DS STOVES

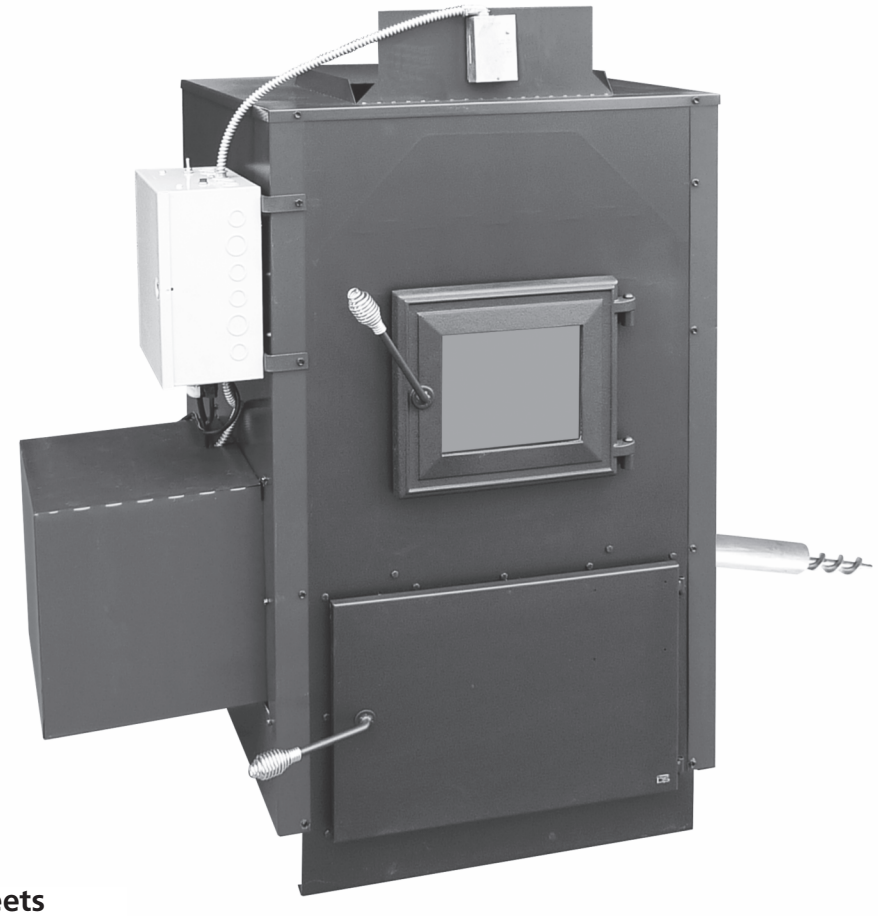
Do Not Discard This Manual

DS Stoker Furnace

High Efficiency Auger Fed Rice Coal Stoker Furnace

Model SF250

OWNER'S MANUAL



This Furnace meets
U.S. Test Standard UL 391
CAN/CSA-B366.1

MADE IN USA
By
D.S. MACHINE SHOP

Before you install or operate a DS Stoker Furnace, you must:

- **Read all instructions carefully**
- **Install smoke and carbon monoxide detectors.**

ALL FURNACES MUST BE INSTALLED BY A NFI CERTIFIED SPECIALIST AND PLUMBED BY A QUALIFIED LICENSED PLUMBER OR D.S. IS NOT RESPONSIBLE FOR WARRANTY

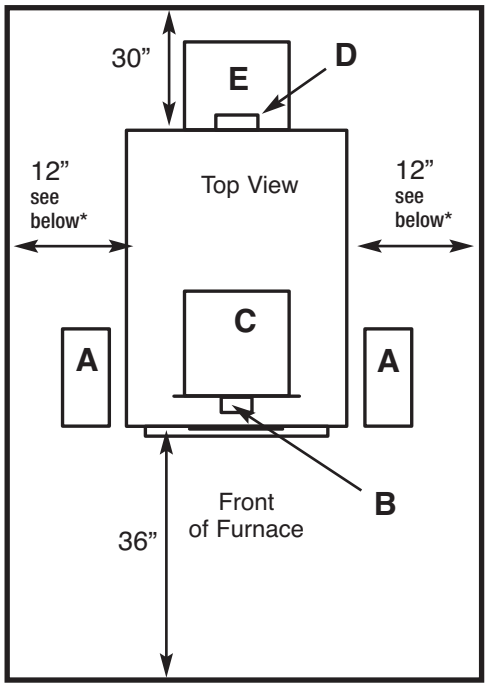
Safety Instructions

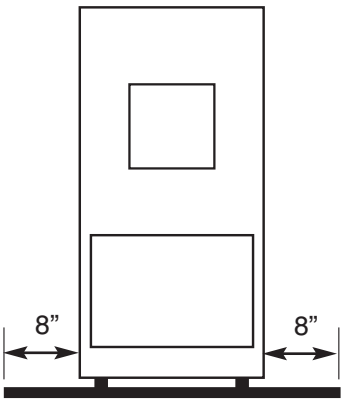
1. Read all instructions carefully before installing or operating any D.S. Furnace.
2. **You must install smoke and carbon monoxide detectors before you install or operate any furnace. Check your local codes, this installation must comply with their rulings.**
3. Never leave furnace doors open when unattended
4. Install a barometric damper in your chimney system.
5. Do not hook up a coal furnace to an aluminum type B gas vent. Use a code approved Class A chimney that is equal or greater than the exhaust on the furnace, and a minimum of 20' high.
6. On all new installs connecting to an existing chimney, a level 2 chimney inspection must be done by a certified chimney sweep.
7. Clean chimney before installing furnace. If there is creosote attached to the liner you could create a serious chimney fire.
8. Never leave children unsupervised when they are in same room as furnace. Provide a sturdy barrier to keep children and pets a safe distance from the furnace, or they could get severely burned.
9. Keep furnace area clear from all combustible materials, gasoline, and other flammable vapors and liquids.
10. Do not burn garbage, gasoline, drain oil or other flammable liquids in or around furnace.
11. Do not operate furnace with fire or ash removal door open.
12. Use the required floor protection as shown on page 3.
13. Check the clearance to combustible walls and floors. (see page 3)
14. Do not allow anyone who is unfamiliar with the furnace to operate it.
15. Spend some time with your furnace to become well acquainted with the different settings and how each will affect its burning patterns. It is impossible to state just how each setting will affect your furnace because of variations in each installation, and chimney drafts.
16. Be extremely careful when removing the furnace ash pan. It can get very hot!
17. Make sure your single wall chimney connectors have at least 3 screws per joint.
18. Always use a mixing valve when hooking up a domestic coil.
19. The area in which the furnace is located must have an adequate amount of air for combustion. Open basements without storm windows or tight doors generally provide adequate air infiltration. If the furnace is located in a separate room with a tight door ventilation must be provided to and open area within the building or to the outside. If the building is of tight construction with exhaust fans, an outside air supply that is ducted into the furnace room may be required.
20. Keep all covers and shields in place while stoker is in operation.
21. Turn off and disconnect power before disassembling pot, performing any maintenance or repairs.
22. Use #641 Seal-It-Right caulking to seal all joints between furnace and auger pipe and any connections to eliminate any carbon monoxide escaping furnace pot area. Carbon Monoxide can cause sickness or death.
23. Do not operate furnace with a fuel draft exceeding -0.06 In. Water Column / 14.93 PA.

