

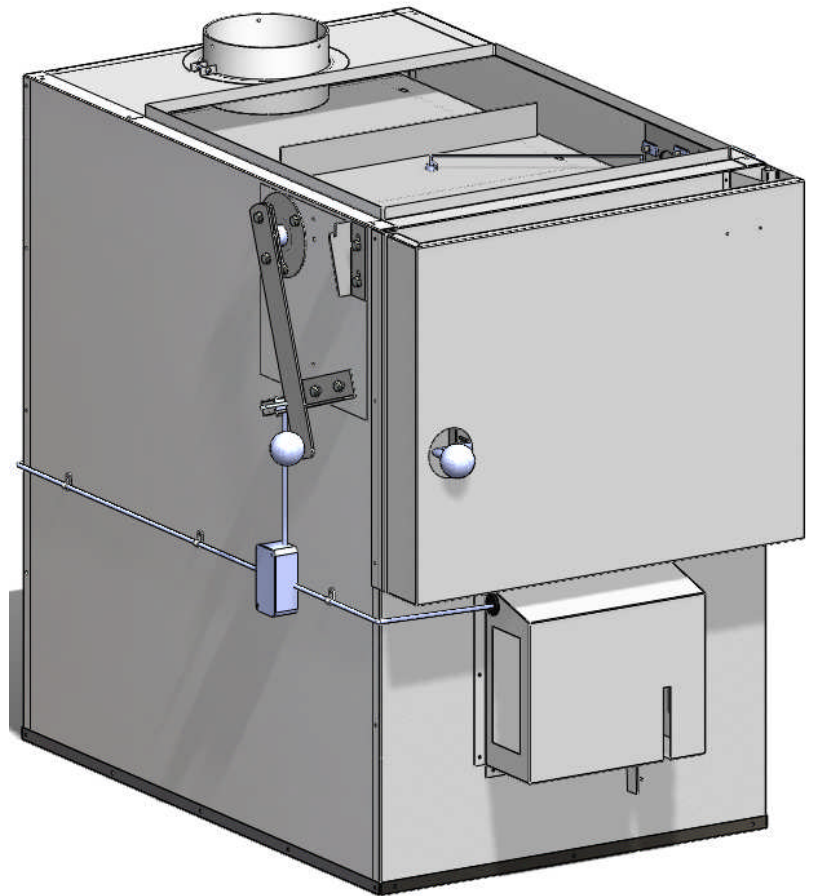


APEX CBT

SOLID FUEL CATALYTIC FURNACE

For use as an add-on to electric, gas, or oil furnaces or and independent wood furnace when equipped with a blower.

USERS' INSTALLATION OPERATION & MAINTENANCE MANUAL



INSTALLER—PLEASE FILL IN:
SERIAL NUMBER.....

SAVE THESE INSTRUCTIONS

**INSTALLER: PLEASE LEAVE THIS MANUAL WITH THE CUSTOMER
CUSTOMER: PLEASE KEEP MANUAL FOR FUTURE REFERENCE**

Pour la version française de nos manuels S.V.P. vous référez à notre site web: www.blazeking.com

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INTRODUCTION

To Our Valued Customers

Dear Customer:

Thank you for purchasing a the **Blaze King APEX CBT** catalytic wood burning furnace (hereafter referred to as "furnace").

This owner's manual explains the steps required to safely assemble, install, operate, and maintain your new furnace. Be a responsible furnace owner; carefully read these requirements for safe installation and proper operation BEFORE installing and using your furnace.

Obtain permits from the Building Inspector or Fire Department, if local laws require. Check local building and fire codes before installing your furnace. When you have completed the installation, have it checked by your local inspector. Disregarding inspection and code requirements may jeopardize your homeowner's insurance. Since some insurance carriers require notification of a furnace installation, contact your insurance agent. We want your **Blaze King** to give you a lifetime of trouble-free operation.

While we have made every effort to make these instructions as complete as possible, some installation or operating conditions may not be covered. If you have any questions that are not answered here, contact your **Blaze King** dealer, Local Building Inspector, Fire Department, or our customer service department at **Blaze King**, Walla Walla, WA (509) 522-2730 or in Canada 250-493-7444.

