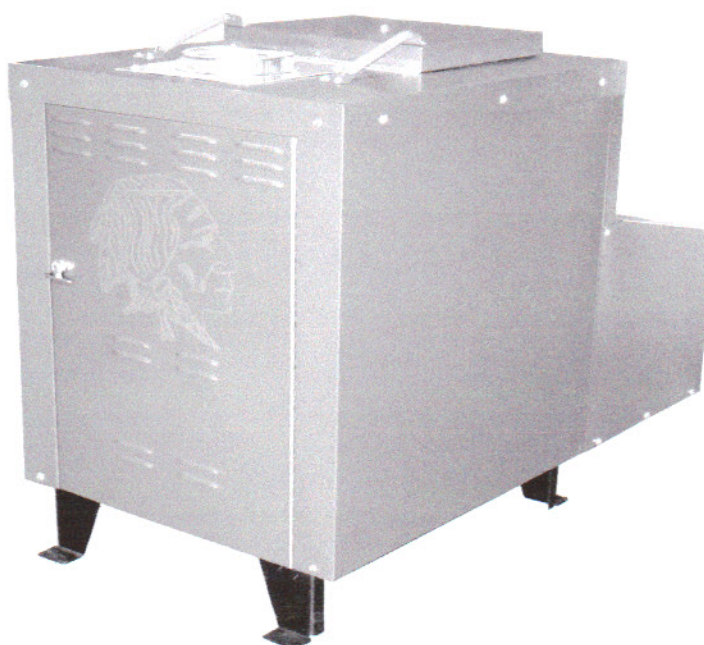


**\$9.95**

# **Fire Chief**

**Outdoor Woodburning Furnace  
Model FCOS1600  
Owner's Manual**



**VOLUME I**

**June 2010**

Manufactured By:

**MADE  
IN  
USA**

**Fire Chief Industries  
7280 Old State Route 21  
Barnhart, Mo. 63012  
1-800-875-4788 or 636-942-4747**



# **“Save These Instructions”**

## **Congratulations!**

You have selected the finest quality outdoor wood burning furnace, manufactured with pride in the USA. Please take a few moments to carefully read the owner's manual. By taking the time to familiarize yourself with your new Fire Chief Outdoor Furnace, you will be able to look forward to years of trouble-free, dependable service.

## **Installation**

First: Check Local Codes. The installation must comply with all local rulings and requirements.

- ***This furnace is an outdoor hot air furnace and must be installed according to the manufacturers specifications.***
- ***This furnace must be connected to a grounded electrical circuit.***
- ***This furnace requires a back-up electric generator, 2000 watts minimum in case of power failure.***
- ***Always have a properly installed and functioning smoke detector installed in your home.***
- ***To prevent accidental injury, do not allow anyone who is unfamiliar with the furnace to operate it.***
- ***Spend time familiarizing yourself with your Fire Chief Furnace, especially the different settings and the effect they have on burn patterns. It is impossible to state how each setting will affect your furnace due to variations in settings, fuels and temperatures.***

## **Transportation Damages**

Every effort has been made to insure that your Fire Chief will arrive in perfect condition. Any visible damage should be noted on the freight bill at the time of delivery. If upon unpacking your Fire Chief you find damage had occurred during transit, notify your supplier immediately. Your supplier will advise you as to what actions must be taken to correct the problem.

## **Disclaimer Notice**

The listed BTU rating of your new Fire Chief was obtained under ideal laboratory testing conditions. The actual BTU output you experience may vary somewhat depending on the type, condition and moisture of the fuel used; damper adjustment; chimney type and other variable factors. Therefore, the manufacturer disclaims any guarantee as to the BTU output or capacity of your furnace. Fire Chief Industries will void and disclaim any responsibility for the following: installation of a furnace that has been altered or modified in any way; installation of the furnace other than as instructed in this manual; installation and or use of any component or part not approved by Fire Chief Industries for use on this furnace. Be sure to complete and return your warranty card within thirty (30) days of purchase in order to receive warranty coverage on your furnace.

## **Manufacturer's Notice**

Please be advised that we periodically make changes to improve our products. Therefore the information in this manual may not be completely compatible with your Fire Chief.

**THIS IS AN OUTDOOR  
WOOD BURNING FURNACE  
AND SHOULD NOT BE ALTERED IN ANY WAY!**



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***ALWAYS KEEP YOUR WOOD COVERED YEAR ROUND.  
DRY WOOD WILL PRODUCE MORE BTU OUTPUT  
AND LONGER BURN TIMES.***

## GENERAL INFORMATION

The Fire Chief OS1600 is an airtight central solid fuel outdoor furnace engineered to provide the most viable solution to the ongoing problem of homeowner utility dependence. The OS1600 is designed to accommodate the heating requirements of the average sized home, even during winter's coldest months. Constructed of high grade, heavy gauge steel and is continually welded to assure the utmost in structural strength. The insulated 6 cubic foot firebox will accommodate a log up to 28" length.

The design of the secondary combustion chamber increases fuel efficiency by creating a "secondary burn" of smoke and wood gases before they are vented up the chimney. By sending the gases back through the secondary combustion chamber less fuel is wasted, the furnace burns at a higher efficiency and for longer burn times.

The cast iron door is custom fitted to provide an air tight seal, greatly extending the burn time and insuring maximum efficiency in fuel consumption. The insulated wrap around sides are designed for maximum heat transfer. The weather-resistant service door offers protection for the fuel and ash door from the elements.

For total comfort and convenience, we added a thermostatically controlled 1800 cfm. circulation blower system. The blower draws the cold air from the home, across the heat chamber before going through the hot air duct and returning the warmed air to your home. This fully automatic blower furnishes rapid heat disbursement to your home, minimizing recovery time. Average burn time per load of fuel is six to twelve hours depending on wood type and condition, desired temperature within the home and amount of fuel. We have incorporated all of these features as standard equipment, offering you the most efficient, durable and affordable appliance possible. *Abnormally cold weather could reduce the burn time.*

The FCOS1600 is a wood burning furnace - it can not be turned "off and on" to control the furnace temperature like gas or electric furnaces. Once the fire is established, it has to burn, until it burns itself out.

### INCLUDED WITH YOUR OS1600 FIRE CHIEF FURNACE:

- 1 10"X25' Insulated Flexible Heat Duct
- 2 10" Starter Collars
- 2 Clamps
- 1 12" Starter Collar for Cold Air Return
- 1 Owner's Manual with Warranty Card
- 1 Electrical Control Kit (shipped on top of the furnace)
- 1 Tube of Silicone

### Electrical Control Kit Contains:

- 8 1/4" Bolts
- 4 1/4" Nuts
- 17 #10" Green Screws
- 4 #10 X 3/4" Screws
- 2 #8 X 1/2" Screws (Attached to Fan Limit Control Cover)
- 1 Fan Limit Control (with Wire Conduit)
- 1 Blower Motor
- 1 Blower Housing Cover with Control Center



## GENERAL INFORMATION, cont.

Before beginning your installation, consult with local authorities regarding the codes governing all such installations. **DO NOT** connect your Fire Chief OS1600 Wood Furnace to any flue that services ANY other appliance.

Your Fire Chief OS1600 may be placed outdoors or indoors. If outdoors, it must be placed on a level, non-combustible base, preferably a 4' X 8' concrete pad, as close to the home as clearances to combustibles permit - do not place the furnace more than 40' from the house. The furnace must be connected to a grounded electrical circuit with access to a backup generator (2000 watt minimum). If locating the furnace more than 10' (ten feet) from the home, a minimum of 6' (six feet) of Class "A" HT 2100 All Fuel 6" Chimney Pipe is required. If installing indoors, your furnace must be placed on a non-combustible floor. Air for combustion must be provided into room where furnace is located. Allow air free access to furnace for combustion and ventilation.

