********** INITIAL INSPECTION **********

When you receive your wood-burning furnace inspect it immediately for any transportation damage. Make an inventory check to see if you have all the necessary parts for the installation. The F2500 wood burning furnace is packaged and shipped as two components:

1. The wood heat exchanger body
2. Blower/filter box complete with hardware and electrical package.

See the parts list at the end of the manual for a detailed account of all parts. If there is any damage or any parts missing, notify your dealer immediately.

****

TABLE OF CONTENTS

CAUTION: This furnace shall be installed in accordance to manufacturer's instructions and in a manner acceptable to the regulatory authority by mechanics experienced in such services. When required by the regulatory authority, such mechanics shall be licensed to perform this service.

Also: The combustion air damper should not be altered for increased firing for any reason.

LOCATING YOUR FALCON

Locating your unit is very important for proper draft and the most efficient heating possible.

The furnace should be located close to the base of the chimney so that the furnace smoke pipe has the shortest path to chimney with a minimum of bends.

PLACEMENT AND MINIMUM CLEARANCES (see Fig. 1)

Your unit should be placed on a non-combustible floor which extends at least 8" from sides and rear and 24" from front. Have a minimum of 18" from rear, sides and top of your unit to any combustible material. Leave a minimum clearance of 48" in front of your unit. This is for safe, easy loading and cleaning of your unit.

REDUCED CLEARANCES

Most building codes permit reduced clearances to combustible walls and ceilings if adequate protection is added. A common mistake is to assume that sheet metal, masonry, or asbestos board placed directly against a wall protects it. Materials installed in this manner give very little protection. These materials are good heat conductors, so they will be almost as hot on their backside as well as on the exposed side. Therefore, the combustible wall behind is still a fire hazard.

A wall can be kept cool using these items, but only if they're mounted spaced out from the wall by an inch or two to allow free circulation of room air behind the protective panel. circulating air keeps the wall cool by carrying the heat from the space between wall and panel. The protective panel should start within a few inches of floor level. (See Fig. 2)

The three rules to follow when constructing wall protectors:

1. Non-combustibility of all material including mounting or supporting system.
2. A well ventilated air space between protector or wall.
3. Sufficient strength and rigidity so that the protector and air space will be durable.

PLACEMENT AND MINIMUM CLEARANCES TO COMBUSTABLES

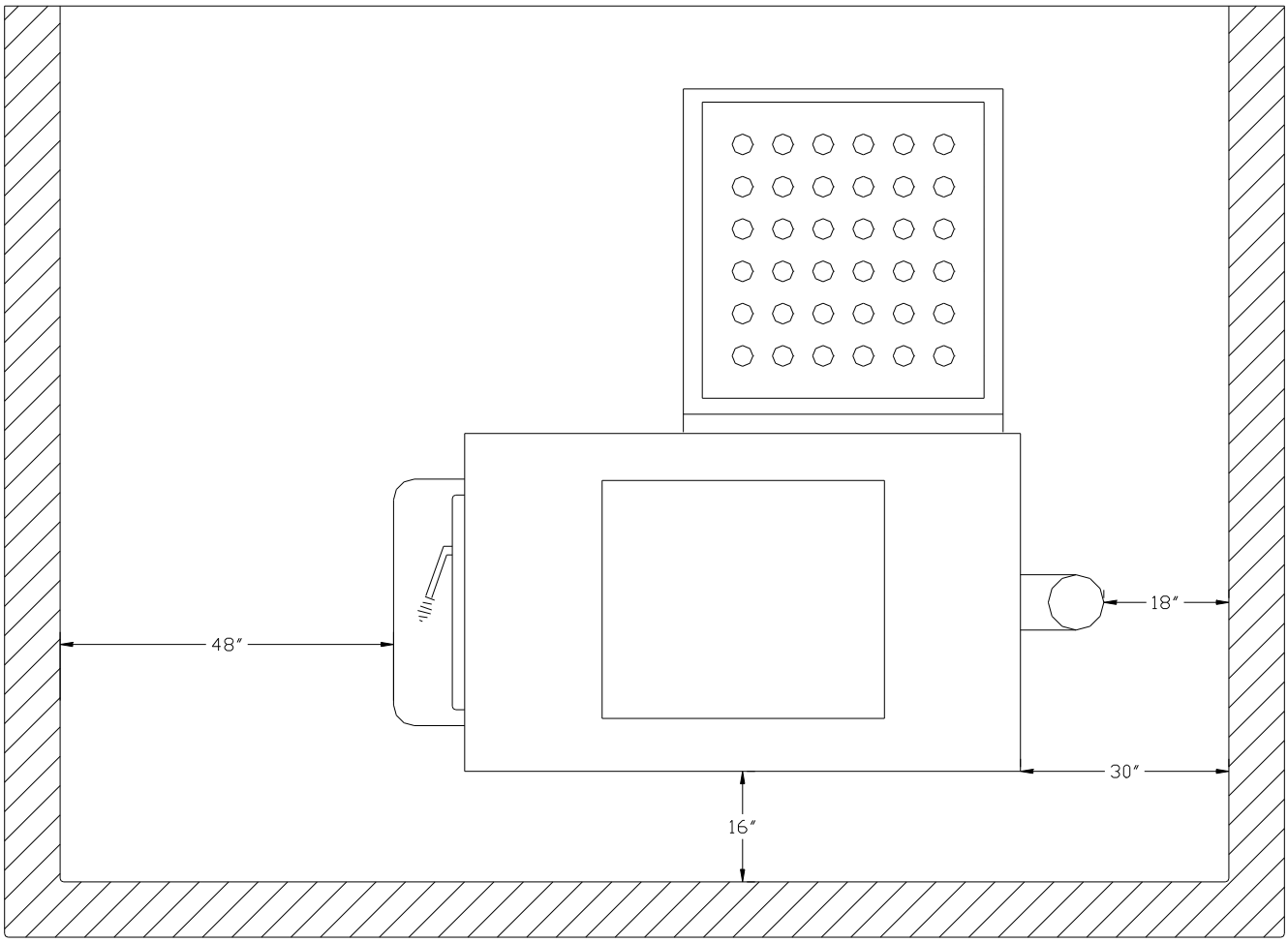


FIG. 1

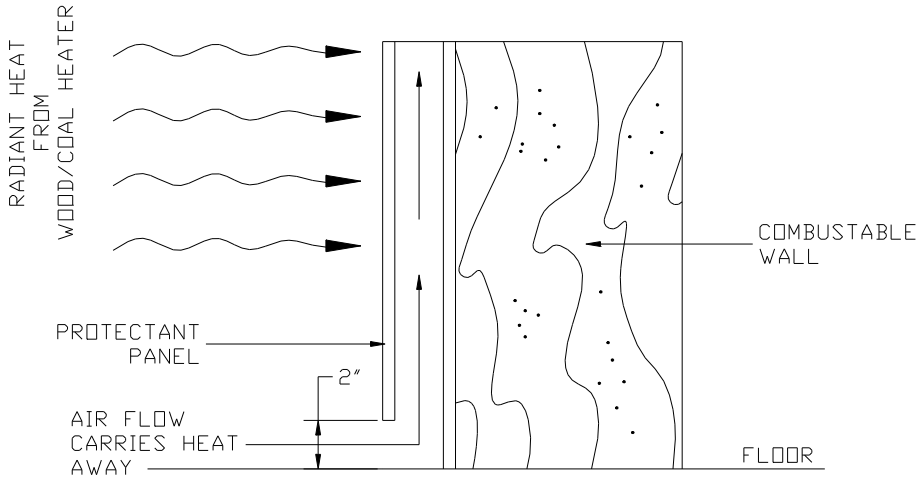


FIG. 2

CHIMNEY INSTALLATION

It is extremely important that the flue of your furnace be installed into a suitable CHIMNEY ONLY. These chimneys consist of flue-lined brick chimney, or an approved all fuel factory-built type. Any other installation constitutes a fire hazard, as wood burning units have stack temperatures as high as 1000 degrees Celsius and may also deposit creosote which can re-ignite and cause severe damage to any chimney.
MAKE SURE YOUR FALCON IN INSTALLED INTO A PROPER CHIMNEY.