The Management and Employees of

Blaze King Industries

SPECIFICATIONS

Model	APEX CBT (catalytic)
Rating	48,000 Btu/hr output*
Height	40"
Width	26 1/2"
Length	48"
Flue collar	7" I.D.
Flue pipe center to rear	10 3/16"
Recommended flue draft	.05" water column
Hot air plenum opening	25 3/4" L x 24" W
Fire door opening	12" x 13"
Firebox length	27"
Width	16"
Height	24"
Capacity	6 cu. ft.
Fuel length	26"
Firebox design features	Catalytic with post burn preheated secondary air.
Construction	12 ga. Firebox brick & cast lined 20 ga. Insulated cabinet
Weight	550 lbs.

*Average output from B415 emission run, Higher Btu's achievable depending on wood size and moisture content, geographic location, time between reloading, installation (draft).

PRODUCT INFORMATION

Appliance Dimensions

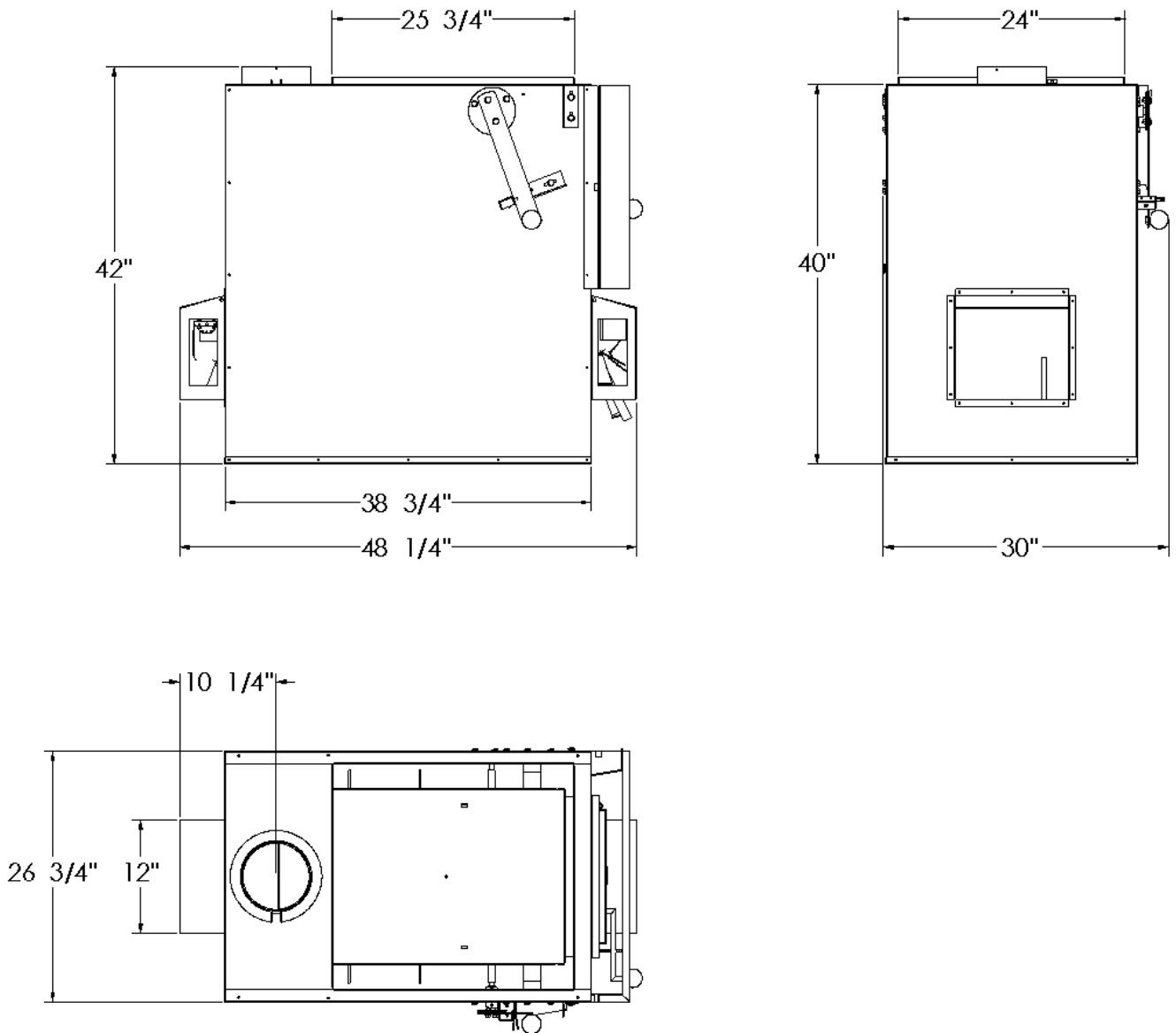
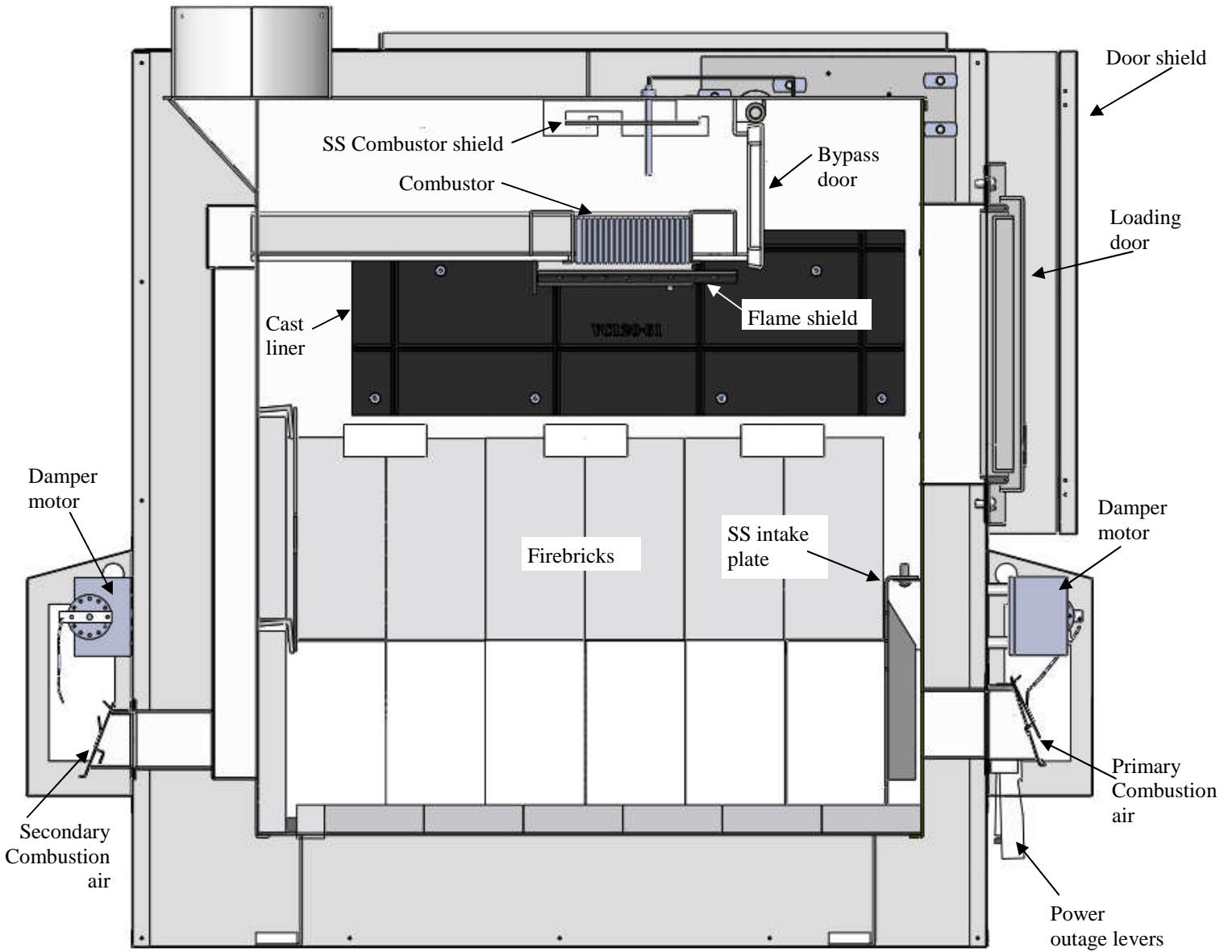