**Maintain the following clearances** - Sides of furnace, 12"; Rear of furnace, 31"; Front of furnace, 48"; Heat Duct, 6" for the first 16" from the rear of the furnace and 3" thereafter. Maintain the "10/2 Rule" for the flue - the flue must be 2' (two feet) higher than any part of the building or peak of the roof within a horizontal distance of 10' (ten feet). The 2 ft. height does not include the cap. **REFER TO PAGE 6 FOR COMPLETE INSTRUCTIONS.**

Class "A" HT 2100 All Fuel 6" Chimney Pipe is recommended for optimum performance and must maintain a 2" clearance from combustibles. The OS1600 will ship with an adaptor plate and 4- #10 3/4" galvanized screws with washer and gaskets to match the chimney your dealer supplies. If the adaptor plate provided with your furnace does not fit the chimney your dealer has in stock, please call our toll free number, 800-875-4788 for assistance.

**Important:** *Please keep in mind that different chimney manufacturer's pipe will not interchange with other brands. A tube of high-temp silicone caulk is included with your furnace. Before siliconing the adaptor plate to the top of your OS1600, insure the chimney you purchase will fit the adaptor plate.*

Guy wire brackets are attached to the sides of the OS1600. A heavy gauge of stainless steel wire can be purchased at your dealer or local hardware store to use as guy wire to help support your chimney. Attach the appropriate chimney pipe lengths to the adaptor plate finishing with a chimney cap. **Important: Your furnace requires its own chimney system and can not share a flue with any other product.**

If you choose to use single wall stainless, the flue temperature will be reduced which promotes the formation of creosote, possibly creating a fire hazard. If you use single wall stainless pipe (minimum 24" gauge), minimum clearance is 18" from combustibles.

**DO NOT use Galvanized or Black Pipe to vent your furnace.**

Once you have met local requirements governing the installation and positioning of the furnace, install the Electrical Control Kit. Open the Electrical Control Kit and confirm that all items were shipped with your OS1600. Install the Electrical Control Kit. **REFER TO PAGE 9 FOR COMPLETE INSTRUCTIONS.**

After installing the chimney and the Electrical Control Kit, you are ready for the initial firing of your OS1600. **IMPORTANT: INSURE THE POWER CORD IS PLUGGED INTO A GROUNDED ELECTRICAL SUPPLY.** **DO NOT** connect the furnace to your duct work at this time. **Build a small fire - DO NOT fill the firebox to full capacity during the initial firing.** Your new



## **"BURN WOOD ONLY"**

**-Keep children away-**

**-Do Not Touch during operation-**

### **GENERAL INFORMATION, cont.**

furnace has a protective coating of oil or paint on the surface which could produce smoke or odors during the initial firing and will burn off. Allow adequate ventilation during this initial break-in firing to let any odors escape. This initial firing allows the metals to cure. After successfully completing the initial firing, you are ready to attach the flexible hot air duct and cold air return to complete your installation. **REFER TO PAGE 10 FOR COMPLETE INSTRUCTIONS.**

The fan limit control is factory pre-set at 170° as the "ON" temperature setting and 110° as the "OFF" temperature setting. This means when the heat chamber reaches 170°, the blower will turn "ON"; when the chamber cools to 110°, the blower will turn "OFF". This process is called a heating cycle.

#### **By-Pass Damper:**

The By-pass damper has several purposes; starting the fire, improving the efficiency and cleaning the chimney. When starting a fire in your OS1600, you must pull the rod out, for a stronger draft during ignition. Once the fire has started, close the by-pass damper, which allows the secondary combustion chamber to engage increasing the furnace's operation to peak efficiency. If the bypass rod is not closed during operation, the furnace's efficiency will be greatly reduced allowing the heat to escape up the chimney. Finally, when cleaning the chimney, the rod must be pulled out to allow any build-up in the chimney to fall into the firebox.

**-This Unit is not to be connected to a chimney flue serving another appliance.-**

#### **Furnace Chimney Location:** **Chimney**

***Requires Class "A" HT 2100 All Fuel 6"***

The furnace requires a minimum of 6' (six feet) of chimney. When positioning the furnace, maintain the "10/2 Rule" for the chimney. In order to determine proper chimney height above the roof, measure from the side of the chimney horizontally. As you move up the chimney, the length of the measurement increases. Once this measurement reaches 10 feet, this height on the chimney is your base height. The chimney must be 2 feet taller than the base height. If the chimney is closer than 10 feet from the peak of the roof, the chimney must be 2 feet higher than the peak of the roof. The 2 feet above the base height does not include the cap. The furnace must be placed on a level, non-combustible surface or 4' X 8' concrete pad. **See Diagram on page 7.**



## GENERAL INFORMATION, cont.

### **Wood Storage:** *Keep wood covered at all times.*

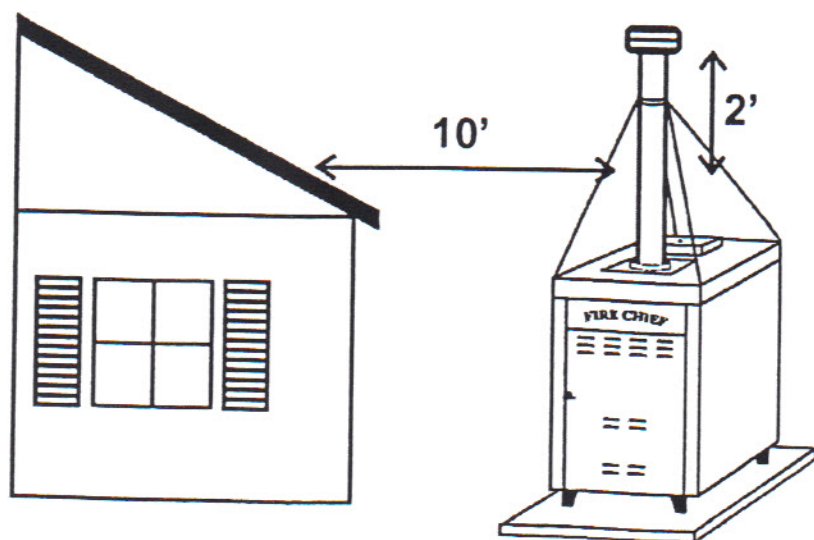
We can not over emphasize the importance of keeping your wood supply covered at all times. Wood stored/stacked, uncovered, exposed to rain and snow has a higher moisture content, causing the formation of creosote, it smokes, takes longer to ignite and produces poorer fires with lower sustained BTU output. Unseasoned wood ends up costing more in time trying to achieve and maintain proper temperatures in the firebox while using more wood with less heat output. Covering the woodpile will keep it dry and offer you the hottest fires with the greatest BTU output. If you store the wood near your furnace, be sure to maintain proper clearance from the furnace to prevent a fire hazard. **Remember, keeping your wood dry will produce hotter fires and increased BTU output.**

In order to create the most efficient draft, the chimney size should be 6" with a maximum of .08 inches water column draft. With the use of a draft gauge or manometer, the flue draft can be measured, if more than .08 inches of water column draft can be adjusted with the installation of a flue damper.

## IMPORTANT FACTS ABOUT INSTALLING AND OPERATING YOUR FIRE CHIEF OS1600

**-Installation is to be performed by a qualified installer.**

- **ALWAYS** consult local building inspectors for codes concerning the installation of your furnace.
- **ALWAYS** have access to a backup generator, 2000 watt minimum.
- **USE** Class "A" HT 2100 All Fuel 6" Chimney for your Fire Chief OS1600.
- **NEVER** use galvanized pipe in your flue connection.
- **INSPECT** the flue periodically for structural integrity.
- **CLEAN** the flue regularly to prevent creosote accumulation.



**NOTE:** When positioning the furnace - the roof is not level. The roof of the furnace slopes to the rear, approximately 1/2", to allow for rain/snow run-off.

