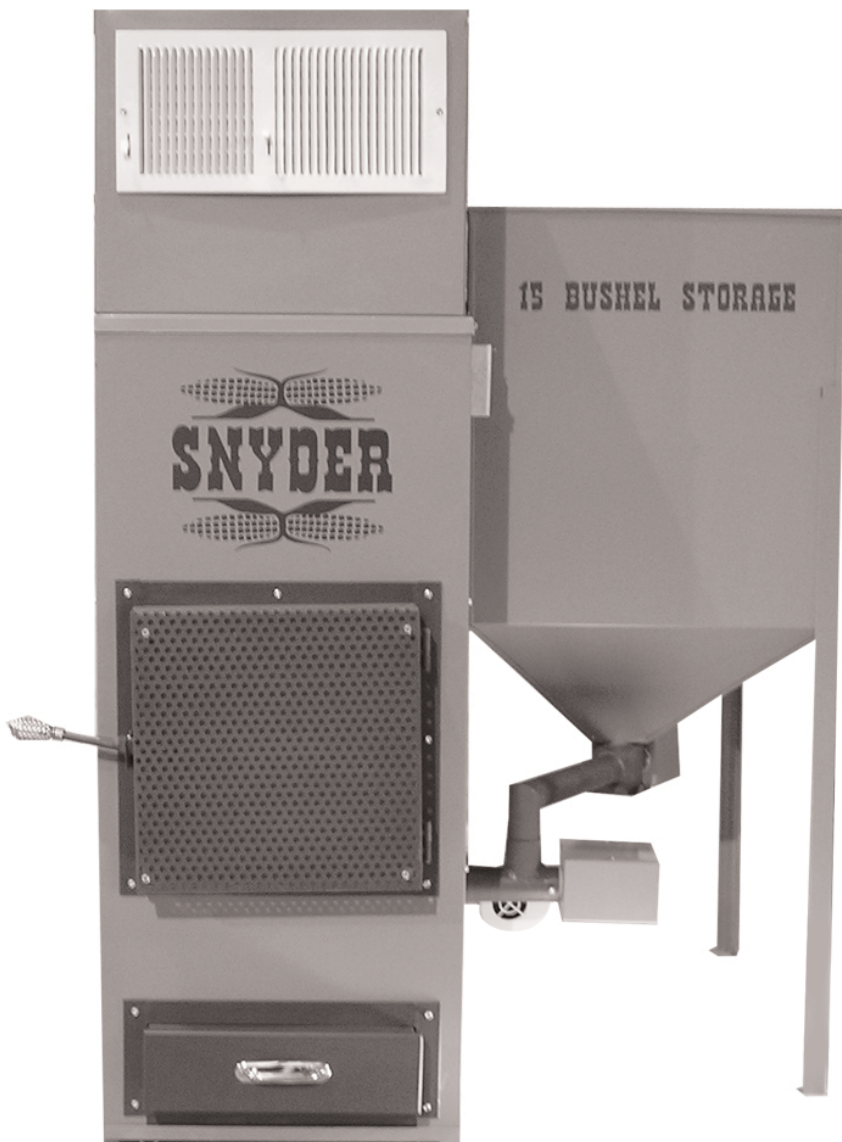


Owner's/Installation Manual



Model
WFS-115

Important:

Please read this manual completely before installing and using the Snyder model WFS-115 corn furnace. Failure to comply with these instructions could result in property damage, bodily injury or even death.

Snyder Corn Furnaces
11 Technology Way
Steubenville, OH 43952
866-658-7300
www.wildfiremotors.com



Thank you for purchasing the Snyder corn furnace.

