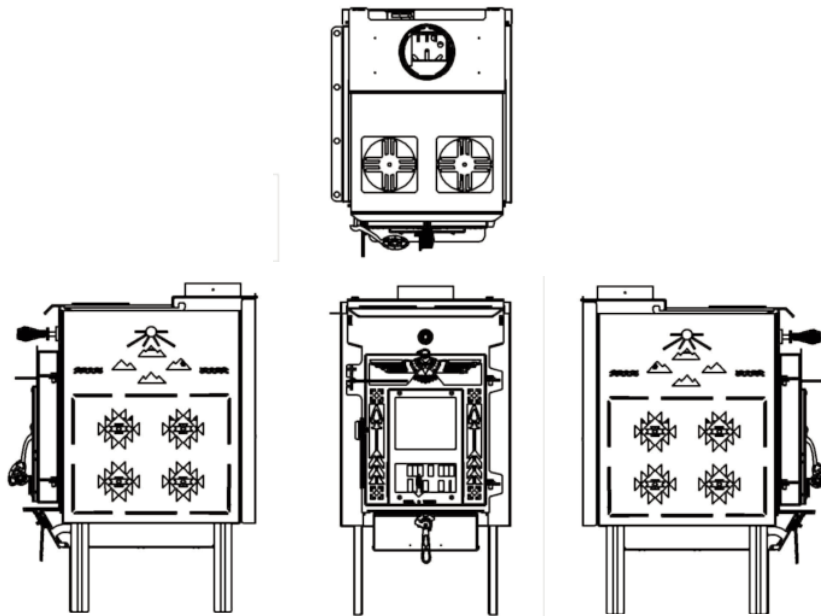


NAVAJO HYBRID COMBINATION WOOD/COAL STOVE MODEL 212



GEAR HEAD STOVES
BY WOODSTOCK SOAPSTONE COMPANY

OWNER'S MANUAL



Tested To UL 1482-2011(R2015)
Tested & Listed By PFS Corporation
Certified to EPA 2020 Standards

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

Tested and Listed by



Rev 1802

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 completely 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 212 Navajo Hybrid Combination Wood/Coal Stove**

The Model 212 Navajo Hybrid Combination Wood/Coal Stove meets the 2020 Standard U.S. Environmental Protection Agency's crib wood emission limits for wood heaters sold after May 15, 2020. Under specific test conditions, this stove has been shown to deliver wood heat at rates ranging from 15,332 to 27,294 BTU/hr., and average emissions of 1.048 grams/hr. Heat output using coal ranges from 7,095 to 10,189 BTU/hr, and average emissions of 4.93 grams/hr.

The Navajo Hybrid has a manufacturer-set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.

The Navajo Hybrid contains a catalytic combustor, which needs periodic inspection and replacement for proper operation. It is against federal regulations to operate this wood heater 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-R2015

Model 212 Navajo Hybrid Combination Wood/Coal Stove has been tested to UL Standard #1482-2011 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 supplied with your Navajo Hybrid Combination Wood/Coal Stove is a Clariant Corporation high performance durafoil catalyst. The catalyst 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. Operating the Navajo Hybrid in a manner inconsistent with the owner's manual will void the catalytic combustor warranty.

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 affordable stoves with high efficiency and low emissions. The first Gear Head Stove, The Ideal Steel Hybrid, was the grand prize winner of the 2013 Wood Stove Design Challenge competition, which judged efficiency, emissions, affordability, innovation, and user friendliness. The Absolute Steel Hybrid was our R2Z (Race to Zero) stove, our internal challenge to design and build a stove that reaches zero wood stove emissions. The Navajo Hybrid Combination Wood/Coal Stove was designed to burn both wood *and* coal cleanly and efficiently.

MODEL 212

NAVAJO HYBRID COMBINATION WOOD/COAL

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INTRODUCTION

Thank you for using one of our Navajo Stoves! The Navajo Stove is designed to heat a small house. Here are some important things to know before using your stove for the first time.