## GENERAL INFORMATION, cont.

- **NEVER** use chemicals or gasoline to start or maintain your fire.
- « **NEVER** burn garbage, oil, trash or gasoline in your furnace.
- **NEVER** leave the ash pan or fuel door open during operation.
- **REMOVE** ashes on a daily basis - before they reach the grates - to insure proper air flow.
- **NEVER** use wet, unseasoned wood or wood exposed to a recent rainfall - *doing so causes a rapid accumulation of hazardous creosote, a proven cause of flue fires.*
- **NEVER** burn plastics, wood products containing glue, paraffin or those treated with chemical preservatives in your Fire Chief Furnace. *The combustion of these substances may release harmful, toxic gases.*
- **NEVER UNPLUG THE FURNACE FROM THE POWER SOURCE. THIS WILL CAUSE THE FURNACE TO OVERHEAT.** If it is too warm in the house do the following: Reduce the spin drafts to allow less flow of air to the fire box; use less fuel (wood).
- **NEVER leave the ash or fuel door open to attempt to regulate the fire** - this will overheat the furnace and void the warranty.

**-Do not connect this unit to a chimney flue serving another appliance.**

**-Refer to nameplate on furnace for additional information.**

### Warning – Risk of Fire

- **DO NOT** operate with fuel draft exceeding .08" (19.9 Pa) in. of water column.
- **DO NOT** operate with fuel loading or ash removal doors open.
- **DO NOT** store fuel or other combustible materials within marked installation clearances.

### Danger- Risk of Fire or Explosion

- Do not burn garbage, gasoline, drain oil or other flammable liquids.



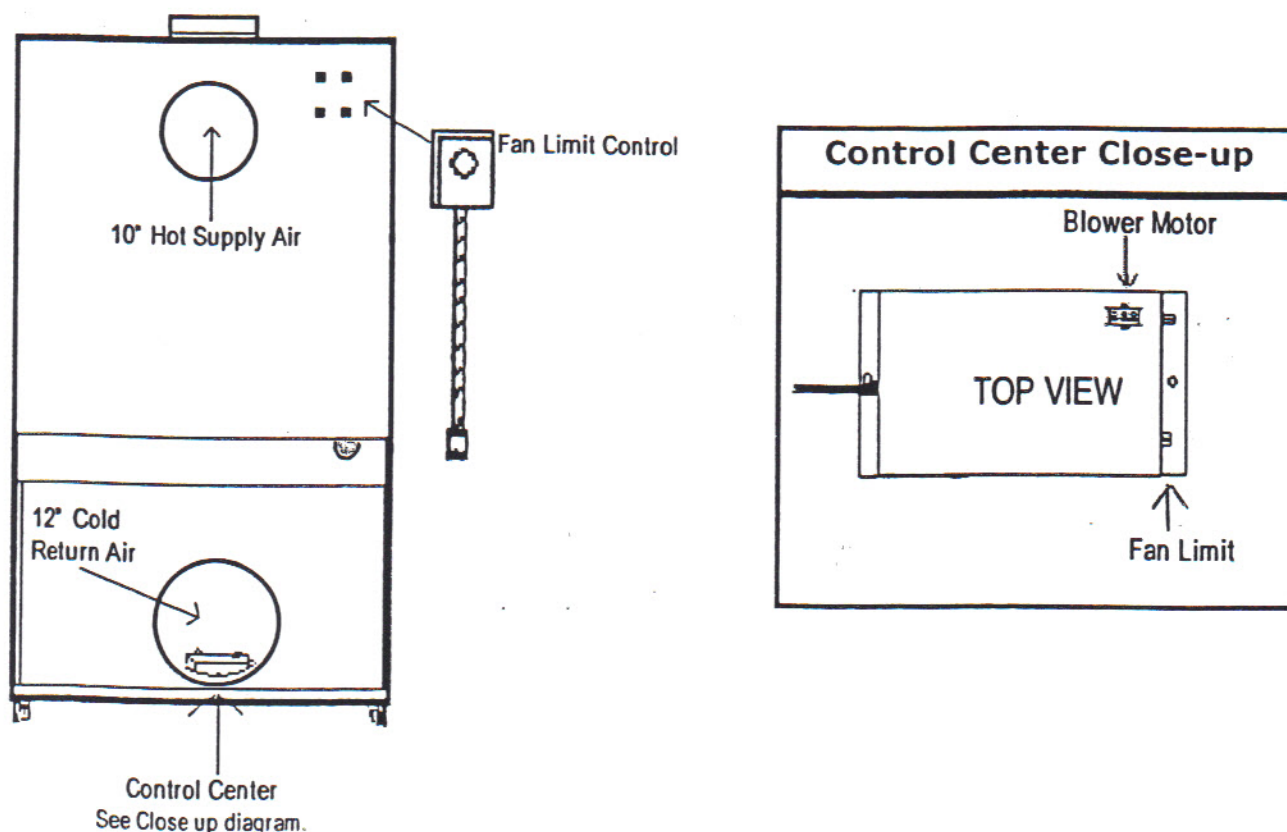
## INSTALLATION OF ELECTRICAL COMPONENTS

- 1- Install the blower on to brackets located on part A blower housing using 4- 1/4" bolts and 4- 1/4" nuts provided.
- 2- Attach blower housing part A to back of furnace using 6- 1/4" bolts.
- 3- Align the fan limit control box with the gasket to the 4 holes on the back of the furnace with 4 - #10 X 3/4" screws for a watertight seal.
- 4- Pass the wire conduit thru the hole on Part A blower housing. Re-install the locking nut on weather tight fitting.
- 5- Insert the plug from the fan limit control into the control center marked fan limit.
- 6- Insert the plug from the blower motor into the control center marked blower.
- 7- Mount cover on fan limit control box with 2 - #8 screws.
- 8- Mount blower service cover part B using 19- #10 green screws provided.

**Note:** You may run the power cord thru the return cold air duct or you may access the hole from the bottom of the blower housing cover. The hole must be sealed afterward regardless of routing choice.

Connect the 10" starter collar to the heat supply vent of the furnace. Connect the 12" starter collar to the cold air return on the back of the blower housing cover.

**Note:** Where part A and part B of the blower housing come together as well as where it is attached to the back of furnace, insure there is no cracks. The blower will pull outside cold air into housing and reduce the temperature of the heat chamber.



## HOT AIR DUCT INSTALLATION

**Hot Air Duct :** *Included with your OS1600 - 25' of ten inch I.D. flexible insulated hot air duct with 2 clamps, two 10" starter collars and one twelve inch starter collar.*

**The 10" insulated flex hot air duct is for indoor use only. When using the insulated flex duct always insure the duct is pulled tight to prevent air drag inside duct.** Outside the house, you must use 10" galvanized pipe, wrapped with weatherproof UV-jacketed insulation for protection from the sun's UV rays. The 12" return air may be galvanized pipe. The 12" return air must be attached to the home so as not to pressurize the home. The warm air supply air duct should be constructed of materials with a minimum temperature rating of 250 degrees Fahrenheit.

**NEVER** reduce the 10" hot air or 12" return air as this will effect the air flow and the furnace will not operate properly.

**NEVER** draw cold outside air into the blower housing - by doing so, the furnace's heat chamber will not reach the necessary temperature to heat the home.

The duct work should be designed so the external static pressure does not exceed .02 water column inches while developing air velocities of 600 feet to 1,000 feet per minute in the main trunk duct and 400 feet to 600 feet per minute at the registers. ***The heat outlet should never be less than ten inches (10") round or 79 square inches.***

**The Fire Chief OS1600 must be installed with a cold air return system.**

The system must be a minimum of twelve inches (12") to readily transfer the cold air back to the furnace. If desired, a cold air filter box may be constructed with a minimum opening of 225 square inches.

A basement window is an excellent location for running the hot air duct vent as well as the vent for the cold air return. The cold air is an integral part of the system and must be used when installing the furnace - failure to use the cold air return will pressurize the home causing the furnace not to work properly. If a basement is not available, you may access the home through a window, wall or crawl space for both the plenum and air return.