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Information

- The SNYDER corn burning furnace has many advantages over other methods of heat.
- The large 15 bushel storage unit will hold enough fuel for up to 12 days.
- The furnace automatically feeds corn into the burn pot as needed with the included thermostat.
- Timer for low fire cycling, acts as pilot light, maintains a low fire.
- The corn furnace also eliminates the mess, constant clean up, labor, insects, and handling problems of wood furnaces.
- Our furnace can be used as a stove for your shop, garage or house with easy installation. An optional plenum with 4 registers can be purchased for anywhere you need a free standing stove.
- Includes replaceable inlet filter.
- You can attach the furnace to your current duct work with or without removing your current furnace.
- Corn is about the same price now as it was in 1960, every other fuel source has risen dramatically.
- Corn is one of the cleanest burning fuels and is safe for the environment.
- The SNYDER corn burner requires very little maintenance.

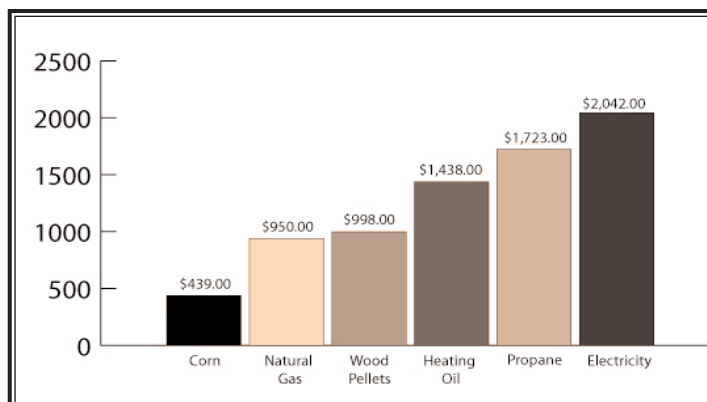
Advantages of the Snyder Corn Furnace

- Lower Fuel Cost
- Low Pollution
- No Toxic Fumes or Gases
- Consistent Fuel Price
- American Grown Fuel Source
- Easy Installation
- Thermostat Included

Specifications

- 115,000 BTU
- 60 C.F.M. Combustion Blower
- 1/2 HP 3 Speed Hot Air Blower
- Plenum with 4 Double Registers with 8 Individual Adjusters for Shop Use.
- Replaceable Air Filters
- 15 Bushel Storage
- Heavy Duty Cast Iron Burn Pot
- Furnace Dimensions:
52"Hx24"Wx21"D
- Storage Unit Dimensions:
26"Hx24"Wx36"D

Cost Comparison of Heating Methods



This is a cost comparison of heating a 2,000 square foot home in the Northern United States for 1 year.

Getting to Know the Functions and Components of Your Furnace

Auger- The auger transfers the corn from the holding hopper to the burnpot. This furnace is equipped with 2 augers which feeds corn into the burnpot for complete combustion. Simply set the thermostat and walk away.

Auger Drive Motor- The auger drive motor turns the auger. This furnace is equipped with 2 auger drive motors. One motor for each auger.

Blower- The blower forces air over the furnace heat exchanger and into your homes duct system. The blower is controlled by the fan limit control.

Combustion Blower- Provides combustion air through the air ports in the burnpot.

Automatic Fan Limit Control- The fan limit control automatically activates the blower when the temperature rises and disengages the blower when the temperature falls. There is also a 200°F safety limit. If the temperature for some reason would reach 200°F, the power to the burner is cut, but the blower continues to run to cool the heat exchanger.

Burnpot- This is where combustion occurs. Corn is delivered into the burnpot by the augers. The heat of the fire in the burnpot causes gases to oxidize off the corn and as the combustion air mixes with the gases, they burn with a flame similar to that of an oil furnace.

Hopper- The hopper is where the corn is stored and then augured into the burnpot.

Thermostat- Device used for regulating temperature.

