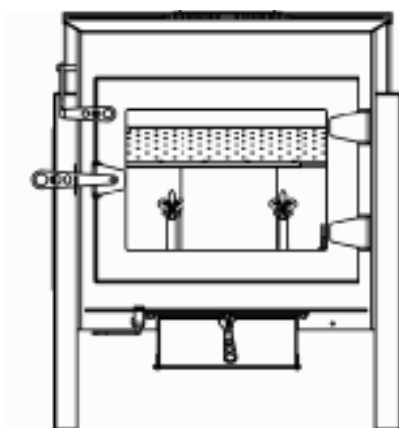


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IDEAL STEEL HYBRID MODEL 210a



GEAR HEAD STOVES BY WOODSTOCK SOAPSTONE COMPANY

OWNER'S MANUAL



Tested To UL 1482-2011 7th Edition
Listed By PFS Corporation



Woodstock Soapstone Company, Inc.
66 Airpark Road, West Lebanon, NH 03784
Toll Free 1-800-866-4344 • www.woodstove.com

Rev 06/2020

OUR PROMISE

We are sure you will enjoy your new stove. During the first six months that you own it, test its performance and experience the comfortable warmth of soapstone. If you are not thoroughly delighted with the beauty, quality, and energy efficiency of your stove, you may return it for a full refund, including the cost of return freight. This is the best consumer protection plan in the industry.

EPA APPROVAL

This Manual describes the installation and operation of: the **Model 210a Ideal Steel Hybrid Catalytic Wood Stove**

The **Model 210a Ideal Steel Hybrid Catalytic Wood Stove** meets the U.S. Environmental Protection Agency's May 2020 cordwood emissions standards. Under specific test conditions, this stove has been shown to deliver heat at rates ranging from 9,324 to 43,263 BTU/hr., and average emissions of 0.89 grams/hr.

The Steel Hybrid contains a catalytic combustor, which needs periodic inspection and replacement for proper operation. It is against the law to operate this woodstove in a manner inconsistent with the operating instructions in this manual, or if the catalytic element is deactivated or removed.



Tested and Listed by



LISTING TO UL #1482-2011

The **Model 210a Ideal Steel Hybrid Catalytic Wood Stove** has been tested to UL Standard #1482 7th edition 2011 for safety, and is listed by PFS Corporation. UL Standard #1482 is the standard for testing solid fuel heating appliances which is universally recognized by all national building regulatory agencies (SBCC, BOCA, ICBO) and individual states.

Please Note: Tested and Listed for US installations only

LIMITED WARRANTY

Your Woodstock Soapstone Stove will be carefully inspected before shipment. We will replace any part which is defective in material or workmanship, free of cost, for a period of one year from the date of purchase. If a defect is discovered, please contact Woodstock Soapstone Company, Inc. for instructions regarding return or replacement of the defective part.

CATALYTIC COMBUSTOR WARRANTY

The catalytic combustor in your **Ideal Steel Hybrid Catalytic Wood Stove** is fully warranted for three years from the date of purchase against any defect in workmanship or materials that prevent the combustor from functioning when installed and operated properly. The catalytic combustor is additionally warranted for three years from the date of purchase for any deterioration in the stainless steel substrate material. For instructions regarding return or replacement of the catalytic combustor, please contact:

Woodstock Soapstone Company, Inc.
66 Airpark Road
West Lebanon, NH 03768
Phone: 1-800-866-4344 • Web: www.woodstove.com

GEAR HEAD STOVES

Gear Head Stoves is a division of Woodstock Soapstone Co., which is specifically 'geared' to designing and building high efficiency, low emission, and more affordable wood stoves. The first Gear Head Stove, The Ideal Steel Hybrid, was the grand prize winner of the 2013 Wood Stove Design Challenge competition, which judged on efficiency, emissions, affordability, innovation, and user friendliness. The affordable steel construction, hybrid burn technology, and Geared 2U custom designs make each stove uniquely affordable and efficient, as well as uniquely yours.

MODEL 210a

IDEAL STEEL HYBRID CATALYTIC

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INTRODUCTION

The Ideal Steel Hybrid Combustion System Explained

The Woodstock Soapstone Company's tradition of building high quality, dependable wood stoves continues in the Ideal Steel Hybrid Wood Stove. This new design combines modern technology to achieve clean and efficient heating performance with rugged reliability and affordable steel construction.

While the Ideal Steel Hybrid shares some time tested features with other members of the Woodstock Soapstone family, it also includes some features that are unique. The Ideal Steel Hybrid has a large glass front that benefits from our proven air-wash design, but unlike our other wood stoves, the glass front is also a large loading door. The door swings open wide for access to a large firebox which can be loaded front-to-back or side-to-side, depending on the length of your wood. Innovative andirons protect the glass and can fold out of the way when the door is opened for loading. The firebox can be lined with thick soapstone panels or firebrick, and the exterior is plate steel in order to make the Ideal Steel Hybrid more affordable.

The Ideal Steel Hybrid has a hybrid combustion system similar to the one that we pioneered in our Progress Hybrid wood stove. The combination of the catalytic combustor and the secondary combustion system gives the operator a wide range of heat output while maintaining a clean and efficient burn. In addition to the Hybrid combustion design, the Ideal Steel Hybrid incorporates new automatic catalyst air to optimize the catalytic combustor's effectiveness.

Hybrid burn technology improves efficiency, lowers emissions, and allows for a wider range of output to meet the heating needs of the operator. Hybrid stoves from Woodstock combine the best attributes of both catalytic combustors and secondary combustion systems. A brief description of each is below, followed by a more detailed explanation.

Catalytic Combustion:

- Burns woodstove exhaust gases starting at 500° F
- Operates best at low to moderate burn rates
- Typically yields long duration burns that are clean and efficient
- Improves stove efficiency by generating heat from burning wood smoke

Secondary Combustion:

- Burns woodstove exhaust gases starting at approximately 1000° F
- Operates best at moderate to high burn rates

- Creates hot firebox for maximum heat output
- Provides a very active fire that is great for viewing

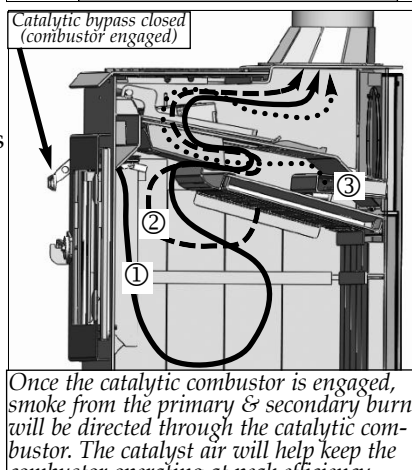
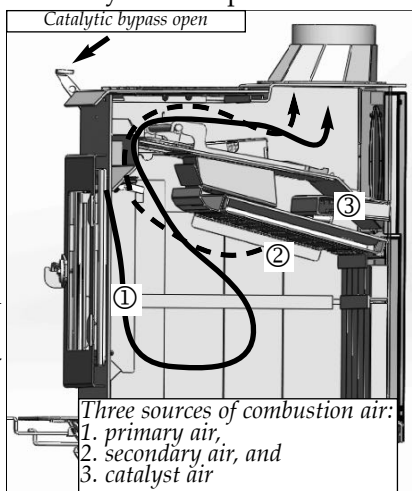
Catalytic combustors are well suited for very long burn cycles. Catalytic combustors have the ability to reduce or eliminate woodstove pollution at low stack temperatures. This means much cleaner, more efficient burns at low firing rates than is possible without a catalyst. The catalytic reaction eliminates harmful combustion byproducts and converts exhaust to water vapor and carbon dioxide. The catalytic combustor burns exhaust gasses and converts them to heat, which is captured inside the stove. This extra heat increases the overall efficiency and output of a catalytic wood stove. The combustor takes full advantage of the energy in wood smoke that would otherwise be lost up the chimney as pollution and wasted energy at low burn rates.

Secondary combustion systems are designed to maximize efficiency and reduce emissions as well, but they operate differently. The secondary combustion system introduces secondary air in the firebox to ignite the volatile gases produced by the burning wood. This reaction requires temperatures over 1000 degrees F to start breaking down the organic compounds in the wood smoke. Secondary combustion systems work best when the stove has high firebox temperatures and secondary combustion air introduced into the high temperature area at the top of the firebox. With secondary combustion the exhaust gases burn at very high temperatures before leaving the firebox, providing an unusual display of secondary flames in the top of the firebox.

In addition to primary and secondary air, the Ideal Steel Hybrid incorporates a system to introduce air directly to the catalytic combustor as it heats up. When the catalyst is fully engaged a self adjusting, bimetallic coil opens a small damper to allow heated air into the exhaust path just upstream from the combustor. This dedicated "catalyst air" keeps the combustor active and helps control primary and secondary burn rates. As the stove and chimney heat up and draft is increased, more catalyst air is added automatically. This has the effect of stabilizing primary and secondary air and at higher temperatures will actually reduce primary and secondary air. The catalyst air design acts similar to a barometric damper. The catalyst air improves emissions and efficiency at high burn rates, provides overfire protection, and stabilizes the burn rate- automatically.

These systems are not mutually exclusive and have been designed to work together. The Ideal Steel Hybrid is designed to utilize each system depending on the conditions present in the firebox. This makes operating the Ideal Steel Hybrid as simple as possible while providing a clean and efficient burn over a wider range of heat output.

The Ideal Steel Hybrid wood stove. The perfect combination of affordability, innovative combustion technology, and rugged construction.



INSTALLATION

For over two centuries, New Englanders have heated their homes with soapstone stoves. A properly installed and operated soapstone stove will warm your home and delight your eye for a lifetime.

Read this entire manual carefully. It explains how to install your Woodstock Soapstone Ideal Steel Hybrid Wood Stove safely and how to operate it correctly and efficiently. The clearances and procedures recommended in this guide are in compliance with the recommendations of the National Fire Protection Association (NFPA), the Underwriters Laboratories (UL), and the U. S. Environmental Protection Agency (EPA). You may feel some of them are very stringent, but they should be followed. They were designed to protect you, your home, and the environment. **Improper installations are a major cause of serious fires. Failure to follow instructions may result in property damage, bodily injury, or death.**

Before installing a woodstove, check your local building codes and any requirements established by your insurance company.

You may need a local building permit to install your stove. Any changes in your home must comply with building codes. If the codes have not been fully updated, you may want to check with the Building Inspection Department or

your local Fire Department. A qualified stove installer should be aware of any changes and updates to local and state codes and may be best suited to handle your installation work.

Many chimney sweeps are qualified installers. If you are unfamiliar with sweeps or need to locate a certified sweep in your area, you can check listings at www.csia.org (Chimney Safety Institute of America). Builders and contractors are another option. In some cases, homeowners install their own stoves. Before installing your stove, please review carefully the stove installation, clearance, and safety information in this manual. Woodstock Soapstone has NFI (National Fireplace Institute) certified woodburning specialists on staff and available to answer any questions you may have about your installation. If you have questions, please call us toll free at 1-800-866-4344.

You should notify your insurance company that you are using a woodstove. Before you light your first fire, have a local building inspector and your insurance representative inspect, and approve in writing, your installation.

When this room heater 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.

LOCATION

A stove which is centrally located will heat the greatest area of your home. Heat should be able to circulate easily into nearby rooms. Placing your stove near an open stairway or register in the floor will help transfer heat to other rooms.

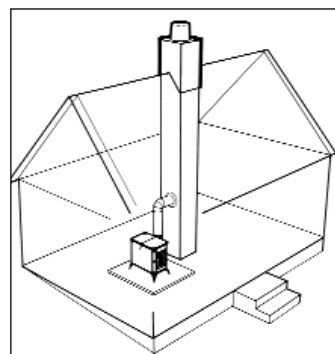
Other installation considerations are:

- Clearance to Combustibles
- Adequate Space for Wood Loading and Ash Removal
- Room Traffic Patterns

Most people install their stove in a room they use frequently where they can enjoy the beauty and comfort of the stove. This also helps in the monitoring and reloading the stove as needed. A well-planned placement will enhance your enjoyment of your stove and may save installation costs.



It is not recommended to install a high efficiency stove in an unfinished basement. Heat loss in an unfinished basement is significant, and it is common for high efficiency stove to be overfired in order to compensate for the heat loss through the unfinished basement walls. For a full article on Basement Installation, visit www.woodstove.com or call 1-800-866-4344.



The best location for a chimney and woodstove is in the center of the house. The chimney will be warmer, draft will be better, and radiant heat will be distributed more evenly.

ALCOVE INSTALLATIONS

THE MODEL 210 IDEAL STEEL HYBRID WOODSTOVE IS NOT APPROVED FOR AN ALCOVE INSTALLATION. AN ALCOVE IS DESCRIBED AS AN AREA LESS THAN 512 CUBIC FEET, WHICH IS EQUIVALENT TO AN 8'X8'X8' SPACE.

CHIMNEYS

Your chimney is a critical component of your wood heating system. A properly designed and constructed chimney will help to provide safe and efficient woodstove operation. Hot exhaust rising up through the chimney also pulls combustion air into the stove through the air damper. If a chimney is too short, or the flue too large, the hot exhaust will cool and slow down. This can lead to poor stove performance, smoke spillage, back puffing, and even creosote build up in the chimney itself. An excessively tall chimney could lead to a strong draft, which may make the fire difficult to control with the stove damper. This could result in over firing the stove and lead to damage to the steel components as well as the catalytic combustor. Whether you are installing a new chimney, or adapting an existing chimney to your woodstove, close attention to chimney height, flue size, and location should be considered.

Chimney Flue Sizing:

The ideal flue size for the Ideal Steel Hybrid is 6" (28 in²), which is the same diameter as the stove's flue collar.

If upsizing needs to occur due to an existing chimney the following general rules apply:

- 1. Interior Chimney** (no walls of the chimney exposed to the outside below the roofline): the inside cross-sectional area of your chimney should be no more than 3x (85 in²) the cross-sectional area of the woodstove flue collar.
- 2. Exterior Chimney** (if there are one or more walls exposed to the outside below the roofline)
 - The flue should be no more than 2x (57 in²) the cross-sectional area of the flue collar.

Recommendation: The Ideal Steel Hybrid has a 6 inch flue collar, thus an 8 inch x 10 inch rectangular or 10 inch round flue tile for an **inside** chimney are the maximum flue sizes we recommend for this stove. For an **outside** chimney, an 8 inch x 8 inch square or 8 inch round would be the largest acceptable. The smallest size we recommend is 6 inches round, as the flue should not be less than the flue collar size.

Note: For flues that exceed the recommended area, a stainless steel chimney liner is recommended.

Height Requirements:

The chimney must extend 3 ft. above the point where it passes through the roof and must also be 2 ft. higher than any roof surface or obstruction within 10 feet (measured horizontally) of the chimney. You should check your local building codes for any other requirements.

The recommended minimum chimney height is 15 feet from the flue collar of the stove to the top of the chimney. This includes connector pipe and chimney pipe. There may be other factors to conform to code for clearances on the roof, high wind, high altitude, etc., that may make the minimum height undesirable or a violation of building codes. Woodstock Soapstone does not list a maximum chimney height requirement, but it is important to know that a tall chimney (often at or over 30'), can overdraft. Overdrafting chimneys can cause internal firebox damage. Often the draft can be controlled with the use of a pipe damper. If you think your chimney may be overdrafting, call us at 1-800-866-4344.

CHIMNEY TYPES

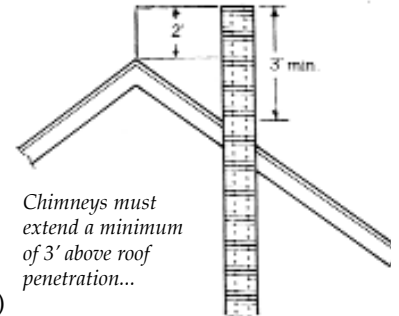
DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

There are two acceptable types of chimneys: (1) A chimney complying with the requirements for Type HT chimneys in the Standard for Chimneys, Factory-Built, Residential Type and Building Heating Appliance UL 103 OR **A code-approved masonry chimney with a flue liner.**

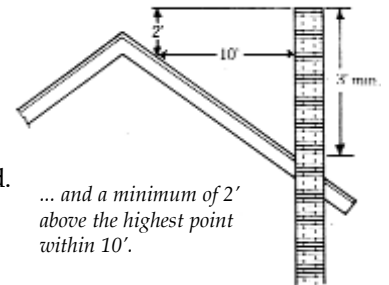
Lined Masonry Chimneys:

Always have the chimney inspected prior to your stove installation. If your chimney is not lined with appropriately sized clay flue tiles, or the clay tiles are old, cracked, damaged or otherwise compromised, a stainless steel chimney liner or poured liner will be required. Depending on the condition of your flue or clay tiles, the stainless steel liner may need to be wrapped in a high temperature insulation blanket. A liner may also be recommended if your flue is too large for the draft to flow properly (please refer to the section on chimney sizing). Our customer service department can answer any questions regarding the use of a liner and/or insulating blanket. Call 1-800-866-4344.

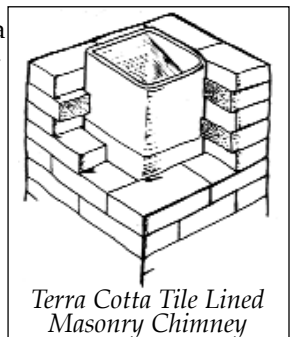
Existing chimneys should be checked twice a year for obstructions, creosote deposits, surface cracks, chemical deterioration and poor construction. Any damage should be repaired immediately. Two other chimney related areas that should be checked are chimney penetrations at the floor or ceiling joists, and at the roofline. There



Chimneys must extend a minimum of 3' above roof penetration...



... and a minimum of 2' above the highest point within 10'.



should be at least 2 inches of clearance between the chimney and floor joists or other combustible materials. Poor flashing between the chimney and the roofline can cause leaks and deterioration of chimney mortar.

You should make preliminary checks, but if you have any doubts, or are unfamiliar with chimney construction, cleaning, or maintenance, have a local fire official or certified chimney professional inspect your chimney. If repairs are required, be sure to use someone who is knowledgeable in chimney work and familiar with local code requirements.

In addition: All brick or cinder block chimneys should have clean out access with a tightly fitting door. Masonry chimneys should have a wash at the top. All chimneys should have a cap to keep out rain and snow and to minimize downdrafts caused by wind.