STOVE PIPE INSTALLATION

Install your Wood unit as close to the chimney as possible with a minimum of elbows (we recommend no more that two) and a run of no more than 6 feet horizontally. The pipe should maintain a 1/2" rise per foot and NEVER be installed closer than 18" from combustibles. Exceeding these recommendations normally represents creosote build-up, a smoking furnace, or one with poor draft.

WHEN INSTALLING

When connecting stove pipe, all joints should be secured with at least three (3) sheet metal No.10 screws. If it is absolutely necessary to make a run of more than 6' (not recommended), use extra support hangers or brackets every 3'.

The connection to the wood burner's collar must also be more than just a snug fit. Drill holes through the collar and secure with sheet metal screws. Mark each connection for cleaning. This will prevent frustration when matching up your hole pattern again.

FLUE DRAFT REGULATOR

IMPORTANT:
This furnace was designed to operate with a flue draft of .04 inches W.C. A draft stronger than this will greatly reduce the efficiency of the furnace, and more importantly may cause a safety hazard. Be sure to install the barometric draft regulator supplied as per instructions included and keep it set at .04 in W.C.

PLENUM AND AIR DUCT INSTALLATION

With Wood furnaces, a special concern is preventing wood joists and flooring close to the hot air ducts and plenum from overheating. A fire hazard is created by the hot air flow circulating through ducts not designed for such high temperatures. Most wood furnaces produce much hotter air than any oil or gas fired unit. So most clearances from the existing ducts and plenum are usually inadequate with a wood furnace installation.

The plenum on your Falcon Furnace should be 22 1/2 x 31 1/2 and no closer than 2" from the ceiling or any combustible. In a power outage situation, excessive heat buildup in the plenum may be dangerous, so make sure clearances are maintained.

All ductwork within six feet of the plenum must also be installed no closer than 2" from combustibles and no closer than 1/2" from combustibles thereafter.

FURNACE ASSEMBLY

BRICKS AND GRATES - (SEE FIG. 3)

- Lay bricks into place starting with the rear.
    - Lay grates on retainers in between bricks.

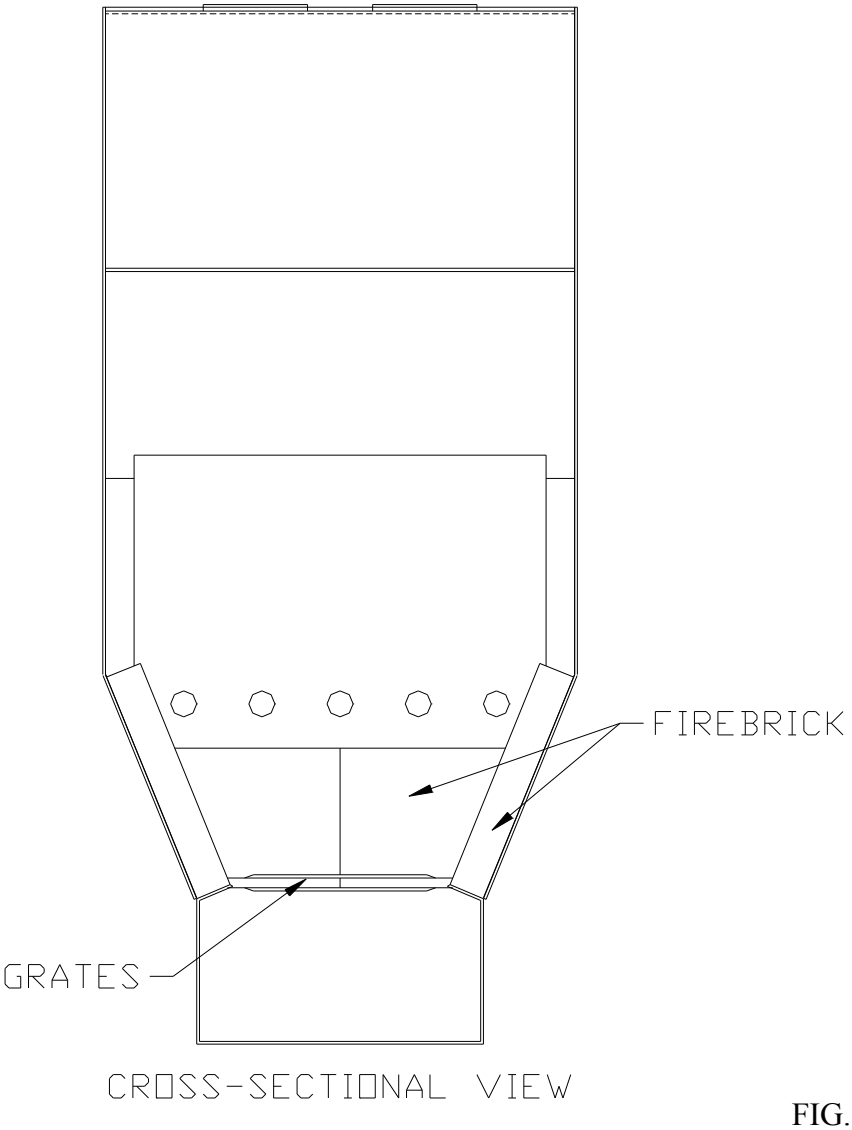


FIG. 3

BRICK AND GRATE ASSEMBLY

PANEL INSTALLATION (See Fig 4)

The blower/filter box assembly can be installed on either side of the furnace.

The bottom side panel must be installed opposite the blower/filter box side. The furnace is shipped with the panel installed on the right hand side. Remove and re-in stall on the left hand side if so desired. Install the small filler panels (supplied with the filter box package) on the blower side. These panels tuck under the large side panels and are fastened together with them to the support angles on the furnace. (Remove the screws from the bottom of the side panel, position the filler panels and re-install screws through side and filler panels.)
NOTE: The long filler panel must be installed on the front corner of the furnace.