Fig. 1

PRODUCT INFORMATION



Cutaway view



Blaze King APEX CBT

LISTED SOLID FUEL FURNACE
LISTÉ FOURNAISE À COMBUSTIBLE SOLIDE

DO NOT REMOVE THIS LABEL / N'ENLEVEZ PAS CETTE ÉTIQUETTE
REFER TO OWNER'S MANUAL / RÉFÉREZ-VOUS AU MANUEL D'INSTALLATIONS

SERIAL NUMBER:

SAFETY TESTED TO / TESTÉ SELON: CSA B366. 1, UL 391 (MARCH 2009)

THIS UNIT MAY BE INSTALLED AS FOLLOWS:

- As an independent forced air furnace equipped with a 900 cfm fan (VB1000) as shown in diagram "B" below.
- As a down stream series duct add-on to any of the following furnaces (Diagram "A"):
 - Oil furnace having oil input as shown on original nameplate between 0.81 usgph & 1.2 usgph (Max.)
 - A gas fired forced air furnace with a maximum output of 120,000 Btu and a minimum fan size of 900 cfm.
 - Electric forced air furnace rated at 10 kW to 30 kW input. Minimum fan size 900 cfm.

Minimum interconnect duct size for add on use 12 in. (300 mm) x 17 in. (430 mm).

CHIMNEY: DO NOT CONNECT THIS FURNACE TO A FLUE SERVING ANOTHER APPLIANCE USE 7" LISTED FACTORY BUILD CHIMNEY SUITABLE FOR USE WITH SOLID FUELS

ELECTRICAL REQUIREMENTS: 120 V AC 15 A CRKT. Fan control rating 2000 VA.

BURN WOOD ONLY burning treated or painted wood, plastic etc. will make the combustor inoperative
DON'T LOAD FUEL ABOVE TOP OF FIREBOX LINER BRICKS
DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE

DANGER: RISK OF FIRE OR EXPLOSION

- Do not burn garbage, naphtha, gasoline, engine oil and other flammable liquids under any circumstances

WARNING: RISK OF FIRE.

- Do not operate with flue draft exceeding 0.06 in water column
- Do not operate with fuel loading or ash removal doors open
- Do not store fuel or other combustible material within marked installation clearances
- Inspect and clean flues and chimney regularly

CAUTION: HOT SURFACES

- Keep children away
- Do not touch during operation
- Maximum draft marked on nameplate

IN THE EVENT OF A RUN AWAY FIRE OR CHIMNEY FIRE: Close all combustion air. Call the fire department and be prepared to evacuate the house. Correct the problem before re-firing.

In the event of a power failure: Remove air filter and cabinet blower door to assist flow. Open up all registers. Lift manual draft control lever until it "clicks", this will open draft to preset level.

Disconnect power before servicing
"Maintain combustion air to both furnaces - air starvation is dangerous"

CETTE UNITÉ PEUT ÊTRE INSTALLÉE COMME SUIT :

- Comme four indépendant à air forcé équipé d'un évent cfm 900 (VB1000) suivant les indications du diagramme B » ci-dessous
- Comme série descendante, canalise l'adjonction au four suivant (Diagramme "A")
 - Four à l'huile ayant une entrée d'huile comme indiqué sur la plaque signalétique originale entre (0.81 usgph & 1.2 usgph (Max.)
 - Un four à gaz à air forcé avec un résultat maximum de 120,000 BTU et un minimum d'évent de 900 cfm.
 - Un four électrique à air forcé évalué à 10 kW à 30 kW d'entrée. Taille minimum de l'évent 900 cfm.

Taille minimum de conduit d'interconnexion pour ajoutée 12 in. (300 mm) x 17 in. (430 mm).