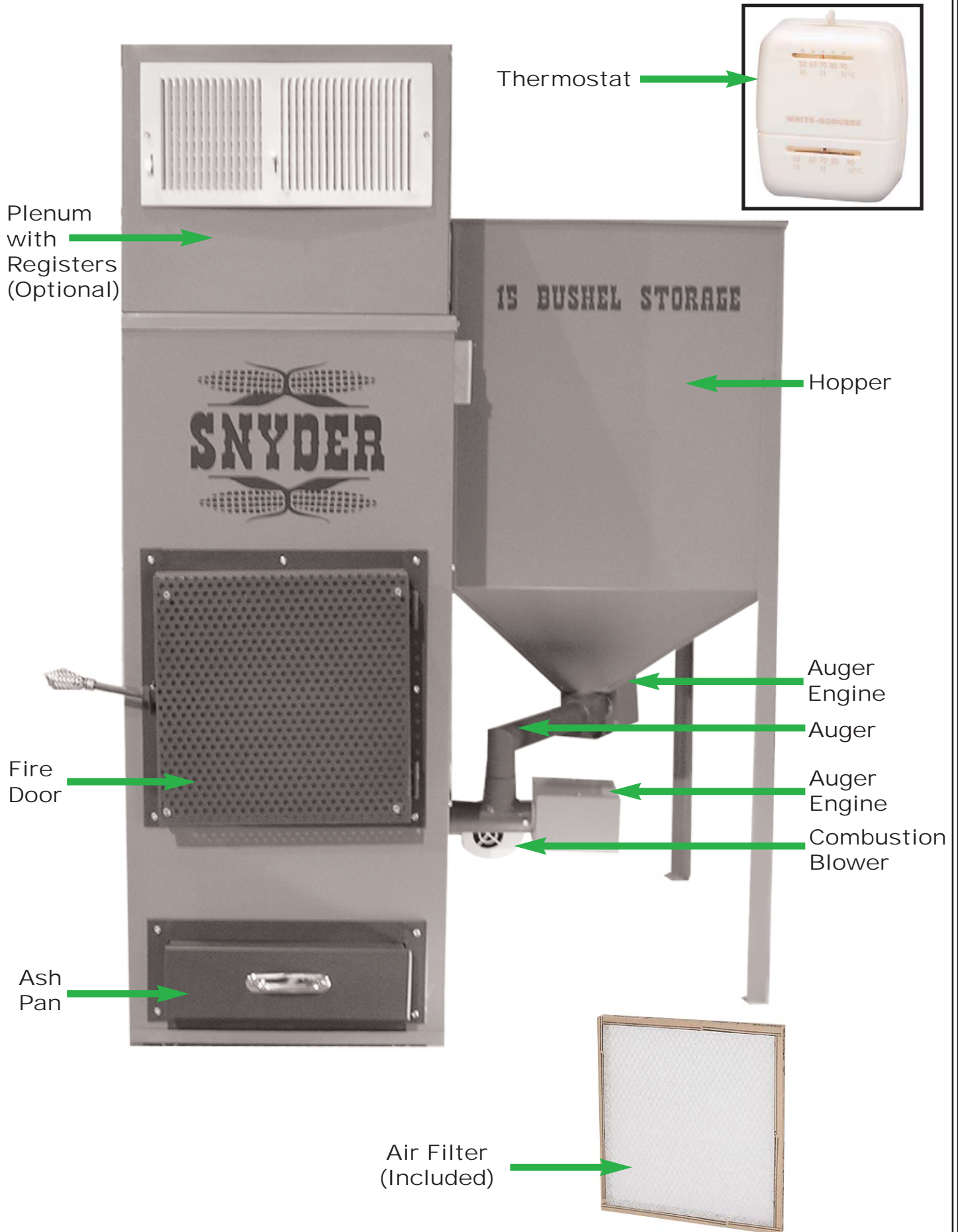
Thermostat Relay- 120v to 24v transformer provides low voltage to thermostat via R&G terminals. When thermostat is realized, closed switch provides 120v power to the furnace timer. When thermostat is engaged, normally open switch provides 120v power to gear motors and combustion blower via timer socket.

Low Limit Switch- The low limit switch is a safety control designed to prevent the flow of corn until burner has been ignited and the furnace has reached operating temperature. The low limit switch will also prevent the flow of corn if furnace operating temperature is not maintained. Example: if the hopper runs out of corn or power outage occurs.