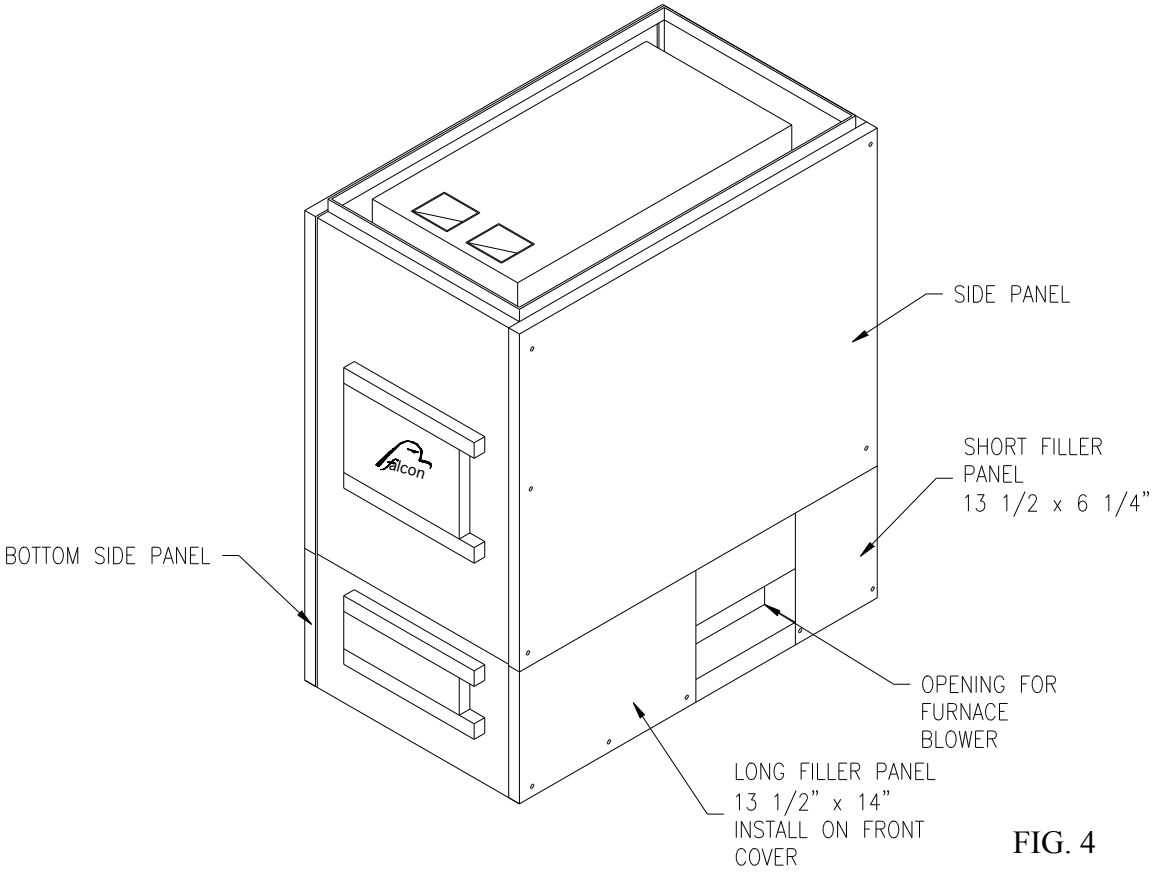


FIG. 4

BLOWER FLAP SEALS

Remove the paper backing and stick the flap seals (sponge rubber strips supplied with the filter box) to the furnace along the top and bottom of the blower opening. Half of the flap seals (approximately 5/8") should protrude into the blower opening. (See fig. 5)

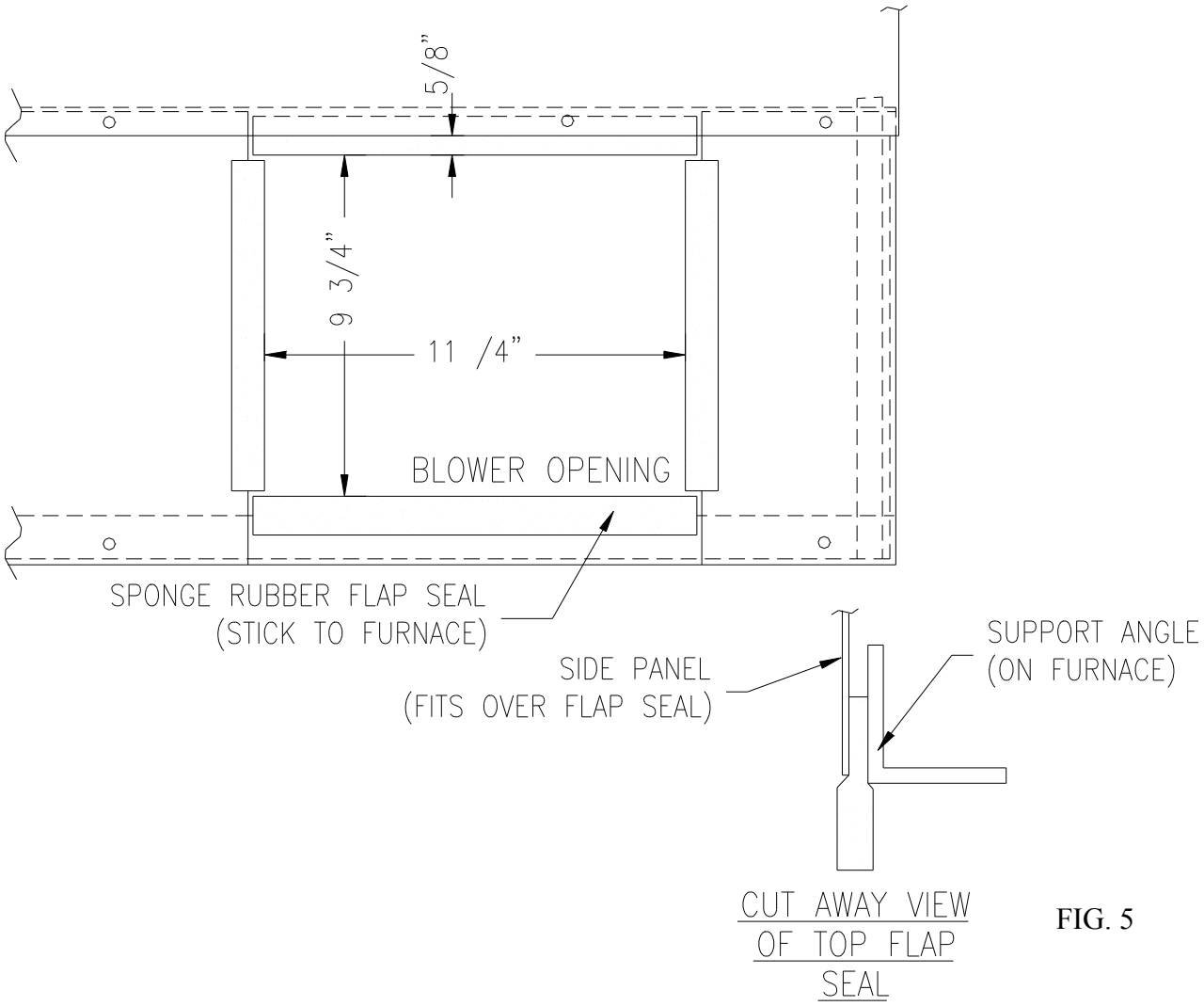


FIG. 5

BLOWER/FILTER BOX INSTALLATION

The blower/filter box assembly has been pre-assembled at the factory. Remove all protective cardboard packaging and check the assembly for correct pulley alignment and belt adjustment. There should be 1 to 1 1/2" of slack in between the pulleys. Adjust if necessary.

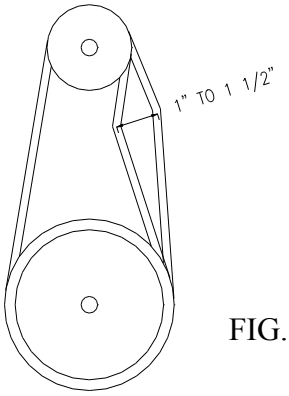


FIG. 6

Check to see that all the nuts and bolts are securely fastened; Tighten if necessary.