CHEMINÉE: NE CONNECTEZ PAS CE FOUR À UNE CONDUITE DE CHEMINÉE SERVANT UN AUTRE APPAREIL UTILISÉ UNE CHEMINÉE ÉNUMÉRÉE 7" APPROPRIÉE POUR L'USAGE AVEC LES COMBUSTIBLES SOLIDES

CONDITIONS ÉLECTRIQUES REQUIS : 120 V AC 15 A CRKT. Contrôle de ventilateur 2000 VA.

BRÛLER SEULEMENT LE BOIS

NE PAS CHARGER AU-DESSUS DES BRIQUES DE REVÊTEMENT
N'EMPLOYEZ PAS AUCUN PRODUITS CHIMIQUES OU AUTRE LIQUIDES INFLAMMABLES

DANGER: RISQUE D'INCENDIE OU D'EXPLOSION

- Ne pas brûler sous aucune circonstance, des ordures, le naphtha, de l'essence, l'huile à moteur et d'autres liquides inflammables.

AVERTISSEMENT: RISK D'ENCIDIE

- N'opérez pas avec l'ébauche de la conduite de cheminée dépassant 0.06 dans la colonne d'eau.
- N'opérez pas pendant le chargement du carburant ou avec la porte des cendre ouverte.
- Ne stockez pas le carburant ou tout autre matériel combustible dans des dégagements marqués d'installation
- Inspectez et nettoyez votre cheminée et les conduites fréquemment

CAUTION: SURFACES CHAUDES

- Gardez les enfants au loin
- Ne touché pas pendant que le four fonctionne
- Ébauche maximum marquée sur la plaque signalétique

EN CAS D'INCENDIE DE CHEMINÉE OU UN FEU FILANT: Fermez tout l'air de combustion Appelez les pompiers et soyez préparé pour évacuer la maison. Corrigez le problème avant la re-mise à feu

En cas d'une panne de courant : Enlevez le filtre à air et la porte de ventilateur pour aider l'écoulement. Soulevez le levier de commande d'ébauche manuel jusqu'à ce qu'il "clique", ceci ouvrira l'ébauche pour pré régler le niveau

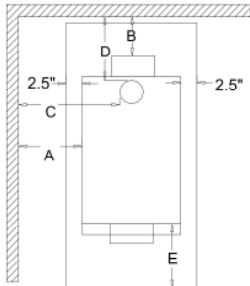
Déconnectez avant l'entretien
"Maintenez l'air de combustion aux deux fours, le manque d'air est dangereux"

APPROVED ELECTRICAL COMPONENTS / COMPOSANTS ÉLECTRIQUES APPROUVÉS

Thermostat	Honeywell - 7822A1258 or equivalent
Damper motor	Honeywell - M847A1049 or equivalent
Fan limit	Honeywell - L4064 or equivalent (200 F limit)

REFER TO DETAILED INSTALLATION INSTRUCTIONS / RÉFÉREZ-VOUS AUX INSTRUCTIONS D'INSTALLATION DÉTAILLÉES

INSTALLED BY / INSTALLE PAR _____
ADDRESS / ADRESSE _____
DATE / DATÉE _____



MINIMUM CLEARANCES / DEGAGEMENTS MINIMUM

WOOD CHARGING DOOR / PORTE DE CHARGEMENT	48 IN. (1220 MM)
ONE SIDE / D'UN COTE (A)	6 IN. (150 MM)
OTHER SIDE / DU COTE OPPOSE	18 IN. (460 MM)
BACK (B) / DOS (B)	3.5 IN. (90 MM)
PLENUM/BONNET & FIRST 2 FT (0.6 M) OF DUCT/TUYAU	1 IN. (25 MM)
FLUE (D) / CONDUITE DE CHEMINÉE	10" IN. (250 MM)
FLUE (C) / CONDUITE DE CHEMINÉE	18 IN. (460 MM)