Locating Boiler

1. The furnace must be placed on a solid non-combustible floor. If you have a combustible floor it is required to use a floor protector per UL 1618.
2. It is recommended that the furnace be centrally located.
3. The most important consideration in installing your furnace is adequate clearance between the furnace and any combustible surface. A furnace that is placed too close to a wall or to furniture can cause a fire. See UL safety plate on furnace for clearances.
4. The type 1 floorboard must extend at least 16" beyond the front and 8" of the back, and sides, and must extend under and 2" beyond either side of the single wall chimney connector if it's elbowed towards a wall.
5. The furnace must have its own flue. Do not connect this unit to a chimney flue serving other appliances.
6. Connection of the furnace to the chimney should be made as directly as possible (6 feet maximum

horizontal) and not more than two bends. No reduction in flue pipe below the exhaust diameter should be used. The pipe connecting the furnace to the chimney should be at least 24 gauge. Thicker gauges are available and will resist corrosion longer and need fewer replacements. Slope the flue pipe back towards the heater, 1/4" per foot of horizontal run. That way if any condensation forms in the pipe it will be carried back into the heater. The connector pipe should be installed so that the upper pipe section fits inside the lower section. This way any condensation building up inside the pipe will stay inside the pipe as it flows down the inside surface. Horizontal pipe runs should have the pipe seams turned up





Floor Protection
8" on back & 2 sides, 16" on front

A - Optional Control Box Location
B - Limit Switch
C - Hot Air Outlet
D - 8" Exhaust
E - Cold Air Return Box

Particular attention should be paid to the point where the flue passes through a wall or ceiling. This penetration should always be made with a thimble, insulated pipe, and then proper accessories following manufacturers instructions. Chimney connectors must not pass through the ceiling, concealed spaces, or enter the chimney in the attic, unless proper clearance or insulated pipe is used following manufacturers instructions. REMEMBER that all single wall chimney connector sections should be connected with at least 3 sheet metal screws per joint. A fire in the stack may cause vibration and poorly fastened piping may come apart causing an extreme fire and smoke hazard. Do not extend single wall chimney connector past the inside edge of the flue liner. If you have a manufactured stainless steel chimney, attach single wall chimney connector to single wall chimney connector adapter. Where the pipe connects to a masonry chimney, the flue to the chimney should be larger than the single wall chimney connector so you can insert the pipe out to the inside edge of the chimney, but not past. Then seal as tight as possible and cover with a trim collar.

Minimum Clearance to Combustibles

Control side to combustibles	21"
Auger side to combustibles	12"
Back to combustibles w/single wall stove pipe	30"
Back to combustibles w/double wall stove pipe	18"
Top to combustibles	18"
Front to combustibles	36"
Single wall stove pipe to combustibles	18"
Double wall stove pipe to combustibles	6"
Top of plenum to ceiling	2"

CAUTION:
Keep furnishings and other combustible materials away from the boiler.

Chimney Requirements

Use an 8" Class "A" approved chimney. Refer to manufacture's instructions.

The minimum height of a chimney system for the D.S. Furnace is 20 feet. The chimney must exceed the roof of a house at a minimum of 3 feet at any point of exit. In a pitched roof installation the chimney must be 2 feet higher than anything within a 10 foot radius of the chimney. It is important to have a chimney draft of -0.06 water column. It is required to abide by the manufacturer's instructions on Class A chimneys as well as local building codes. It is not recommended to build a chimney on an addition that is lower than the main part of your house. Do Not extend the single wall chimney connector past the inside of a masonry chimney liner. Never connect this unit to a chimney serving another appliance.

Should you have a problem with inadequate draft you should see page 15.

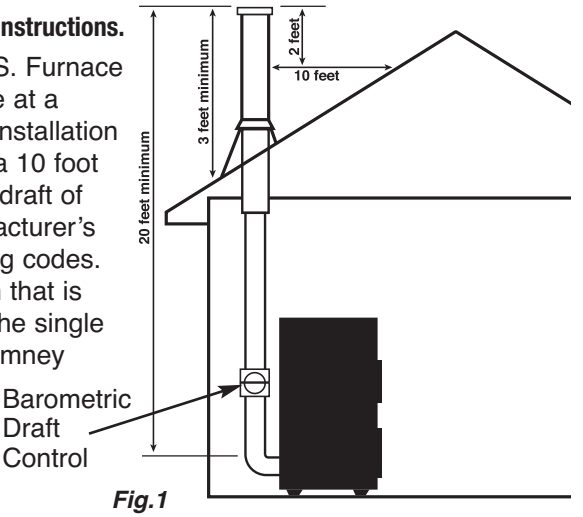
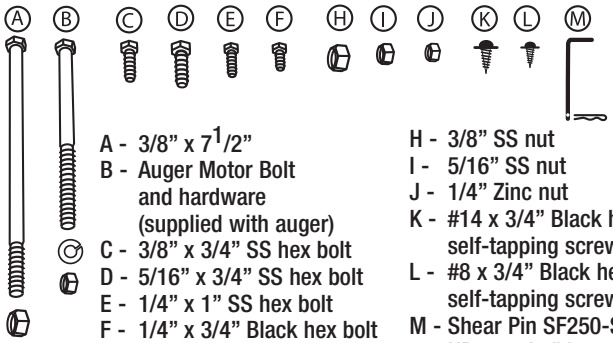


Fig.1

Installation Instructions

Chart 1



A - 3/8" x 7 1/2"
B - Auger Motor Bolt and hardware (supplied with auger)
C - 3/8" x 3/4" SS hex bolt
D - 5/16" x 3/4" SS hex bolt
E - 1/4" x 1" SS hex bolt
F - 1/4" x 3/4" Black hex bolt
H - 3/8" SS nut
I - 5/16" SS nut
J - 1/4" Zinc nut
K - #14 x 3/4" Black head self-tapping screw
L - #8 x 3/4" Black head self-tapping screw
M - Shear Pin SF250-SPIN 1/8 HR round 2" long with 0.04 x 0.8 hairpin

1. Set on noncombustible level hard surface prepared for 850 lbs
2. See Label or page 3 for clearance to combustibles.
3. When installing screws, nuts, bolts and pipes, it is always important to use an anti-seize compound to aid in future removal.
4. Assemble side ash slides (2 pcs part #SF250-RLAS) to inside control side mounting plates (part #'s SF250-ASMP & SF250-CSMP) using 4-¼ x ¾ (F) Black hex bolts and 4-¼" (J) Zinc nuts. Assemble back ash slide (part # SF250-BKAS) to the back baffle of stoker base. Using 2-¼ x ¾ (F) Black hex bolts and 2- ¼" (J) Zinc nuts. Assemble front ash slide (part #SF250-FTAS) to front panel of stoker base. Using 2- ¼ x ¾ (F) Black hex bolt and 2- 1/4" (J) Zinc nuts. See Fig. 2.

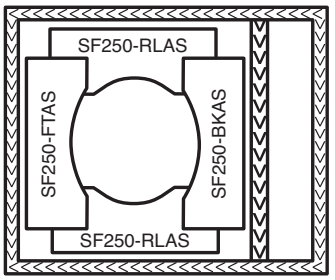


Fig. 2

5. Determine which side of furnace your coal hopper or coal bin will be. Else right or left side. The coal hopper side is called the auger side of furnace in this manual. The side opposite the coal hopper is called the control side of furnace
6. Install (part #SF250-ASMP) to auger side of furnace. Using 8 - 5/16x3/4 (D) SS hex bolts and 8-5/16" (I) SS nuts. See Fig. 3.
7. Assemble pot assembly (part #SF250 pot-assem) to inside of control side mounting plate (part #SF250-CSMP) using 4-5/16x3/4 (D) SS hex bolts and 4-5/16 (I) SS nuts. See Fig. 3.
8. Attach snap disc conduit with 90º connector to #SF250-CSMP and insert snap disc wiring through snap disc conduit. See Fig. 3.