Position the blower/filter box in place alongside the furnace, making sure that the blower spout penetrates past the flap seals in the side of the furnace. (See fig.8)

Secure the filter box in place by screwing it together with the side panel to the support angle on the furnace. Use two of the long screws (#10 x 3/4") as you will be penetrating three layers of sheet metal. Fasten the corners of the filter box to the side panel with four sheet metal screw. (Holes must be drilled through side panel).
(See fig.7)

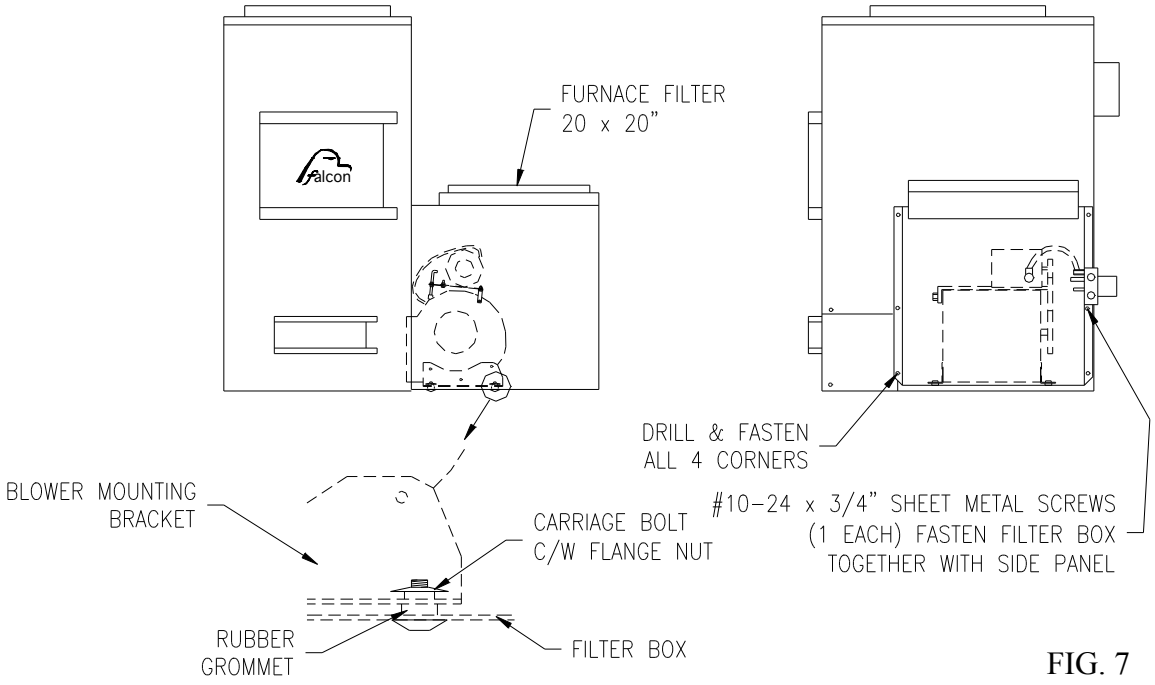

FURNACE FILTER
20 x 20"
DRILL & FASTEN
ALL 4 CORNERS
BLOWER MOUNTING
BRACKET
CARRIAGE BOLT
C/W FLANGE NUT
#10-24 x 3/4" SHEET METAL SCREWS
(1 EACH) FASTEN FILTER BOX
TOGETHER WITH SIDE PANEL
RUBBER
GROMMET
FILTER BOX

FIG. 7

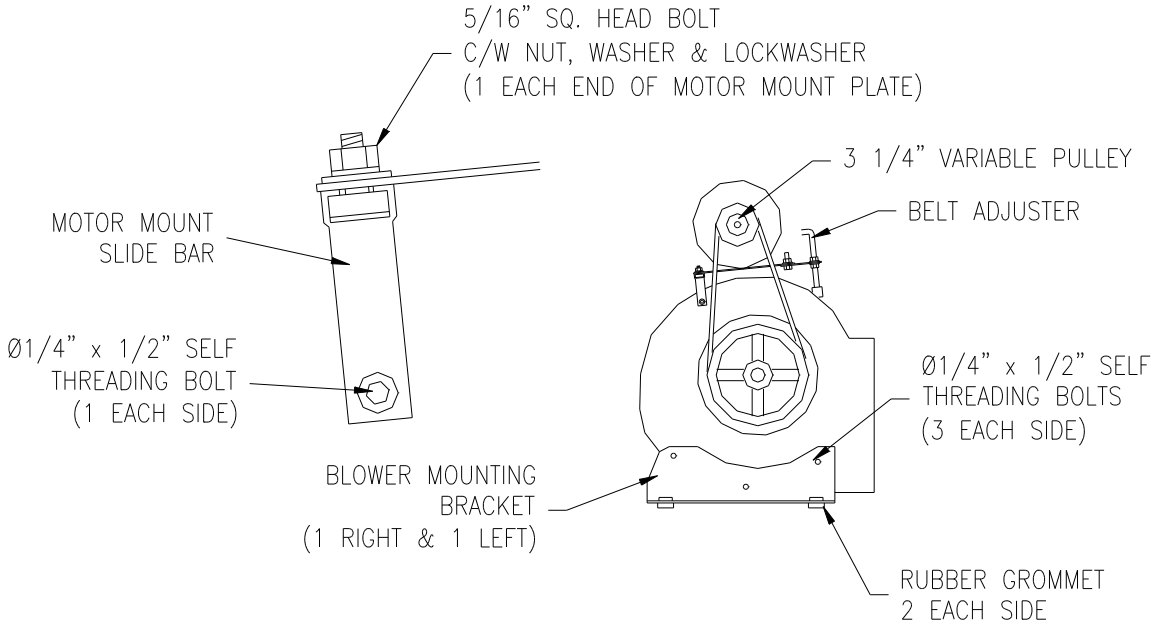

5/16" SQ. HEAD BOLT
C/W NUT, WASHER & LOCKWASHER
(1 EACH END OF MOTOR MOUNT PLATE)
3 1/4" VARIABLE PULLEY
BELT ADJUSTER
MOTOR MOUNT
SLIDE BAR
Ø1/4" x 1/2" SELF
THREADING BOLT
(1 EACH SIDE)
Ø1/4" x 1/2" SELF
THREADING BOLTS
(3 EACH SIDE)
BLOWER MOUNTING
BRACKET
(1 RIGHT & 1 LEFT)
RUBBER GROMMET
2 EACH SIDE

FIG. 8

INSTALLATION OF ELECTRICAL COMPONENTS
(See fig. 9)

DAMPER MOTOR INSTALLATION
(See fig. 10)
- Hold damper motor in place under mount plate in back of furnace
- Line up holes.
- Fasten in place with machine screws and nuts provided.
- Do not tighten screws yet as chain tension in adjusted by motor position.

DRAFT DOOR LINAGE ASSEMBLY
(See fig.11)
- Hook one end of the linkage chain through the hole in the draft motor wheel which is in the 6 o'clock position.
- Hook the other end through the hole in the draft door flange. (Left side)
- Adjust the chain tension by positioning the damper motor (use the slots in the motor mount plate for adjustments)
- There should be little slack in the chain if any when the motor is disengaged and the door is closed.