THERE SHOULD BE NO SMOKE INSIDE

With a good stove and chimney system, there should be no smoke or odor inside your house, and very little smoke outside the house. If you have smoke or odors inside the house, please let us know right away so we can help you!

THE STOVE IS ONE PART OF A SYSTEM

The stove is part of a system. All parts of that system need to work together to ensure your wood stove is a safe and efficient heat source that you and your family will enjoy for years to come.

The system includes (1) the chimney, (2) the stove, (3) the hearth, (4) tools and ash bucket, (5) a safe installation, and (6) a trained operator (you!)

1) The Chimney: The chimney serves a critical function. It is the “engine” that drives the stove. As hot air rises in the chimney, “draft” is created which pulls combustion air into the stove. It is essential to have a good draft in your chimney system for optimum stove performance.

A good draft in your chimney provides the oxygen needed for the fire to burn. A stove with a strong draft creates more heat. A sluggish or weak chimney draft will cause your stove to smolder, produce less heat, and potentially spill smoke and/or odors inside the home. These are all indications of a stove that isn’t burning as it should.

Draft can be adversely affected by a chimney that is too short, or too tall, high winds, and flue size.

High efficiency stoves make the best use of your wood and send cleaner smoke into the air. This is because they are burning the gas vapors in the smoke, keeping extra heat inside your stove and therefore inside your home. The smoke going up your chimney is cooler and cleaner. This makes a highly efficient stove more draft sensitive. A chimney that meets all requirements for your stove will ensure peak performance.

2) The Stove: The new Navajo Hybrid is designed to burn either coal or wood efficiently. It will produce more heat with less wood, and burn either wood or coal with clean air both inside and outside of the home. With basic maintenance and proper operation, this stove will keep you and your family warm for years to come. Plus, the Navajo stove has an added bonus of a cook surface on the top for skillets, saucepans or kettles (perfect for frybread!).

3) The Hearth: The stove is the heart of the home, and the hearth that the stove sits on creates a focal point that

serves two important functions. The stove must be placed on a non-combustible surface so that the floor is protected from falling embers or ashes. The dimensions required for the hearth area are based on providing this protection, particularly from the loading door and ash pan.

Not having enough thermal protection to any combustible flooring under the stove (wood, carpet, vinyl, laminate, etc) can cause hidden scorching and can be a fire hazard. If the thermal protection is adequate but the size of the pad is not, there is danger of heat, ashes, or embers causing a fire hazard on the combustible floor surface.

The manual has specific minimum dimensions for a hearth pad for your stove. We actually prefer larger hearth areas to allow plenty of room, if possible, for storing wood, hearth tools, or drying boots. A larger hearth also provides a visual cue so children, elders, and other members of the household give it a wide berth when passing by.

4) Tools: Having the right tool for the right job is a key to success. Your stove and your safety will benefit from the proper use of tools such as – an ash rake, an ash shovel, poker, stove top thermometer, and ash bucket. All of these except the ash bucket are included with the stove.

Ash rake - Use the rake to help move ash down to the ash pan below. Also use the rake before loading coal (see instructions).

Ash shovel - Handy to remove coal “klinkers” and ash from the firebox. Be sure to use an appropriate ash bucket.

Poker - Use this to reposition wood inside the stove. You will also find the poker handy to adjust the air damper - just “poke” it to adjust the heat output. A very small adjustment can make a big difference.

Probe Thermometer - One is provided with your stove to help you monitor the firebox and stove top temperatures and catalyst operation.

Ash bucket- The safe removal and disposal of ashes is of utmost importance. An ash removal container should be metal, have legs that lift it off the floor, and have a top that closes securely and will not fall or blow off.

Ashes should NEVER be dumped into a combustible container, such as a cardboard box. An ash container should never be set on a combustible floor. Hot embers in the ashes can often stay viable for 36 hours or longer after removal from your stove. A galvanized ash can, set away from the home, on a non-combustible surface or up on bricks or cinder blocks is advisable.