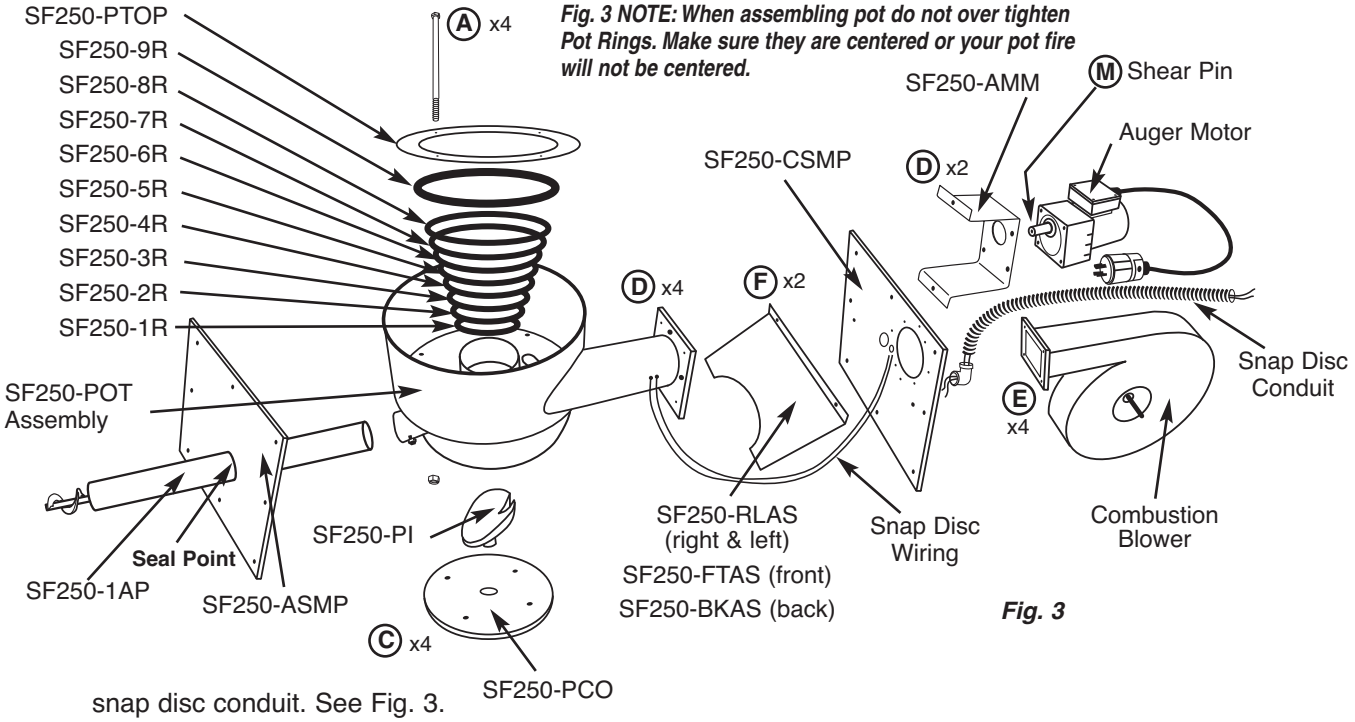


Fig. 3 NOTE: When assembling pot do not over tighten Pot Rings. Make sure they are centered or your pot fire will not be centered.

Fig. 3

9. Assemble auger motor to auger motor mounting bracket (part #SF250-AMM) using 4-bolts & nuts provided with auger motor. Install part #SF250-AMM to outside of part #SF250-CSMP using 2-5/16x3/4 (D) SS hex bolts and 2-5/16" (I) SS nut. See Fig. 3.
10. Insert standard auger pipe (part #SF250-1AP) into stoker pot inlet and tighten 2-5/16 x ¾ (D) SS bolts. See Fig. 3.

Installation Instructions

11. Disassemble Pot Ring #SF250-PTOP from pot assembly. Install part #SF250-CSMP on control side of furnace using 8-5/16 x ¾ (D) SS Hex bolts and 8-5/16" (I) SS nuts. Insert short auger pipe through inside of stoker furnace and out the 2-7/16" hole of part #SF250-ASMP. See Fig. 3. Reassemble Pot Ring #SF250-PTOP to pot assembly. See Fig. 3 Note.
12. Install electrical control box on the control side of furnace using 2-#14 x ¾ (K) self tapping screws. See Fig. 4

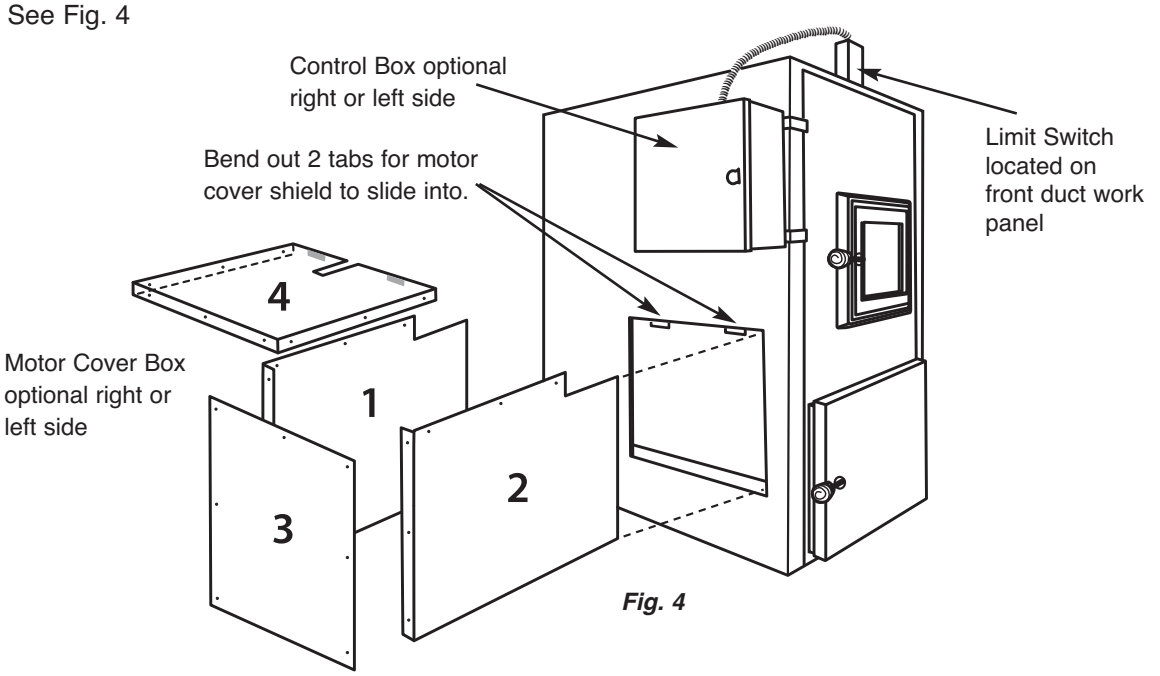


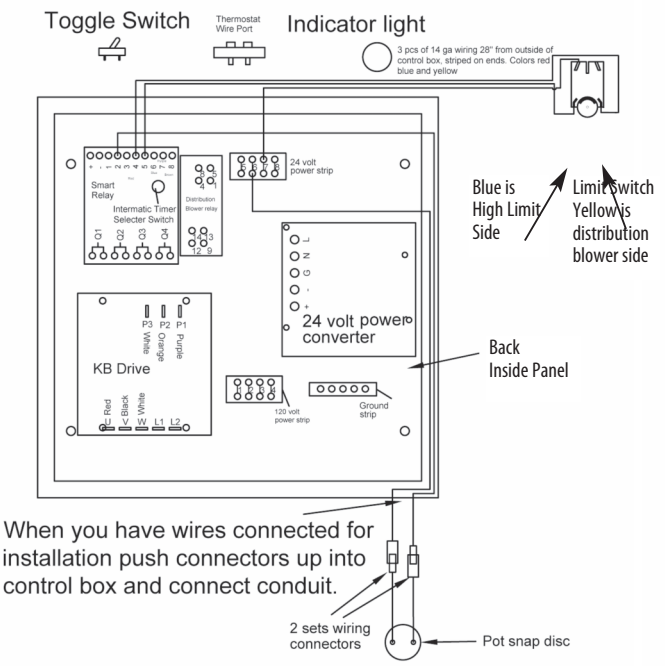
Fig. 4

13. Remove pot insert part #SF250-PI from bottom of pot see Fig. 3, page 4. Insert main auger through short auger pipe on auger side of furnace and attach to auger motor on control side of furnace using shear pin (M). See page 5, Fig. 3. Re-install pot insert. Note: You must remove pot insert from pot bottom to install or remove short auger.
14. Seal all joints where auger pipe exits furnace, and where pipe coupler is used for 5' and 8' auger extension option, seal both ends of pipe coupler as well as where you enter your hopper or bin. Use #641 Seal-It-Right caulk. Provided with furnace. See Figs. 3, 14, 15, 16.
15. Install limit switch on top plenum of furnace by hot air duct work outlet see Fig. 4. See page 6 for limit switch wiring diagram.
16. Assemble motor cover box using #8 - 1/2" screws provided with unit. You must bend out the tabs on the control side of furnace for the motor cover box tabs to slide into. See Fig. 4.
17. Assemble filter box for back of unit. Following instructions with filter box. You can assemble filter box to have filter on right or left side of furnace. Do not install top of filter box until filter box is screwed to back of unit. Screw filter box to back of unit, do not completely tighten the 2 top screws because you need room to slide the top of filter box in behind these screws. Install blower on back of unit, connect conduit from electrical box to hole in the top of filter box. Connect the 5 wires in conduit to the 5 wires on blower using the 5 wire nuts in hardware bag provided with the furnace, connect white wire to purple wire, green wire to green wire, red wire to red wire, blue wire to yellow wire and black wire to black wire. Install top of filter box and tighten top 2 screws on back accessing thru filter box opening. Install 20" x 20" pleated filter.
18. Install a barometric damper in your chimney system. With furnace operating at normal temperature adjust barometric damper so that you have about a negative .05 or negative .06 inches of water column in your single wall chimney connector approx. 12" below barometric damper. See page 3, Fig. 1.
19. Have a licensed electrician connect all your wiring. Make sure all power is disconnected from furnace before opening control box. Connect limit switch and snap disc wiring to control box as shown in wiring diagram. See Fig. 5.
20. Hook up return duct to return box at back of unit.
21. Install thermostat and hook up thermostat wire to thermostat wire connectors on control box.