Toggle Switch- Double pole, double throw switch. In the START position, it provides 120v to the combustion blower. In the ON position provides 120v to the thermostat relay. Furnace must reach operating temperature, closing the low limit switch and activating gear motors before turning the switch to the ON position.

Timer- The timer on/off cycle controls delivery of corn by gear motors when the thermostat is relaxed. The appropriate on/off cycle maintains burner pilot fire.

Component Diagram



General Instructions

- Installation is allowed only by a licensed heating contractor.
- Install the furnace according to local codes and regulations.
- Install the furnace with adequate return and supply duct systems.
- The installer/contractor must explain in detail, the operations of this furnace to the owner/operator, including minor service requirements.
- Never block or restrict any air intake ports. Dangerous overheating could result.
- Install the furnace with safe clearances to combustible surfaces.
- Connect the furnace to its own independent chimney at least 6 inch in diameter.
- This is a well manufactured furnace, but cannot make up for poor or incorrect installation.
- Repair should be done only by a qualified service person.
- Never stack or pile combustible materials against or near the furnace surfaces.
- Never store, use, or dispose flammable liquids near the furnace.

Snyder Corn Furnace Pre-Assembly Inventory Sheet

The following parts are included with your Snyder Corn Furnace:

Control Box

- 1-6"x6" Steel Control Box
- 1-3 Position Toggle Switch
- 1-Timer
- 1-Timer Socket
- 3-Wire Nuts
- 2-Straight Conduit Connectors
- 1-90 Degree Conduit Connector
- 1-Fan Relay Center
- 1-Fan Limit Wiring Harness with 29" Steel Conduit Covering. Includes 1-73" High Temperature White Wire, 1-38" Black Wire, 1-38" Yellow Wire, 1-38" Green Wire.
- 1-Main Power Supply Cord with 26" Steel Conduit Covering. Includes 1-32" Black Wire, 1-32" White Wire, 1-32" Green Wire, 1-32" Yellow Wire.
- 1- Burn Pot Feed Motor Wiring Harness with 13" Steel Conduit Covering. Includes 1-21" Green Wire, 1-21" White Wire, 1-21" Red Wire.
- 1-Hopper Feed Auger Motor Wiring Harness with 27" Steel Conduit Covering. Includes 1-36" Red Wire, 1-36" Green Wire, 1-36" White Wire.

Burn Pot Feed Auger Assembly

- 3-Wire Nuts
- 1-Straight Conduit Connector
- 1-90 Degree Conduit Connector
- 1-Auger Motor
- 1-Auger

Hopper Feed Auger Assembly

- 1-Timer
- 1-Straight Conduit Connector
- 1-Feed Tube with Clean Out
- 1-Auger Motor

Furnace Componets

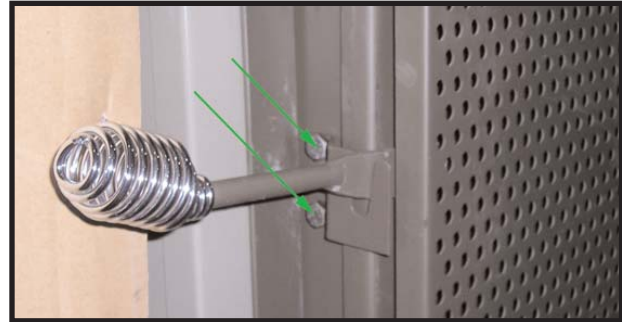
- 1-Fan Center Limit Control
- 1-Snap Disc Control
- 1-Combustion Fan
- 1-3 Speed Heat Blower
- 1-Air Intake Filter
- 1-Fire Door and Latch with Mounting Hardware
- 1-Ashpan with handle and Mounting Hardware
- 1-Feed Storage Hopper
- 3-Hopper legs with Mounting Hardware
- 1-Fire Plate
- 1-25' Piece of Thermostat Wire
- 1-Thermostat

Assembly

1. Remove the furnace and its contents from the cardboard packing.
2. The first step will be installing the door. Locate the door. Slide the door onto the pins attached to the door frame.