*check with local codes, 18" may be required for single wall pipe** vérifiez avec les codes locaux, 18" peut être exigé pour la conduite de cheminée*
IF INSTALLED ON COMBUSTIBLE FLOOR THE FLOOR MUST BE PROTECTED 18 IN. (460MM) IN FRONT OF WOOD CHARGING END (16 IN. (410MM) IN USA)
SI INSTALLÉ SUR UN PLANCHER COMBUSTIBLE LE PLANCHER DOIT ÊTRE PROTÉGÉ 18 PO(460MM) AU DEVANT DE LA PORTE DE CHARGEMENT
MINIMUM SIZE FLOOR PROTECTOR= 65" x 31.5" (1650 x 800 MM) /LA TAILLE MINIMUM DU PROTECTEUR DE PLANCHER = 65" x 31.5" (1650 x 800 MM)

DIAGRAM A

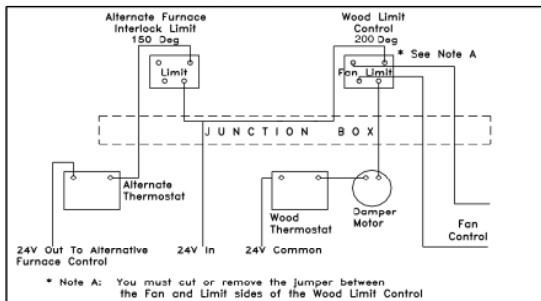
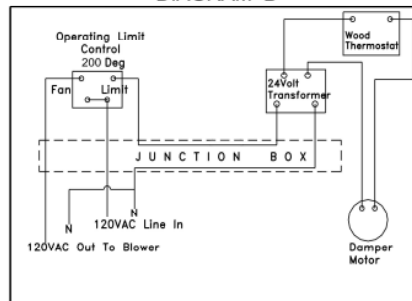


DIAGRAM B



*For Supply Connections Use No. 16 AWG Or Larger Wires Acceptable For At Least 220 °F (105 °C)** Pour les raccordements d'approvisionnement utilisez NO 16 AWG ou des files plus grands acceptable pour au moins 220 °F (105 °C)**

MANUFACTURED BY:
Blaze King Industries
146 A Street
Walla Walla, WA.
99362
Ph# 1-509-522-2730

Valley Comfort Systems Inc.
1290 Commercial Way
Penticton, BC
V2A 3H5
Ph# 1-250-493-7444

EMISSIONS TESTED TO / TESTÉ SELON:	CSA B415 (MAY 2009)
AVERAGE PARTICULATE EMISSION:	3.3 GR/HR
AVERAGE EFFICIENCY:	87.2 %
MINIMUM HEAT OUTPUT:	13779 BTU
MAXIMUM HEAT OUTPUT:	47996 BTU

MANUFACTURE DATE:

- JAN FEB MAR APR
- MAY JUN JUL AUG
- SEP OCT NOV DEC
- 2009 2010 2011 2012

#0199

SAFETY PRECAUTIONS

- ✓ Installation is to be performed by a qualified installer
- ✓ Comply with all local codes and regulations.
- ✓ Never operate a furnace that has been improperly installed.
- ✓ **DO NOT USE CHEMICALS OR FLUIDS TO START OR FRESHEN A FIRE. Keep all flammable fluids well away from the furnace.**
- ✓ **RISK OF FIRE OR EXPLOSION - DO NOT BURN GARBAGE, GASOLINE, NAPHTHA, ENGINE OIL, OR OTHER INAPPROPRIATE MATERIALS.**
- ✓ Combustible materials, including fire wood, must not be stored within the furnace installation clearances or within the space required for fueling, ash removal, and other routine maintenance operations.
- ✓ Never operate the furnace unless you are sure the smoke pipe and chimney are in safe condition. Flue gasses may contain carbon monoxide which is poisonous.
- ✓ Keep smoke pipe and chimney clean to prevent a chimney fire. Inspect and clean flues and chimney regularly. In the event of a chimney fire turn down all thermostats and close off combustion air. Call a fire department if necessary. Have a clearly understood plan to handle a chimney fire.
- ✓ **CAUTION: CLEANOUT OF THE HEAT EXCHANGER, FLUE PIPE, CHIMNEY, AND DRAFT INDUCER IF USED, IS ESPECIALLY IMPORTANT AT THE END OF THE HEATING SEASON TO MINIMIZE CORROSION DURING THE SUMMER MONTHS, CAUSED BY ACCUMULATED ASH.**
- ✓ **CAUTION: Hot Surfaces**
 - Keep children away
 - Do not touch during operation
 - Maximum draft marked on nameplate

INSTALLATION INSTRUCTIONS

GENERAL

INSTALLATION IS TO BE PERFORMED BY A QUALIFIED INSTALLER

Please take time to read these instructions thoroughly. Not following the instructions could result in a faulty installation causing serious problems. Along with these general instructions you must follow the specific instructions which pertain to your particular installation i.e.: add-on to electric, gas, oil or independent installations.

