

OPERATION

The Navajo Wood/Coal Hybrid Stove is uniquely designed to burn clean when burning either wood or coal. It is important to note that there are separate operating techniques when burning these two fuels. The directions below will direct you how to best burn each fuel type in a clean and efficient manner.

Seasoning Your Stove

The seasoning can be accomplished through a series of small to moderate wood fires. *Don't place anything on the top surface of the stove until the paint has finished curing. 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.

Getting to Know the Navajo Stove Controls

Fuel Choice Lever

The Fuel Choice Lever is operated with a coil spring handle above the door. This control engages a catalytic combustor when burning wood, and disengages it when burning coal.

To burn wood, use the coil spring to straighten the lever, then push it in as far as it will go and leave it there. The coil spring handle is centered over the door.

To burn coal, pull the rod out completely to disengage the catalyst. Move the handle to the left before loading coal.

Bypass Damper

Opening the Bypass Damper prevents smoke from coming out the loading door when you are kindling a fire or loading fuel. The Bypass Damper Handle is in front of the loading door, so the door cannot be opened unless the bypass is opened first.

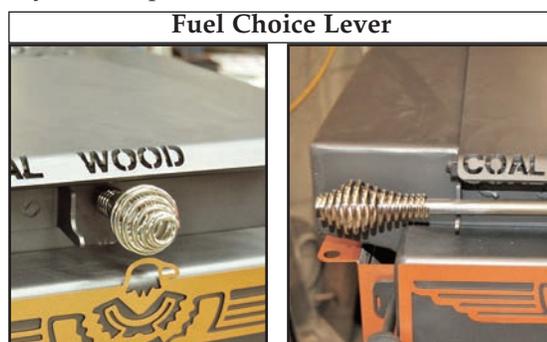
When the bypass is open, smoke goes directly up the chimney

When the bypass is closed, the stove produces more heat, and less smoke. Close the bypass as soon as the stove begins to warm up.

Air Control

The air damper on the bottom of the Load Door controls the rate the fuel is burned and the amount of heat that the stove produces.

Move the air damper to the right of the diamond mark to burn wood. Move it all the way to the right to kindle a fire or maximum heat.



Wood Position

Coal Position

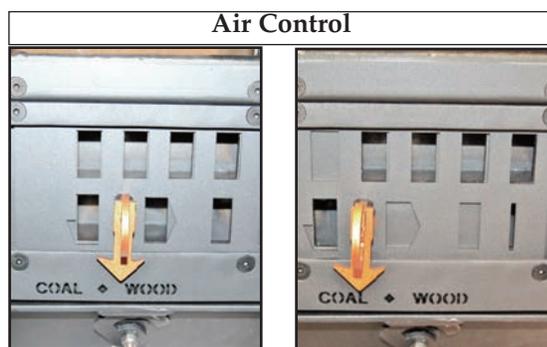
When burning wood and coal at the same time, leave Fuel Selection Rod in "COAL" position.



Bypass Closed

Bypass Opening

The Bypass Handle must be opened to kindle a fire or reload the stove. Close this handle when the stove is in operation. The stove will produce more heat and less smoke with the handle closed.



Push RIGHT To Burn WOOD

Push LEFT To Burn COAL

When burning coal, move the air damper all the way to the left. Adjust the damper slightly toward the middle to extend coal burn times.

Door Latch Detent

There is a small notch in the door handle. If you close the door just to this notch, it will let air in at the edge of the door. This will provide a small boost when kindling a fire. Use the detent to add a little air when starting a wood fire, or just after reloading.

Wood Burning ONLY Operation

1. Move the coil-handled FUEL CHOICE LEVER to "WOOD" position (Figure 1)
2. Open the combustion air control, located on the loading door, to "WOOD" by sliding the air control to the RIGHT (upper slots fully open). (Figure 2)
3. Open the Bypass Damper (Figure 3). The Bypass Damper must be open to open the loading door. Keep the Bypass Damper open to prevent smoke from spilling into the room when kindling the fire.
4. **Always confirm there is adequate draft before lighting the fire.** Hold a lit match or light a small piece of newspaper in the top/back 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, retest with a match.
5. 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 (Figure 4).
6. Add small splits of firewood once the kindling has ignited to establish a bed of hot coals.
7. Add small to medium splits onto the hot coals (Figure 5).
8. After the single wall pipe temperature reaches 250°-300°F, close the Bypass Damper by lowering the handle down to the closed position (Figure 6). 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.
9. Adjust the Combustion Air Control to a lower setting, by sliding the Air Control towards the center diamond.
Do Not slide the air control past the center diamond, keep the Air Control on the "Wood" side of the diamond. The closer the lever is to the center diamond (without going past) the longer the wood will burn (Figure 7).