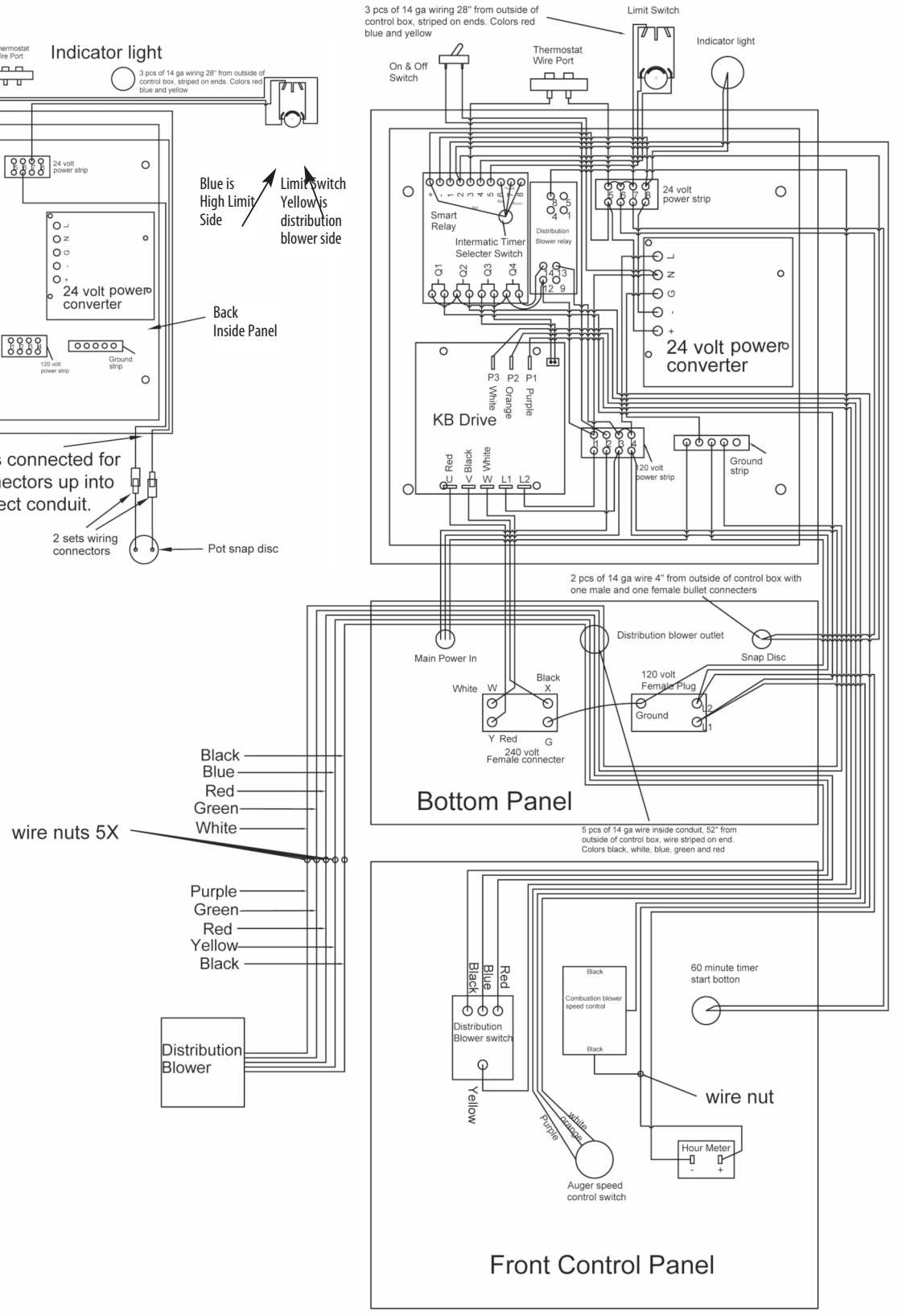
FURNACE MUST BE WIRED BY A QUALIFIED LICENSED ELECTRICIAN OR D.S. IS NOT RESPONSIBLE FOR WARRANTY