3. Next locate the door latch and install.



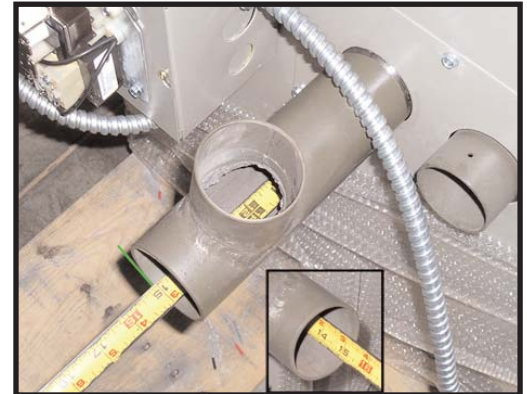
4. Locate the the ash pan handle and install.



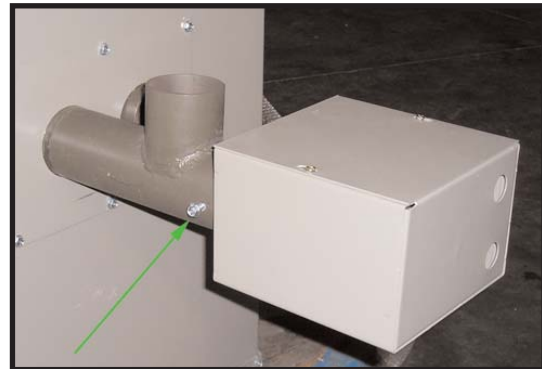
5. Remove the fire plate, located in the ash pan. Place the fire plate on the two mounts, above the firepot.



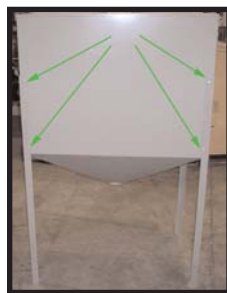
6. Locate the feed tube and thread it into the side of the burn pot. **CAUTION! Thread the feed tube in three complete turns. If the tube is threaded more, the unit will not burn properly.** Place a tape measure inside of the tube and hook it to the the inside of the burnpot. (The tape measure will only hook in one place) Measure from the inside of the burnpot to the outside of the tube. The measurement should be 15 inches. **If this measurement is incorrect, the unit will not burn properly.**



7. Locate the feed auger and install it into the feed tube. Align the small holes in the feed tube and feed auger and fasten with a supplied screw.



8. Locate the hopper and hopper legs. Attach the legs to the hopper. There are a total of three legs.



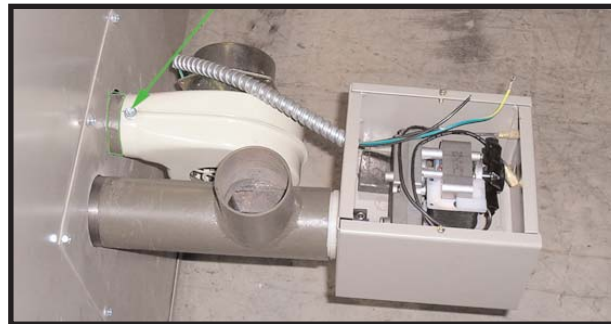
9. Install the hopper to the furnace. Make sure that the hopper is 11 5/8in away from the front of the furnace. Attach the hopper to the furnace using two of the supplied screws.



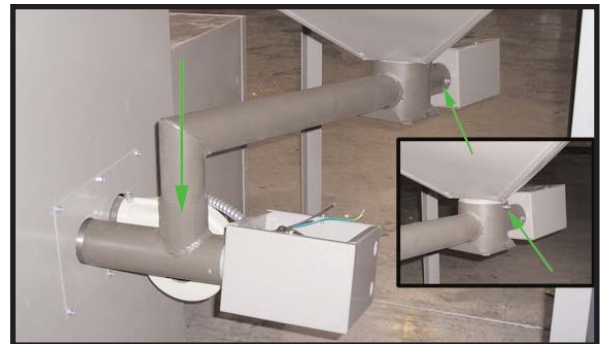
10. Install the handle on the hopper lid.