Figure 1



Figure 2

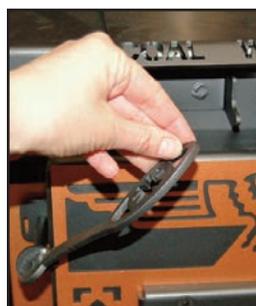


Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



CAUTION

NEVER USE GASOLINE, GASOLINE TYPE LANTERN FUEL, KEROSENE, CHARCOAL 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.

Coal Burning or Coal-Wood Combination Operation

The stove should be started using wood. Once a wood fire has been established, coal may be added as an alternative fuel. Establish a good, hot coal bed before adding coal.

1. Move the coil-handled FUEL CHOICE LEVER to "COAL" position (Figure 8)
2. Open the combustion air control, located on the loading door, to "COAL, by sliding the air control to the LEFT. (Figure 9)
3. Open the Bypass Damper (Figure 11) and the Loading Door.
4. Rake down the center of the grate, to move ashes into the ash pan and increase airflow through the grate and into the firebox. If the ash pan is full, make sure to safely empty into an ash bucket with a tightly sealed lid. A full ash pan will prevent the required "under-fire" air from reaching the coal bed.
5. Put in several large pieces of coal. Leave space between pieces of coal so air can flow up through the middle of the grate. Add small coal pieces outside big pieces. (Figure 10) Always keep a flame in the coalbed. Make sure there is some flame before you close the door.
6. Close the Load Door but leave the Bypass Damper open for about 10 minutes after loading coal.
7. Leaving the bypass damper open will help to create a strong draft and ignite the coal.
8. When the bypass damper is open, all of the exiting smoke will go directly up the chimney, creating additional draft. The additional draft pulls more air through the coal bed, heating up the coal. You should notice secondary flame activity around the exit at the back of the stove.
9. After about 10 minutes, close the bypass damper (Figures 11 and 12). Flames will now come toward the front of the stove, across the perforated fireback at the top of the firebox. Oxygen is introduced through the holes in the fireback, and the flames will create enough heat that exhaust will ignite at the top of the firebox.



Figure 8



Figure 9



Figure 10



Figure 11



Figure 12



AFTER LOADING COAL, CHECK TO BE SURE THERE ARE VISIBLE FLAMES IN THE COALBED. IF THERE ARE NO FLAMES, OPEN THE BYPASS DAMPER FOR SEVERAL MINUTES UNTIL FLAMES ARE CLEARLY VISIBLE.

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 Navajo 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.
2. Wearing stove gloves, open the loading door and 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 split pieces of wood. If burning coal, add about 10-12 pounds of coal for an overnight burn. 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 and draft conditions.
6. Adjust the air damper to a low setting, close to the diamond setting on the wood/coal indicator.
7. Close the Bypass Damper by lowering the lever until it stops.
8. Try to always maintain a flame in the stove, especially when burning coal. If no flame is present, open the bypass damper.

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 INNER FIREBRICK WALLS OF THE NAVAJO HYBRID. ATTEMPTS TO REACH HIGH TEMPERATURES VERY QUICKLY COULD RESULT IN DAMAGE TO THE STEEL 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 Navajo 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.

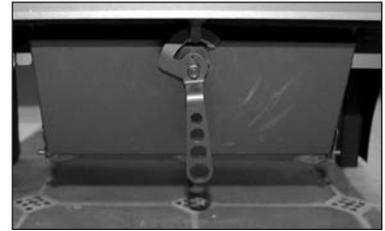
1. Before you open the loading door, you must fully open the catalytic bypass and the air damper. Wait a minute or so to establish a strong draft. This will help to keep smoke from spilling into the room.
2. Open the load door and stir up the coals and remove excess ash as needed.
3. Place several small 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. 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°. Lower air damper handle down to the 3 position.
6. Close the Bypass Damper 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.

Ash Removal

NEVER BURN THE STOVE WITH THE ASH DOOR OPEN!

If your Navajo Steel Hybrid is in continuous operation and you are burning both wood and coal, it is recommended to empty the ash pan daily. Daily ash removal will keep the underfire air flow from becoming blocked when burning coal. You do not have to let the fire die out completely, but make sure that it is reduced to hot coals. Open 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 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.



The ash pan door is located below the front loading door.



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

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.