Installation Instructions

Limit Switch and Pot Snap Disc Wiring Diag

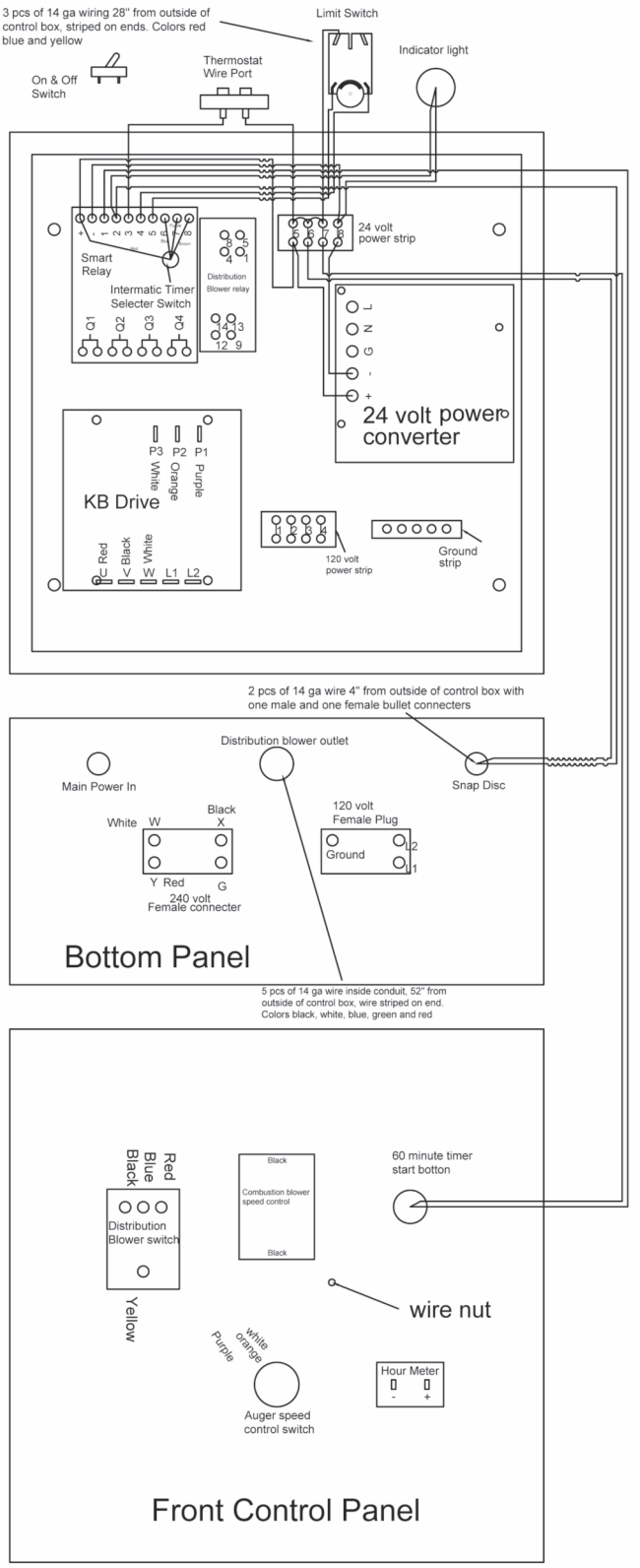


Wiring diagram with all wires included

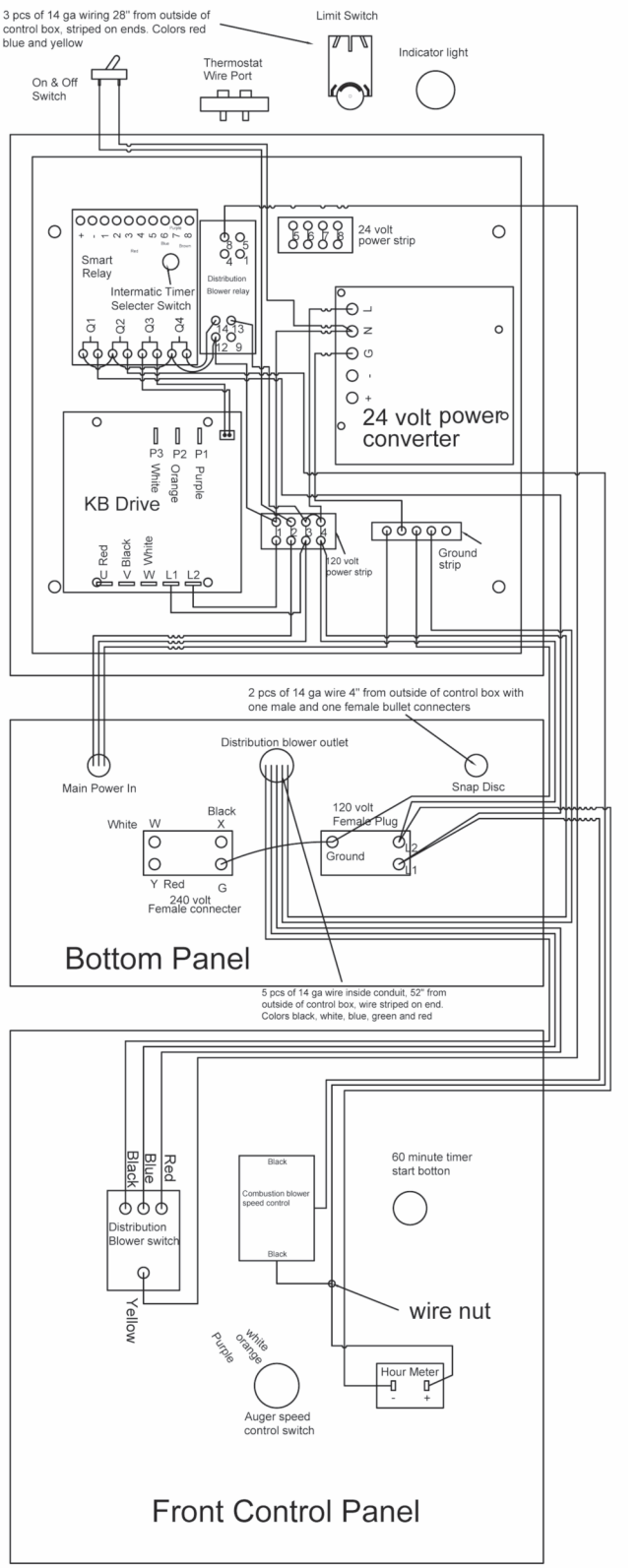


FURNACE MUST BE WIRED BY A QUALIFIED LICENSED ELECTRICIAN OR D.S. IS NOT RESPONSIBLE FOR WARRANTY

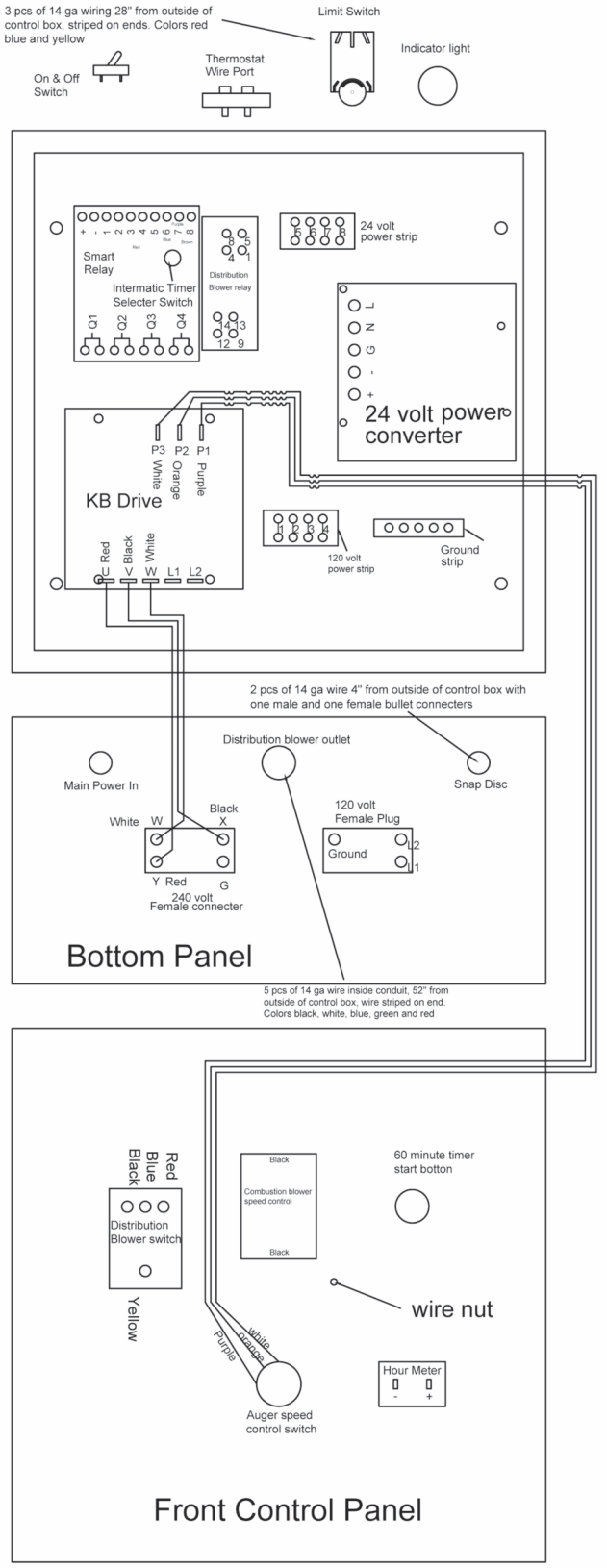
24 Volt Wiring Diagram



120 Volt Wiring Diagram



240 Volt Wiring Diagram



YOU MUST INSTALL A SMOKE AND CARBON MONOXIDE DETECTOR BEFORE INSTALLING THIS UNIT

Typical Installation

Below is a typical way to install a stoker add-on furnace. In case of power outage you should always run the hot air plenum up so that it can circulate by gravity. The supply duct must be constructed of material with a minimum 250º temperature rating.

If you are using this unit as an add-on furnace, locate as close to the central furnace as possible.

NOTE: Do Not use a chimney serving another appliance!