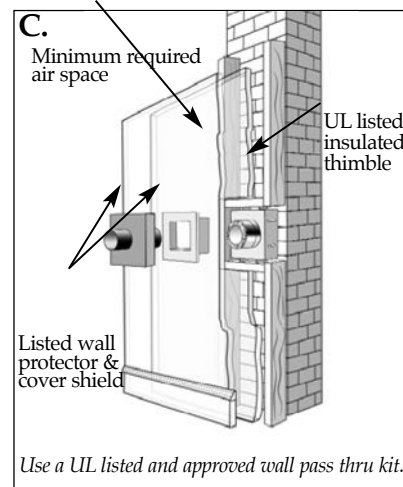
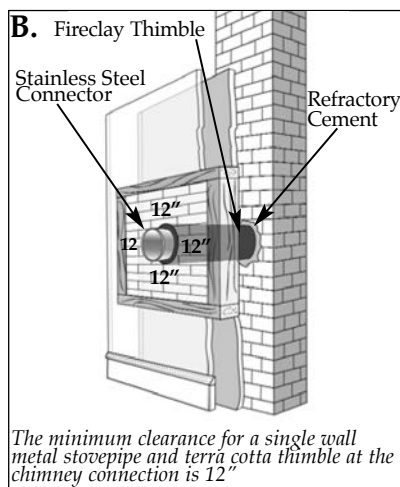
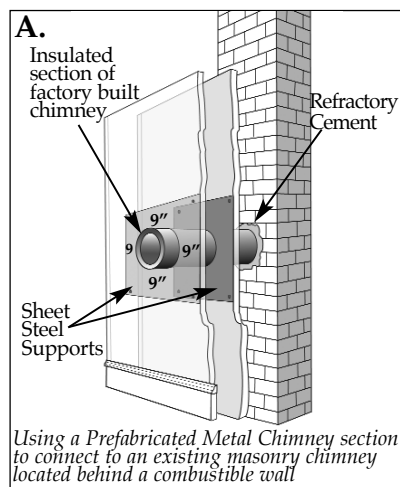
Passing Through A Combustible Wall:

With an exterior chimney, in most cases the chimney connector (or stove pipe) will need to pass through a combustible wall. The following are acceptable methods:

A. Use a section of Solid Insulated Prefabricated Metal Chimney to connect to the chimney - Use a section of insulated prefabricated 2100° Class A chimney pipe listed to UL 103 HT (at least 1" of insulation or greater) the same inside diameter as the stove pipe and maintain a 9" air space between the wall of the prefabricated chimney and the combustible wall. This section of chimney pipe can be supported by a sheet metal plate securely fastened to the combustible wall, with a hole cut in the middle of it. This will close the gap around the chimney pipe and the framed opening. (See Diagram A Below)

B. Build a solid brick surround around a tile liner - Frame a 3.5" thick brick surround into the combustible wall you need to pass through. Maintain a minimum 12" brick separation from the clay liner to combustibles. The minimum 5/8" thick clay liner should be cemented in place and run from the outer surface of the brick to the inner surface of the chimney. (See Diagram B Below)

C. There are also UL Listed kits available that are specifically designed for passing through a combustible wall. For more information on these kits, please contact Woodstock Soapstone Company. Please note: there are several UL listed wall pass through kits available, always follow the specific manufacturers installation instructions. (See Diagram C Below)



For other methods, please refer to NFPA 211.

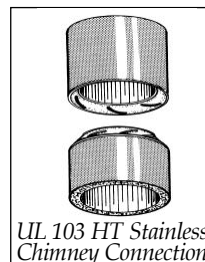
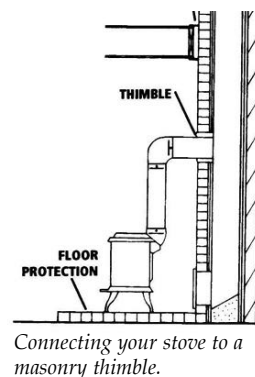
REMEMBER, UNPROTECTED SINGLE OR DOUBLE WALL STOVE PIPE SHOULD NOT PASS THROUGH A COMBUSTIBLE WALL OR CEILING TO CONNECT TO THE CHIMNEY. YOU MUST USE AN APPROVED METHOD WHICH PROVIDES GREATER PROTECTION THAN SINGLE OR DOUBLE WALL PIPE.

Prefabricated Metal Chimneys:

For high efficiency, freestanding woodstoves, like your Woodstock Soapstone stove, a Prefabricated Metal Chimney must be listed as Class A and carry a UL Listing of 103 HT (high temperature). The "UL 103 Type HT Class A" prefabricated chimney will have a temperature rating of 2,100° F.

There are prefabricated chimney systems that are approved only to 1,700° F and are suitable only for fireplace inserts or factory built fireplaces. **DO NOT** use these with your Woodstock Soapstone stove.

At the point of the first penetration of a combustible surface (i.e., wall or ceiling) all subsequent venting components need to be prefabricated "UL Type HT Class A". If your prefabricated chimney



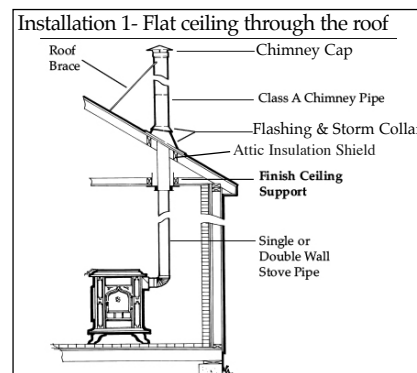
goes through a living space it must be enclosed, and that enclosure must conform to clearance standards for the prefabricated chimney. Your chimney must pass through your roof and extend above the roof line in accordance with code standards. Please refer to height requirements on Page 2.

Prefabricated Chimney Configurations

The diagrams below represent the most common and acceptable installations using prefabricated chimney pipe. The necessary components are listed and shown in their appropriate locations. These components are Class A listed to U.L. 103HT (tested to 2100 degrees F.) Only components listed to UL 103HT can be used to install your wood stove. Installation instructions are described below **as examples only**. More detailed instructions are available through Woodstock Soapstone or the pipe manufacturer. **ALWAYS FOLLOW THE SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.**

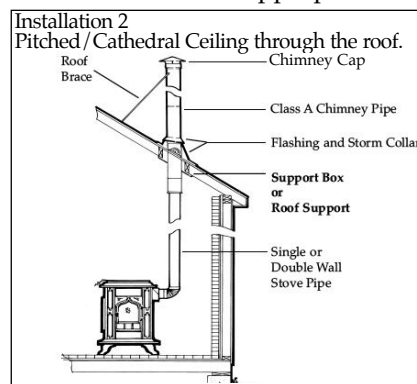
Installation 1- Flat ceiling through the roof

First, determine where the stove will be placed. Pay close attention to all required clearances for the stove **and** connector pipe. Next, use a plumb line to locate the finish ceiling support in the ceiling above. Cut the appropriate sized hole in the ceiling and frame in the necessary supports to secure the ceiling support. Install the pipe adapter onto the first section of chimney pipe, and lower them into the ceiling support. Use an insulation shield in the attic to keep any insulation away from the pipe. If the attic is a living space the chimney pipe must be fully enclosed. As the pipe extends through the roof, install the appropriate flashing and storm collar to keep the weather out. As the height of the chimney increases to meet code, it may be necessary to install a roof brace (typically recommended at 5' intervals). All chimneys should have the appropriate cap installed at the top to reduce wind and weather related downdrafts as well as deter any animals from building nests. The connector pipe should extend from the flue collar of the stove to the pipe adapter at the ceiling support. The male (crimped) end should always point down toward the stove. Be sure that each joint has enough overlap for a secure connection. All connections should be fastened with screws, including at the flue collar and pipe adapter. (Please refer to the manufacturers full set of installation instructions)



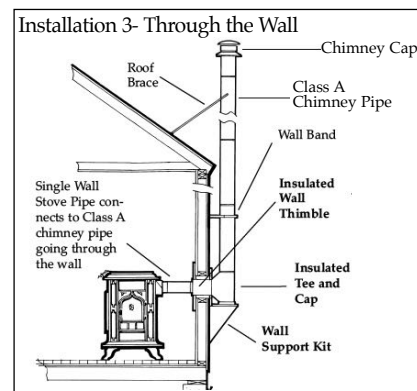
Installation 2- Pitched/Cathedral Ceiling through the roof

Determine where the stove will be placed. Be sure all clearance requirements are satisfied. Choose the appropriate support for your installation (support box or roof support). Use a plumb line to locate the support in the ceiling above. Cut the appropriate sized hole in the ceiling and install the necessary framing to secure the support. Install the support according to its specific instructions. Be sure that the support hangs down below the ceiling far enough to maintain proper clearance for the connector pipe (steeper slopes require more chimney pipe below the ceiling). Install the pipe adapter to the first section of chimney pipe and lower it into the support box (or connect it to the bottom of the roof support). As the pipe extends through the roof, install the appropriate roof flashing and storm collar. Install the proper chimney pipe lengths to meet code and recommended chimney height. It may be necessary to install a roof brace for stability. Always install the appropriate cap to the top of the chimney. Double wall connector pipe is recommended for installations that have 8' or more from the stove to the chimney. Be sure that all joints in the connector pipe are secure and fastened with screws, including at the flue collar and chimney pipe adapter. (Please refer to the manufacturers full set of installation instructions)



Installation 3- Through the wall

This installation requires the use of an insulated wall thimble to penetrate a combustible wall. Typically a 9"-12" chimney pipe and pipe adapter will pass through the thimble and make the connection between the interior connector pipe and an insulated tee with a clean out on the outside of the building. The tee and chimney rising up from it rest on a wall support designed to bear the weight of the chimney. Install lateral supports as specified as the chimney rises along the exterior wall. The appropriate flashing and storm collar should be installed if the chimney penetrates an eave or overhang. An offset of 15 or 30 degrees may also be used to go around an overhang. As the chimney extends above the roof to meet code recommended heights it may be necessary to install a roof brace. (Please refer to the manufacturers full set of installation instructions).



Stovepipe (Connector Pipe):

Connector pipe is either single wall (sheet metal) or double wall (sheet metal outer pipe with a stainless steel inner pipe). We strongly recommend 22 gauge pipe (26 or 28 gauge is too thin for use with a woodstove). The connector pipe should be 6 inch diameter to match the flue collar of the stove. If your connection to either a masonry chimney or prefabricated chimney system is more than 8 feet tall, we recommend the use of double wall connector pipe. If you need to reduce clearances for your connector pipe installation, double wall connector pipe would be recommended. All pipe connections, including at the flue collar, must be secured with screws. **DO NOT USE GALVANIZED SINGLE WALL PIPE.**

Connector pipe is designed to connect your stove to your masonry lined or approved prefabricated chimney system. **CONNECTOR PIPE SHOULD NEVER BE USED AS A CHIMNEY AND SHOULD NEVER PASS THROUGH A COMBUSTIBLE WALL, CEILING, WINDOW, CLOSET, OR ROOF.** At the point where your stovepipe meets the chimney, you must either vent into a masonry chimney with approved non-combustible transition, or a prefabricated chimney system with a specially designed transition piece.

FIREPLACE INSTALLATION

Your Model 210 Ideal Steel Hybrid Woodstove has variable height legs, giving you a greater range of flue heights for ease of installation when venting through an existing fireplace. The variable height legs have a range of 5". The height adjustment is in 1" increments. The centerline height of the rear flue exit at the lowest leg height is 24.5". Installing the Ideal Steel Hybrid soapstone stove in a fireplace setting is a great way to enjoy the view of the fire, while greatly increasing the efficiency and reducing heat loss to the fireplace chimney. **PLEASE NOTE: You cannot have an ash pan if you are setting the stove to 30.5" .**

We do not recommend placing the stove inside the fireplace, as it would make routine maintenance such as cleaning the combustor more difficult, and much of the heat radiating off the stove would not circulate into the room.

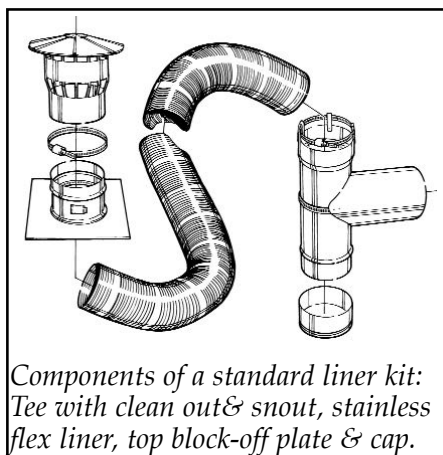
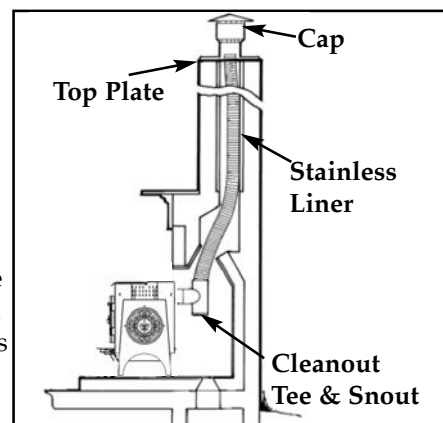
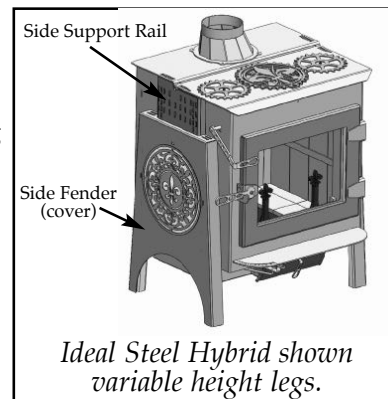
The preferred method for installing a stove in front of a fireplace is by running a stainless steel 'flex' liner down the chimney, connecting it to the stove at the fireplace. Chimneys with large flues should be relined to achieve proper draft. If the chimney does not have flue tiles or if the tiles are cracked or compromised, an additional insulating material must be used.

It is important that there be a secure connection between the stove and the flue liner. It is **NOT** acceptable to simply install a plate in front of the fireplace and run a stovepipe through it. The stove pipe must connect with the liner for a continuous outlet to the top of your chimney.

Stainless steel flex liner kits come in a variety of lengths and are readily available. These kits include a flexible stainless steel pipe, tee with snout & clean out, a block-off plate for the top of the chimney, and a cap. Please contact Woodstock Soapstone Company for more information on these kits. **ALWAYS FOLLOW THE SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.**

If the fireplace surround is clad in wood trim, the proper clearance to a combustible will need to be maintained. Please refer to the clearance charts on pages 7-10. An unprotected wood mantel needs to be a minimum of 30" from the top of the stove. If a mantel shield is installed that clearance can be reduced to 12".

DO NOT VENT YOUR WOOD STOVE THROUGH A FACTORY BUILT FIREPLACE UNLESS IT IS SPECIFICALLY LISTED FOR SUCH AN INSTALLATION . Most factory-built fireplace chimney systems are only rated to 1,700° F, which is not sufficient for a freestanding wood burning stove.



FLOOR PROTECTION REQUIREMENTS

Your Woodstock Soapstone stove must be set on an approved hearth or floor protection. The hearth protects your floor from two hazards:

- Heat Transfer: Heat radiation from the bottom, front, and sides of the woodstove
- Ember Protection: Sparks and hot coals that may fall out during ash removal and reloading of firewood

DO NOT INSTALL YOUR WOODSTOCK SOAPSTONE STOVE ON A COMBUSTIBLE SURFACE (WOOD, CARPET, LAMINATE, OR VINYL, FOR EXAMPLE).

Even if you have a stone or tile overlay on wood, it is still considered combustible since the surface materials will not provide adequate heat transfer protection.

Your stove **MUST** sit on one of the following:

- A hearth pad of solid masonry (brick or tile on concrete and mortared in place)
- A prefabricated hearth pad listed to UL1618 approved standards. These pads are made to be placed on an existing floor. Woodstock Soapstone Company has a good selection of these pre-made pads.
- A custom designed pad constructed of approved non-combustible materials which will protect the floor from sparks, hot coals, and ashes; and prevents heat from being transferred onto the floor beneath.

IF YOU CHOOSE TO BUILD YOUR OWN HEARTH PAD

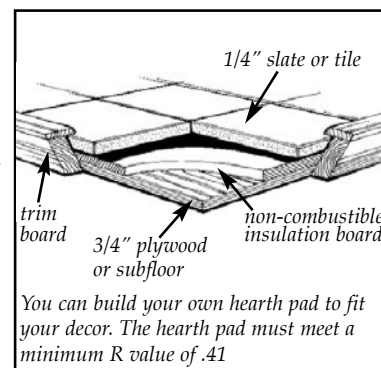
- 1) Start with a plywood base or subfloor.

Over this apply:

- 2) a layer of insulating board with an R-Value of at least 0.41. Depending on the material you choose, the insulating board can be as little as 1/2" thick. For additional help with material specifications, contact Woodstock Soapstone Company at 1-800-866-4344 or info@woodstove.com.

Over this apply:

- 3) 1/4" or greater of a decorative, non-combustible material such as tile, slate, stone, or brick. Use mortar or grout to set the material in place, then grout the seams.



Specifications for floor protectors may be listed in terms of R-value, K-value, or C-value. To convert K or C value to R-value use the following formulas.

K to R: $R=1/K \times T$ (Thickness of the alternate material)

C to R: $R=1/C$

Once alternate materials have been converted to R-values, the values of multiple layers can be added to determine the combined protection. If the overall R-value meets or exceeds the specified .41 then the materials are acceptable.

R-values of common hearth materials:

Ceramic Tile	1/4"	0.020
Granite	1/4"	0.020
Slate	1/4"	0.025
Cement Mortar	1/2"	0.025
Cementboard	1/4"-1/2"	0.20-0.39
Common Brick	2.25"	0.450
Common Brick	4.00"	0.800
Mineral/Ceramic Fiber Board	1/2"	1.10-1.470

Please Note: Always check with the manufacturer of the hearth material used to verify the R or K value.

K Values cannot be added. Convert to R value before adding multiple layers.

DO NOT USE: Old-fashioned stove boards that were commonly sold in hardware stores as they **DO NOT** have adequate protection and **ARE NOT** approved for primary floor protection under your stove.

Hearth Rugs also **ARE NOT** meant to be used as primary hearth protection. These are made to be used in addition to an approved hearth, and are an auxiliary decorative protection. They are not a substitute for an approved hearth pad.

Hearth Sizing:

Clearances for your Ideal Steel Hybrid stove on the front, back and sides must be taken into consideration when determining the placement and size of your floor protection. The floor protection must extend under any horizontal connector pipe and 2 inches beyond each side of that connector.

PARALLEL HEARTH PAD

MINIMUM DIMENSIONS

- A. Floor protection in front of load door opening = 16"
- B. Protection to either side of the loading door/ash door opening = 8"
- C. Floor protection non-loading door sides = 6"
- D. Floor protection behind stove (top vent or rear vent) = 6"

Minimum hearth size in a parallel installation is 46"D x 38"W.
Recommended size is 48" D x 48"W or larger.

A 48" x 48" square hearth pad will allow for 6" behind the stove, 11" on either side, and 18" in front of the stove. The hearth pad must have a minimum R value of 0.41 (1/2" of "cementboard" covered with 1/4" of tile or stone).

CORNER HEARTH PAD

Minimum hearth size in a corner installation must be 54.5"x 54.5" (with the front corner cut off). **NOTE:** To achieve the minimum hearth dimension, the stove must be top vented.