FAN LIMIT CONTROL
(See fig. 9)
-Punch out the slug on the blower side of the rear panel and insert the fan limit control with cover removed. Mark off and drill two 9/64" mounting holes and fasten the control to the panel with two #10 sheet metal screws provided.

JUNCTION BOX / TRANSFORMER
(See fig 9)
-Punch out the center slug on the bottom of the electrical box and line it up with the hole on the filter box. Fasten the electrical box in place with two sheet metal screws. (Drill two holes in the filter box)

WIRING THE FURNACE

IMPORTANT

THIS UNIT SHOULD BE WIRED BY A QUALIFIED ELECTRICIAN.

NOTE: See wiring diagram for connection details (Fig 12)

-Connect the two wire section of Low Voltage Cable from the Damper Motor, through the hole in the damper motor mount, and through a knock-out on the side of the electrical box. When installing the transformer slip the motor leads through a knock-out hole on the transformer base plate. Use the Strain Relief Bushing supplied to secure the damper motor cable to the electrical box. (See Fig 9)

-Connect the two wire section of the flexible conduit connected to the blower motor through the hole in the filter box to the electrical box. Make sure that the conduit is tucked alongside of the filter box to avoid being caught in the blower belt.
(See Fig. 7)

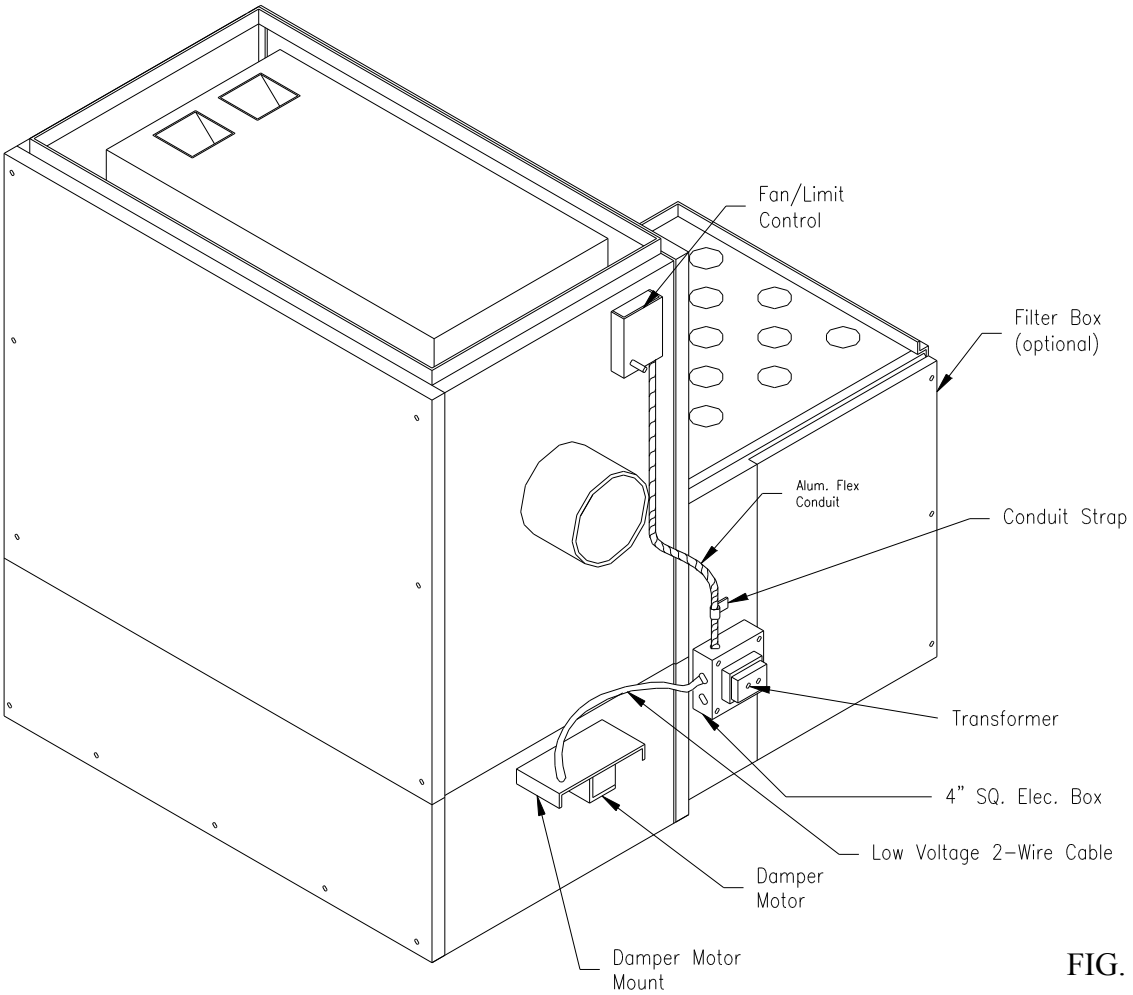


FIG. 9

Installation of Electrical Components

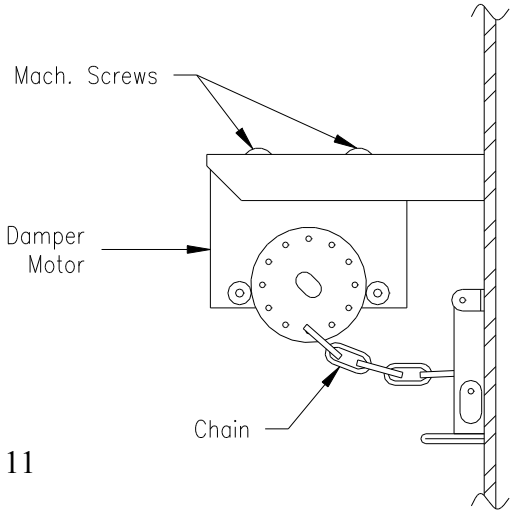


FIG. 11

Draft Door Linkage Assembly

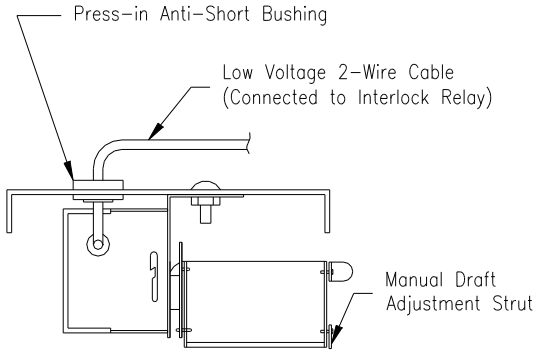
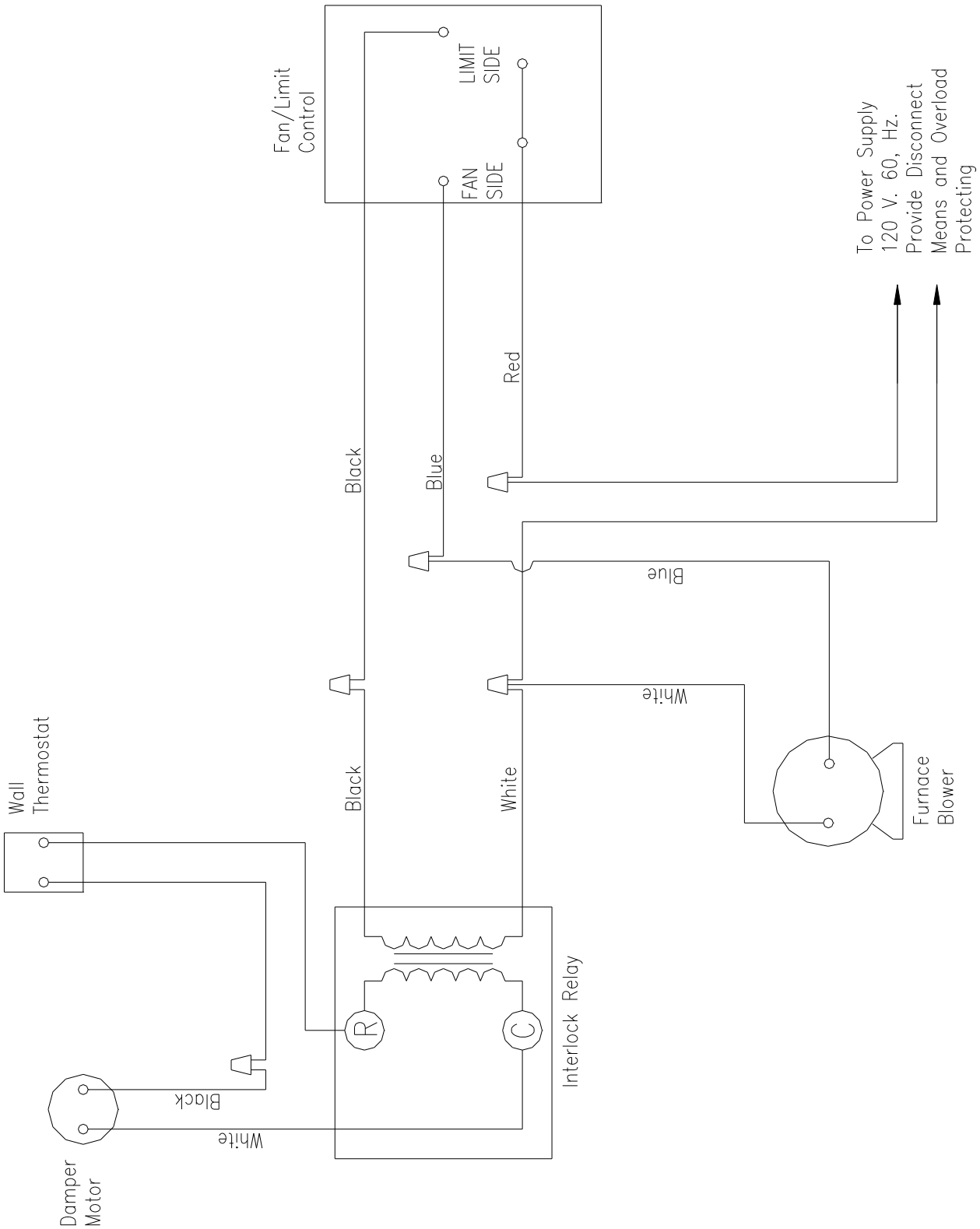


FIG. 10

Damper Motor INstallation



Wiring Diagram

FIG. 12

THERMOSTAT HEAT ANTICIPATOR SETTING:

It will be necessary to set the heat anticipator of the thermostat to suit the characteristics of the installation. Longer cycles suit this furnace best.

- Set the thermostat anticipator to .32
- If longer cycles are required, move the pointer counter-clockwise, if shorter cycles are required move the counter clockwise.

TESTING AND OPERATING PROCEDURE

The following steps should be taken to test your solid fuel furnace:

- Check your main blower by using the manual switch on the fan limit control to see if the blower is working properly.
- Check the draft motor by turning your room thermostat up high enough so that the draft door opens and then lower the thermostat until you hear it close.
- Use a sheet of newspaper to check your draft by placing it inside your furnace and lighting it.

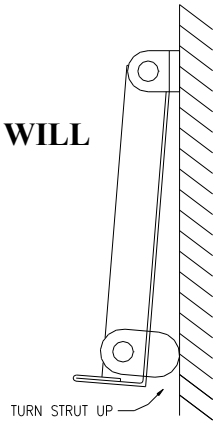