5) Stove Installation: A wood stove by itself is not a hazard, but an unsafe installation is. Following the specific

guidelines for clearances and venting materials is critical. Your stove installation needs to conform to certain clearances for safety, not just around it, but under it as well.

Clearance is the open space between your stove, or stovepipe, and a combustible surface. A combustible surface is a surface that burns (like wood, sheetrock, fabric, etc.). Framed or sheet rock walls simply covered by brick or stone are still considered combustible because heat will transfer through those materials and dry out the combustible wall behind.

Both your stove and your chimney pipe need to conform to the required distances to combustible materials for the safety of your home and your family. Clearance specifications and information is in your manual. Read it carefully and make sure your installation meets all requirements.

Please note that installation of any wood stove in a mobile home has some additional special requirements that must be met. Because mobile homes can be airtight, an outside air adapter connection from the stove down and out to an outside air source is necessary for good air supply to your stove. This manual has additional information on connecting an outside air adapter. A pipe shield is necessary for the connection from the stove to the stainless chimney and there must be a spark guard screen on the chimney cap. Wood stoves cannot be installed in bedroom areas of a mobile home.

6) Stove Operator - The last part of a happy relationship with your stove is in the day-to-day use. Learning to use a catalytic stove means a little more participation on the owners end, but the result is rewarding. Like learning to drive a car, or ride a bicycle, it becomes second nature.

The catalyst will work when the firebox is at 500 degrees- this translates into roughly 250 degrees on the top of the stove. After you have burned dry kindling for about 10 minutes, engage the catalyst. Smoke will then filter through the honeycomb of the stainless catalytic combustor. The catalyst will activate and cause the gas vapors in the smoke to burn, creating more heat inside your stove and eliminating smoke.

EFFICIENCY & EMISSIONS

EPA TEST DATA

Your Navajo Hybrid Combination Stove is

- One of the cleanest woodburning stoves approved by EPA;
- One of the most efficient wood stoves approved by EPA;
- The first wood/coal stove approved by EPA;
- A very clean coal-burning stove

AVERAGE WOOD EMISSIONS: 1.13 g/hr
AVERAGE WOOD EFFICIENCY: 79.5%
HEAT OUTPUT WOOD 15,332-27,294 BTU/hr

AVERAGE COAL EMISSIONS: 4.93 g/hr
AVERAGE COAL EFFICIENCY: 60%
HEAT OUTPUT COAL: 7,095-10,189 BTU/hr

FACTORS EFFECTING EFFICIENCY & EMISSIONS

1. Burn Rate: The Navajo Steel Hybrid is able to attain its highest efficiency and lowest emissions burning wood at a low-medium burn rate. A lower burn rate gives the combustor more time to effectively burn the volatile gases as they enter into the catalytic combustor (see discussion in the Catalytic Combustor Section of the Manual). When operating your stove at a lower burn rate you will achieve a cleaner burn over a longer period of time. Low burn rates are also how you achieve desirable long burn times of 6-8+ hours.

2. Wood Quality: Cord wood with a moisture content between 15-22% is ideal for burning. The Navajo Hybrid will still burn wood with a higher moisture content with great effectiveness, however, the energy loss at start up and reloading is significant. During the first stage of wood burning the moisture content within the wood is expelled creating steam. The higher the moisture content the lesser the available heat value.

Kiln Dried Wood:

**Approximately 8600 BTU Available/per pound
20% Moisture Content:
Approximately 6,200 BTU Available/per pound
50% Moisture Content:
Approximately 4,000 BTU Available/per pound**