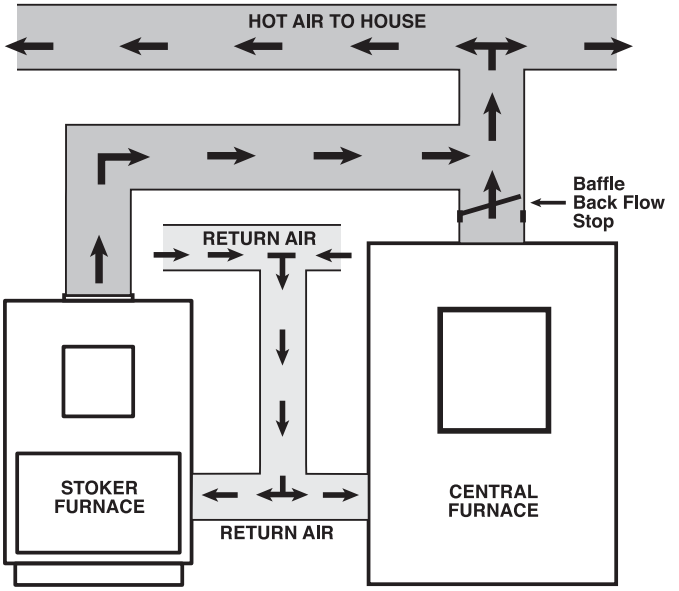
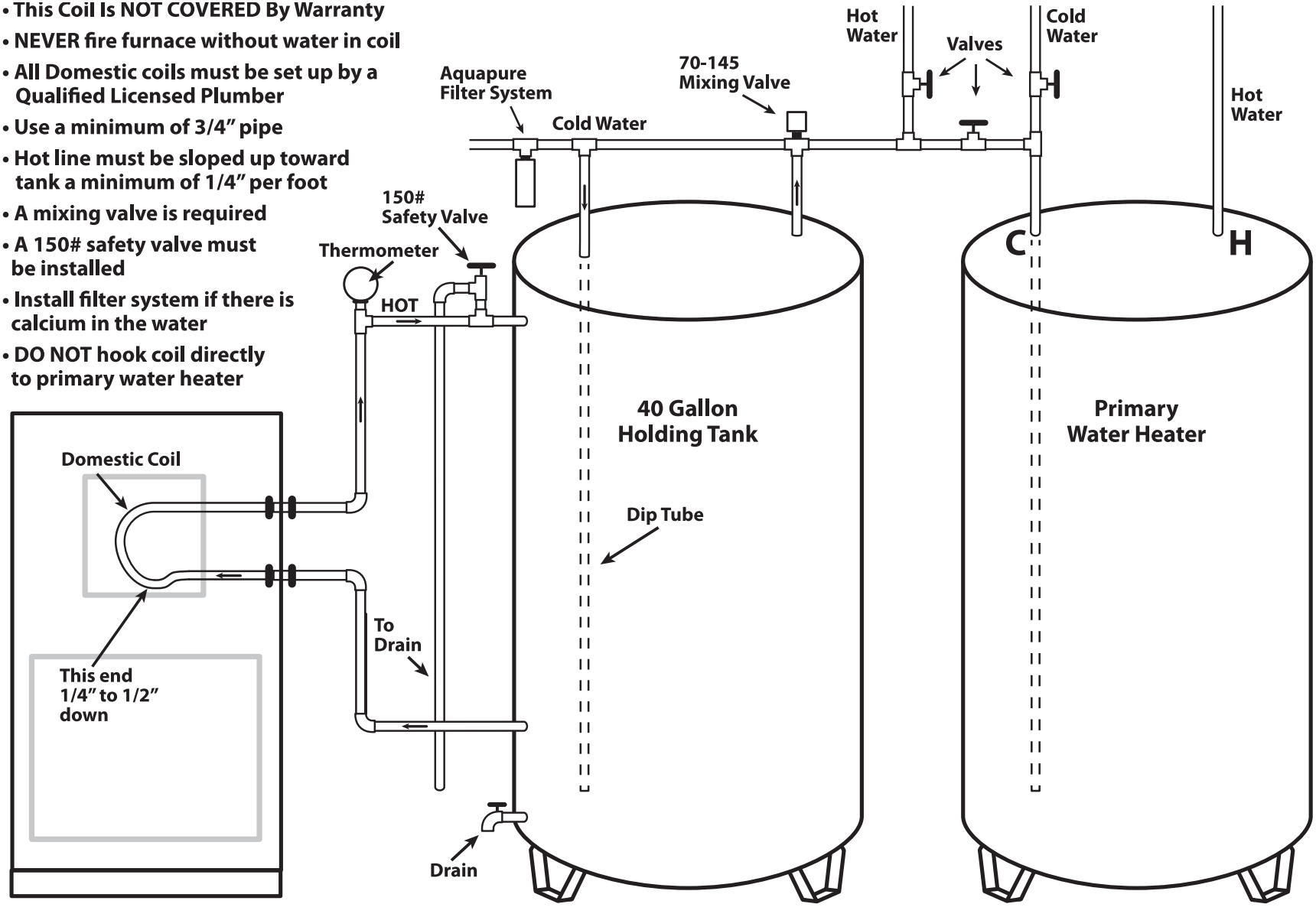


Fig. 9

Optional Domestic Coil Hook Up

- This Coil Is NOT COVERED By Warranty
- NEVER fire furnace without water in coil
- All Domestic coils must be set up by a Qualified Licensed Plumber
- Use a minimum of 3/4" pipe
- Hot line must be sloped up toward tank a minimum of 1/4" per foot
- A mixing valve is required
- A 150# safety valve must be installed
- Install filter system if there is calcium in the water
- DO NOT hook coil directly to primary water heater



– Must have Aqua Pure or any water softener system when using coil to heat water –

Operating Instructions

Starting a fire

1. Turn switch on top of control box to on.
2. Push 60 minute timer start button. See page 7, Fig. 7 for start button location.
3. Turn on auger. Set auger speed to high setting and fill stoker pot to top ring. Turn off auger.
4. Bury stoker starter package in center of pot with just the fuse exposed. Or wrap shavings or saw dust in news paper and partially bury in coal.
5. Use torch or lighter to ignite stoker starter or newspaper.
6. Turn combustion blower on high.
7. Wait till well started then add more coal to top of shavings and newspaper package.
8. When you have blue flames coming off of stoker pot, turn on auger and set combustion blower and auger speed setting to desired heat setting. Adjust thermostat to desired heat setting. See Chart 2 below.
9. Must empty ash pan before it overflows. Empty ash pan regularly.

Adjusting The Coal Feed Rate

1 The coal feed rate determines the output of the furnace. See chart below.

2 The coal feed rate is adjusted by changing the RPM's of the auger. This is done by adjusting the auger speed control up or down.

3 You may need two feed rate settings. One for spring and fall and one for winter time. During the heating season, the feed rate will have to be raised to provide sufficient heat for load conditions. This feed rate may cause outfire conditions during the time you are only maintaining pot fire for warmer seasons. See outfire section. It is recommended to record both spring/fall and winter combustion air and coal feed rate settings for easy reference.

Adjusting The Air Supply

1 Whenever the coal feed rate is adjusted, the air supply setting needs to be adjusted as well. See chart below. These are approximate settings and may vary according to draft conditions and coal quality. The numbers on the auger speed control are not intended to coincide with the numbers on the blower speed control.

2 It may be necessary to adjust the air supply a few times to find the desired setting. With a proper adjusted fire there will be approximately a 2” wide ash ring around outside of burner ring with a small dark circle in the center of the pot. This is the fresh coal entering into the bottom center of the pot. With too much air, the fire bed will tend to develop cracks. The dark spot in the center of the pot will disappear. With too little air, the ash ring will be very small, hot and dark, falling off the burner ring into the ash pit and the dark spot at the center ring will be large.

3 Some unburned coal in the ash is normal and indicates a well adjusted fire for maximum efficiency. This amount must be small. Excess unburned coal indicates poor air/feed adjustment or a poor grade of coal. In some cases, what appears as unburned coal may be slate or other foreign material.

Output per hour				Approx. Sq Ft Heating Area	Approx. Sq Ft Greenhouse Heating Area
Auger speed	Blower Speed	Pounds of coal per Hr.	Approx. Input BTU		
1.5	2	7	91,700	1800	900
2	2.5	9.5	124,450	2400	1200
2.5	3.5	12	157,200	3000	1500
3	6	14	183,400	3500	1750
3.5	10	15.5	203,050	4000	2000
4	10	19	248,900	4800	2400
This is only a recommended blower speed setting with each auger speed setting. You may need to adjust your blower speed for your chimney draft and coal quality.					

Chart 2

ALL FURNACES MUST BE INSTALLED BY A NFI CERTIFIED SPECIALIST AND PLUMBED BY A QUALIFIED LICENSED PLUMBER OR D.S. IS NOT RESPONSIBLE FOR WARRANTY

Interval Timer Operations

Interval timer is what keeps your pot fire lit while the thermostat is not calling for heat. You may need a higher setting during spring and fall than you will in colder temperatures.

Set interval timer so that it runs about 2 minutes every hour. Ideally 40 seconds on time for every 20 minutes off time. This is just a suggested starting point. You will need to adjust to your setup. Chimney draft and coal quality play a role in the required run time of your stoker. If your run time is too high your distribution blower may turn on and distribute heat when thermostat does not have a call for heat. When interval timer setting is to low, you will experience an outfire. When this happens you need to increase the on time and decrease your off time.

The following list is on and off time for each Interval Timer Setting.

1. 20 Seconds On – 30 minutes off.
2. 30 Seconds On – 30 minutes off.
3. 20 Seconds On – 20 minutes off.
4. 30 Seconds On – 15 minutes off.
5. 30 Seconds On – 20 minutes off.
6. 40 Seconds On – 20 minutes off.
7. 40 Seconds On – 15 minutes off.
8. 50 Seconds On – 15 minutes off.

Winter Month Operation

During the heating season, the feed rate will need to be adjusted to provide sufficient heat for load conditions. See chart 2 on page 10 for output settings. Interval timer settings should be about 30 seconds every 30 minutes for your peak heating season.