Calculating a Corner Hearth Pad (per NFPA 211):

A = C x 1.414 + W/2 + D + Front Hearth Requirement

A = distance from corner to the front of the hearth pad

C = clearance from rear corner of appliance to wall (rear heat shield is recommended but not required)

1.414 = a constant

W/2 = one half the appliance width (12.625")

D = appliance depth (23.5")

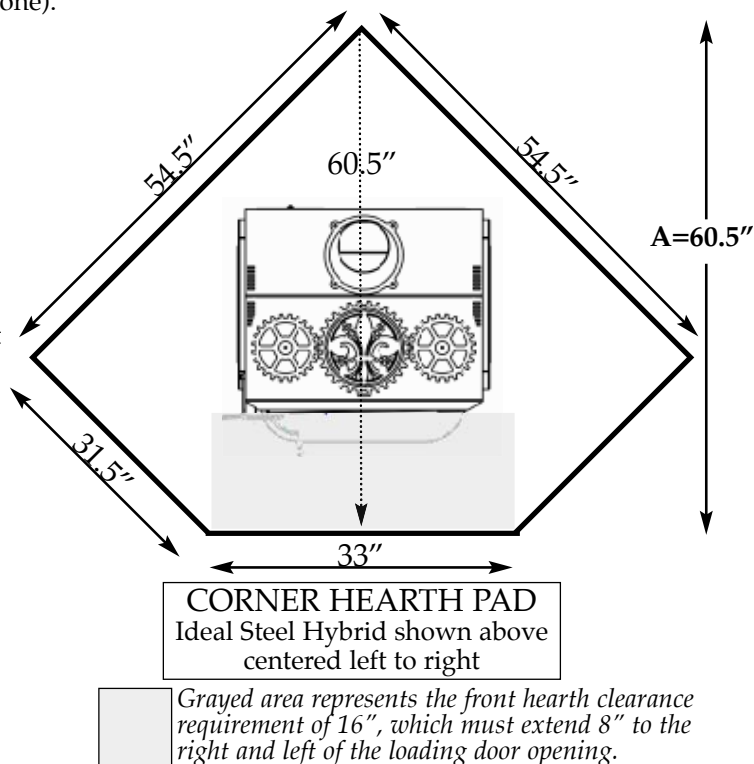
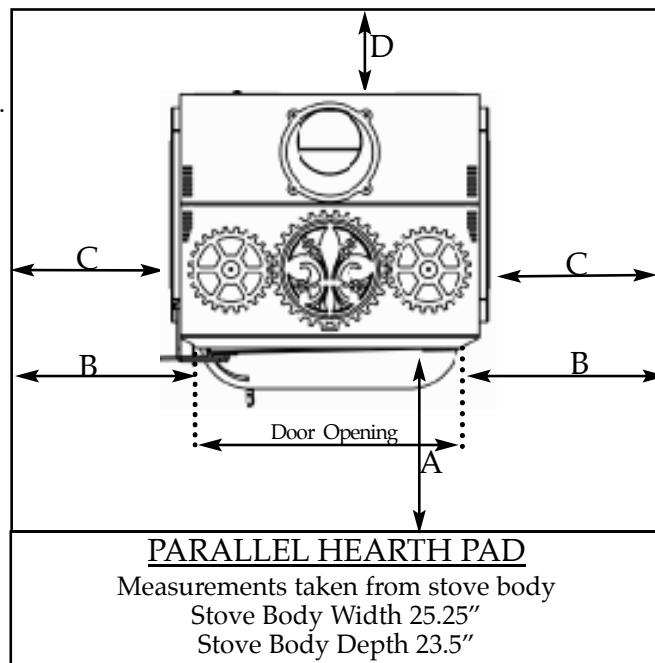
Front Hearth Clearance = 16"

Example:

Ideal Steel with the Rear Heat Shield & Pipe Shield

A = 6" x 1.414 + 12.625 + 23.5" + 16"

A = 60.5"



WALL PROTECTION

The Model 210 Ideal Steel Hybrid stove has been tested to UL standards for clearances to combustible walls. The minimum clearances to unprotected walls are as follows:

Minimum clearances with no heat shields to unprotected combustible walls:

From the back----- 14"

From the sides-----19"

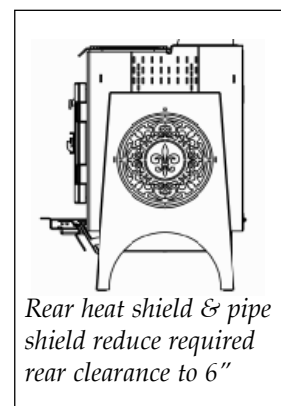
Do not assume that a wall is not combustible because it has a nonflammable surface. A wall with any combustible materials in it must be considered combustible. For example, a brick wall attached to wood studs is considered a combustible wall. Over time, heat will pass through bricks and heat the wood, lowering the ignition temperature of the

studs, possibly resulting in a fire. As waves of radiant heat energy meet a combustible object, heat is absorbed and the temperature of the object is raised, which can result in spontaneous combustion. Similarly, wood-framed walls which are covered with tile, stone or fire-rated sheetrock must be considered combustible. Fire-rated sheetrock is also considered combustible due to the paper covering.

If you wish to install your stove closer to a combustible wall than standard clearances will permit, you can either attach an approved stove & pipe shield, or mount a ventilated, non-combustible shield on the wall.

Stove and Pipe Shields:

Clearances can be reduced by attaching an approved heat shield, part #IS-256 and pipe shield, part #W-413. Woodstock Soapstone Company carries heat shields specifically designed for this stove. When using one or both of these shields, **clearance is measured from the back of the shield to the combustible wall**. The clearance behind the stove can be reduced to 6 inches. The clearance behind the pipe can be reduced to 6 inches.



Clearance Table:

The Ideal Steel Stove can be installed at a 14" clearance with no additional protection, if the stove pipe is top vented, and the provided shield, is used to cover the rear flue cover plate. To further reduce the rear clearance to 6", you must attach an approved rear heat shield and a 36" pipe shield.

Clearance Table For Model 210 IDEAL STEEL						
Type of Installation▶	Clearance from stove back, top vent, with stove pipe which goes straight up	Clearance from stove back and pipe, which goes straight back	Clearance from stove back and vertical single wall connector pipe <u>with elbow at stove back</u>		Stove Sides	
Type of protection▼			Stove Back	Stovepipe		
No Protection	14"	14"	23"	15"	19"	
With 36" Pipe Shield			14"	6"	19"	
With Approved Rear Heat Shield (Part #IS-256) and 36" Pipe Shield	6"		14"	6"*	19"	
			*Controlling clearance			
3 1/2" thick Masonry Against Combustible Wall*	12"	12"	20"	12"	13"	See note below regarding NFPA 211 clearance reduction methods and implementation.
3 1/2" thick Masonry with 1" ventilated airspace*	12"	12"	14"	6"	12"	See note below regarding NFPA 211 clearance reduction methods and implementation.
24 ga. sheet metal with 1" ventilated airspace*	12"	12"	14"	6"	12"	See note below regarding NFPA 211 clearance reduction methods and implementation.
1/2" thick non-combustible insulation board with 1" airspace*	12"	12"	14"	6"	12"	See note below regarding NFPA 211 clearance reduction methods and implementation.

*These clearance reductions meet or exceed requirements of NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances. Approved NFPA 211 clearance reduction methods **DO NOT** allow stove clearances to be reduced below 12". **NFPA WALL SHIELDS MUST BE SIZED TO NFPA 211 SPECIFICATIONS. CONSULT NFPA 211 AND A QUALIFIED EXPERT BEFORE IMPLEMENTING THESE REDUCTIONS.**

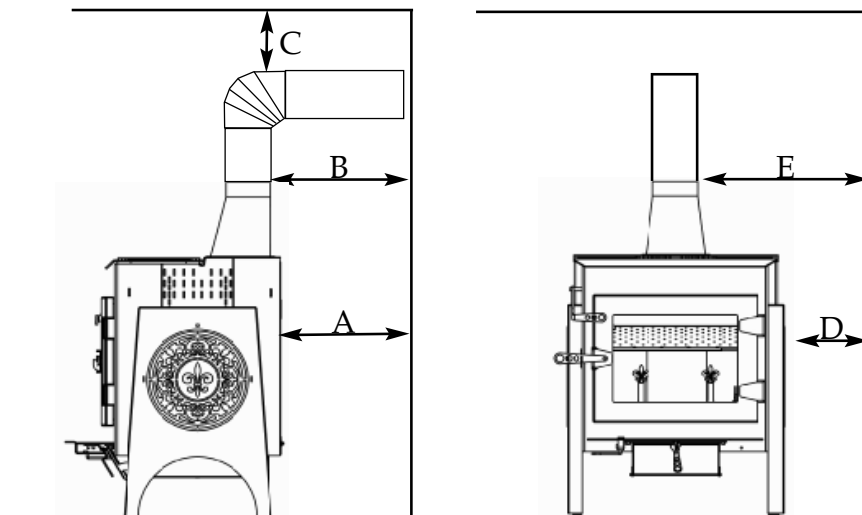
The only approved method allowing for a rear stove clearance less than 12" is the Approved Rear Heat Shield (#IS-256) provided by Woodstock Soapstone Co. If your installation requires the use of the Approved Rear Heat Shield call 1-800-866-4344.

- These clearances apply to walls, ceilings, furniture and other combustibles.
- The 36" Vertical Stack Shield attaches to the back of the stove pipe and prevents excess heat from being radiated from the pipe. Heat shield protection is only required for the first 36" of vertical connector pipe.
- At least 30" is required from the front of the stove to combustibles (such as curtains, wall hangings, and furniture).

The same clearances from your stove and stove pipe apply to both fireplace and freestanding installations. Be particularly careful to check clearances to a wood mantel or a wood fireplace facade. You must maintain a 30" clearance to an unprotected wood mantel. See Fireplace Installations on Page 5.

CLEARANCE INSTALLATION DIAGRAMS

1) Parallel Installation, Single Wall Pipe, Top Vent



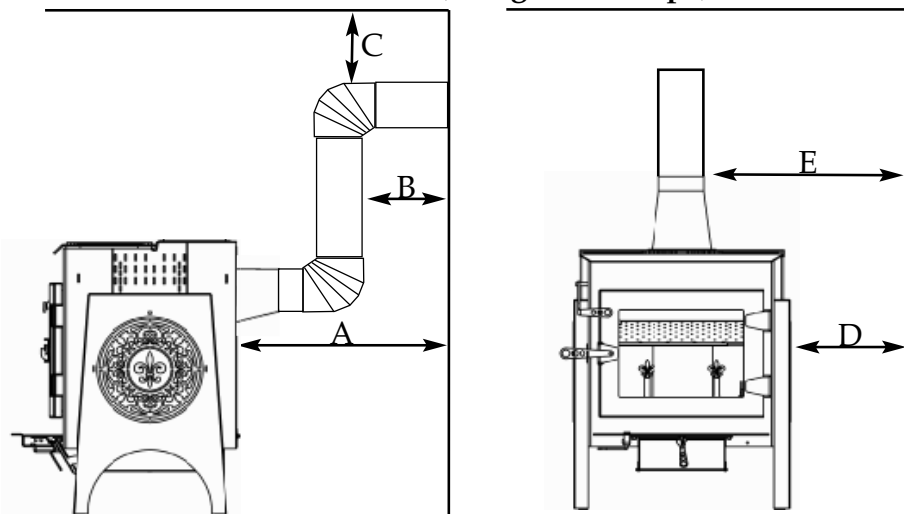
NO HEAT SHIELD

- | | | | |
|--------------------------|-------|--------------------------|---------|
| A. Back of stove to wall | = 14" | D. Side of stove to wall | = 19" |
| B. Back of pipe to wall | = 15" | E. Side of pipe to wall | = 29.5" |
| C. Above pipe to ceiling | = 18" | | |

WITH REAR HEAT SHIELD & PIPE SHIELD ATTACHED

- | | | | |
|---------------------------------|-------|--------------------------|---------|
| A. Back of stove shield to wall | = 6" | D. Side of stove to wall | = 19" |
| B. Back of pipe shield to wall | = 6" | E. Side of pipe to wall | = 29.5" |
| C. Above pipe to ceiling | = 18" | | |

2) Parallel Installation, Single Wall Pipe, Back Vent



NO HEAT SHIELD

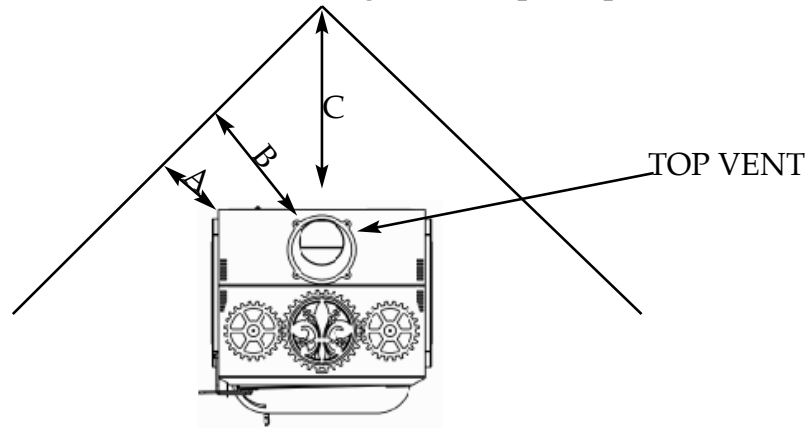
- | | | | |
|--------------------------|-------|--------------------------|---------|
| A. Back of stove to wall | = 23" | D. Side of stove to wall | = 19" |
| B. Back of pipe to wall | = 15" | E. Side of pipe to wall | = 29.5" |
| C. Above pipe to ceiling | = 18" | | |

WITH REAR SHIELD & PIPE SHIELD ATTACHED

- | | | | |
|---------------------------------|-------|--------------------------|---------|
| A. Back of stove shield to wall | = 14" | D. Side of stove to wall | = 19" |
| B. Back of pipe shield to wall | = 6" | E. Side of pipe to wall | = 29.5" |
| C. Above pipe to ceiling | = 18" | | |

CLEARANCE INSTALLATION DIAGRAMS

3) Corner Installation, Single Wall Pipe, Top Vent



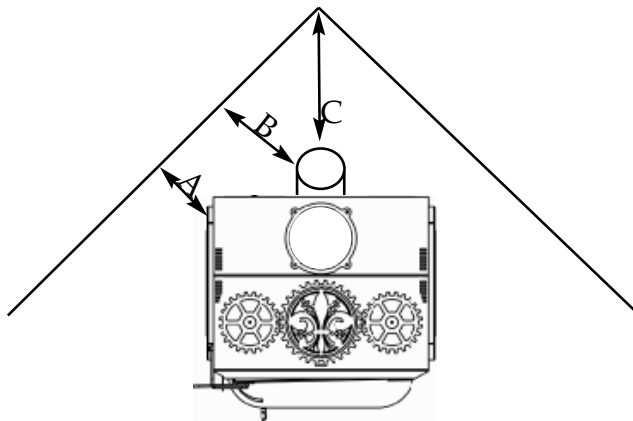
NO HEAT SHIELD

- A. Stove corners to side walls = 6" (determines placement)
- B. Pipe to side walls = 17"
- C. Pipe to corner = 17"

WITH REAR HEAT SHIELD & PIPE SHIELD ATTACHED

- A. Stove corners to side walls = 6" (determines placement)
- B. Pipe to side walls = 17"
- C. Pipe to corner = 17"

4) Corner Installation, Single Wall Pipe, Back Vent



NO HEAT SHIELD

- A. Stove corners to side walls = 10.5"
- B. Pipe to side walls = 17"
- C. Pipe to corner = 17" (determines placement)

WITH REAR SHIELD & DOUBLE WALL CONNECTOR PIPE

- A. Stove corners to side walls = 6" (determines placement)
- B. Back of pipe shield to side walls = 6" (Double Wall Connector Pipe)
- C. Pipe to corner = 6" (Double Wall Connector Pipe)

SETTING UP YOUR STOVE

Your Model 210 Ideal Steel Hybrid woodstove has been shipped assembled except for four parts:

1) Changing the height of the stove; 2) the flue collar, 3) the ash lip 4) and door handle.

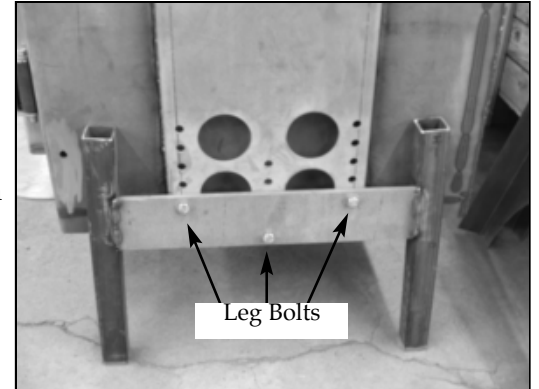
Your stove is factory set at the 33.5" height, if you need it raised or lowered, follow the directions below. The ash lip, flue collar, door handle, as well as the center burner are packed inside the firebox of the stove. All necessary hardware and instructions are also packed in the firebox. Any optional items such as heat shields will be packed separately.

(1) How to adjust stove height:

The Ideal Steel Leg system has both a structural element as well as a customizable decorative outer fender. The structural steel legs offer a total of 5" of height adjustment in 1" increments. The decorative fender is designed to match the height of the legs once the desired height is set. **Please note: You cannot have an ash pan if you are setting the stove at the lowest stove height of 30.5".**

To adjust the height of the stove you will need to first remove the decorative leg fender. a means to lift and support the stove safely and a 9/16" wrench and 9/16" socket and ratchet.

1. First remove your decorative fenders. First lift up on the fender assembly and then swing the bottom away from the stove to remove the fender assembly from the body of the stove, repeat the process on the other side.
1. Raise and support one side of the stove at a time to make height adjustments. A small automotive or bottle jack may work to elevate the stove but be sure to use safety supports as well. Do not rely on the jack alone for support while working on the stove. Be aware of the air control components located at the bottom left side of the stove to avoid damage.
2. The steel legs are attached to the body of the stove with (3) 3/8" bolts, nuts, and lock washers. Use a 9/16" socket, ratchet, and wrench to loosen and remove the hardware.
3. Move the steel legs to the desired height setting. Each row of holes is 1" apart. Insert the bolt from the outside and through the corresponding hole in the stove body. Place a lock washer over the bolt and secure with a nut. Be sure that the two outside bolts are positioned in the same row. Firmly tighten each bolt and nut.
4. Repeat this process on the opposite side.
5. Reinstall the fender assemblies. Align the bottom of the fender with the legs. Lift it slightly until the lower tabs rest over the leg bracket. Rotate the top of the fender in toward the body of the stove to align the top tabs with the slots in the body, and push the fender down to secure it.



2) How to attach the Ideal Steel Hybrid flue collar & cover plate:

The Ideal Steel is designed to be vented out the top or out the rear with an easily convertible flue collar and cover plate. Each part is secure to the stove body with 4 bolts. You will need a 1/2" wrench or socket and ratchet to install these parts. The stove is shipped with the cover plate installed over the rear flue exit. The flue collar is packed inside the firebox.

1. Decide which way you would like to vent your stove. This may be dependent on the location of an existing chimney or the design of an existing hearth. Always pay close attention to required clearances when considering stove placement
2. Install the flue collar in the desired location. Be sure that the gasket on it is secure and stays in place while installing. Use four of the bolts to attach the flue collar to the stove body. The holes in the stove body are threaded to accept the bolts. Alternate between the bolts while tightening to ensure even pressure. The bolts should be tight enough to firmly compress the gasket. Do not over tighten.
3. Repeat the process to install the cover plate over the flue exit not being used.