11. Locate and install the combustion blower. Locate the small hole in the blower tube and the combustion blower and fasten with a supplied screw.



12. Locate and install the corn feed tube. Align the small holes in the corn feed tube and the hopper and fasten with a supplied screw.



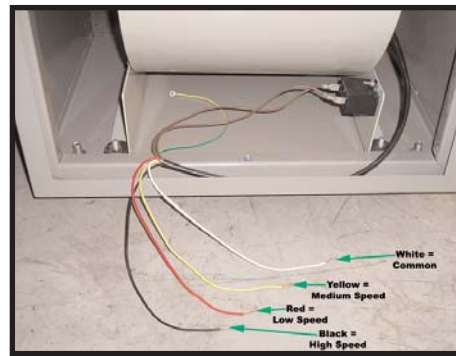
13. Locate the snap disc and install.



14. Locate and install the fan limit switch. Fasten using two supplied screws.



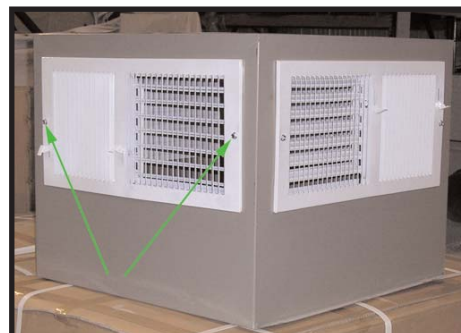
15. Locate and install the blower housing. Adjust the feet on the bottom of the blower housing so it is level with the furnace. The common adjustment length of the feet on a level floor is 1 1/2in. Attach the blower housing to the furnace with the supplied screws. When wiring the blower, you will have to determine what speed you want the blower to run. The following wire colors indicate the speed of the blower: White= Common, Red= Low, Yellow=Medium, Black=High.



16. Locate and install the air filter to the blower housing. Be sure the arrow on the filter is pointing towards the furnace.



17. If you are wanting a free standing stove for your shop or garage you will have to install the optional plenum. Locate the plenum and install the registers with the supplied screws. Place the plenum on top of the furnace and align with the hole in the top of the furnace. Fasten the plenum to the furnace with the supplied screws.



Installation

Electrical Connections:

1. Make sure the power source meets the requirements of the furnace. Disconnect the power source before performing any electrical work.
2. Connect the electrical power according to the wiring diagram on page 17.
3. All power leads should be installed with approved nuts, fittings and cable connectors.
4. Electrical rating: 115 Volt, 60 Hz, less than 15 Amps.

Thermostat:

1. Install the thermostat in a central location. Use only a White-Rodgers model 1C20-101 or equivalent low voltage thermostat and install according to the thermostat manufacturer's specifications.
2. Connect the supplied thermostat wire as shown in the picture below. (There is 25ft supplied, but do not use more than you need).



3. Make sure that the thermostat anticipator setting is correct. The heat anticipator should be 3.2. Adjust up or down as necessary.

Furnace Location:

Locate the furnace as close as possible to the chimney and the air distribution system.

Connecting the Duct System:

1. Connect the supply and return to the air duct system. Be sure the duct system is adequate for the intended use of the furnace.
2. For supply and return extensions, we recommend using metal duct, duct board, thermaflex, or insulated metal pipe.
3. Included is one replaceable air filter. Be sure to inspect every 30 days and replace if needed each burning season.