Out-Fire Situation

1. Is power indicator light ON? If light is ON this indicates that the furnace still has power and is trying to function. If light is OFF this indicates that furnace has shut down due to pot out-fire situation.
2. Check shear pin. If sheared, replace shear pin (part #SF250-SPIN) see page 4 Chart 1. Ⓜ
3. A stoker fired furnace must run periodically to maintain a pot fire even though there is no call for heat by the thermostat. This is accomplished by the interval timer. A normal run time in the peak heating season is approximately 30 seconds every half hour. This is a suggested start and times may have to be adjusted to meet conditions and time of year. Due to the wide range in the quality of coal, a timer setting of 2 minutes per hour may produce an acceptable burn. Its an experimental process of timer run times, air and feed settings, with the two main objectives being a proper ash ring (2 inches) and a fire that does not burn deeply into the pot. You may need a spring / fall setting and a winter setting. It is recommended to record your settings for future references.
4. An outfire in the stoker is a more prevalent condition during the spring / fall months. It can happen even though you find nothing wrong with the stoker mechanically.

Snap Disc Function

1. The snap disc is located on the outside bottom of the main pot ring towards the front, behind the front ash slide inside the ash door.
2. The snap disc will sense the temperature at the pot. If the temperature at the pot drops below 90 degrees Fahrenheit the snap disc will shut off. This will shut power off to the unit. You can push the 60 minute timer button to override this snap disc for 60 minutes. This should provide enough time to relight furnace and get the pot temperature above 120 degrees where the snap disc will reconnect and the furnace should function. If it does not function see Out-Fire situation.

Note on Limit Switch settings: The L4064B2236 limit switch has three settings

1. The High Limit Setting: This shuts the stoker off when the limit switch reaches the temperature setting. It overrides all other controls. (Distribution blower will keep running, Stoker will shut down) Factory setting is 215 degrees Fahrenheit.

2. The Low Limit Setting: This turns off distribution blower when limit switch temperature drops below this set point. (Only turns off distribution blower, stoker will still be able to run) Factory setting is 100 degrees Fahrenheit.
3. The Middle Limit Setting: This turns distribution blower on when limit switch temperature rises to set point. Distribution blower will stay on until limit switch temperature drops below the low limit set point. (This only turns on distribution blower. It does not interrupt operation of stoker in any way) Factory setting is 170 degree Fahrenheit.

• **Loss of Draft:** This can occur during hot, humid summer weather, with low fire in burner. Changing the number of minutes of run time per half hour, increasing slightly the coal feed and air settings may help. Thoroughly clean the furnace flue pipe and chimney. Remove fly ash buildup in furnace by removing clean out plates and removing fly ash from furnace. Check to make sure all openings that could infiltrate air from furnace base are sealed either by gaskets or seal it right caulk.

• **Too much Draft:** This is most likely to happen during cold, windy weather where there is no barometric damper installed in chimney pipe. In this situation the fire continues to burn, even though the stoker is not on. Adding a barometric damper and or properly adjusting barometric damper can help. Adjust barometric damper so that you have about a negative .05 or negative .06 inches of water column in your single wall chimney connector between your barometric damper and where single wall chimney connector enters the furnace. Exhaust fans can also cause this problem by drawing air down the chimney, through the burner and out of the housing inlet. This can be corrected by providing adequate outside air openings for both the stoker and the exhaust fan or discontinuing the use of exhaust fan.

Cleaning and Maintenance

• Turn off all power supply or disconnect power cord before attempting any maintenance.

• We recommend that you completely clean out stoker pot immediately after unit is shut off and cooled down for the summer. Take auger out of auger pipe and completely clean out left over coal, this will help reduce corrosion. Spray full inside with vegetable oil. If furnace is located in a damp atmosphere it is recommended to put heat lamp inside furnace to reduce corrosion while furnace is not running.

• Clean out fly-ash every 1,000 hours or at least once annually. You can expect fly-ash buildup behind baffle in the base of unit and under pot rings. (remove pot rings once annually to remove fly ash.) Remove all clean out plates from furnace, (including pot insert clean out on bottom of pot assembly) and remove fly-ash with ash-vac or by just cleaning out manually. Also remove single wall chimney connector from furnace and remove fly-ash. There may be some fly-ash buildup in the single wall chimney connector elbow.

• Check all gaskets and sealer joints for cracks or leaks annually. Replace gaskets or seals as needed.

Coal

1. Use rice sized coal in your stoker furnace. With not more than 10% oversize and not more than 15% under size. Not following these guide lines will result in poor combustion.
2. Avoid using wet coal, this will retard combustion and increase carbon monoxide output.

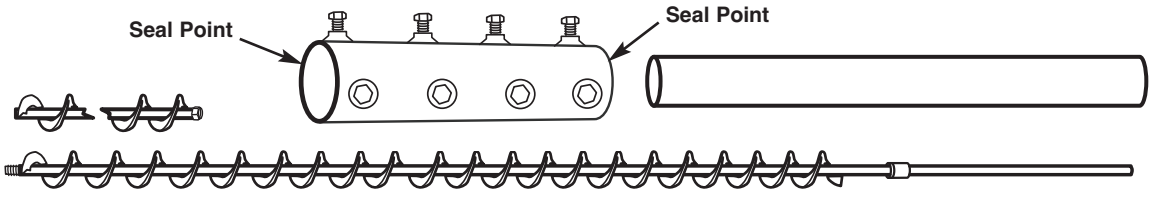


Fig. 14 Example of 5' or 8' Auger Options

Coal Storage

1 - Provide an adequate amount of coal storage for your boiler. Preferably indoors in the form of an optional manufactured coal hopper or coal bin within the same room as your boiler. Ideally your coal bin will be located so that your coal supplier can access your coal bin from the exterior of your building. We recommend that you contact your local coal supplier for recommendations on this matter.

2 - If you purchased the optional 500 lb coal hopper that is available with this stoker boiler it gets attached to the end of the short auger coming out of boiler. This can be located on either the right or left side of boiler. Make sure you put sealant around auger pipe where it enters hopper. Because of carbon monoxide keep hopper lid closed when not loading coal. **(very important)**

3 - Never hook 55 gallon barrel or coal bin to short hopper that gets shipped with boiler, because of carbon monoxide you must add either 5' or 8' auger option For coal bin option we recommend you build a coal bin feed trap see drawing at right. If using a 55 gallon barrel for coal hopper, it must have a sealed lid.

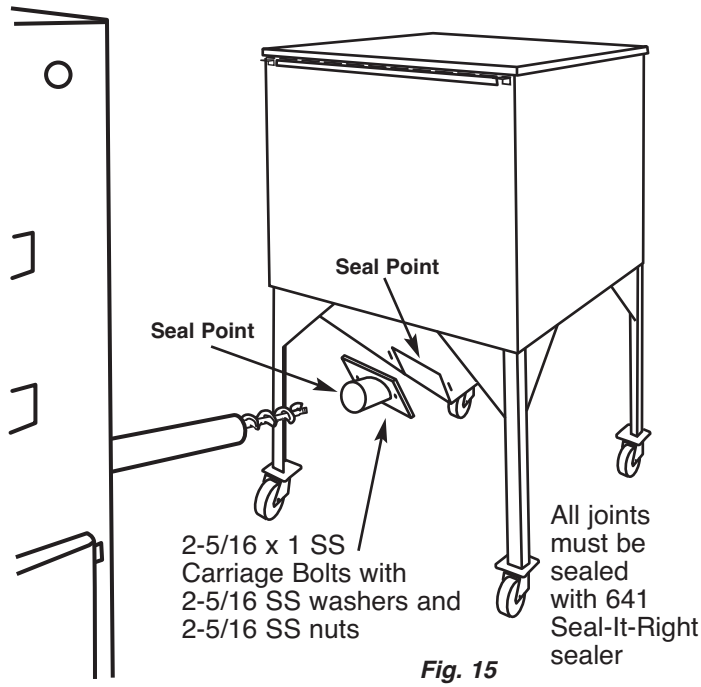
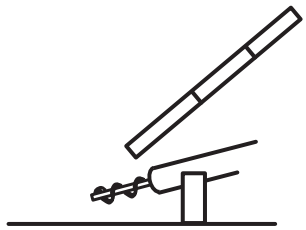