**Burying Duct Work:** ***DO NOT BURY FLEXIBLE DUCT SUPPLIED WITH FURNACE.***

To bury the duct work below ground, use schedule 40 or 80 PVC or black plastic culvert pipe with smooth inner walls. Dig a trench to accommodate both the heat duct and the return air duct. The trench must be a minimum of 24" deep. To further insure efficiency, minimize heat loss and prevent moisture formation, line the trench with 1" (one inch) pink styrofoam insulation sheeting on the sides and bottom of the trench. The duct run should not exceed 40 feet. If the run exceeds 40 feet, you run the risk of reducing the furnace's efficiency and air flow. **REMEMBER TO AVOID 90° ELBOWS IN DUCT LINE.**

**DO NOT USE FLEXIBLE HOT AIR DUCT INSIDE PVC OR CULVERT PIPE.**

**ALWAYS KEEP YOUR WOOD COVERED YEAR ROUND.**

**DRY WOOD WILL PRODUCE MORE BTU OUTPUT**

**AND A LONGER BURN TIME.**



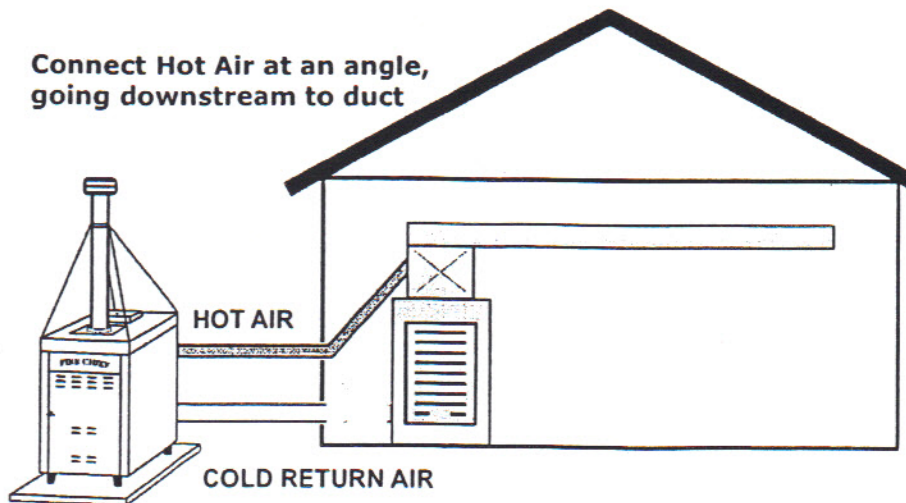
## TYPES OF INSTALLATION

Your Fire Chief Furnace is designed to be a supplemental or central heating source for your home. This wood burning furnace may be installed parallel with a properly operating electric, gas or oil-fired central furnace that is listed or certified in accordance with a nationally recognized safety standard within installation clearances as specified on the Fire Chief nameplate. When in a parallel installation the static pressure of the central furnace plenum may not exceed 0.15 inch of water column and maximum setting on central furnace limit switch is 182°F. With the Fire Chief woodburning furnace in an "Interconnection Arrangement" your wood burning furnace should be upstream of the central furnace. The Fire Chief furnace warm air supply should never be connected to return air of the central furnace. **Installation should be performed by a qualified installer.**

**Central Duct Connections:** *Installation should be done by a qualified professional. Maximum run 40' - a duct run in excess of 40' will greatly restrict the air flow and heat output - therefore, is not recommended. When connecting the OS1600 to a central duct system, avoid 90 degree elbows - as with any furnace, the more turns and branches in the ducting the less air flow delivery. DO NOT USE FLEX DUCT OUTSIDE.*

Run 10" insulated hot air duct from the outside furnace through a window or wall of the house. **Attach the insulated flexible hot air duct**, furnished with the furnace, to the central duct system of the home. Connect the duct with a 45° elbow or at an angle so the hot air from the OS1600 is delivered down stream. This will insure proper air flow into the duct system. Avoid delivering the hot air through the air conditioning coil as this will cause an obstruction reducing the amount of heat output. **Do not reduce the size of the hot air duct.** As with any furnace, the greater run, turns and branches in the ducting the less air flow and heat output delivered. Use of 90° elbows is not recommended. When using the insulated 10" flex duct inside the house, insure the flex duct is pulled tight to avoid air drag in duct.

The 12" cold air return duct must run to the house to prevent pressurization of the home. Failure to connect the cold air return will cause the furnace not to operate. **Never reduce the size of the return.** Reducing the size of the cold air return will restrict the hot air flow and put excess pressure on the blower motor. You may terminate the cold air return where you enter the house - this will provide adequate circulation within the home. See *diagram below*.



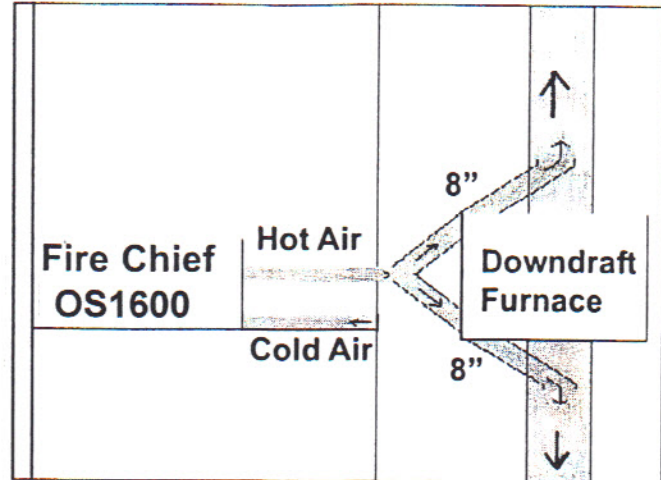
**THE 10" FLEX DUCT MUST NOT BE EXPOSED TO THE OUTDOORS. IT IS FOR INDOOR USE ONLY.**



## TYPES OF INSTALLATIONS, Continued

**Mobile Home Down Draft Furnace Connections:** *Installation should be done by a qualified professional. Maximum run 40' - a duct run in excess of 40' will greatly restrict the air flow / heat output and is not recommended. Both the hot air duct and cold air return duct may be accessed through the floor in a mobile or modular home.*

In a mobile home, with a down-draft furnace, do not attach the hot air duct from the OS1600 to the hot air plenum, doing so will cause the heat to rise through the central furnace instead of going through the duct work. Split the hot air supply of the OS1600 by using a "Y" and install one branch into each of the hot air ducts, be sure both are pointing downstream. (See diagram - maximum reduction for each "Y" duct run, 8").

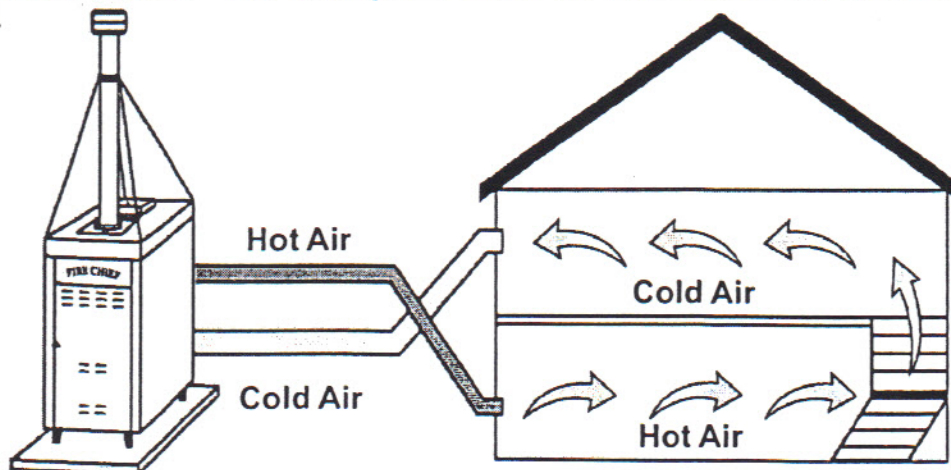


**No Duct work Installation Connections:** *Installation should be done by a qualified professional. Cold air return must be installed in all installations, even those without duct work.*

When there is no duct system to connect to the hot air flex duct, keep the following in mind:

1. You must separate the hot air duct from the cold air return - ideally, locate each at opposite ends of the home, if you do not the air will not flow evenly through out the home. This method will work well on homes built on concrete slabs and create a good air flow.