If the above three steps work, you are then ready to light a regular fire.

PLEASE NOTE: Because of the oils used in the manufacturing process and the time for the paint to set-up permanently, some odor may result the first few days of operation.

Should any unusual odors persist, consult your dealer immediately.

OPERATION DURING A POWER FAILURE

IN CASE OF A POWER FAILURE OR DAMPER MOTOR FAILURE A SMALL FIRE CAN BE MAINTAINED BY MANUALLY JAMMING THE DRAFT DOOR OPEN WITH THE OVAL-SHAPED STRUT ON THE BOTTOM RIGHT-HAND SIDE OF THE DOOR. SINCE THE FURNACE BLOWER AND SAFETY LIMIT SWITCH WILL NOT FUNCTION DURING A POWER OUTAGE, TRY TO MAINTAIN A SMALL FIRE ONLY, AS EXCESSIVE HEAT WILL BUILD UP IN THE PLENUM AND DUCTWORK. REMOVE THE LOWER SIDE PANEL FROM THE WOOD FURNACE SO AS TO INCREASE THE FLOW OF AIR THROUGH THE SYSTEM. WHEN POWER RESUMES THE STRUT WILL AUTOMATICALLY RETRACT AND THE FURNACE WILL RESUME NORMAL OPERATION.



----------CAUTION----------

- Burn Wood Only
- Do Not use chemicals or fluids to start the fire. Do not burn garbage, gasoline, naptha or engine oil.
- This unit is not to be used with an automatic stoker.

STARTING A WOOD FIRE

- Set the thermostat up high and make sure the draft door is fully open.

- Lay several pieces of dry kindling wood (1/2 to 3/4 inch thick) in you unit on top of several crumpled pieces of newspaper. Ignite the newspaper and close the door. The door should remain shut for at least 5 to 10 minutes in order to establish the fire. If the fire has established itself, you are ready to load.

- Do not load wood above the level of the bricks, as hazardously high temperatures may occur.

- Once the unit is loaded keep the firing and de-ashing doors tightly shut.
Note: It is important to maintain a good seal around the doors, check the seals regularly and replace if necessary.

- The thermostat can be adjusted according to your heating needs approximately one half hour after your fire has been established.

- After 5 to 7 days of regular burning, burn your unit hot for about 30 to 45 minutes with the draft door open. This will help minimize creosote formation. During this process DO NOT LEAVE UNIT UNATTENDED!

EMERGENCY PROCEDURE

SAFETY HINT

IN CASE OF AN EMERGENCY SUCH AS A CHIMNEY FIRE CALL YOUR FIRE DEPARTMENT IMMEDIATELY AND SHUT ALL DRAFT CONTROLS HAVE A FLARE-TYPE EXTINGUISHER ON HAND (THE KIND SPECIFICALLY DESIGNED FOR CHIMNEY FIRES). DON'T POUR WATER INTO YOUR FIREBOX. RAPID COOLING OF THE FURNACE COULD CAUSE STRUCTURAL DAMAGE.