Fig. 15



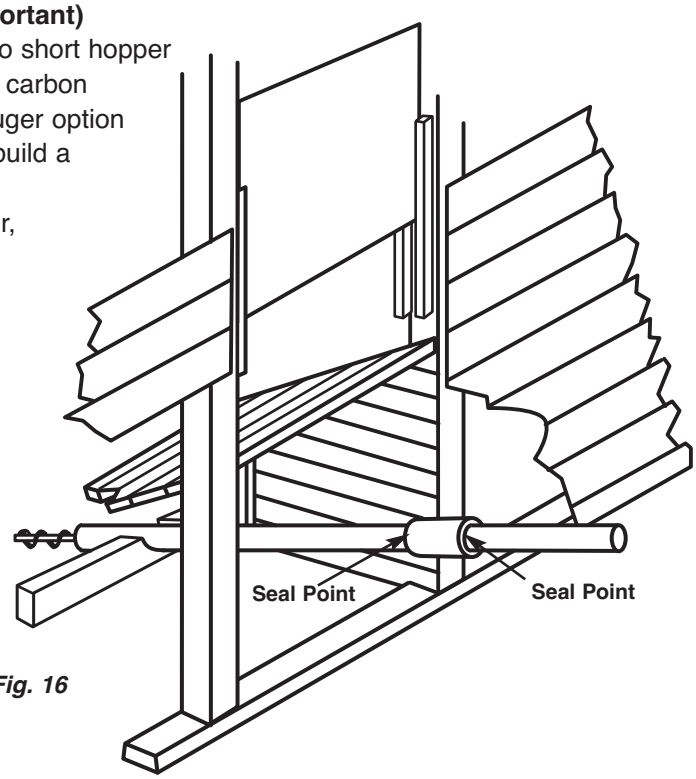


Fig. 16

Parts List

DS Stoker Furnace

1	Cover box	SF250-MCP
1	Ash door	SF250-AD
1	Auger side mount	SF250-ASMP
1	Control side mount	SF250-CSMP
1	Ash pan	SF250-ASHP
1	r/h l/h ash slide	SF250-RLAS
1	Back ash slide	SF250-BKAS
1	Front ash slide	SF250-FTAS
1	Ash door handle	SF250-ASDH
1	Ash door latch	SF250-ADL
1	Auger motor mount	SF250-AMM
1	Energy max door	EM-FD
1	Door glass	EM-GL
1	Baffle Bottom Channel	SF250-BBC
1	C-Cast Middle Baffle	SF250-CCMB
2	C-Cast Outside Baffle	SF250-CCOB

Pot Assembly SF250-POT

1	Pot Ring (bottom ring)	SF250-1R
1	Pot Ring	SF250-2R
1	Pot Ring	SF250-3R
1	Pot Ring	SF250-4R
1	Pot Ring	SF250-5R
1	Pot Ring	SF250-6R
1	Pot Ring	SF250-7R
1	Pot Ring	SF250-8R
1	Pot Ring	SF250-9R
1	Pot Ring (cast iron)	SF250-PTOP
1	Pot Insert (cast iron)	SF250-PI
1	Pot Bottom Clean Out	SF250-PCO
1	Standard Auger	SF250-3A
1	5' Auger	SF250-5A
1	8' Auger	SF250-8A
1	Standard Auger Pipe	SF250-1AP
1	5' Auger Pipe	SF250-SAP
1	8' Auger Pipe	SF250-LAP
1	Auger Motor Bushing	SF250-AB
1	Auger Shaft Shear Bolt	SF250-ASSB
1	Auger Shaft Shear Bolt Hair Pin .04 x .8	SF250-HPIN

Sheet Metal

1	Top Sheet Metal	SF250-TSM
1	Left Sheet Metal	SF250-LSSM
1	Right Sheet Metal	SF250-RSSM
1	Back Sheet Metal	SF250-BSM
1	Motor Cover shield	SF250-MCP
1	Auger Side Cover Plate	SF250-ASMPC
1	Return Box Top	SF250-RBT
1	Return Box Filter Side	SF250-RBFS
1	Return Box Side	SF250-RBS
1	Return Box Bottom	SF250-RBB
1	Return Box Back	SF250-RBBK
2	Exhaust Trim Ring	SF250-ETR

Furnace Controls and Electrical

1	Limit Switch	KKLS
1	Smart Relay	ASR-B24DC
1	24 volt Power Converter	RS-50-24
1	Snap Disc (pot)	SF250-ESD
1	Auger Motor	SF250-EAM
1	Auger Speed Control	SF250-EASC
1	Blower Motor	SF250-EBM
1	Blower Speed Control	SF250-EBSC
1	Hour Meter	SF250-EHM
1	On/off Toggle Switch	SF250-ETS
1	Green Power Indicator Light	SF250-EPIL
1	110/240V Electrical Convertor	SF250-EC
1	Complete Blower	SF250-CB

Gaskets

1	Fire Door Gasket ¾ x 56” rope gasket	3448-Kit
1	Fire Door Glass Gasket 7/8 x 46” window gasket - 46”	78-WG
1	Ash Door Gasket ¾ x 77” rope gasket	3475-Kit
2	Auger and Control side panel gaskets 7/8 x 57” window gasket - 57”	78-WG

Trouble Shooting

Problem 1 - Inadequate heat being delivered to your home
Solution:
- Is furnace the recommended BTU size for your home?
- Check home insulation – is it adequate?
- Is coal feed rate and draft blower at optimal setting for your situation.
- Do you have a good draft of minus 0.06 water column? If not, check and clean chimney and single wall chimney connector.
- Do you have the appropriate amount of duct work and return vents installed?
- Do you have return duct connected to return box of distribution blower? If not connect it.

Problem 2 - Poor Draft
- Check and clean fly ash from furnace, chimney and single wall chimney connectors
- Check chimney draft – there should be at least a minus 0.06 inch of water column. This service is provided by a certified chimney sweep or a professional installer.
- If you have a barometric damper? Is it installed properly? Read the instructions.
- Check ash pit. If it is too full - empty it.
- There might be a cracked flue liner. If so you need to reline chimney before further use of the furnace.
- Make sure no other fuel burning devices are connected to the chimney impairing the draft.
- Make sure all of chimney mortar connections are airtight.
- Check chimney for possible down draft caused by taller surrounding trees or objects.
- Make sure clean-out door in the chimney is closed tight if you have one.
- When start up, the chimney is cold so you will have less draft.
- Check and clean chimney and single wall chimney connectors

Problem 3 - Odor from first fire
- Uncured paints and oils will create an odor that can last a few hours. Odors can continue to develop if you make hot fires until the paint cures.

Problem 4 - Out-Fire (see Out-Fire section page 11)
- Is power indicator light: On
- Is shear pin sheared
- Timer operates too infrequently.
- Timer “ON” operation too short. Chose timer setting with longer on time and shorter off time.
- Excessive draft
- Too little draft
- Too much combustion air
- Not feeding coal
- Stoker will not run
- Exhaust fan in building
- Control failure
- Too little coal feed

Problem 5 - Carbon Monoxide
- Burning wet coal
- Poor draft due to partially choked chimney flue (see poor draft section above)
- Check all gaskets and seals on furnace and auger fittings for cracks or leaks
- Coal hopper lid not sealed

Problem 6 - Heat in auger pipe
- Increase auger feed rate
- Decrease combustion blower speed

Limited Warranty

LIMITED WARRANTY

DS Stoker Furnace

Please read this warranty carefully!

D.S. Stoves warrants this DS Stoker Furnace against premature failure of any component due to workmanship quality or materials. So long as it is owned by the original purchaser, subject to terms, limitations and conditions herein set out. **Soft coal is prohibited in any DS Furnace or Boiler.**

	Time Period
1 - Furnace Steel Structure	Five Years
2 - Pot / Auger	Five Years
3 - Doors	Five Years
4 - Pot and Auger Components (bushings and wear plates)	One Year
5 - All Electrical Components	One Year

D.S. Stoves door glass, gaskets, paint or enameled parts, and furnace cement are not covered by this Limited Warranty.

D.S. Stoves will replace, at no charge to the owner, any defective part which D.S. Stoves determines affects the operation of the furnace. The owner is responsible for labor and costs to complete the repair. The owner may at his option and with D.S. Stoves approval, have the furnace shipped to the factory for repair.

All labor and material costs for repair at the factory will be borne by D.S. Stoves. The owner is responsible for all shipping costs.

Failure to follow installation and basic operation recommendations written in this manual, negligence, abuse, or modifications to the furnace and over firing 600 degrees outside furnace temperature maximum, as determined by D.S. Stoves or its authorized dealers will also void your warranty.

This Limited Warranty is in lieu of all other warranties either expressed or implied. (US Environmental Protection Agency. The furnace is only for burning rice coal. Use of any other solid fuel except for Coal ignition purposes is a violation of federal law.)

D.S. Stoves is not responsible for accidents due to improper installation or failure to follow instructions.

– D.S. Stoves
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Gordonville, PA 17529
717-768-3853