Note: If the flue collar is installed on the rear flue exit, the sloped side must face the floor.

3) How to attach the Ideal Steel Hybrid Ash Lip:

The Ideal Steel ash lip is packed inside the firebox. The ash lip must be installed prior to using your stove. You will need a 7/16" wrench or deep socket and ratchet to install the ash lip.

1. Locate the two threaded studs on the ash lip. The studs will be on the bottom side of the ash lip. The air damper markings should be on the left as you face the stove.
2. Align the threaded studs with the holes in the flat lip that extends out from the front of the stove. Insert the studs

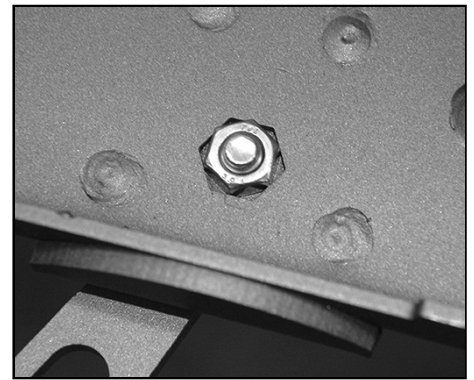
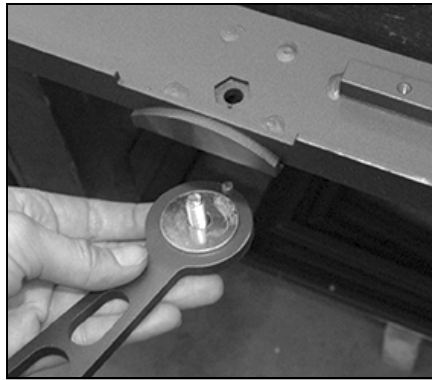
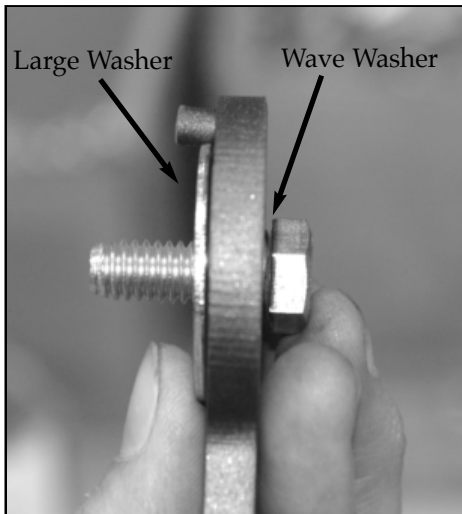
into the holes.

3. Secure the ash lip with the washers and nuts provided.

4) How to attach the Ideal Steel Hybrid Door Handle:

For shipping purposes the door handle for your Ideal Steel stove has been packed in the firebox with the appropriate hardware for installation. You will need a ½" socket and ratchet or wrench to install the handle.

1. Slide the small wave washer onto the bolt first.
2. Place the bolt through the hole in the handle. Slide the large spacer washer over the bolt so that it is between the handle and the exterior of the loading door.
3. Place the handle through the hole on the door and line up the pin up with the slot in the door.
4. Using a wrench and a socket and ratchet, tighten the bolt until you feel some resistance when the handle travels up and down.



The large spacer washer gets sandwiched between the door handle and the OUTSIDE of the loading door. The lock nut will secure the door handle assembly on the inside of the loading door.

OPTIONAL ACCESSORIES

Your Model 210 Ideal Steel Hybrid wood stove has several optional add-on components depending on individual installation needs.

- 1) Rear Heat Shield:** Reduces the rear clearance from the back of the stove to a combustible surface from 14" to 6". See page 8 for additional clearance details.
- 2) Pipe Shield:** Reduces the clearance requirement for single wall connector pipe. See page 8 for additional clearance details.
- 3) Outside Air Adapter:** Typically required or recommended in certain installations, including Mobile Homes (HUD Homes), WA State, tightly sealed construction, as well as certain state wood stove change-out programs. The outside air adapter allows combustion air to be drawn directly to the stove from the outside or ventilated crawl space. The outside air adapter easily attaches to the bottom of the stove (over the air intake) and has a 4" round collar to attach 4" ductwork. The connecting ductwork (usually 4" aluminum dryer vent) should only run straight back or down, and the duct should be as short and direct as possible.
- 4) Side Shelf:** Part PG-29 can be seen on page 31 of the manual.
- 5) Hearth Tools & Tool Hanger:** Includes a rake, poker, shovel, and side mount tool hanger (or optional stand): Made right in our NH Factory, choose from a variety of designs (deer, leaves, moose, fish, dogs, etc.).

MOBILE HOME INSTALLATIONS

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

Because mobile homes are also referred to by HUD as “manufactured” homes, regulations present a gray area. Many “mobile” homes are set on a permanent foundation and connected to public utilities. If you are installing a stove in a mobile or manufactured home, check out the requirements above and check with your local code officials. More questions? Give us a call Monday through Saturday from 9 to 5 Eastern time at 1-800-866-4344.

While all stove installations have to meet National Fire Safety codes, mobile homes are given special consideration when it comes to installing a wood burning stove. These additional regulations were established by the Department of Housing and Urban Development (HUD), and result in the following additional requirements:

1. Double Wall Connector Pipe
2. Outside Air for Combustion
3. Tie Downs for the Stove
4. Spark Arrestor on the Chimney Cap
5. Stove Grounded to Chassis
6. Stoves May Not Be Installed in Mobile Home Bedrooms

Mobile Home Prohibition:
WARNING:
DO NOT INSTALL IN SLEEPING ROOM

Double wall pipe must be used to connect the stove to the chimney. This is stove pipe that is constructed with two walls, usually with the inner wall made of stainless steel. It reduces the required clearance to combustible building materials and furnishings.

Outside Air must be used for combustion. Because of the tight construction of mobile homes, wood stoves need a way to get adequate air for complete combustion from outside the home in order to avoid the risk of depleting oxygen in the living space. Having outside air for combustion is a requirement for all woodburning stoves in the state of Washington and is recommended for woodstoves in “super tight” new construction.

Tie Downs: The stove must be attached to the floor. This is to prevent tipping in the event the home is moved. (We can provide tie downs for our stoves at no extra charge).

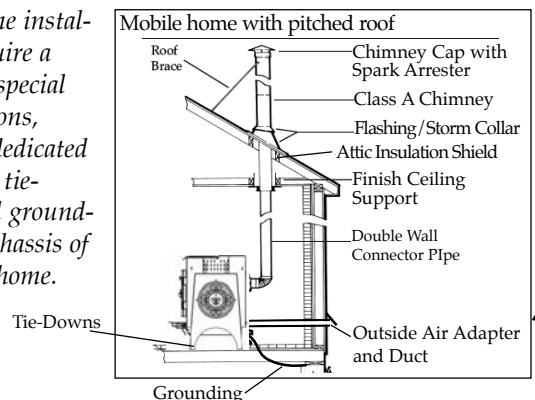
Spark Arrestor: The chimney cap must have a spark arrestor screen. These are available with most prefabricated chimney systems.

Grounding: The stove should be grounded to the home chassis.

Not allowed in mobile home bedrooms: wood stoves are not permitted for installation in bedrooms in mobile homes.

The Outside Air Adapter attaches to the bottom of stove over the air damper inlet. The four inch round outlet allows you to connect ducting from the stove to the outdoors. Woodstock Soapstone Company manufactures an Outside Air Adapter that fastens directly over the air damper inlet on the Ideal Steel Hybrid. It has a four-inch collar which allows you to attach a four inch pipe, usually flexible dryer duct, from the stove to the outside. For long runs, the flexible pipe can transition to PVC or aluminum pipe, if you wish.

Mobile home installations require a number of special considerations, including dedicated outside air, tie-downs, and grounding to the chassis of the mobile home.



Woodstock Soapstone Company
66 Airpark Road, West Lebanon, NH 03784
800-866-4344 • www.woodstove.com

OPERATION

Seasoning Your Stove

Both soapstone and steel need to be seasoned. The seasoning can be accomplished through a series of small to moderate fires. Your Woodstock Soapstone Stove is an easy stove to season, because even a small fire will provide hours of radiant heat once the stove is warm. **There are two things you will notice during the first fire:**

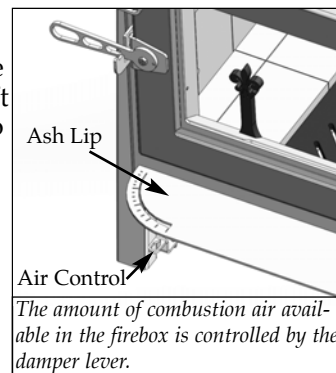
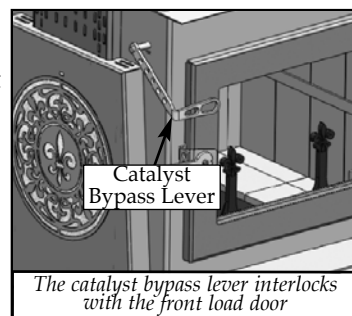
First, there will be a hot, acrid smell as the stove heats up. This smell is a result of the paint on the stove and pipe curing. You will want to have your first fire on a day when you can open the windows in the house to provide adequate ventilation. The odor is non-toxic and will only be present for the first few fires.

Second, there will be some condensation on the glass. This condensation is a result of any moisture being driven out of the stove and condensing on the inner surface of the glass. It takes a couple of small fires to season the stove and remove this excess moisture.

Starting a Fire And Establishing Proper Draft

1. Open the catalytic bypass. The bypass lever is located at the left front of the stove just above the loading door handle. Lift the bypass lever up until it stops to bypass the catalytic combustor. The bypass must be opened before opening the load door.
2. Open the combustion air damper by moving the lever in front. The air damper is located at the lower left corner at the front of the stove. Slide the lever to the right toward the center of the stove to the open position. The lever will stop when fully open. Maximum air is allowed into the firebox.
3. **Always confirm there is adequate draft before lighting the fire.** Hold a lit match or light a small piece of newspaper in the top of the firebox, where smoke exits. If the flame is drawn out of the firebox, toward the flue, proceed with lighting the fire. If the flame stands still or is pushed away from the flue exit, you must establish a good draft before lighting a fire. A hair dryer or heat gun pointed at the flue exit is a good way to establish draft without creating a lot of smoke. After you think you have draft, re-test with a match.
4. Once good draft has been established, build a fire on the floor of the firebox. **DO NOT USE ADDITIONAL GRATES, ANDIRONS OR ANY OTHER METHODS TO SUPPORT THE FUEL IN THE FIREBOX.** Start with crumpled newspaper and dry kindling.
5. Add small splits of firewood once the kindling has ignited. This will establish a bed of hot coals.
6. Add small to medium splits onto the hot coals. Assuming the wood is dry, the fire should spread through the wood. After about 10 minutes, close the air damper down between 3/4 and 1/2 open.
7. After the single wall pipe temperature reaches 250°-300°F, close the bypass by lowering the handle down to the closed position. All of the smoke from the firebox will now pass through the catalytic combustor. The combustor will generate a substantial amount of heat as it "burns" the smoke passing through it.
8. Adjust the air control damper to a lower setting, the best burn setting is around the 1/4 open mark. Slide the lever to the left. The closer the lever is to the face of the stove, the lower the burn rate, as less air is entering the firebox. The final damper setting will be determined by the desired heat output from the stove, the condition of the wood being burned, and the draft through the chimney system.

NOTE: The above procedures, times, and positions are a guide. Your conditions will vary depending upon draft, wood moisture and size, and weather conditions.



Engaging the Catalytic Combustor

The catalytic combustor will start to burn the gases and particles in the smoke when the temperature of the smoke reaches approximately 500°F (internally), or after about 5-15 minutes of establishing a strong fire. Each stove comes with a magnetic thermometer. Use the thermometer to monitor your stove/pipe temperatures. The temperature of the single wall pipe or the stove top is approximately 1/2 the temperature of the exhausting smoke, so when the thermometer on the stove pipe reads 250°F, it is approximately 500°F inside. You will find that after the combustor is engaged, the pipe temperature will often stabilize or lower, while the stove surface temperature rises - evidence that the heat isn't getting lost up the chimney!

Engage the combustor by lowering the bypass handle (front of the stove) down until it closes completely. Then reduce the air damper setting to achieve the desired burn rate. Make fine adjustments to your air control damper by moving it slightly left or right. You may find that you can achieve the longest burn when the damper is only slightly open. In the Ideal Steel Hybrid, allowance is made for a small amount of primary and secondary air to enter the stove even when the damper is fully closed, and the stainless steel catalyst will work efficiently at low to moderate firing rates, thus preventing creosote formation or excessive smoke from your chimney.

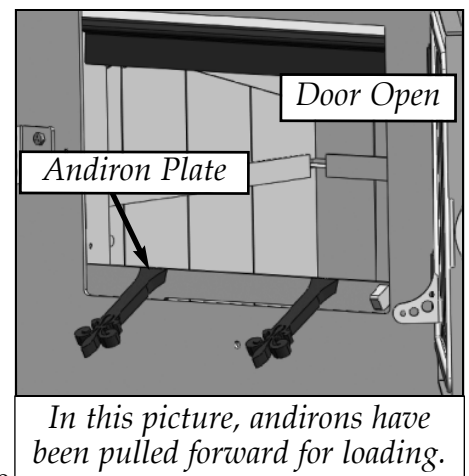
CAUTION

NEVER USE GASOLINE, GASOLINE TYPE LANTERN FUEL, KEROSENE, CHAR-COAL LIGHTER FLUID OR SIMILAR LIQUIDS TO START OR "FRESHEN UP" A FIRE IN THIS STOVE. KEEP ALL SUCH LIQUIDS WELL AWAY FROM THE STOVE WHILE IT IS IN USE.

Low & Overnight Burning

These instructions are intended as a guide to operating your wood stove. Your timing and final damper settings will vary depending on chimney draft, type of wood, moisture content of the wood and size of the splits. The Ideal Steel Hybrid is simply designed and intended to be user friendly, but it will take some practice to understand how the stove works best for you.

1. Before you open the loading door, you must fully open the catalytic bypass and the air damper. Wait a minute or so, before opening the loading door slowly, for a strong draft to be established to prevent smoke from spilling back into the room. The Ideal Steel is equipped with a smoke flap which drops down when the loading door opens. The smoke flap will help keep smoke from spilling out of the loading door.
2. Wearing stove gloves, open the loading door and tip the andirons forward. Stir up the hot coals. If necessary, excess ash should be removed before reloading the firebox. If your stove has the optional ash pan, simply rake the hot coals back and forth in the firebox to allow the loose ash to fall through the center grate into the ash pan. If your stove does not have an ash pan, push the hot coals to one side and shovel the loose ash into a non-combustible ash container with a tight fitting lid. Dispose of the ash properly. **Never put an ash container on a combustible surface, like a wood floor.**
3. Place several small splits on top of the hot coals and allow them to ignite.
4. Load the firebox to capacity leaving roughly 2" of space for secondary combustion, with a mix of larger and smaller splits. Tip the andirons to the upright position. Close the loading door.
5. Allow the temperature on the exterior of single wall pipe to come back up to 250°, this may only take 5-15 minutes depending on the dryness of the wood.
6. Adjust the air damper to a low setting, around the 1/4 open mark, by sliding the lever to the left.
7. Close the catalytic bypass by lowering the lever until it stops.
8. Initially the fire may appear to die out. This may cause a small amount of soot to collect on the glass. Any buildup on the glass should go away with higher temperature burns.



Never burn the stove with the air damper fully open except when kindling a fire or reloading the firebox. Never build a roaring fire in a cold stove. It takes at least 30 minutes to heat the soapstone panels of the Ideal Steel, if equipped. Attempts to reach high temperatures very quickly could result in damage to the steel or soapstone parts.

Burning for Higher Heat Output

These instructions are intended as a guide to operating your wood stove. Your timing and final damper settings will vary depending on chimney draft, type of wood, moisture content of the wood and size of the splits. The Ideal Steel Hybrid is simply designed and intended to be user friendly, but it will take some practice to understand how the stove works best for you.

1. Before you open the loading door, you must fully open the catalytic bypass and the air damper. Wait a minute or so to establish a strong draft. This will help to keep smoke from spilling into the room.
2. Open the load door and tip the andirons forward (see image on pg 15). Stir up the coals and remove excess ash as needed.
3. Place several small splits on top of the hot coals and allow them to ignite.
4. Load the firebox to capacity, leaving about a 2" space for secondary combustion at the top, with a mix of larger and smaller splits. Tip the andirons to the upright position. Close the loading door.
5. Allow the fresh wood to become involved in the fire. With dry wood this may take 5-15 minutes, or until the exterior of single wall pipe reaches 250°. Slide the air damper lever to the left and close approximately half way.
6. Close the catalytic bypass by lowering the lever until it stops.
7. You should see the flames from secondary combustion at the top of the firebox becoming more active. Adjust the air damper to approximately 1/3 open.

Ash Removal

NEVER BURN THE STOVE WITH THE ASH DOOR OPEN!

Without an ash pan:

If your Ideal Steel Hybrid does not have an ash pan you will have to remove ash through the front loading door, approximately every 5-7 days if the stove is in continuous operation. You do not have to let the fire die out completely to remove the ashes, but the fire must be reduced to hot coals. First make sure that both the catalytic bypass damper and the air control damper are open. This will increase the draft and prevent smoke from entering the room.

Open the front door and tip the andirons forward. Move the hot coals to one side or the back of the firebox. Scoop out the ashes that were underneath the coals, and then reverse the procedure. Leave some ash and hot coals in the bottom of the stove to help rekindle a fire.

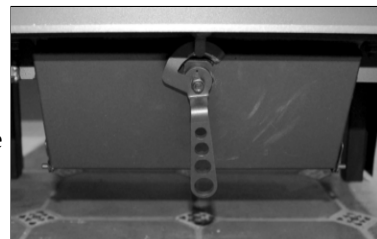
With an ash pan:

If your Ideal Steel is in continuous operation, you will probably need to empty the ash pan every 7-10 days. You do not have to let the fire die out completely, but make sure that it is reduced to hot coals. Open the catalytic bypass damper, and open the air control damper. Remember to wear stove gloves - the ash pan will be hot! Open the ash pan door located at the front of the stove, below the loading door. Carefully slide the lid into place on the top of the ash pan and remove the ash pan from the base of the stove. The lid slides over the long top edges of the ash pan. Close the ash pan door before emptying the ashes into an appropriate container.

Do not open the ash removal door while the stove is in the middle of a long burn, because the additional draft created under the fire could cause the stove to burn excessively hot and the ash pan itself will be very hot, and full of live coals. If you are burning your stove 24 hours/day, it is often easiest to empty the ashes first thing in the morning, after an overnight burn.

Ashes should be emptied into a metal container with a tight fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled. Live cinders can take 36 hours or longer to cool.

Never shovel ashes into a combustible container like a cardboard box or a plastic bucket. Do not use a vacuum cleaner to remove ashes unless it is specifically designed for woodstove ash removal. NEVER leave a container of hot ashes on a wood floor, porch, or any combustible surface.