A fire will probably last only a few minutes... but on rare occasions a chimney blaze might last up to an hour. Keep checking the flue pipe temperature, and watch nearby flammable objects to see that they don't become dangerously hot. In addition, check outside every once in a while to be sure that the sparks coming from the chimney haven't ignited anything in the are (especially your roof!)
Once the fire's out, clean and inspect your furnace, chimney and flue pipe... and resolve to do the job more often in the future. NOTE: A chimney fire will not insure that your chimney is clean of creosote! Often the fire merely transforms the creosote into a thicker, crustier layer.. and the transformation usually leads to very rapid additional ccumulations. Check the flue liner carefully for damage, too. Chimney fires can produce temperatures as high as 2500 degrees Fahrenheit...which may crack masonry or warp steel.

CHIMNEY AND SMOKE PIPE MAINTENANCE

The chimney, smoke pipe and furnace must be cleaned periodically depending upon the soot or creosote buildup. The frequency of cleaning will depend upon a number of factors but mainly upon the type of fuel being burned. Check weekly for creosote build-up until experience shows how often you need to clean to be safe. Be aware that the hotter the fire the less creosote is deposited and weekly cleanings may be necessary in mild weather even though monthly cleanings are enough in the coldest months. Also: Small hot fires are more efficient and deposit less creosote than large smoldering ones. Again, depending on the weather, you may not need a full load for a good overnight burn. You will get the best efficiency when you add only the amount of wood needed until the next time you are available to load. The buildup of soot or creosote can usually but not always be determined by tapping the outside of the chimney connector with a metallic object. If there is a sharp sound, the interior is probably clean, if there is a dull thudding sound, the chimney and chimney connector interiors should be checked further. If the chimney cap is easily accessible, this may be done by removing the cap and looking down from the top using a bright flashlight. If the chimney cap is not easily accessible, then the chimney connector must be removed so that the interior surfaces may be examined.

In the furnace, creosote may build up around the flue collar and on the flue side of the heat exchanger tubes. For inspection and/or cleaning of the furnace, the smoke pipe must be removed. Scrape away creosote build-up with the scraping/stoking tool supplied. Brushes are available for chimney and smoke pipe cleaning.
Also, inspect smoke pipes, smoke pipe joints and smoke pipe seals regularly to ensure that smoke and flue gases are not drawn into, and circulated by the air circulation system.

ASH REMOVAL

When burning wood every morning when there is just a bed of hot embers, run your poker over top of grates to be sure grate slots are clear of burnt fuel.

About once every week or two, depending on weather and how much fuel you burn, you should remove ashes.
CAUTION: NEVER LET ASHES BUILD-UP TO GRATE LEVEL. THIS WILL GREATLY REDUCE THE LIFE SPAN OF YOUR GRATE.
Wood ash is useful as a fertilizer particularly because of its potassium content. Ashes will also provide good traction on ice and snow during the heating months.

To remove ash pan, simply pull out your ash pan. CAUTION: Ash pan can get very hot. Dump ashes in a metal container with a lid. Ash can must be places on a non-combustible surface. CAUTION: Never use anything but a metal container to put your ashes in. Every year many fires are caused by emptying ashes into cardboard boxes or paper bags. Proven fact- small red embers buried in ash cans can stay red hot for days. Ashes are good thermal insulator and keep enough oxygen away so the embers do not burn out.

WOOD FOR YOUR FURNACE

WHICH KIND

- Each wood species offer different qualities that must be considered when deciding just what type of fuel is needed in your wood stockpile.

- Softwoods, such as spruce, fir and pine ignite easily because they contain more resin than hardwood. They are good for starting fires or reviving a slow fire. Also once a fire is started, softwoods can be mixed with hardwoods. Like hardwoods, softwoods need plenty of oxygen to avoid a smoldering fire which can deposit creosote on the flue and stack. Softwoods do burn more quickly and your furnace will require more frequent replenishing.

- Hardwoods such as oak, maple, birch, beech and ash are best for a long lasting fire. These species produce a shorter flame and burn less vigorously than softwoods. Oak gives the most uniform and shortest flames and produces steady, glowing coals.

- Green wood yields approximately 15% to 45" less heat value than air-dried wood. The moisture content cuts the heat output and increases the possibility of creosote build-up.

- The standard cord measures 4 feet by 4 feet by 8 feet. The "Face Cord" measures 4 feet by 8 feet by 16 inches. Green wood is best stored partially covered, to air dry at least six (6) months.

- When bringing wood indoors be sure not to store it within the furnace installation clearances or within the space required for charging and ash removal.

B.T.U. HEAT VALUE PER CORD

TYPE	B.T.U. IN MILLIONS
Hickory	26.8
Maple (Hard)	25.2
Beech	23.8
Oak (White)	23.5
Oak (Red)	21.3
Birch (Yellow)	21.2
Ash	20.5
Maple (Soft)	18.8
Spruce	18.0
Elm	17.4
Pine (White)	13.1

TROUBLE SHOOTING PROBLEM SOLVING FOR YOUR SOLID FUEL FURNACE

PROBLEM: SMOKE PUFFS FROM FURNACE

CAUSES/SOLUTIONS:
- Check chimney draft. Check for blocked chimney or flue pipe. Use mirror to check chimney clearance.
- Check ash pit - if too full, empty.
- Make sure furnace room is not too airtight.
- Check cleanout door. Make sure it's airtight.
- Check chimney for possible down-draft caused by taller surrounding trees or objects. Correct with proper chimney vent cap.
- Check the possibility of cold chimney forcing cool gas blockage. Remedy by properly insulating chimney with non-combustible liner- non-combustible insulation.
- Wood may be to green.

PROBLEM: INDADEQUATE HEAT BEING DELIVERED TO YOUR HOME

CAUSES/SOLUTIONS:
- Check home insulation - Is it adequate?
- Check hook-up to furnace - is it installed correctly? (Review Manual)
- Check fan limit control - is it set too low?
- Cool air inlet may be inadequate or furnace room too airtight.
- Your fuel may be too low grade and or too green.
- Make sure your hot air duct (and other duct work) is airtight.
- Insufficient draft - too much horizontal pipe and/or elbows, chimney too short and/or poorly insulated, down-draft caused by taller surrounding objects and/or poor vent cap.

PROBLEM: EXCESS SMOKE OR FLAMES COMING OUT DOOR WHEN RE-FUELING

CAUSES/SOLUTIONS:
- Open fire door slowly - then refuel
- Check length of flue pipe to chimney. Your unit should be within six (6) feet of your chimney.
- Make sure chimney cap is not too close to the top of the chimney.
- Check chimney draft - make sure chimney flue pipe is clean and chimney is of adequate height.
- Make sure you're not suffocating the fire with excess amount of unburnt fuel.

PROBLEM: DISTRIBUTION BLOWER CONTINUES TO RUN OR WILL NOT RUN

SOLUTION:
- Check to see if fan limit control is set incorrectly or is faulty.
- Check to see that the blower is properly wired. (See Wiring and Assembly Instructions).
- Check to see that limit controls are on the proper setting.

PROBLEM: DRAFT MOTOR CONTINUES TO RUN OR WILL NOT RUN

SOLUTION:
- Check wiring.
- Check thermostat or thermostat wire for short.
- Make sure temperature is calling for or not calling for heat.

PROBLEM: EXCESSIVE CREOSOTE

SOLUTION:
- check the grade of solid fuel you are burning.
- Make sure your unit is serviced by its own proper chimney.
- Check length of flue pipe and its connections.
- Make sure you are burning the smallest, hottest fire to adequately heat your home.
- Also see Solutions to Problem 1.