2. In homes with a basement, you may run the hot air duct to the basement and pull the cold air return from the main floor, this will create a perfect air flow, since hot air rises. The cold air return must be connected, even if the home does not have duct work - if you do not connect the cold air return, the furnace will not be able to heat the home. See a diagram below for homes with no duct and a basement.





## **"Burn Wood Only"**

### **Caution- Hot Surfaces:**

- Keep children away.
- Do not touch during operation.

**-The fuel loading door has a removable handle (#17), which can be stored in vented bottom panel (#11).-Refer to parts diagram on page 17.**

## **OPERATION**

**Starting your first "real fire:** *Check to be certain the spin drafts are wide open to allow oxygen into the firebox.*

Place several crumpled newspapers on the grate with some dry kindling layered on top of the papers, ignite the newspaper. When the kindling is burning, add several small pieces of wood - allow the wood to fully engage in flames. After about 20 minutes the fire should be established, allowing you to add more wood - do not overload and smother the fire. Add more wood slowly so the flames have time to engulf the fresh wood. Once the fire is burning and there is a glowing ember bed, adjust the drafts to achieve the desired burn pattern. Learning how to adjust the drafts to maintain the desired temperature for your home may take a few days. After a short time you will know which settings and adjustments work best for your home. Over-firing by overloading/over-fueling the furnace causes the metal to superheat and expand, then cool rapidly which causes cracking, therefore voiding the warranty. Over-firing or abuse can easily be determined upon inspection.

**Caution: NEVER** use chemicals or gasoline to start or maintain your fire. Do not burn oil, garbage, trash, plastic or any fuel other than wood in your furnace, doing so will void the warranty.

**Fuel Recommendations: MAXIMUM Log Size 28"; Heat resistant gloves are recommended.**

We advise using only dry, seasoned hardwoods in your Fire Chief OS1600 rather than highly resined woods such as pine. Firewood should be cut at least one full season prior to the time of its intended use for optimum heat output. Firewood should be stacked to provide a free flow of air between the logs, thus allowing more rapid seasoning of the wood. If wood is stored outdoors, it should be completely covered year round to protect it from moisture and exposure to the elements.

Use extreme caution when opening the doors during operation, temperatures can exceed 300° - wait at least 10 (ten) seconds after releasing the first latch, then proceed to the fully open position. The dual latch system has been incorporated as a safety feature - designed to eliminate the possibility of gaseous ignition. **Heat resistant gloves are recommended** when opening the fuel doors, regulating the spin draft or emptying the ash pan.

**Ash Removal:** Remove the ashes from your Fire Chief OS1600 at least once a day - or as often as necessary to ensure the ashes do not accumulate to the height of the grates. If ash build-up occurs at grate level, it will cause premature failure of the firebox, voiding the warranty. The air flow was designed to keep the grate area cool in addition to providing the firebox with warmed air for better combustion. If the ash level is improperly maintained, the firebox will be starved for air, greatly reducing the efficiency and heat output of your furnace. Place hot ashes in a covered, air tight metal container -place the container on a non-combustible surface. Discard the hot ashes in a safe manner. Remove the Ash Pan from the furnace and dump the ashes into a metal container with a tight fitting lid. The closed container of ashes should be placed on a non-combustible 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 metal container until all cinders have thoroughly cooled.

**Always keep your wood covered year round. Dry wood will produce more Btu output and a longer burn time.**

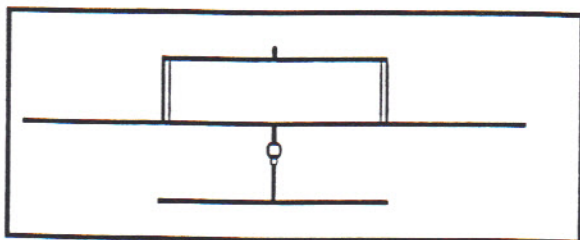


## FCOS1600 HEAT DUMP SYSTEM - HEAT FUSE LINK

Your OS1600 has an automatic safety feature - **Heat Dump Release System**. In case of power failure, the Heat Dump Release will open the spring loaded lid when the internal furnace temperature reaches 370°. The heat sensitive fuse link, located within the top of the heat chamber, causes the lid to open, allowing excess heat to escape. This safety feature is designed to activate before any extreme heat can damage the furnace

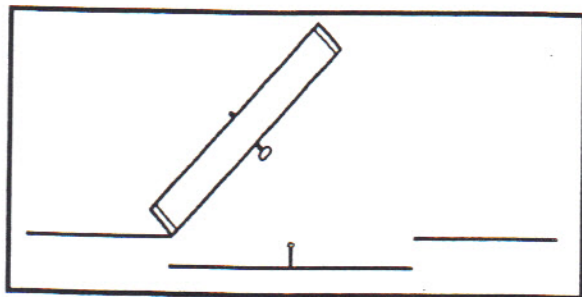
**In Case of Power Failure:** *Connect to Generator immediately. If the Heat Dump Release lid should open, do not continue to burn the furnace. DO NOT UNPLUG THE FURNACE. Close the draft dampers. DO NOT add any fuel ( wood) - allow the fire to die. After the electricity is restored, replace the fuse link before resuming normal operation.*

**Replacing the Heat Fuse Link:** Remove the acorn nut on top of the release lid and pull the bolt down thru the lid. Removed the separated fuse links and connect the new fuse link to the shaft inside of the furnace heat chamber. Connect the opposite end of the fuse link to the bolt that goes thru the lid. Feed the bolt through the lid and replace the acorn nut onto the bolt on top of the lid. ***As a precaution, keep a replacement on hand.***



***Heat Dump Lid "CLOSED" - indicating NORMAL OPERATION.***

***NOTE: Do not allow snow or ice to build up on lid.***



***Heat Dump Lid "OPEN" - indicating POWER LOSS.***

***THIS IS VERY IMPORTANT:*** **NEVER** disengage this safety feature or fail to connect the fuse link as this will void all warranties. **NEVER** lay anything on top of the release lid. The area must be kept free of any objects or obstructions. A visual inspection by factory personnel can easily determine if the furnace over-heated and proper steps were followed. ***If the furnace is found to be deliberately or improperly used, all warranties will be void.***

**To order a replacement Heat Fuse Link:** Call 800.875.4788. One replacement fuse link will be included in the hardware pack of your furnace. Cost for each additional heat fuse link, \$4.95 - Part Number: **FCFUSELINK** - Heat Fuse Link.



## **CREOSOTE FORMATION AND THE NEED FOR REMOVAL:**

When wood is burned slowly, it produces an organic vapor which combines with expelled moisture to form creosote. The creosote vapors condense in the relatively cooled chimney flue of a slow burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire. The chimney connector and the chimney should be inspected at least twice monthly during the heating season to determine if a creosote build-up has occurred. If creosote has accumulated it should be removed to reduce risk of a chimney fire.

## **Maintenance of the FCOS1600**

At the beginning of each heating season, take time to thoroughly check your furnace and chimney system. Make sure there are no leaks where the metal panels are joined or at the caulk lines. Should you find a leak; hi-temp silicone will correct the problem. Check the doors for signs of rust. Should rust develop, lightly sand or steel wool the surface and follow-up with black, high temperature paint to keep the doors looking new. Check the gaskets. If they are frayed and burnt, replace the gasket. Check the chimney pipe for signs of creosote formation, if you find creosote, thoroughly clean the chimney system replacing the chimney cap securely so rain or snow does not run down the chimney into the firebox - if the cap is removed for any length of time when the furnace is not in use, cover the pipe so no moisture gets into the firebox. Check the chimney pipe for holes or loosened connections - replace and secure as necessary. Check the heat duct and cold air return to be sure they have not come loose or been damaged. If so, tighten or replace as needed. Check the duct work for any air leaks that will affect the furnace's performance - airtight duct work increases efficiency and furnace performance while delivering higher BTUs. Remove any accumulated ashes at the end of the season. By following these procedures your furnace will provide many years of trouble-free service.