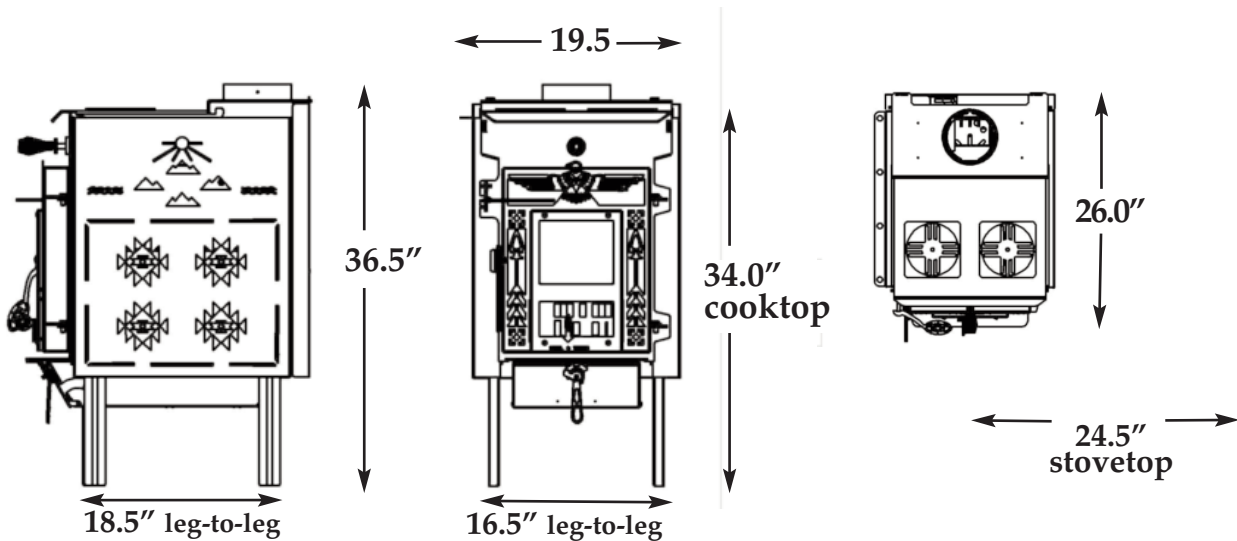
3. Effective Wood Fire Starting: The most effective method for an emissions free start is a top down fire. A top down fire is built with the larger splits on the bottom of the firebox, the second layer should be medium sized splits, and if possible running perpendicular to the large splits on the bottom, and the third layer should be small splits. On top of the small splits a generous amount of small very dry kindling and newspaper will be placed at the top. The newspaper and kindling will produce enough heat very quickly allow in the secondary air and catalytic combustor to ignite within minutes. You may need to leave the loading door cracked open to allow enough oxygen in for a quick start. Within a few minutes you should be able to engage the combustor and start the clean burn cycle.

4. Effective Coal Fire Starting: A successful clean burn with coal begins with the starting conditions. Since coal requires more air and heat to ignite cleanly, it is crucial that the firebox conditions prior to loading coal include a hot coal bed, with flames that are high enough to reach the ceiling of the firebox. Be sure to maintain a flame in the firebox at all times after loading coal.

DIMENSIONS & SPECIFICATIONS

H x W x D (standard height)..... 36.5"x19.5"x26"
 Cooktop Height..... 34"
 Maximum Cooktop Height..... 40"
 Footprint..... 16.5" W x 18.5" D
 EPA Certified..... Yes
 Listed to UL 1482..... Yes
 EPA Emissions Rating..... 1.13 grams/hr
 EPA Efficiency..... 79.4%
 Flue Height to Center (Standard Leg)..... 28"
 Catalytic Combustor & Secondary Air Standard
 Bottom Heat Shield..... Standard
 Area Heated..... up to 1,000 sq. ft.
 Weight..... 310 lbs.
 Flue Exit..... Top Only

Flue Size..... 6"
 Ash Pan..... Standard
 Loading Door..... Front
 Loading Door Opening (W x H)..... 8" x 9"
 Draft Control..... Manual
 Back Clearance (w/Heat Shield Kit) 9.0"
 Side Clearance (w/Heat Shield Kit)..... 9.0"
 Corner Clearance (w/Heat Shield Kit)..... 9.0"
 Wood Length (Recommended Maximum)..... 16"
 Window Size (viewable)..... 7" W x 6"H
 Firebox Size..... 1.2 Cubic ft.
 Burn Time..... 6-8 hrs.
 Heat Output Range..... 15,332-27,294 BTU/hr





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