PARTS SCHEDULE

NO.	DESCRIPTION	QUANTITY
1.	FIREBOX ASSEMBLY	1
2.	FIRE DOOR	1
3.	ASH DOOR	1
4.	HANDLES	2
5.	DRAFT DOOR CHAIN	1
6.	ASH COLLECTOR	1
7.	RIDGID GRATES	2
8.	HINGE PINS	4
9.	FIREBRICKS	12
10.	PANEL - SIDE	2
11.	PANEL - FRONT	1
12.	PANEL - BACK	1
13.	PANEL - BOTTOM SIDE	1
14.	PANEL - BOTTOM (FILLER)	2
15.	FLASHING - DOOR FRAME	1
16.	FLASHING - FLUE RING	1
17.	FILTER BOX	1
18.	FILTER	1
19.	BLOWER	1
20.	BOLWER MOTOR C/W 2 WIRE SECTION OF FLEXIBLE CONDUIT	1
21.	3” ADJUSTABLE PULLEY	1
22.	FAN BELT 38”	1
23.	BELT ADJUSTMENT SCREW C/W NUT, WASHER & LOCKWASHER	1
24.	SQUARE HEAD BOLTS C/W SECTION OF FLEXIBLE CONDUIT	2
25.	FAN/LIMIT SWITCH C/W 3 WIRE SECTION OF FLEXIBLE CONDUIT	1
26.	CONTROL RELAY	1
27.	DAMPER MOTOR C/W 36” WIRE LEADS	1

NO.	DESCRIPTION	QUANTITY
30.	4” ELECTRICAL BOX	1
31.	MARRETTES (WIRE CONNECTORS)	5
32.	CONDUIT HOLD-DOWN STRAPS	4
33.	CARRIAGE BOLTS (DOMED HEAD) C/W FLANGED NUTS	2
34.	MACHINE SCREWS C/W NUTS	20
35.	1/2” LONG SHT. METAL SCREWS	4
36.	3/4” LONG SHT. METAL SCREWS	2
37.	RUBBER FLAP SEALS	1
38.	9/64” DRILL BIT (NOT SHOWN)	1

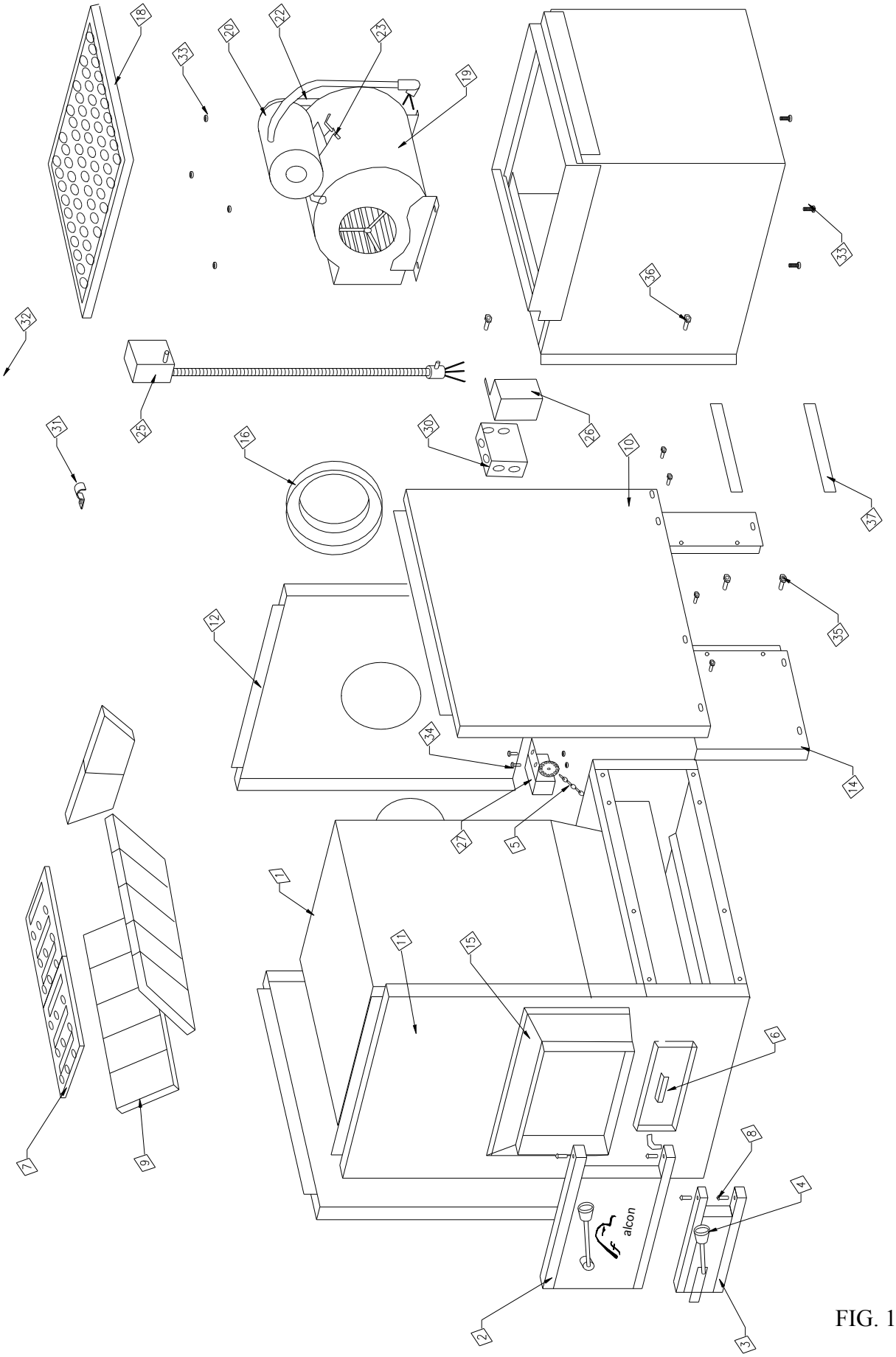

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FIG. 14

FALCON MACHINERY 1965 LIMITED

"LIMITED TRANSFERABLE WARRANTY"

Falcon Machinery 1965 Limited warrants all parts and components manufactured by them to be free from defects in material and workmanship for a period of 2 (two) years from the date of installation. The manufacturers obligation will be to effect all warranted repairs or parts replacements at the manufacturers option, for parts or labour required to complete the actual repair.

CONDITIONS

1. The warranty registration card supplied with each unit, MUST BE completed and mailed to Falcon Machinery within 10 (ten) days of the installation date.

2. Service estimates must be issued to the manufacturer for written authorization prior to effecting repairs.

3. Components not manufactured by Falcon Machinery are NOT covered by the terms of this warranty. They may be covered under specific warrantees outlined by their respective manufacturers.

4. The operation of the heating unit in a corrosive environment is considered misuse and voids this warranty.

5. This unit must not have been previously altered, repaired, modified or services by anyone other than the service facilities authorized by Falcon Machinery. The serial number on the unit must not have been altered or removed. The unit must not have been subject to accident, misuse, abuse or operated contrary to the instructions contained in the accompanying manual. The opinion of Falcon Machinery Limited with respect to these matters shall be final.

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