### **ALWAYS:**

- © Locate the OS1600 on a level, solid, non-combustible surface.
- © Follow local codes concerning installation requirements.
- © Connect power cord to a grounded 110 outlet.
- © Connect cold air return to the house.
- © Use Class "A" HT2100 All Fuel 6" Chimney.
- © Follow guidelines within this manual regarding burn procedures.
- © Operate furnace with fuel door and ash drawer closed.
- © Inspect the furnace several times a year to insure furnace caulking is adequate.
- © Inspect chimney pipe for creosote formation.
- © Use dry, seasoned hardwood - maximum length, 28"- always keep your wood covered.
- © Have access to a backup generator in case of power failure, minimum of 2000 watts.

### **NEVER:**

- © Never allow anyone to operate the furnace who is not familiar with the unit.
- © Operate furnace with spin draft wide open unattended.
- © Operate with the fuel door and ash drawer open.
- © Use gasoline, oil or any other flammable liquid to start or maintain the fire.
- © Burn garbage, plastic, wood containing glue, paraffin or treated with chemical preservatives.
- © Operate your furnace without a backup power supply (generator).
- © Fuel your furnace with wet, unseasoned wood.
- © Use 90° angles when running duct work.
- © Operate the furnace without the chimney attached.
- © Alter the furnace in any way.

## **WARNING – RISK OF FIRE**

- DO NOT operate with fuel draft exceeding .08" (19.9 Pa) in. of water column
- DO NOT operate with fuel loading or ash removal doors open.
- DO NOT store fuel or other combustible materials within marked installation clearances.
- Inspect and clean flues and chimney regularly.

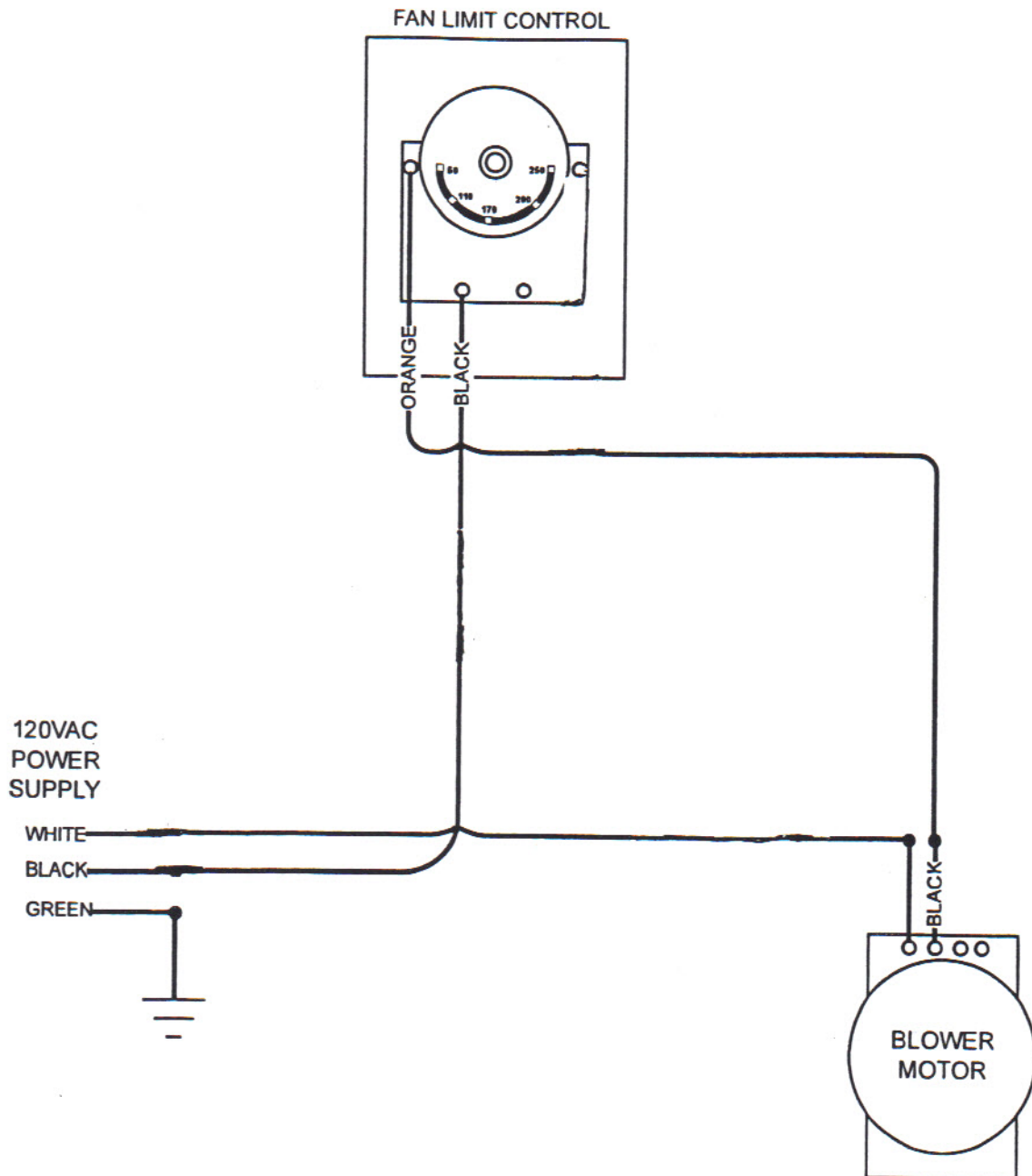
## **Danger- Risk of Fire or Explosion**

- Do not burn garbage, gasoline, drain oil or other flammable liquids.