The ash Pan door is located at the front of the stove, below the ash lip.



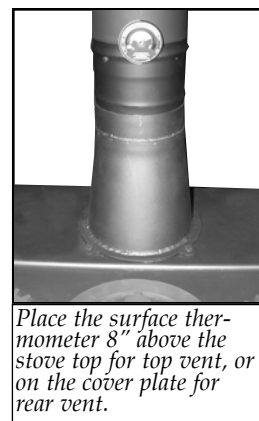
The ash pan door drops down and the ash pan slides out from under the stove for easy ash removal.

The Pipe Thermometer

We recommend placing the thermometer 8"-10" above the flue collar on **single wall** stove pipe if the stove is vented out the top. If the stove is rear vented, the surface thermometer should be placed on the steel plate toward the back of the stove.

If you are reading the single wall stove pipe temperature, the interior flue exhaust temperature is about twice as hot. Since the 22 gauge sheet metal pipe is more reactive (faster heat transfer) than the stove top, you will find you can engage the combustor sooner. We recommend engaging your catalytic combustor once the pipe thermometer reaches 250° F.

Once the combustor is engaged, you should see the stove surface temperature rise and the pipe temperature drop, indicating catalytic combustor activity. From a cold start it may take about 30 minutes to get the stove up to temperature. If you are reloading a hot stove, wait approximately 5-15 minutes before engaging the combustor. The thermometer is not a precise instrument – it will not tell you the exact temperature inside the firebox or in the flue.



The Probe Thermometer

A probe thermometer is provided for measuring the temperature immediately downstream of the catalytic combustor. This thermometer installs in a port right below the top lid of the stove, and the sensing end of the probe extends to within 1 inch of the face of the catalyst. The probe is calibrated from room temperature to 1700 degrees F. The catalyst can be engaged as soon as the temperature on this probe exceeds 400 degrees F, or as soon as the temperature on the pipe thermometer exceeds 250 degrees (see above).

The best operating range for the catalyst is from 500 - 1400 degrees F. When the temperature on the probe thermometer exceeds 1400°F, we recommend closing the damper to prevent excessive heat from occurring.



Overfiring

Burning a stove frequently at excessive temperatures is known as overfiring. When the surface temperature is consistently over 700° F, the stove has reached 1400° F inside. Operation with temperatures in this range can lead to metal warping, becoming brittle, and eventually deteriorating completely. It can shorten the useful life of the catalytic combustor.

Avoid overfiring by letting the combustor and secondaries do most of the work in the stove. Your stove is operating at peak efficiency when the combustor is "engaged" and the secondaries are ignited, with the damper lever set to a low to moderate setting, and the logs are glowing with secondary flames apparent. You will get the greatest amount of heat per pound of wood when the stove is operated in this manner.

DO NOT OVERFIRE!
ATTEMPTS TO ACHIEVE HEAT OUTPUT RATES THAT EXCEED STOVE DESIGN SPECIFICATIONS CAN RESULT IN PERMANENT DAMAGE TO THE STOVE AND TO THE CATALYTIC COMBUSTOR.

Daily Use

Your Ideal Steel Hybrid stove is well suited for continuous firing on a 24 hour a day basis. It will burn for hours on one load of wood, and will provide steady, even, heat for hours after the fire dies down. You need only disengage the catalytic combustor when you kindle a fire, or reload the stove. Once the catalyst is ignited, it will continue to function as long as there is smoke to burn.

Your connector pipe and chimney, or chimney pipe, should be inspected at regular intervals (not less than once every two months). Examine the connector pipe for creosote, corrosion, loose seams, or excessive soot. Clean and replace as necessary. The chimney or chimney pipe should be cleaned and checked by a certified specialist once a year. A small mirror held at the cleanout door of a masonry chimney will be helpful. For a Class A prefabricated metal pipe, some disassembly is usually required.

Smoke Flap

The Ideal Steel Hybrid is a front loading stove with a large loading door. In order to reduce the occurrence of smoke spillage upon reloading, we've incorporated a drop down smoke flap. This flap proved to be essential in reducing smoke in the home, especially for those who have a marginal chimney draft. Upon opening the loading door, the hinged smoke flap

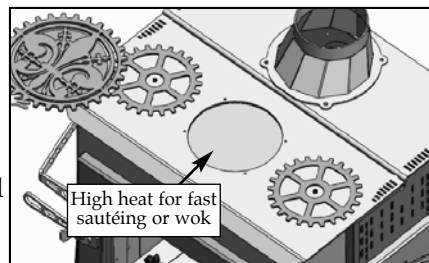
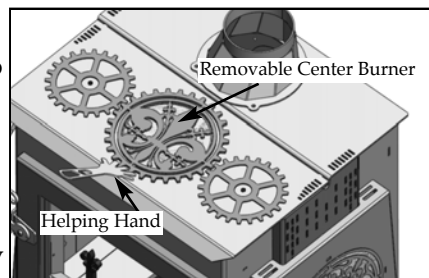
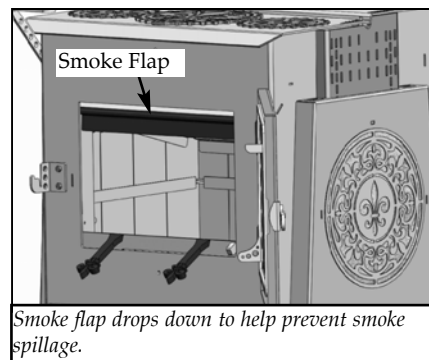
will drop into a down position at the top of the door opening. When closing the loading door, the smoke flap will be pushed back out of view. This flap can be locked into an upright position to keep it out of the way for loading, or it can be removed from the stove, if you find this feature to be unnecessary in your installation. To lock the smoke flap in the upper position, simply take a hearth tool, like a poker, and push it up and back. To release the smoke flap from the locked position, push up on the latch located on the upper left side of the door opening (about 2" down), using a hearth tool or the provided helping hand. Do not attempt to remove the flap while the stove is hot.

The Helping Hand

The "helping hand", which comes with your stove, can be used to operate the door latch. Simply insert the bent finger into the door handle circle to use to safely open/close the loading door. The loading door and the door handle are very hot, so use the tool provided. The "helping hand" conforms to UL requirements and is made so that if you let go of it, it will "fall-away" from the stove and not become too hot to handle.

The Cook Top

The top lid of the Ideal Steel Hybrid woodstove consists of a three-piece decorative metal set. The lid has been designed to enhance the beauty and versatility of your stove. The cook top has three distinct areas that provide high, medium, and low temperature zones for more cooking flexibility. The center "burner" can be removed to expose a stainless steel surface which delivers the highest heat. The left and right burners are elevated about 1/8" and the center burner is elevated 1/4". The steel cook top is not designed as a cooking surface and food should always be placed in a heavy duty Dutch oven or skillet, not directly onto the steel surface. The decorative metal set can be easily removed and the steel cook top/lid will stand upright to access the catalytic combustor below. This easy access makes cleaning and replacing the combustor very user friendly.



Firewood

Your Woodstock Soapstone Stove is designed to burn dry, natural cordwood. Higher efficiency and lower emissions generally result when burning air dried hardwoods, as compared to green, freshly cut hard woods. It is perfectly fine to burn soft woods in your stove as long as they are properly dried. Hardwoods are preferable because they are typically denser than soft woods which gives them a higher fuel value per volume.

The moisture content of some trees may range as high as 50% – i.e., there is as much moisture in the tree as there is wood. After wood has been cut to length, split and stacked for a year, the moisture content will usually range from 15-25%. Splitting wood before it is stored will reduce drying time. Properly dried wood will produce more heat, reduce the likelihood of water vapor condensing in the chimney, forming creosote, and result in less pollution entering the air. It is safer and more efficient to burn dry hardwood than green or wet wood that smolders.

The advantages of burning dry wood are many. Dry wood is lighter, easier to split, and easier to carry. It is easier to light, produces more heat, and generates less pollution. If you burn wet wood much of the energy generated by the fire is used to drive moisture out of the wood, rather than producing heat for you. Dry wood will maintain the highest combustor temperatures and burn the most efficiently. Creosote is much less likely to form if you burn dry wood.

DO NOT BURN TREATED OR PAINTED WOOD, COAL, GARBAGE, CARDBOARD, SOLVENTS, COLORED PAPER, OR TRASH IN YOUR WOODSTOCK SOAPSTONE STOVE. Coal and artificial logs burn much hotter than wood and could cause damage through overheating the the steel or the soapstone panels. Burning treated wood, garbage, solvents, colored paper or trash may result in the release of toxic fumes and may poison or otherwise render the catalytic combustor ineffective.

Burning cardboard, loose paper, and trash will add significantly to ash and soot buildup, and it will not produce much heat. Fly ash from improper fuel can also coat or plug the combustor, causing smoke spillage into the room. Under normal operating conditions, the Woodstock Soapstone Stove is designed to last for generations. It is not, however, designed for continuous over-firing, or firing with coal, artificial logs or trash.

DO NOT BURN

- Treated Wood
- Coal
- Garbage
- Cardboard
- Solvents
- Colored Paper
- Trash

THE CATALYTIC COMBUSTOR

Here is how your catalytic combustor works.

The catalytic combustor is a stainless steel honeycomb with hundreds of cells. If you looked at the inside of each cell with a microscope, you would see that the walls are uneven and filled with minute nooks and crannies. Precious metals, such as platinum, are sprayed on the inside of these cells to coat all of the nooks and crannies. This creates the largest possible surface area to interact with the wood smoke. The catalytic combustor in your stove is very similar to the one in the exhaust system of your automobile and works to achieve the same results - high efficiency and clean air!

When you first start a fire, you should bypass your catalytic combustor and let the smoke go directly up the chimney. Once wood smoke reaches 500° F (about 10-15 minutes after reestablishing a strong fire), it is hot enough to ignite the catalytic combustor. As the wood smoke passes through the cells in the combustor, the smoke reacts with the precious metals which line the inside of the honeycomb and both combustible gases and particles in the smoke ignite and burn. This "catalytic burn" reduces emissions and also increases heat output from the stove.

Without a catalytic combustor, between 5% - 40% of the chemical energy contained in wood simply escapes up the chimney when wood is burned. Energy laden gases are exhausted up the chimney where they pollute the air or may condense on the inside of the chimney flue as creosote. The slower the burn, without a catalytic combustor, the greater the amount of energy that is lost. A long smoldering fire is the least efficient use of energy in wood, yet it produces lots of smoke, which is the fuel supply for the catalytic combustor.

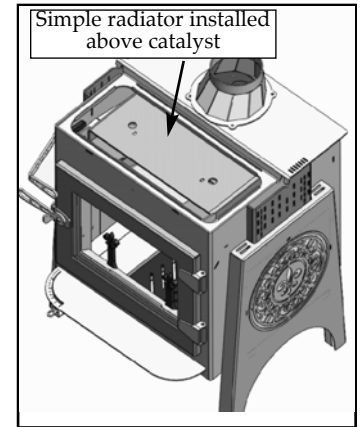
Most of the chemical compounds in wood smoke are combustible. The catalyst produces high temperatures, which loosen the bonds of these chemical compounds and "burns" wood smoke. A stove that "burns" these compounds and uses smoke as additional fuel will burn more efficiently and produce more heat, while reducing creosote and air pollution at the same time. However, most stoves cannot consistently produce temperatures high enough to burn cleanly, particularly during long burning times - hence the need for a catalytic combustor.

Your catalytic combustor can get the most efficiency out of every piece of wood if it has three things: temperature, turbulence, and time.

- 1. Temperature.** The catalytic combustor can only start burning the gases in the wood smoke after the smoke has reached at least 500 degrees F. Before the smoke reaches that temperature, it simply is not hot enough to start the reaction at the combustor. This will result in an inefficient smoldering fire.
- 2. Turbulence.** The wood smoke can interact best with the precious metals inside the honeycomb cells if there is some variation in the air flow. Increased turbulence enables more of the wood smoke to come into contact with more of the nooks and crannies in the honeycomb cells. The exhaust path as well as the irregular surface of the combustor cells adds needed turbulence.
- 3. Time.** Once the temperature and turbulence are achieved, the catalytic combustor just needs to have enough time to burn all the gases in the wood smoke. For this reason, it is best to minimize the amount of air you allow into the firebox once the combustor is ignited. Allowing too much air into the firebox speeds up the rate at which the fire burns and allows more wood smoke to be consumed by the secondary combustion system. The ideal air setting for a long catalytic burn allows enough air to keep the wood burning and producing smoke.

With proper care, a new catalytic combustor will give years of fuel savings and lowered emissions. By following some simple guidelines you can ensure maximum combustor performance and longevity. Your catalytic combustor is designed to last for 12,000 -14,000 hours of use. You can ensure yourself of getting the maximum life from your combustor by following these simple guidelines:

- 1) Burn only natural, dry wood.**
- 2) Wait until the exhaust gases reach about 500 degrees F before engaging the catalytic combustor (about 5-15 minutes, or 250° on single wall stove pipe, after establishing a strong fire).**
- 3) Bypass the combustor before reloading, and leave the bypass open for a few minutes after reloading, to raise the temperature in the stove.**
- 4) Don't overfire the stove.**
- 5) Clean the combustor regularly. See instructions below.**



You can also obtain a lot of useful information by visiting our website (www.woodstove.com). Other very useful web

sites on all aspects of wood burning are (www.hearth.com), (www.woodheat.org) and (www.csia.org). CSIA is the Chimney Safety Institute of America.

Inspection & Cleaning

Your stove comes with a new stainless steel combustor already installed. The stainless combustor is a honeycomb foil block located under the top lid of the Ideal Steel . Typical lifespan for a well maintained catalytic combustor is 4-6 years. There are a few ways to determine if your combustor needs to be cleaned. If you notice the smoke exiting your chimney is thicker and darker in color, the combustor may need cleaning. Additionally, if you notice reduced draft or backpuffing, or performance and heat output has diminished, then the combustor may not be working as efficiently as designed.

Plan to clean and inspect your catalytic combustor about every 4-6 weeks. Any fly ash deposits on the combustor will need to be brushed or vacuumed off. An accumulation of fly ash can reduce the draft, causing backpuffing, sluggish burning, and inefficient heating performance. You should clean and check your combustor before the heating season begins, as well as on a regular 4-6 week basis.

COMBUSTOR CLEANING HOW TO:

Tools needed: (1) work gloves and safety glasses; (2) soft bristled paint brush or vacuum cleaner (preferably one designed for ash removal).

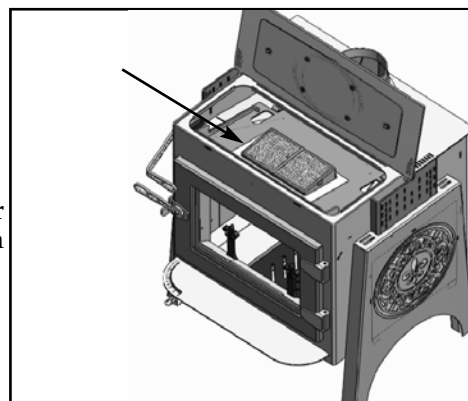
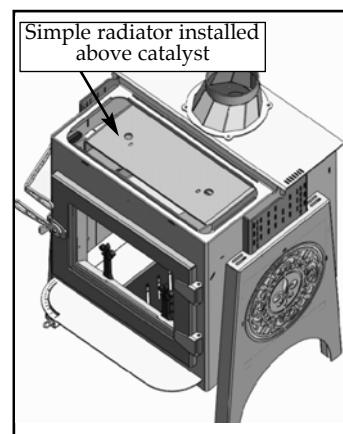
1. Be sure the fire is out and the stove is cold. If you are using a regular home vacuum, it is extremely important that no hot ashes or embers be sucked into it as this could result in damage to the vacuum or cause a serious fire. Remove the center burner, if equipped, from the stove. Open the top lid. The combustor is located under the radiator. Lift the radiator up and remove it from the stove.

2. Lift the combustor out of the stove. Brush or vacuum the combustor thoroughly, from both sides. Do not use high pressure compressed air to clean the combustor, as this could damage the reactive coating. Be sure to remove all fly ash from the combustor. Inspect the gasket that the combustor housing rests against.

3. Return the combustor to the stove. Be sure that it is seated properly. Place the radiator over the combustor. Raise and lower the bypass lever to be sure the radiator is seated properly.

4. Close the top lid and return the center burner to the top of the stove.

NOTE: A more thorough cleaning can be done as needed, by following the same directions above. After the combustor is vacuumed or brushed off, rinse (or soak for 10-15 minutes) the combustor with a mixture of 50% white vinegar & 50% distilled water. After rinsing or soaking in the 50/50 mixture, rinse with distilled water. Allow the combustor to dry before reinstalling in the stove.



The Catalytic Combustor is easily accessible. Just lift the lid, remove the radiator using the two finger holes, and the catalyst is visible. The catalyst can be removed by lifting the catalyst housing.

Catalytic Combustor Replacement

If you feel that your catalytic combustor is not working properly, please contact Woodstock Soapstone Company at 1-800-866-4344 for instructions regarding return and replacement. Accessing the catalyst in your new Ideal Steel Hybrid Woodstove is simple. Just lift the top stove lid. Then remove the radiator (pictured above right) using the two finger holes in the top. You can lift the catalyst plate from the stove.

Frequently Asked Questions

Q. How does the catalytic combustor work?

A. The catalytic combustor breaks the bonds that hold the chemicals contained in wood smoke together. The result is that these chemicals begin to burn at temperatures of about 500 degrees F (the normal range of exhaust gas temperatures). Without the catalytic combustor, wood smoke would have to be brought up to a temperature of 1000 to 1200 degrees F in order to start to burn. A stove with a catalytic combustor will generate up to 25% more heat from each piece of wood, thus reducing the amount of fuel used during the year.

There are three advantages to burning the smoke created by burning wood. First, the smoke becomes another source of

fuel, giving you more heat from the same amount of wood. *Second*, creosote causing materials will be burned up instead of being deposited in your chimney, reducing the risk of a chimney fire. *Third*, air pollution will be drastically reduced.

Q. How can I tell if the catalytic combustor is working or “worn out”?

A. *First* - The best way to tell if the catalytic combustor is working is by observing the smoke coming out of your chimney. If there is only a small amount of smoke, and/or it's white in color, the catalytic combustor is working. You will see significantly more smoke when the combustor is being bypassed than when the smoke is being burned by the combustor.

Second - One very noticeable effect of a well functioning combustor is the high efficiency of your stove. Catalytic combustors produce lots of heat, which the stove radiates into your home. If you notice that the stove is producing less heat, or that a load of wood doesn't provide as much warmth, under similar circumstances, as it did before, it's time to check the combustor. If and when the catalyst ceases to function properly, the stove will produce noticeably less heat.

Third - Regular inspection of the connector pipe and chimney flue should show very little accumulation of soot and creosote. Soot is typically brown and powdery when the combustor is working properly. Heavy buildup of black sticky creosote may indicate the combustor is not functioning or needs cleaning.

If you suspect that your catalyst is not working, let the stove cool down and clean the combustor and try it again.