Initial Start Up of the Snyder Corn Furnace

1. Turn on electrical power to the furnace.
2. Turn thermostat to highest setting.
3. Push in the manual override fan button on the fan limit control, starting the fan. Check the fan unit to make sure that it is running freely. Pull the button back out, deactivating the fan.
4. Remove the cover on the fan limit control. Make sure the fan-off tab is set at 130°F, the fan-on tab is set at 170°F, and the high limit is set at 200°F.
5. Load the hopper with corn.
6. We recommend starting your fire with paper and kindling wood. Place a generous amount of paper and kindling wood in the burn pot. Light the fire, as soon as the fire starts, flip the switch to the "**START**" mode. Add a handful or two of corn to the fire. Let it warm up to 120°F and flip the switch into the "**ON**" mode.

"START"



"ON"



7. Remove the fan limit cover and observe the dial rotation as internal temperature rises. Observe the engaging of the blower.

Burning the Snyder Corn Furnace

1. The WFS-115 will burn most types of clean shelled corn. It is not necessary to mix the corn with wood pellets.
2. The moisture content of the corn should be 15% or less and should be inspected for any debris which may jam the feed system such as sticks, stalks or cob pieces.
3. Again, we recommend starting the the fire with paper and kindling because corn has a dense shell that can be difficult to start. **DO NOT EVER USE CHEMICALS OR FLUIDS TO START THE FIRE. DO NOT BURN GARBAGE, GASOLINE, ENGINE OIL OR ANY OTHER INAPPROPRIATE MATERIAL.**
4. When burning corn, the primary combustion takes place on a fluidized bed at the bottom of the burn pot. As a result, this creates a white, calcium like deposit which builds up on the burn pot. This deposit will need to be removed. We recommend shutting off the unit and letting it cool. To get more heat out of your furnace, take a traditional poker with a 90° bend on the end and run it around the inside of the burnpot. This will remove all of the deposit from the inside of the burnpot and out of the holes which creates more airflow.

General Maintenance

1. Check the firepot for any residue build up. Clean and dispose of them when completely cooled.
2. Check the ash pan regularly and empty as necessary. Dispose of the ashes in a metal container until cooled.
3. Check the upper heat exchanger by removing the heat exchanger plate once per month for any fly ash accumulation. Clean heat exchangers if necessary.
4. Oil the drive motors, bearings and draft inducer motor twice during the burning season.
5. Inspect the flue pipe and chimney at least once per year.

Trouble Shooting

Tools Essential for Trouble Shooting:

1. Furnace Owners/Installation Manual
2. Circuit Tester/ Volt Meter
3. Drill with 5/16in nut runner

Before attempting any trouble shooting:

1. Check your outlet or wiring to the breaker box to insure proper polarity and grounding.
2. Check the flue for any blockage.
3. Clean the burn pot.

Circulating the Blower Check:

The factory setting for the blower is to come on at 170°F and off at 130°F.

Find the blower limit control. Locate the button and place it to the "ON" position. If the blower fails to come on, the first step is check the power source. If the power source is OK, you will need to make sure all wire leads are properly connected. If the blower still fails to run, replacement is necessary.



Relighting the Furnace:

Refer to " Burning the Snyder Corn Furnace" on pg.12.

Related Problems Due to Incorrect Installation/ Adjustments

Problem: Incomplete combustion, unburned fuel.

Solution: 1. Check the chimney. Is it drafting? Is the chimney direct vented? Is it a tight basement? What is the fuel moisture? Check if the feed auger pipe is more than 3 turns in.

Problem: Fuel burns too quickly and may have difficulty holding a fire on pilot.

Solution: 1. Check for an over drafting chimney by using a draft gauge. To solve over drafting, use the following procedures.

Masonry Chimney:

Cover the top with a plate and mount a 4" cap. If it is still not slowed down use a barometric damper.

Problem: Smoking.

Solution: Make sure the chimney is not direct vented on a windy side of the house. Also check gaskets to insure proper sealing. Adjust damper opening, it may be too far closed. Is the heat exchanger clean? Is the chimney clean.

Problem: Auger Squeaks.

Solution: Possible build up of carbon on the end of the auger, where it enters the burn pot.

Problem: Decrease in heat output.

Solution: Thoroughly clean the heat exchanger. Did you start using different fuel?