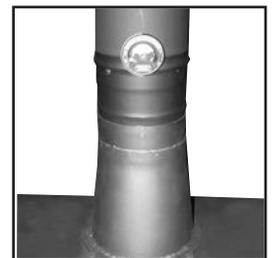
NEVER SHOVEL ASHES INTO A COMBUSTIBLE CONTAINER LIKE A CARDBOARD BOX OR A PLASTIC BUCKET. DO NOT USE A VACUUM CLEANER TO REMOVE ASHES UNLESS IT IS SPECIFICALLY DESIGNED FOR WOODSTOVE ASH REMOVAL. NEVER LEAVE A CONTAINER OF HOT ASHES ON A WOOD FLOOR, PORCH, OR ANY COMBUSTIBLE SURFACE.

Magnetic & Probe Thermometer

We recommend placing the magnetic thermometer 8"-10" above the flue collar on single wall stove pipe.

If you are reading the single wall stove pipe temperature, the interior flue exhaust temperature is about twice as hot as the reading on the magnetic thermometer. We recommend engaging your catalytic combustor once the pipe thermometer reaches 250° F.

To install the probe thermometer, remove the screw toward the rear of the lift top, and insert the probe in the hole. The end of the probe is about 1 inch away from the catalyst, when the catalyst is engaged. This thermometer will tell you the exhaust gas temperature as it exits the catalyst. Over time you will become used to monitoring the exhaust gas temperatures. If these temperatures decline over time, then it is usually an indication that the catalyst needs



Place the surface thermometer 8" above the stove top for top vent, or on the cover plate for rear vent.



DO NOT OVERFIRE THIS WOOD STOVE!

ATTEMPTS TO ACHIEVE HEAT OUTPUT RATES THAT EXCEED STOVE DESIGN SPECIFICATIONS CAN RESULT IN PERMANENT DAMAGE TO THE STOVE AND TO THE CATALYTIC COMBUSTOR.

to be cleaned. See directions for cleaning in the next section.

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.

Daily Use

Your Navajo 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.



Dry Firewood will show “checking” or cracks at the end of the split

The Stove Top

The top lid of the Navajo Hybrid makes for a perfect cook surface. The cook surface can be used to make soups, stews, sauces, and even traditional Navajo Fry Bread. 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 Fall-Away Tool

The “fall-away tool”, which comes with your stove, can be used to operate the door latch and the bypass lever. Simply insert the tool 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 “fall-away tool” 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.

Firewood

Your Woodstock Soapstone Navajo Steel Hybrid Wood 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 hardwoods. 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.

There are several ways to determine if wood is properly dried. Visual “checking” on the end of the wood splits, dry wood will feel lighter, if you bang two pieces of dry wood together it will sound hollow (wet wood will sound solid & dull), and no bubbling or sizzling from the wood as it burns. Moisture meters are a great way to determine the percentage of moisture content in wood. Moisture meters utilize two pin probes that insert into the wood and read the percentage of moisture. Moisture meters can be purchased online.

Common symptoms of burning wet wood include: Difficulty getting the fire started, smokey fire, dirty glass, creosote buildup within the stove pipe and/or chimney, low heat output, short burn times, and excessive wood use.

DO NOT BURN pressure treated or painted wood, unseasoned wood, garbage, solvents, lawn clippings or yard waste, materials containing rubber; including tires, plastics, petroleum products, paints, paint thinners, asphalt products, materials containing asbestos, construction debris, railroad ties, manure or animal remains, salt water driftwood or other salt treated saturated materials, or paper products, cardboard, plywood, or particle board in your Woodstock Soapstone Navajo Steel Hybrid Wood Stove.

The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in the Navajo Steel Hybrid.

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 and cause smoke.

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 the burning of trash.

 DO NOT BURN!	
<ul style="list-style-type: none">• UNSEASONED WOOD• TREATED/PAINTE WOOD• GARBAGE• CARDBOARD• SOLVENTS• COLORED PAPER• TRASH• LAWN CLIPPING• RUBBER PRODUCTS	<ul style="list-style-type: none">• PLASTICS• PETROLEUM PRODUCTS• PAINT/PAINT THINNER• MATERIALS CONTAINING ASBESTOS• DRIFTWOOD• ASPHALT PRODUCTS• RAILROAD TIES• MANURE/ANIMAL REMAINS• PLYWOOD/PARTICLE BOARD

Coal Fuel

The Navajo stove has been designed and developed for burning sub-bituminous coal, like Fruitland Coal and Black Mesa Coal. We recommend small piece sizes, in the 1 pound to 7 pound range. Remember when loading the stove to always leave a gap between pieces down the center of the grate. This will allow air to flow freely between pieces. We do not recommend the use of other fuels, other than wood and coal.

Coal should be stored outside in a box, container, or shed with a roof to keep the coal dry. Excessive moisture will result in loss of heat and generation of excessive smoke.