Q. How do I maintain my catalytic combustor?

A. Combustors should be inspected and cleaned if necessary every 4-6 weeks during the heating season. When the stove is cool, the combustor can be cleaned by thoroughly vacuuming or brushing both sides.

If the stove does not draft well when the catalytic combustor is engaged then the combustor cells themselves might be partially plugged with fly ash. If this is the case, follow the cleaning procedure described in detail on page 20 of this manual.

Q. Is it all right to burn my stove hot daily to clean any build up in my chimney system?

A. It is not necessary to burn your stove hot daily to burn off any creosote build up in the chimney. This function is performed by the catalytic combustor. It is there to reduce the emissions from the stove that contribute to deposits in the connector pipe and chimney flue.

View more frequently asked questions and articles at our web site www.woodstove.com. Other very useful websites on all aspects of wood burning are www.hearth.com, www.woodheat.org, and www.csia.org. CSIA is the Chimney Safety Institute of America.

TWO OTHER IMPORTANT POINTS REGARDING CATALYTIC COMBUSTORS:

- 1) The combustor uses wood smoke as fuel. Most smoke is created in the early stages of the burn cycle. When a bed of coals is all that remains of your wood, there is little smoke left to fuel the combustor, and it will no longer create substantial amounts of heat. Hence, the temperatures on the surface thermometer tend to fall toward the end of the burn, even though the firebox is full of hot coals. This does not mean that you have to reload the stove or open the bypass. Let the hot coals burn down to ashes.
- 2) Since the combustor blocks the path of exiting smoke, it can reduce the draft in your stove. When draft is reduced by warm or rainy weather, open the bypass damper longer when starting the stove to create more draft.

CATALYTIC COMBUSTOR WARRANTY

The catalytic combustor in your Ideal Steel Hybrid Woodstove is fully warranted for three years from the date of purchase against any defect in workmanship or materials that prevent the combustor from functioning when installed and operated properly. The catalytic combustor is additionally warranted for three years from the date of purchase for any deterioration in the stainless steel substrate material. For instructions regarding return or replacement of the catalytic combustor, please contact:

Woodstock Soapstone Company, Inc.
66 Airpark Road
West Lebanon, NH 03784
Phone: 1-800-866-4344 • Web: www.woodstove.com

MAINTENANCE

Stove Cleaning

The steel body of your Ideal Steel Hybrid stove is painted with two coats of high temperature stove paint. Under normal operating conditions, this paint will not peel or blister. We suggest cleaning by dusting with a soft brush or cloth, or vacuuming with a brush attachment when the stove is cold. If the steel is exposed to moisture for a long period of time it may develop surface rust. If this happens, brush the affected area until clean with either a short wire brush or medium steel wool and then touch-up with high temperature stove paint, which is available from Woodstock Soapstone Company.

The soapstone that lines the firebox interior is rugged and well suited to the harsh environment of the firebox. It should last for years under normal use. Should you need a replacement soapstone part, contact Woodstock Soapstone Company directly.

Glass Cleaning

We use ceramic glass in our stoves because it is resistant to both impact and thermal shock. The panes of ceramic glass installed in the stove fronts have full gaskets around the perimeter so there is no contact between the glass and the steel frame.

There are two panes of glass at the front of each stove, with an air-space between the two panes. This “thermalpane” arrangement helps keep the temperature on the inside of the glass higher and prevents condensation and soot from accumulating. The Ideal Steel Hybrid has a large glass area with an “airwash” design in which the primary air supply washes over the front glass to assist in keeping the glass free of ash and soot.

The glass may soot up the *first* time you use the stove (from condensation already inside the stove). *Don't be alarmed!* Usually, as soon as you build up adequate temperature with a hot fire, the glass will clean itself. The residue will burn off, and it will stay clean. Soot accumulation on the inside of the glass is more likely in the spring and fall, when temperatures are very mild and you are less likely to maintain a hot fire.

To clean the inside of the glass or wipe off fly ash, we recommend that you use a brush with soft bristles (like a paintbrush). A white vinegar and water solution works well to remove most ash or soot accumulation. You may clean heavy soot from the glass with very fine steel wool (0000 grade), but first, be sure the fire is out; and second, be sure that the glass has cooled to room temperature before you clean it. **DO NOT ATTEMPT TO CLEAN HOT GLASS.**

Gasket Replacement

There are 4 places on your stove where you should check the gasket routinely: (1) on the loading door, (2) under the steel lid/ cooktop, (3) under the catalytic bypass damper, and (4) the ashpan door (models purchased with the ashpan). These gaskets are most important for maintaining high efficiency and clean burning. Close a slip of paper in these gasketed areas. There should be resistance as you pull the paper out. If there is any evidence of deterioration and/or leaking in any of these areas or if any of the gasket material in the stove becomes worn or frayed, it should be replaced. Please contact Woodstock Soapstone Company for replacement gasket and instructions. The sizes of all the gaskets on your Ideal Steel Hybrid woodstove are included in the parts list on page 28 of this manual.

Routine Checks And End of Season Maintenance

Every few weeks of operation we recommend checking the chimney connector (stovepipe) and combustor (see combustor section) and cleaning, if necessary. The connector pipe and chimney should be inspected every two months at a minimum and cleaned if necessary.

When the weather warms up and the burning season is over, it is a good idea to do a thorough spring cleaning and inspection of your stove and chimney system. We recommend an annual inspection and cleaning by a certified chimney sweep who has the tools and knowledge to inspect the whole system, from top to bottom. Chimney safety is an important part of responsible wood burning. The best way to gain confidence in the safety of your Ideal Steel Hybrid woodstove is to have it serviced and inspected once a year by a professional chimney sweep. The Chimney Safety Institute of America maintains a database of certified sweeps nationwide. Go to their website www.csia.org to find a

professional in your area.

If you live in a climate with warm, humid summer weather, your stove may collect moisture from warm, moist, chimney downdrafts during the summer. If this happens, you may get smoky smells in your home. One way to reduce the likelihood of this happening is to block the flue exit in the stove with fiberglass insulation at the end of the heating season. This will help prevent downdrafts and humidity from entering the stove. (You'll have to be careful to remember to remove the insulation before you light the stove again in the fall!). Some prefer to place a tray of kitty litter or baking soda in the firebox to reduce moisture and odors.

Creosote Formation and Need for Removal

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

The chimney connector and chimney should be inspected at least once every two months during the heating season to determine if creosote buildup has occurred. If creosote has accumulated it should be removed to reduce the risk of a chimney fire. Cleaning the combustor regularly will also greatly reduce creosote buildup. Under certain conditions, creosote can form rapidly.

The most likely conditions for creosote to occur are: (1) when a large number of small pieces of wood are added to a hot bed of coals and the damper is then completely closed; (2) extremely long, smoldering fires, and; (3) burning wet or green wood.

Lack of combustion air and smoldering fires usually result in dense smoke and low stack temperatures in the chimney connector and the chimney. Wet or green wood can also produce dense smoke and excessive water vapor, which can quickly lead to creosote buildup.

Creosote will accumulate faster in exterior chimneys than interior chimneys because of colder outside temperatures.

There are three stages of creosote build-up. The first is a flaky, crystal like accumulation which can be removed with a brush. The second is a tar like coating. The third is a hard, glossy enamel like coating that is difficult to penetrate. If your chimney is heavily coated with tar or enamel like creosote, we recommend that you consult with an experienced chimney sweep about removal and prevention.

CREOSOTE PREVENTION: Without question, the best way to treat creosote is to prevent its accumulation. In order to reduce the danger of accumulation, we recommend the following:

1. Burn only properly dried firewood. Dry wood burns hotter, cleaner, and expels less moisture to condense.
2. Use the catalytic combustor properly. It can reduce possible creosote accumulation by as much as 90% and improve stove efficiency at the same time. Be sure to read the section on catalytic combustors on pages 18-21.
3. Never operate your stove for extended periods of time with the draft control completely closed. Both the wood fire and the catalytic combustor need oxygen to burn efficiently.
4. Re-establish a hot fire, and reignite the combustor after every reloading by opening the primary air control for about 10 minutes.
5. Check the catalytic combustor output. Use the thermometer provided with the stove to be sure that the catalytic combustor is igniting properly when you kindle a fire or reload the stove. The temperatures on the stove top should rise noticeably when the catalytic combustor is engaged.
6. Avoid long, smoldering fires. Again, the catalytic combustor is critical here. Hot firebox temperatures (with the stove top thermometer in the 400-600°F range) will produce more complete combustion and maintain proper catalytic activity.

TROUBLESHOOTING GUIDE

<u>Problem</u>	<u>Possible Cause</u>	<u>Solutions</u>
Stove smokes	Operating technique	Open bypass and air damper prior to reloading stove
	Cold start	Check and establish a chimney draft prior to lighting the stove. If you have neutral or a down draft, preheat the chimney with a hairdryer, heat gun, or twists of lit newspaper.
	Blocked Chimney	Examine chimney and stovepipe for blockage and creosote accumulations. Check spark arrestor screen on your cap, if you have one.
	Blocked outside airduct	Check the outside inlet for blockage caused by snow, debris, or insects.
	Oversized chimney	Reline chimney to appropriate size.
	Chimney too short	Add height (industry standard is 15ft or more).
Back Puffing or sudden internal ignitions	More than one appliance vented into flue	Disconnect other appliances, seal openings appropriately.
	Operating technique	Open bypass and air dampers before opening to reload and keep it open a few minutes after reloading.
	Burn rate too low	Open air damper to allow for hotter burn.
	Chimney down draft	In high wind areas, a specially designed wind cap may be necessary.
	Combustor is plugged	Clean combustor of accumulated fly ash.
	Tight house	Dedicated air supply with outside air adapter attachment to stove.
Combustor not glowing	Late stage of burn	Combustor does not need to be glowing to be working. Check smoke exiting chimney to help determine if combustor is working properly.
Stove burning too hot or fast	Ashpan Door is Open	Close ash door securely, check ash door gasket for tight seal.
	Excessive draft	Adjust air damper to lower setting;a pipe damper may be necessary.
	Extra tall chimney	Consider installing pipe damper

Stove burning too hot or fast (cont.)	High wind or hilltop location	Install wind cap on top of chimney
Insufficient Heat	Poor quality or green wood	Use only dry wood (dried at least one year depending on wood species) Test with kiln dried wood.
	Blocked outside air duct	Check outside air duct for blockage
	Heat going up chimney	Test with thermometer on 1st section of stovepipe– temps should drop below 300 degrees F when combustor is engaged.
Acrid odor during initial burn	Paint and/or window gasket curing	Open windows until paint or gasket is cured.
Window Dirty	First start up fire	This is sometimes the result of condensation in a new stove, and should disappear after several hot fires.
	Airflow too restricted	Open the air damper in small increments until some slow flames appear. Run a hot fire to burn smoke off the glass, or remove build up with glass cleaner when stove is cold.
	Smoldering fire	Green or wet wood. Burn dry wood, or open air damper slightly for a hotter burn. (see above)

Is my Combustor still working?

Your catalytic combustor is viable for 12,000 to 14,000 burn hours. This translates, roughly, into a life span of 4 -6 years. If the catalytic coating is not working as it should, it is not burning the gas vapors in the smoke and therefore, the smoke exiting your chimney will be darker in color. If your draft is sluggish and you have ruled out any draft related issues in the venting or in the wood supply, your combustor may not be burning the smoke vapors and too much volume is trying to pass through the honeycomb at one time. If heat output is diminished, and any other factors are ruled out, that may also be a sign that the catalytic combustor is not burning the smoke vapors, therefore not extracting maximum heat from available BTUs in the wood you are burning.

SAFETY

Overview

To gain maximum enjoyment and benefit from your stove, you must have a safe installation. Adhere to all guidelines found in this manual. All local and national building codes need to be followed. Having a certified installer perform all connections to an inspected chimney system is strongly advised. If you choose to perform any or all of this work yourself, it must be inspected by either a Certified Wood Stove Specialist or a Certified Chimney Specialist.

You will often find the local Fire Department to be very knowledgeable. They may inspect your house for proper warning devices, fire extinguishers, and evacuation routes. Keep their phone number handy. Although many communities utilize Fire Department personnel for woodstove installation inspections, they are not usually trained as combustion venting specialists. Generally, you are best advised to use a certified specialist. The sense of security that comes with a properly installed and maintained system is worth far more than its cost.

Installation

Your Woodstock Soapstone Stove has been thoroughly tested and listed to UL #1482 by an independent testing laboratory. UL #1482 is the standard for testing solid fuel appliances and is universally recognized by all national building regulatory agencies, (SBCC, BOCA, ICBO) and individual states. Your woodstove is a safe product, but it must be installed in accordance with the instructions in this manual. Woodstoves themselves rarely cause fires, but improper installation or careless operation are often to blame.

Follow the guidelines in the Installation chapter of this manual with regard to:

- Proper chimney and connector pipe
- Clearances to combustible surfaces and objects
- Floor protection

Smoke and the Chimney

According to www.woodheat.org, "The chimney is the engine that drives a wood heat system". To have a safe system you must have:

- The correct type of chimney
- The correct size of chimney
- Correct location inside the house
- A properly installed system

Smoke spilling into the living space when starting a fire is an inconvenience. Smoke spilling into the house when you are away or asleep can be a major problem. In order to have all the smoke go up the chimney all the time, the chimney must have positive draft. Ideally, this draft is between 10-18 pascals, or .04-.07 inches water column, a pressure measurement, when there is no fire in the stove. A certified installer can perform a simple draft test for this.

Hot Surfaces

Your stove is HOT to the touch! Utilizing the "helping hand" and use of heat resistant or insulated stove gloves can prevent serious burns when opening or closing the door, ash pan, or lid of your stove.

Ash removal

Convenient and safe ash removal is a necessity for trouble free wood burning. An ash removal container should have:

- A comfortably large capacity
- Good stability
- A top that closes securely and will not fall off
- Legs or other means of preventing downward heat flow
- A design that prevents spilling when loading

Ashes should never be dumped into a combustible container, such as a cardboard box, and an ash container should never be set on a combustible surface. Hot embers in the ashes can often stay viable for 36 hours or longer after removal from your stove.

Precautions

• **Smoke detectors:** A smoke detector is inexpensive insurance and is required by most localities. They can either work on batteries, or can be hard-wired into your electrical system. If you have battery operated detectors, it is a good idea to replace batteries on an annual basis (i.e.: every New Year's day, or 4th of July, etc). They will sound an audible alarm in the event of the presence of smoke. Smoke will almost always precede a wood fueled fire.

• **Fire Extinguisher:** If you burn wood, you should have at least one ABC dry chemical extinguisher. The chemical extinguisher is preferable to water because the application of cold water to hot metal stove pipes can cause metal parts to buckle or crack, thereby releasing more fuel to the fire.

• **Carbon Monoxide Detector:** These operate in a manner similar to smoke detectors but are usually user calibrated and record minute quantities on a digital readout before sounding an audible alarm. The chances of carbon monoxide being created and escaping from your properly installed and operated stove are miniscule. You may have other vented appliances in your home that could be potential problems. The investment in a high quality carbon monoxide detector is well worth its cost in the peace of mind it affords.

• **Chimney inspection:** Your connector pipe and chimney, or chimney pipe, should be inspected at regular intervals. Examine the connector pipe for creosote, corrosion, loose seams, or excessive soot. Clean and replace as necessary. The chimney, or chimney pipe, should be cleaned and checked by a certified specialist once a year. A small mirror held at the cleanout door of a masonry chimney will be helpful. For a Class A prefabricated metal pipe, some disassembly is usually required.

Emergency Procedures In The Event of a Chimney Fire:

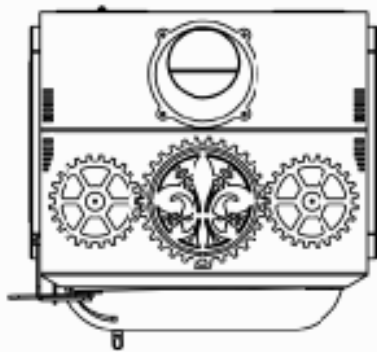
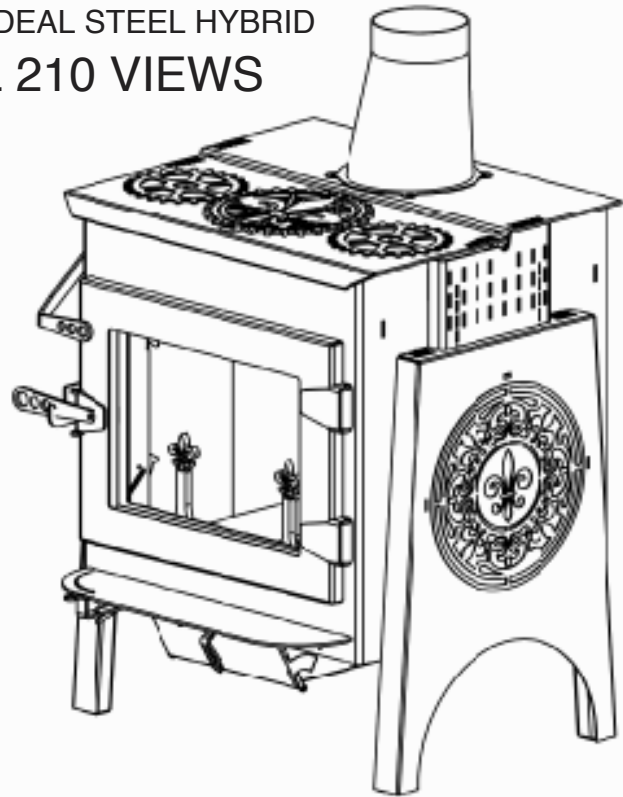
If you have a chimney fire or runaway fire, follow these safety precautions:

1. Close the draft damper immediately, with a slow and even motion. This cuts off the supply of oxygen to the stove.
2. Call the fire department immediately.
3. Get everyone out of the house. One adult should stay in the house to check for sparks and signs of fire. Those outside should watch the roof for signs of fire.
4. If there is a danger of a fire, discharge the fire extinguisher into the stove. Do not pour or spray water directly into the chimney as rapid contraction caused by the application of cold water could cause the tile liner in the chimney to crack.
5. After the fire is out, check the stove, chimney connector and chimney carefully for signs of damage. The entire system should be thoroughly inspected by a certified chimney professional.

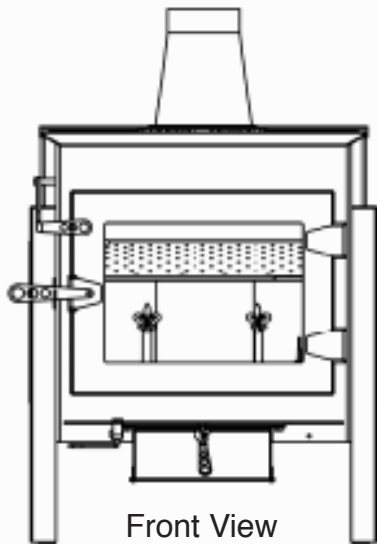
Note: Chimney fires must be put out from the bottom. The entire system must be air tight to suffocate a fire; hence the importance of having a tight cover on the chimney cleanout and not venting two appliances into a single flue.

The length of time it takes to bring a chimney fire under control depends on the amount of fuel in the stove, the rate at which it is burning and the amount of oxygen available to it. The faster it is brought under control the less severe any damage is likely to be.