Problem: Combustion blower will not engage in start position.

Solution: Check the power to the furnace. Check with a voltmeter the leads from the blower motor.

Problem: After the furnace ignition and operating temperature is reached, the auger motors will not engage.

Solution: Check the power to the furnace. Turn the thermostat to the highest setting. Unhook the thermostat wires and run a jumper between the poles. Check for power at the fan load switch. If power indicated check for power at the fan limit switch. If power indicated, check for power through the low limit switch. If power indicated check for power at the thermostat relay. If power indicated, check the 24 volt terminals at the transformer. If power is indicated check power to normally open switch. If power is indicated check for power to the gear motors.

Problem: The auger motors engage in "START" position at operating temperature, but will not engage in the "ON" position.

Solution: Bad wire connections. Faulty toggle switch

Problem: Furnace blower will not run.

Solution: Place the blower limit control in "Manual" mode. Check connection to blower and blower limit switch.

Operator Related Problems

Problem: Furnace will not feed fuel.

Solution: Is there fuel in the hopper?

Fuel Related Problems

Symptoms of Poor Fuel:

1. Firepot overflows as a result of high moisture content.
2. Lack of heat.
3. Excessive ash build-up.
4. Incorrect size.



Warranty

! Warranty valid only when purchased from an authorized Snyder Corn Furnace Dealer!

The Snyder Corn Furnace is warranted against defects in workmanship or material under normal use and maintenance for a period of 1 year from the date of installation or a period of 18 months from the date of sale from Snyder Corn Furnaces if the installation date cannot be verified. In addition to the 1 year warranty there is a 5 year extended, pro rated, on the heat exchanger and burnpot. **Snyder Corn Furnaces are sold as is without warranty to the original buyer, except for a 1 year replacement parts only warranty against manufacture defects.** Your warranty does not cover labor, misuse, abuse or damage in shipping. Assembly, labor, disassembly and reassembly are not the responsibility of Snyder Corn Furnaces. Registration must be completed and sent in within seven (7) days of purchase with a copy of your receipt to validate the warranty. No refunds or exchanges.

NOTE: If there is any shipping damage to your unit, you must report this to the delivery company immediately; you must file a claim with the delivery company.

Within 1 year of purchase, Snyder Corn Furnaces will replace any defective part at no charge plus a \$10.00 shipping and handling fee after the consumer sends back the defective warranty part to Snyder Corn Furnaces. After 1 year from the date of purchase or 18 months (If the installation date cannot be verified), replacement parts may be purchased from Snyder Corn Furnaces plus a \$10.00 shipping and handling fee. When warranty is confirmed, Snyder Corn Furnaces will ship all parts via DHL ground only. For replacement parts, please call Snyder Corn Furnaces toll free at 866-658-7300 or email parts@wildfiremotors.com

NOTE: Any and all modifications to the furnace will void the manufactures warranty. Defective parts are subject to be recalled by Snyder Corn Furnaces.

Disclaimer:

Wildfire Motors disclaims the warranty of merchantability and fitness for any particular use. This disclaimer shall be effective as to all claims of any kind made by or through any wholesaler, retailer, consumer or any other persons or entity. Some states do not permit this disclaimer of implied warranties. Hence, this disclaimer may not apply to you.

Limitation of Remedies:

Snyder Corn Furnaces are sold as is without warranty to the original buyer, except for a 1 year replacement parts only warranty against manufacture defects. Consumer's remedy is limited to replacement parts only and in no event shall exceed the purchase price. Absolutely no returns or exchanges. Incidental, consequential and/or indirect damages are expressly disclaimed. NO person or entity is authorized to alter, amend or increase this limited

Warranty Validation:

Please fill out this form and mail it in to Snyder Corn Furnaces, 11 Technology Way, Steubenville, Ohio 43952 to register your warranty.

Name			
Address		City	
State	Zip	Dealer Name	
Model #		Date of Purchase	
Address	City	State	Zip