FCOSI600

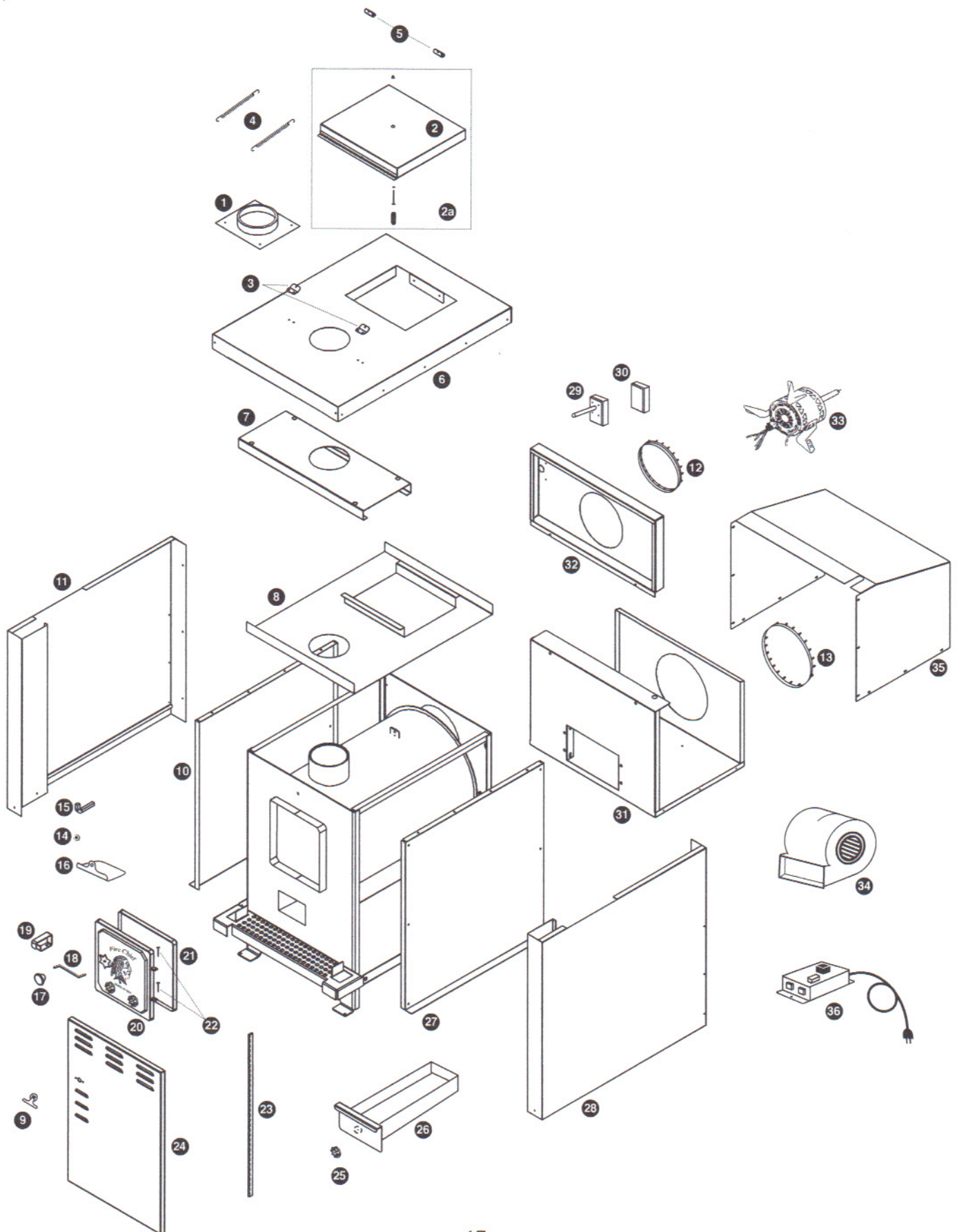
# WIRING DIAGRAM

## OUTDOOR FURNACE





# FCOS1600 Parts Diagram



# FCOS1600 PARTS LIST

*Repair Part Number are shown in "Bold" type*

1. Chimney Anchor Plate (included with installation kit)
2. Heat Dump – Cap with Hardware
- 2a. Heat Fuselink - **FCFUSELINK**
3. Heat Dump Spring Brackets for top of Furnace (2)
4. Extension Springs for Heat Dump
5. Heat Dump Spring Brackets for Lid (2)
6. Roof Panel
7. Inner Hat Channel
8. Inner Top Panel
9. Door Handle - **FCOSTHANDLE**
- 9a. Latch Cam (Not Shown)
10. Left Side Inner Panel
11. Left Side Outer Panel
12. Starter Collar for 10" Insulated Heat Duct – **FCOS10COLLAR** (2 included)
13. Starter Collar for 12" Cold Air Return - **SNGCLR12** (1 included)
14. Hitch Pin Clip (2)
15. By-Pass Damper Rod
16. By-Pass Damper Plate
17. Spring Handle
18. Fuel Door Handle - **FCFDH**
19. Fuel Door Latch
20. Fuel Door with Spin Drafts (2)
21. Fuel Door Gasket, 5/8" – **FCGSKT58**
22. Door Pins – **FCDP**
23. Outer Door Hinge
24. Weather Resistant Front Door
25. Spin Draft for Ash Pan - **FCSD**
26. Ash Drawer
27. Right Side Inner Panel
28. Right Side Outer Panel
29. Fan Limit Center - **FCFLC8"**
30. Fan Limit Box & Cover - **FCOSFLCBOX**
31. Bottom Blower Housing Cover
32. Rear Panel
33. Blower Motor w/Capacitor - **FCOSMOTOR**
34. Blower Housing - **FCBH**
35. Blower Housing Cover
36. Electrical Control Center – **FC16ECC**



## TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>PROBABLE CAUSE</u></b>	<b><u>SUGGESTED REMEDY</u></b>
1. Bugs found in wood.	<ul style="list-style-type: none"> <li>• Wood has rotted or has been laying around for an extended period of time.</li> </ul>	Inspect the wood for obvious signs of insect infestation such as burrows or holes and avoid using if possible. Do not store indoors.
2. Circulation blower will not turn on.	<ul style="list-style-type: none"> <li>• Defective fan limit control.</li> </ul>	Check by rotating the knob to "ON" position, the blower should turn on. If the blower doesn't run, replace the fan limit control.
3. Circulation blower runs continuously.	<ul style="list-style-type: none"> <li>• "Off" setting is too low on the fan limit control.</li> <li>• Defective fan limit.</li> <li>• Improper wiring.</li> <li>• Back draft damper in duct line is closed.</li> </ul>	<p>Pointers should be set at 110 and 170 degrees.</p> <p>Replace fan limit.</p> <p>Review wiring diagram. If wired correctly, seek professional assistance.</p> <p>Open Damper.</p>
4. Circulation blower vibrates during operation.	<ul style="list-style-type: none"> <li>• Screw on squirrel cage is not tight.</li> <li>• Balance weights on squirrel cage have become dislocated.</li> <li>• Defective main bearings.</li> </ul>	<p>Check squirrel cage alignment and position so that it does not drag on the housing during rotation; then tighten the screw sufficiently to fasten the squirrel cage securely to the shaft.</p> <p>You may attempt to adjust the weights yourself to obtain an acceptable balance. If you are unsuccessful, contact your supplier.</p> <p>Return the blower to your supplier for replacement.</p>
5. Odor detected in home during initial firing.	<ul style="list-style-type: none"> <li>• There is an oily film that remained on the steel after the manufacturing process. Firing the unit has raised the temperature of the firebox to a level that is sufficient to vaporize the residue.</li> </ul>	This odor should disappear after a few hours of usage.

## TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>PROBABLE CAUSE</u></b>	<b><u>SUGGESTED REMEDY</u></b>
6. Smoke from the fire chamber is puffing back through spin drafts.	<ul style="list-style-type: none"> <li>Chimney not high enough.</li> </ul>	Chimney should be a minimum of 6' high.
7. Down draft on chimney caused by one or more of the following:	<ul style="list-style-type: none"> <li>Chimney blocked or dirty.</li> <li>Chimney has a cold spot which inhibits exhaust discharge from rising properly. This symptom may occur in factory built chimneys because the insulation has settled or a seam has ruptured. In masonry chimneys, mortar loss may be causing the aspiration of cooler outside air into the stack.</li> <li>There is an obstruction outside the chimney, such as a tree.</li> <li>Chimney is located too close to the peak of the roof or does not rise above it to provide the proper draft.</li> <li>Chimney is located too close to another building.</li> <li>Obstruction in chimney.</li> <li>Excessive ash accumulation.</li> <li>Creosote build-up.</li> <li>Insufficient draft.</li> <li>Obstructed chimney or clogged chimney cap.</li> <li>Creosote build-up.</li> </ul>	<p>Clean chimney.</p> <p>Check entire chimney system for structural integrity and leakage. Correct or repair as needed.</p> <p>Remove obstruction.</p> <p>Relocate chimney termination or increase height as required.</p> <p>Relocate chimney termination.</p> <p>Check entire chimney system including stove pipe run. Clean chimney to remove any foreign matter.</p> <p>Remove if necessary.</p> <p>Clean chimney.</p> <p><b>SEE #6</b></p> <p><b>SEE #7</b></p> <p><b>SEE #7</b></p>
8. Excessive smoke discharge from fuel door during reloading.		
9. Flames discharging from fuel door during reloading.	<ul style="list-style-type: none"> <li>Insufficient natural draft or an obstruction in the chimney system.</li> </ul>	<p>Open spin drafts.</p> <p><b>SEE #6 AND #7</b></p>



## TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>PROBABLE CAUSE</u></b>	<b><u>SUGGESTED REMEDY</u></b>
9. Flames discharging from fuel door during reloading - <i>Continued.</i>	<ul style="list-style-type: none"> <li>• Opening the door has provided additional oxygen which has ignited accumulated gases from partially spent fuel.</li> </ul>	Always open the door cautiously, allowing the safety latch system to perform its designed function of containing ignition gases within the fire chamber. <b>SEE PAGE 10.</b>
	<ul style="list-style-type: none"> <li>• Fire chamber filled to capacity with unburned fuel.</li> </ul>	Do not attempt to overload furnace.
10. Excessive dirt accumulation surrounding air registers in the home.	<ul style="list-style-type: none"> <li>• Furnace is not connected to return air duct and is drawing dirt and discharging through the home.</li> </ul>	Check for leaks in return air duct system. Add filter system.
	<ul style="list-style-type: none"> <li>• Excessive dirt accumulation in air filter.</li> </ul>	Check and replace the filter if necessary.
11. Home does not achieve comfortable temperature.	<ul style="list-style-type: none"> <li>• Improper connection to existing furnace.</li> </ul>	Refer to information in the manual relating to the proper installation procedures or contact your local heating and cooling contractor.
	<ul style="list-style-type: none"> <li>• Improperly sized ducting.</li> </ul>	Refer to information in the manual relating to proper ducting procedures or consult your local heating and cooling contractor.
	<ul style="list-style-type: none"> <li>• Inadequate insulation in the home.</li> </ul>	Provide additional insulation.
	<ul style="list-style-type: none"> <li>• Spin draft not open.</li> </ul>	Open spin draft.
12. Rapid accumulation of creosote in furnace and chimney.	<ul style="list-style-type: none"> <li>• Improper connection in stove pipe causing air leakage or structural defect in the chimney itself.</li> </ul>	Inspect the entire chimney run - from the exhaust stack of the furnace to the termination cap. Replace as necessary.
	<ul style="list-style-type: none"> <li>• Fueling furnace with wet or unseasoned wood.</li> </ul>	Completely avoid using if at all possible. If circumstances necessitate the use of wet or unseasoned wood, fuel the furnace with smaller loads.

## TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>PROBABLE CAUSE</u></b>	<b><u>SUGGESTED REMEDY</u></b>
12. Rapid accumulation of creosote in furnace and chimney – (Continued)	<ul style="list-style-type: none"> <li>Fueling furnace with wet or unseasoned wood.</li> <li>Insufficient flue draft.</li> <li>Using un-insulated stove pipe for the chimney flue.</li> </ul>	<p>If hardwoods are not available fuel the furnace with smaller loads. This will cause the fan limit to call for heat more often, Consequently, the resultant fires will be hotter, thereby retarding the accumulation of creosote.</p> <p><b>SEE #6</b></p> <p>Un-insulated pipe used as an outside flue causes rapid cooling of the stack gases, thereby causing them to condense as creosote on the inside of the flue.</p>
13. Heat dump lid on top of furnace has opened.	<ul style="list-style-type: none"> <li>Power failure.</li> <li>Furnace has over-heated and the heat release lid has opened.</li> </ul>	<p><b>USE BACKUP GENERATOR AS POWER SOURCE IMMEDIATELY - SEE PAGE 13</b></p> <p>Correct the over-heating problem and restore power to the furnace. Replace the heat sensitive fuse link before firing the furnace again.</p>
14. Insufficient air flow from the heat registers.	<ul style="list-style-type: none"> <li>Return air not connected to furnace from the house.</li> <li>Excessive duct run to the house.</li> <li>The use of 90 degree elbows in the duct run.</li> <li>The hot air supply is being short cycled back through the return instead of going downstream to the house.</li> <li>If using flex duct, it is not straight and pulled tight. A sagging line will cause swirling in the duct and reduce air flow.</li> </ul>	<p>Connect air to the home to circulate air flow.</p> <p>Reduce the duct run by placing the furnace closer to house.</p> <p>Remove 90 degree elbows and replace with 45 elbows.</p> <p>Re-direct the hot air supply to send it down the air duct supply line. You may install a back draft damper from the direction of the return air.</p> <p>Insure the flex duct is pulled tight and straight with no snags. Always go into your main supply lines at a slant pointing downstream.</p>



<u>PROBLEM</u>	<u>PROBABLE CAUSE</u>	<u>SUGGESTED REMEDY</u>
15. The air coming out of my heat registers is not warm enough.	<p>The chimney on your furnace is not tall enough which is affecting the efficiency of your furnace.</p> <p>Wood being used is not dry enough to produce higher BTUs.</p> <p>Outside air is being pulled through the return air duct thus reducing the temperature of the heat supply.</p> <p>Fan limit control is not set to Factory specifications.</p>	<p>Add additional sections of chimney to your flue to insure compliance to the 10/2 rule. See diagram on page 7.</p> <p>Use hardwood that is covered for at least 6 months from the weather and avoid using rotten or poor quality wood.</p> <p>Check your return duct and blower housing for holes and cracks and seal them with aluminum tape.</p> <p>Set fan limit to 170° as high limit and 110° as low limit.</p>

## Certificate of Limited Warranty

**Extent of Coverage:** *This warranty covers any Fire Chief OS1600 Outdoor Furnace sold in the United States. This warranty applies only if the Fire Chief OS1600 Furnace is installed, maintained and operated safely, in accordance with the instructions in the owner's manual and local codes. This warranty applies to the original purchaser/owner of the Fire Chief OS1600 Furnace and is not transferable. Replacement or repair parts are warranted for the remaining period of the original part.*

All warranty claims must include: **date of purchase, model and serial number of furnace, proof of purchase** (*dated invoice, bill of sale, cancelled check or payment record*) and **the name and address** of the dealer from whom you purchased the furnace.

Fire Chief Industries warrants the **firebox** to be free of defects in material and workmanship for **five (5) years** from date of purchase. The firebox warranty will be pro-rated after **one (1) year** at a rate of 25% of the retail cost in effect per year after the first year; 50% of the retail cost the following year and so on. Intentional misuse, abuse or burn through of cast iron components is **not warranted**. Over firing the furnace will cause the front face to crack and is not covered by warranty. Furthermore, some aesthetic deterioration can be expected as the result of normal operation, therefore the physical appearance is not guaranteed to remain unchanged. The manufacturer warrants all electrical components **one (1) year**. Please be advised that the door gaskets are excluded from this warranty.

In order to exercise the aforementioned warranty, a certified professional must determine the appliance/part to be defective. He or she must submit a written statement to Fire Chief Industries detailing his assessment of the problem. This assessment **must** be accompanied by substantiating proof of purchase (*dated invoice, bill of sale, cancelled check or payment record*), model and serial number. Fire Chief Industries will then authorize repair or replacement as warranted by the submitted claim. Fire Chief Industries will not honor expenses incurred from any action that was not expressly consented to in writing. The owner is hereby notified that he will be obligated to assume liability for removal, reinstallation, shipping and labor cost involved in servicing/repairing or replacing the part/unit. The merchandise in question must be shipped via **"PREPAID FREIGHT"** to Fire Chief Industries. Fire Chief Industries will return the repaired or replacement part to the purchaser on a **"Freight Collect"** basis.

This warranty will be rendered null and void if this part/unit exhibits symptoms of obvious over-firing, deliberate abuse or negligence, improper installation or is used for commercial purposes.

Finally, Fire Chief Industries will not be responsible for any claim not stated in our warranty nor does any implied warranty extend beyond the limits stated above.

*If you are unable to receive satisfactory service from your local dealer, write Fire Chief Industries and include all pertinent information, including a daytime phone number and a detailed description of the type of problem you are having and Fire Chief Technical Service will contact you. Mail To: Fire Chief Industries 7280 Old State Route 21, Barnhart, MO 63012*

**Or call 800.875.4788 or 636.942.4747 - be sure to have model, serial number and purchase date.**



**For your convenience, you may wish to record the following information:**

**Fire Chief Model Number:** \_\_\_\_\_

**Purchase Date:** \_\_\_\_\_

**Serial Number:** \_\_\_\_\_

**Dealer where purchased:** \_\_\_\_\_

**Additional Service Information:**

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