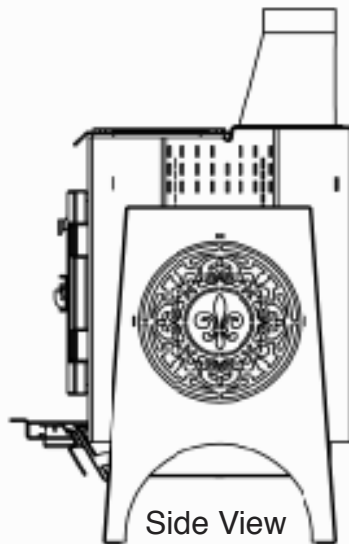
MODEL 210: IDEAL STEEL HYBRID
MODEL 210 VIEWS



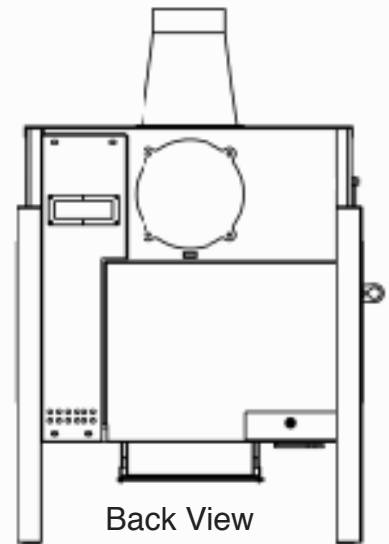
Top View



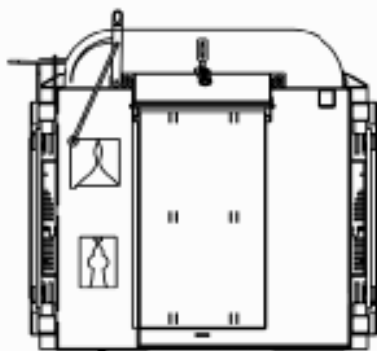
Front View



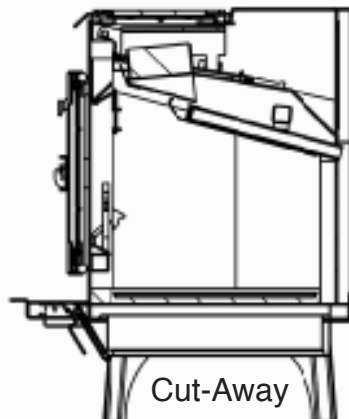
Side View



Back View



Bottom View

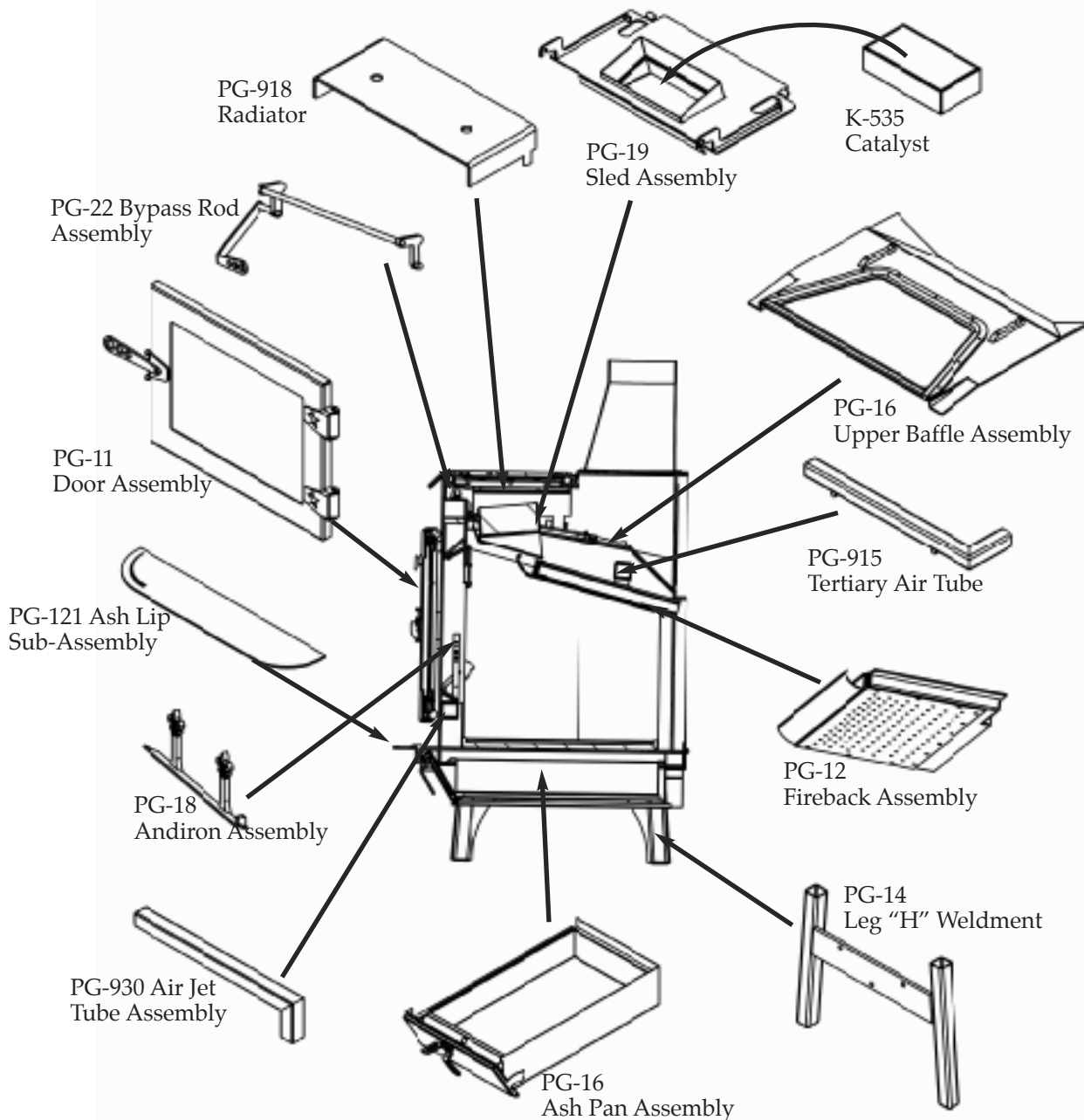


Cut-Away

MODEL 210: IDEAL STEEL HYBRID

MODEL 210 ASSEMBLIES, PAGE 1

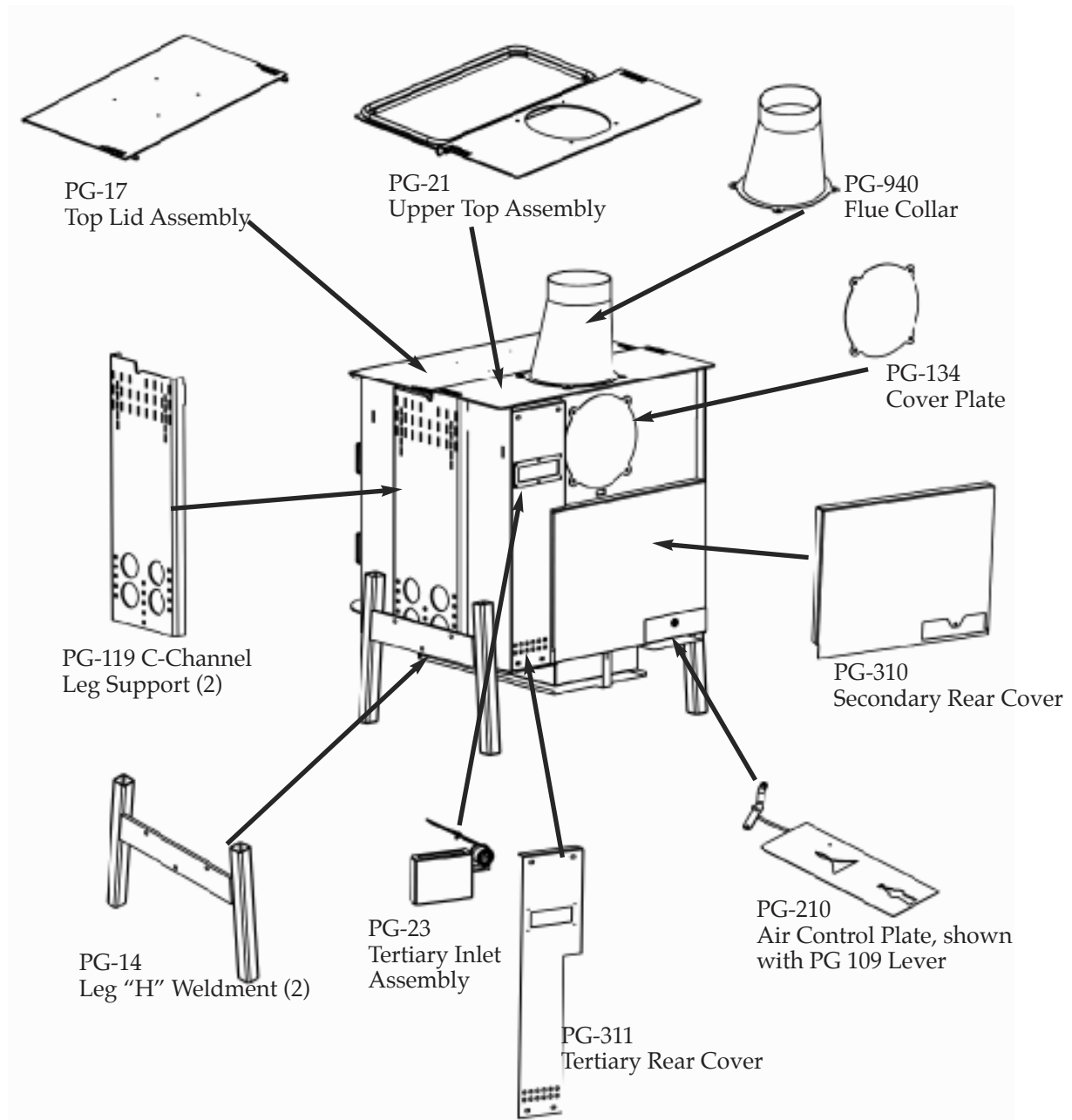
PG-918 Radiator	PG-19 Sled Assembly
PG-22 Bypass Rod Assembly	K-535 Catalyst
PG-11 Door Assembly	PG-16 Upper Baffle Assembly
PG-121 Ash Lip Sub-Assembly	PG-915 Tertiary Air Tube
PG-18 Andiron Assembly	PG-12 Fireback Assembly
PG-930 Air Jet Tube Assembly	PG-14 Leg "H" Weldment (2)
PG-16 Ash Pan Assembly	



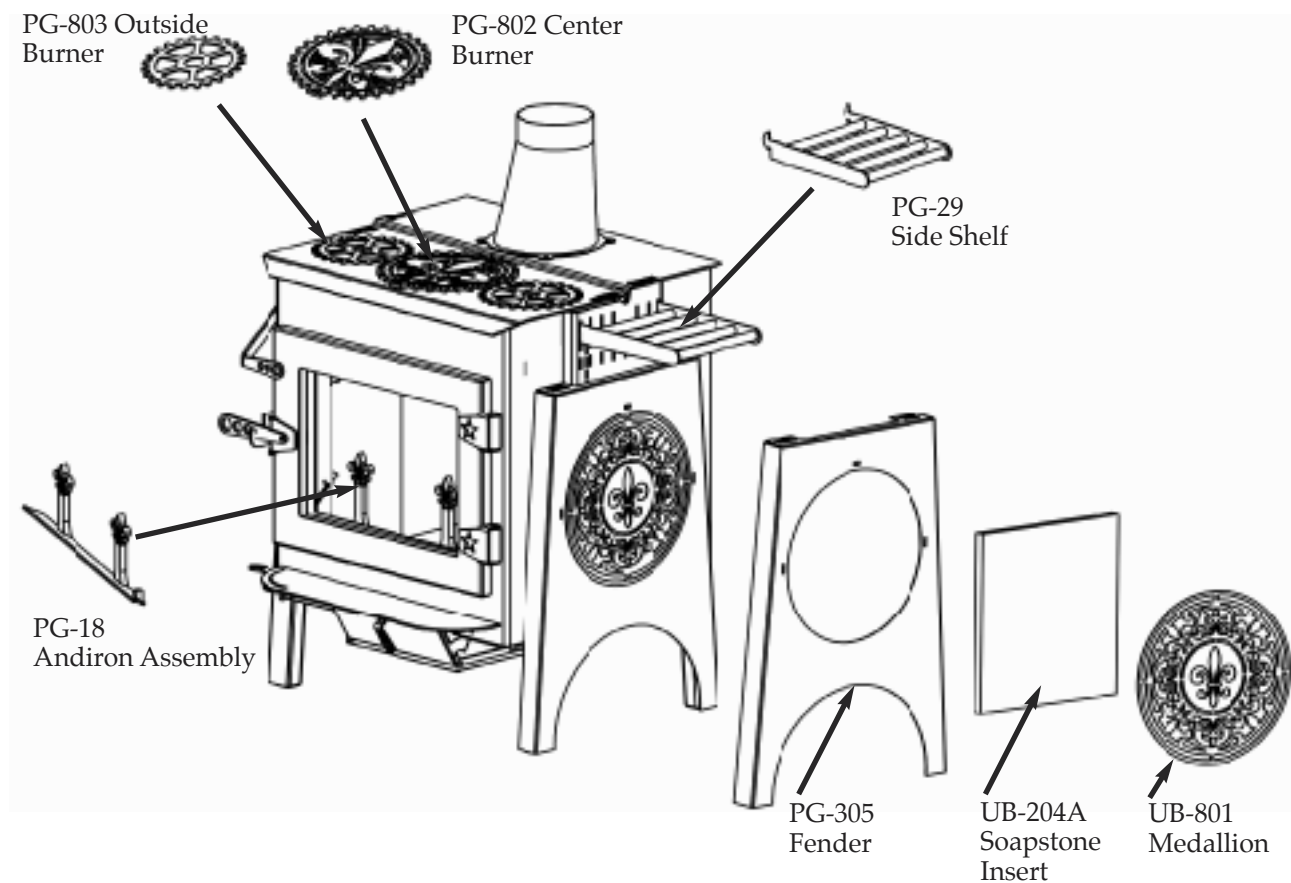
MODEL 210: IDEAL STEEL HYBRID

MODEL 210 ASSEMBLIES, PAGE 2

PG-21 Upper Top Assembly	PG-311 Tertiary Rear Cover
PG-17 Top Lid Assembly	PG-210 Air Control PLate/Linkage
PG-119 C-Channel Leg Support (2)	PG-310 Secondary Rear Cover
PG-14 Leg "H" Weldment (2)	PG-134 Cover Plate
PG-23 Tertiary Inlet Assembly	PG-940 Flue Collar



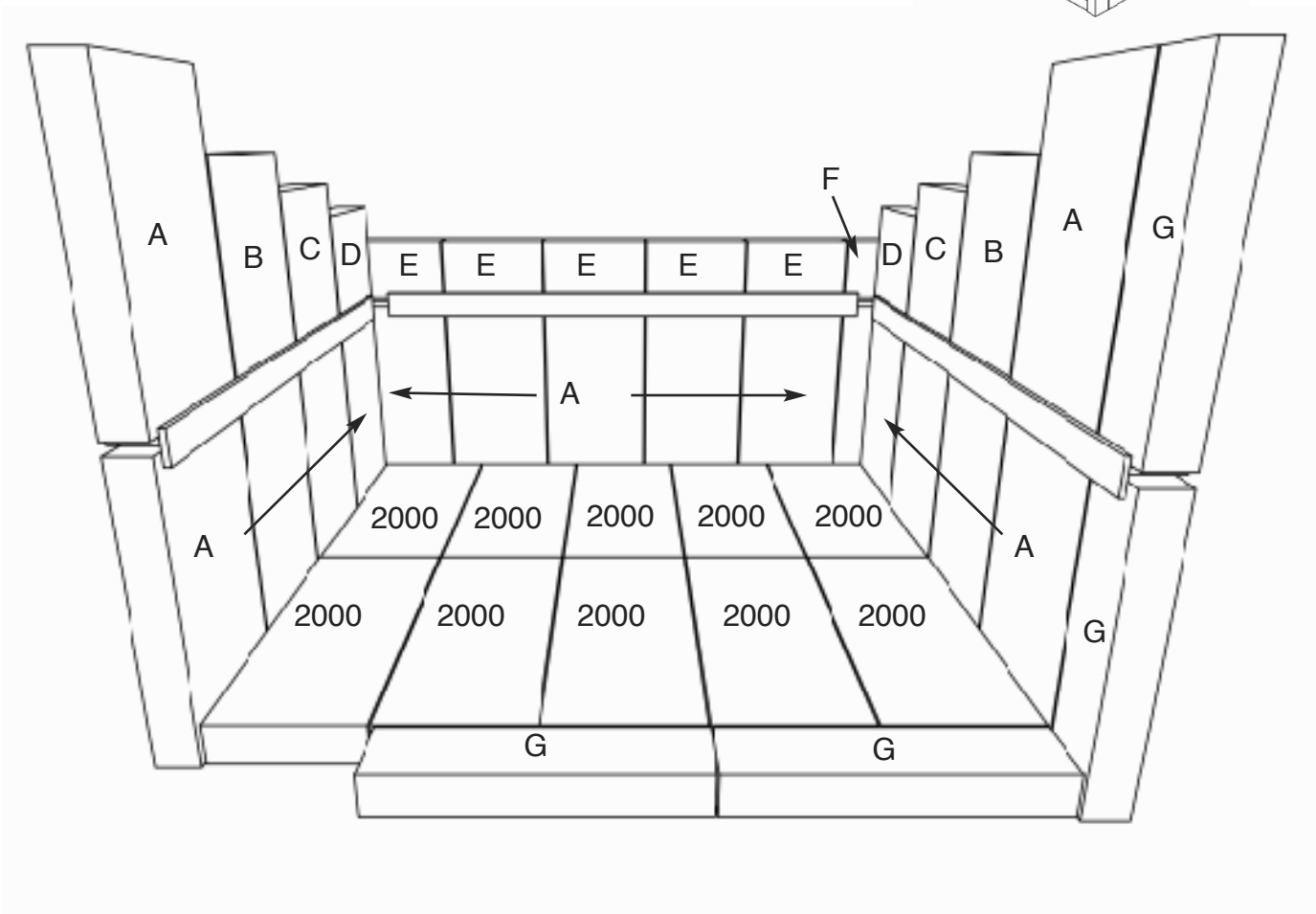
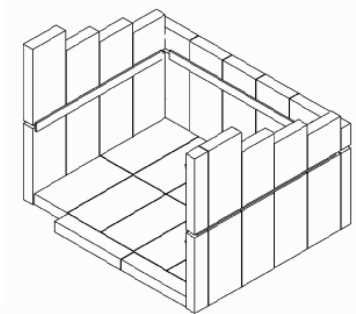
MODEL 210: IDEAL STEEL HYBRID
DECORATIVE ACCESSORIES/ATTACHMENTS



MODEL 210: IDEAL STEEL HYBRID

PG-26 SOAPSTONE LINER and W-2000 FIREBRICK BASE

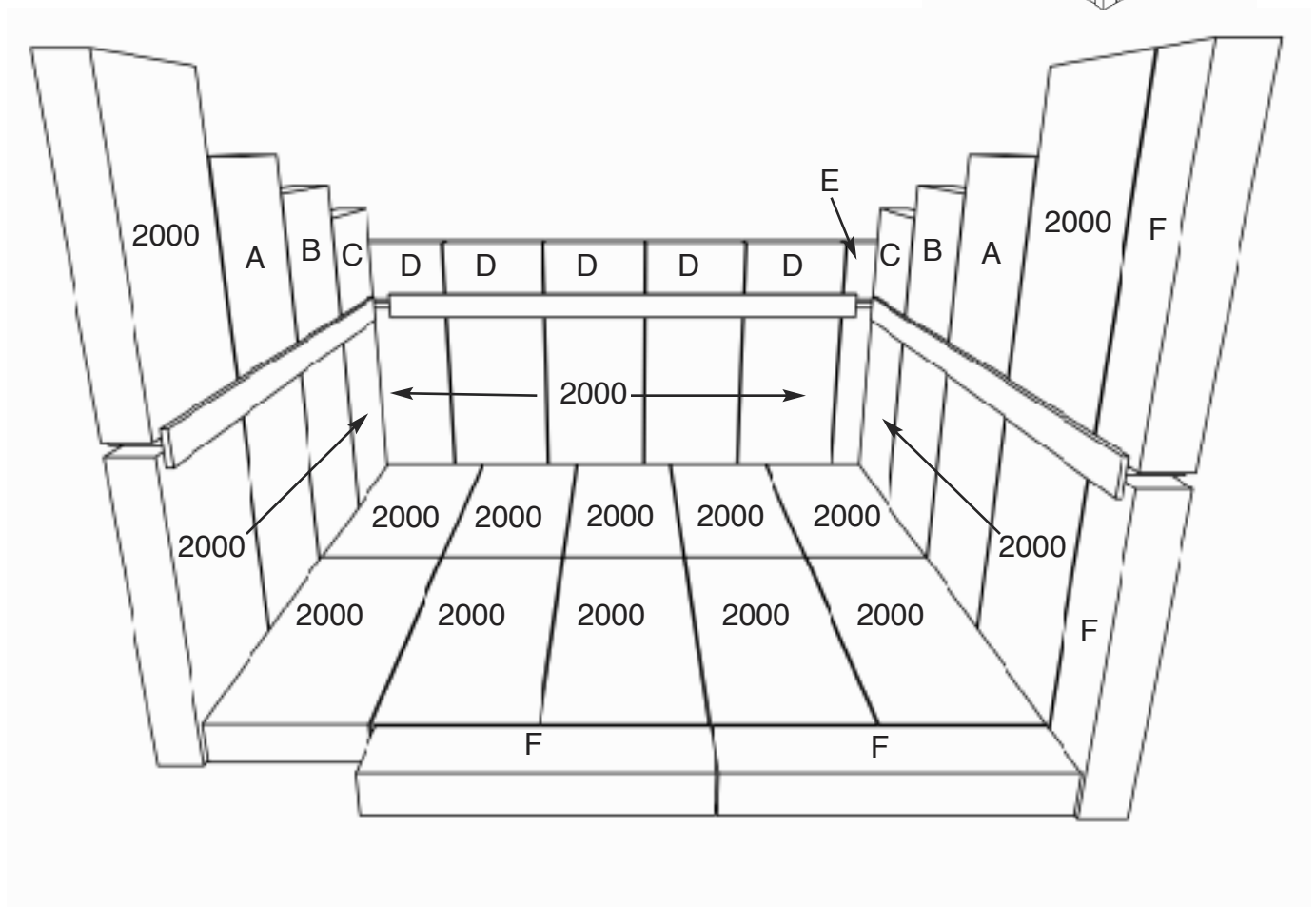
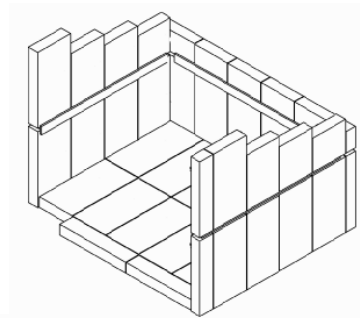
PG-26-A. Soapstone Brick 4.5"x9" (15)	PG-27-F. Soapstone Brick 2.5"x 2.5" (1)
PG-26-B. Soapstone Brick 4.5"x6.5" (2)	PG-27-G. Soapstone Brick 1.75"x 9" (4)
PG-26-C. Soapstone Brick 4.5"x 5.25" (2)	W-2000. Firebrick 4.5"x9" (10)
PG-26-D. Soapstone Brick 4.5"x 4" (2)	
PG-26-E. Soapstone Brick 4.5"x 2.5" (5)	



MODEL 210: IDEAL STEEL HYBRID

W-2000 FIREBRICK LINER and FIREBRICK BASE

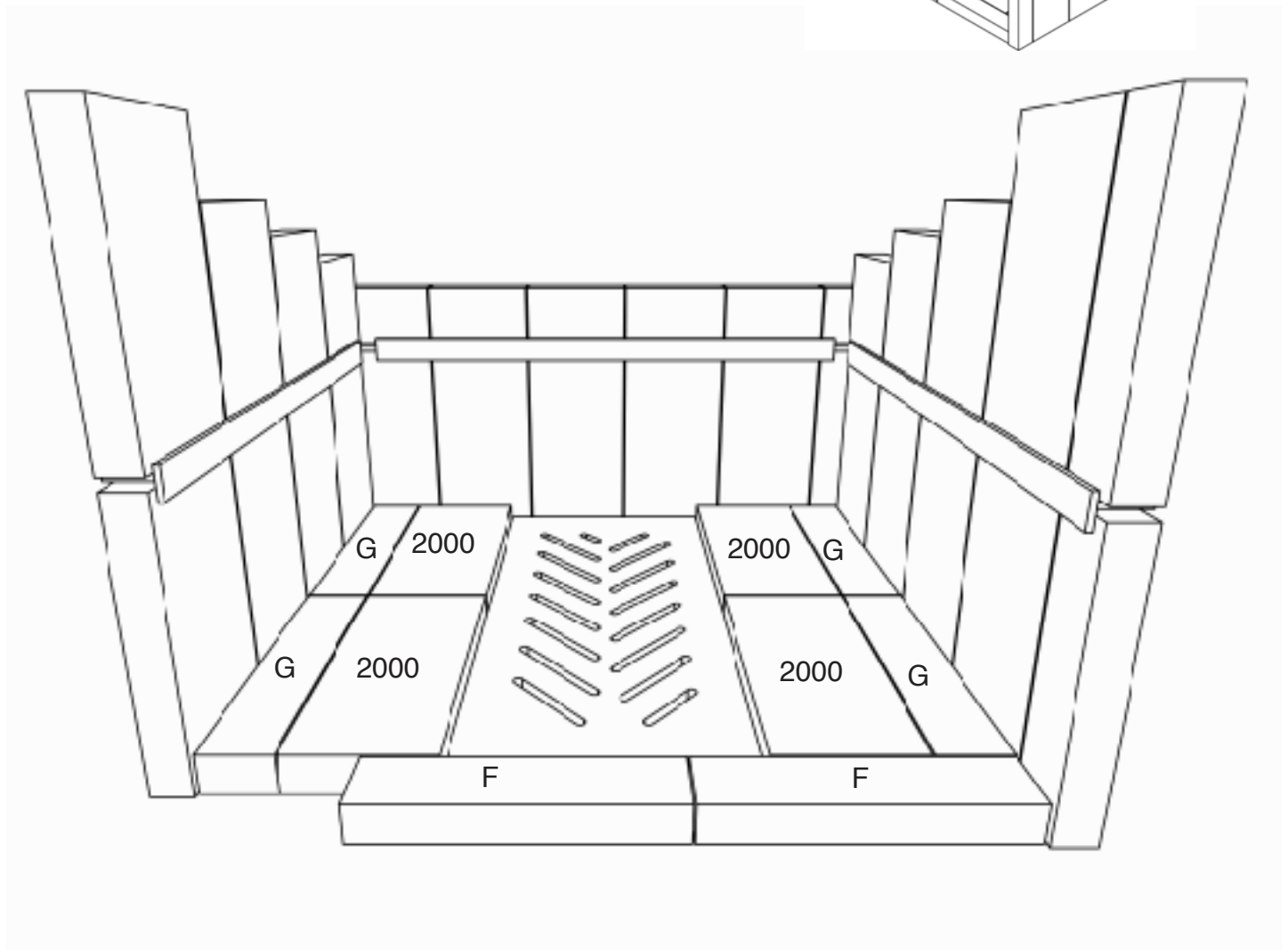
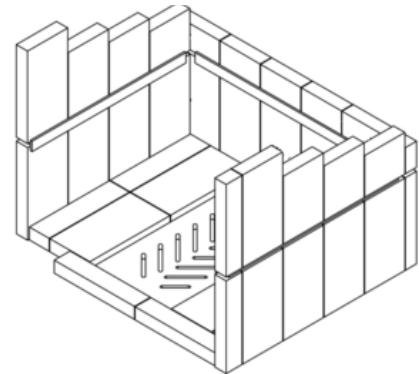
W-2000 Firebrick Back 4.5" x 9" (25)	W-2000-E Firebrick 2.5" x 2.5" (1)
W-2000-A Firebrick 4.5" x 6.5" (2)	W-2000-F Firebrick 1.75" x 9" (4)
W-2000-B Firebrick 4.5" x 5.25" (2)	
W-2000-C Firebrick 4.5" x 4" (2)	
W-2000-D Firebrick 4.5" x 2.5" (5)	



MODEL 210: IDEAL STEEL HYBRID

ASH PAN GRATE and W-2000 FIREBRICK BASE

PG-981 Ash Grate
W-2000 Firebrick Back 4.5" x 9" (4)
W-2000-F Firebrick 1.75" x 9" (2)
W-2000-G Firebrick 2.125" x 9" (4)



PARTS LIST

COMPLETE ASSEMBLIES AVAILABLE AS REPLACEMENT PARTS		
PG-14 LEG "H" WELDMENT		
PG-305 FENDER		
PG-17 TOP LID ASSEMBLY		
PG-11 DOOR ASSEMBLY		
PG-121 ASH LIP ASSEMBLY		
PG-19 SLED ASSEMBLY		
PG-22 BYPASS ROD ASSEMBLY		
PG-18 ANDIRON		
THE FOLLOWING PARTS ARE AVAILABLE FOR EACH ASSEMBLY		
FIREBOX		
PG-944-140109	STEEL: TERTIARY SEAL PLATE	1
PG-945-140113	HARDWARE: BIMETALLIC COIL	1
PG-136-140113	STEEL: BIMETALLIC PLATE & STUD	1
PG-109	STEEL: AIR CONTROL HANDLE	1
PG-904	STEEL: AIR CONTROL LINK	1
PG-311-131009	STEEL: REAR TERTIARY COVER	1
PG-918	STEEL: RADIATOR	1
PG-134-131106	STEEL: FLUE COVER PLATE	1
PG-940-131104	STEEL: FLUE COLLAR 8 to 6	1
PG-17 TOP LID ASSEMBLY		
PG-317-131106	STEEL: SPACER, HEAT SHLD	1
PG-923-131003	STAINLESS: HEAT SHIELD, UPR	1
PG-318-131202	STEEL: PENTAGON SPACER	2
PG-11 DOOR ASSEMBLY		
PG-206	STEEL: DOOR FRAME	1
PG-117-130925	STEEL: DOOR HANDLE	1
PG-303.1-131023	STEEL: DOOR GLASS RETAINER	1
PG-118-131107	STEEL: DOOR LATCH	1
PG-933-140113	GLASS: HIGH TEMP	2
PG-16 UPPER BAFFLE ASSEMBLY		
PG-217-131001	STEEL: GASKET RETAINER BOW	1
PG-218-131001	STEEL: STR GASKET RETAINER	1
PG-22 BYPASS ROD ASSEMBLY		
PG-112-130924	STEEL: BYPASS HANDLE	1
ACCESSORIES		
UB-204AA	SIDE SOAPSTONE	2
PG-802-140113	CENTER BURNER	1
PG-801-140113	SIDE MEDALLION	2
PG-803-140113	OUTER BURNER	2
PG-16 ASH PAN ASSEMBLY		
UB-217, 080513	STEEL: HINGE PIN, ASH DOOR	1
PG-937-131030	STEEL: OUTER ASH DOOR	1
PG-924-131004	STEEL: SPCR, ASHPAN HANDLE	1
PG-124-130924	STEEL: ASH PAN HANDLE	1
PG-130-131029	STEEL: ASH PAN CATCH	1
PG-934-131106	STEEL: ASH PAN	1

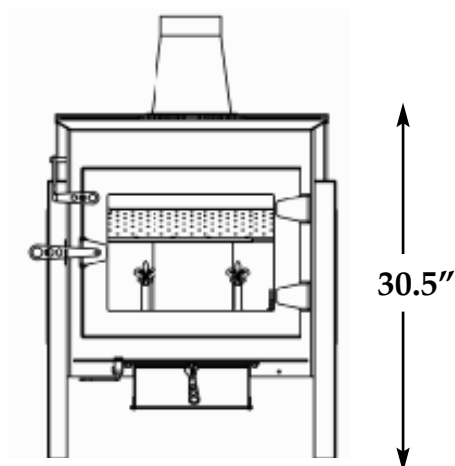
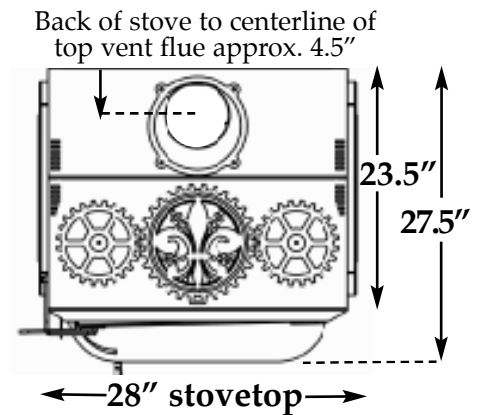
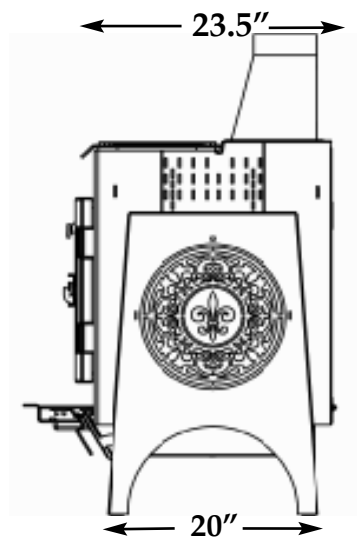
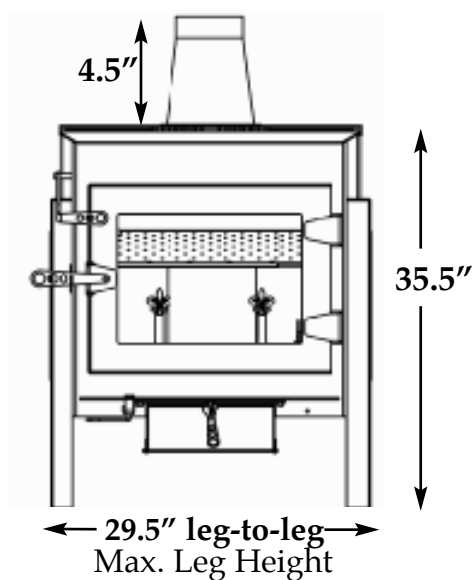
GASKET AND CATALYTIC COMBUSTOR SPECIFICATIONS

PART	SPECIFICATION
① Gasket For Top Lid	1.00" Rope
② Gasket For Sled Assembly / Bypass	Tadpole Gasket
③ Gasket for Catalyst to Sled	0.625 Wide Flat
④ Gasket for Load Door	0.750 Rope
⑤ Gasket for Ash Pan Door	0.500" Rope
⑥ Gasket for Top Lid Assembly	0.250" Rope
⑦ Gasket for Glass in Door	0.625" Graphite Tape
⑧ Gasket for Flue Collar / Block-off	0.75 Flat Adhesive Gasket (cut in half)
⑨ PG-K-535 Catalyst	5.25" x 10" x 2.625" Canned Dim. Durafoil or equivalent; 49 cells per square inch

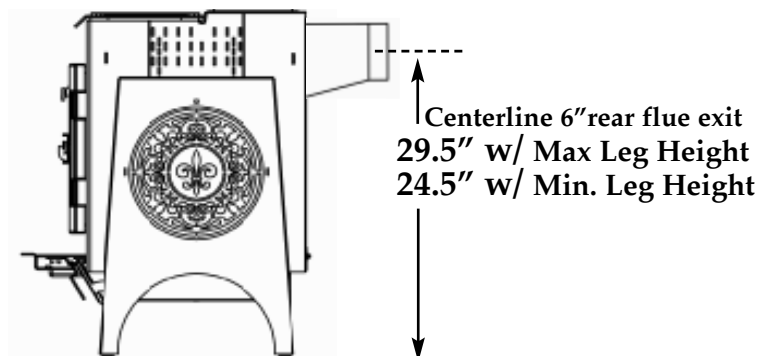
DIMENSIONS & SPECIFICATIONS

H x W x D (Max. Leg Height).....35.5"x29.5"x27.5"
HxWxD (Min Leg Height).....30.5"x29.5"x27.5"
** Cannot have Ash Pan at the Lowest Leg Height*
Leg Height Adjustment.....5" (in 1" increments)
2020 EPA Certified (cordwood).....Yes
Catalytic Combustor & Secondary Air Standard
Listed to UL 1482.....Yes
Flue Exit.....Top or Back
Flue Size.....6"
Flue Height to Center (Max Leg Height).....29.5"
Flue Height to Center (Min. Leg Height).....24.5"
Weight.....620 lbs.
Ash Pan.....Optional
** Cannot have Ash Pan at the Lowest Leg Height*
EPA Emissions Rating.....0.89 grams/hr

EPA Efficiency.....82.79% LHV
EPA Efficiency.....76.94% HHV
Area Heated.....up to 2,200 sq. ft.
Burn Time.....10-14 hrs.
Heat Output Range.....9,324 - 33,263 BTU/hr
Loading Door.....Front
Loading Door Opening (HxW).....12"x17"
Back Clearance (no protection).....14"
Side Clearance.....19"
Back Clearance (w/Heat Shield Kit)6"
Bottom Heat Shield.....Standard
Draft Control.....Manual
Wood Length (Maximum).....22"
Firebox Size (22"W x 18"D x 12-15" H).....3.2 Cubic/ft.
Window Size (viewable).....12"H x 17"W



Min. Leg Height
** Cannot have an Ash Pan at the
Lowest Leg Height*



Centerline to rear 6" flue



GEAR HEAD STOVES
BY WOODSTOCK SOAPSTONE COMPANY