FREIGHT DAMAGE

This product was carefully inspected before it left Blaze King. Inspect the unit thoroughly upon its arrival. If damage is found report it to the carrier and then immediately file a freight damage claim. Your local Blaze King dealer will assist if required.

PARTS INCLUDED WITH THE APEX CBT

1. 2 Fan limit controls and bracket
2. Thermostat
3. Rake
4. Ash shovel
5. Insulation strips (3 pieces)
6. Digital Combustor thermometer
7. This manual

OPTIONAL EQUIPMENT

1. Blower and cabinet for independent use (900 cfm. to 1200 cfm.), see page 27.
2. 24 volt control transformer

USAGE

The APEX CBT may be installed as follows:

1. An add-on to any of the following furnaces:

- A. An electric forced air furnace rated at 15 KW to 27 KW with a minimum size fan of 900 cfm. (see page 22)
- B. A forced air gas furnace with a maximum output of 120,000 btu. and a minimum size fan of 900 cfm. (see page 24)
- C. An oil furnace having an oil input as shown on the nameplate of not more than 1.2 usgph. and a fan capacity of not less than 900 cfm. (see page 24)

2. As an independent forced air wood furnace equipped with a blower of not less than 900 cfm. Capacity (see page 26).

INSTALLATION INSTRUCTIONS

CAUTIONS

1. All installations must comply with local building safety codes.
2. Installation shall be by a licensed, qualified installer experienced in heating equipment installations.
3. **THE WOOD SECTION MUST BE VENTED INTO A CHIMNEY APPROVED FOR SOLID FUEL USE IN GOOD CONDITION. MOST GAS FURNACES ARE VENTED INTO "B" VENTS, THIS IS UNACCEPTABLE FOR SOLID FUEL APPLIANCES. THE APEX CBT MUST NOT BE VENTED INTO ANY TYPE OF CHIMNEY THAT ALSO SERVES ANOTHER APPLIANCE.**
4. **DO NOT CONNECT THE DUCT WORK SO REVERSE OR PARALLEL FLOW IS POSSIBLE.**
5. **DO NOT RELOCATE ANY OF THE CONTROLS ON THE ORIGINAL OR ALTERNATE FURNACE.**
6. Ensure that all existing or alternate furnace systems are in good operating condition before installing the add-on. Always maintain required clearances from the existing or alternate furnace.
7. The warm air supply duct system need to be constructed of metal in accordance with NFPA 90B,2-1.1
8. The plenums installed to the furnaces need to be constructed of metal in accordance with NFPA 90B,2-1.3

Blaze King supports the WETT (Wood Energy Technology Transfer Inc, Canada) & NFI (National Fireplace Institute, USA). These organizations provide training and certification for personnel involved in installation and maintenance of wood heating systems.

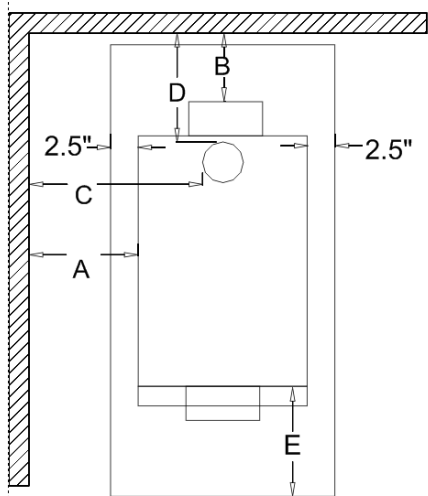


Fig. 1a

CLEARANCES TO COMBUSTIBLES

These clearances are **minimum** clearances to combustibles. Always maintain sufficient space for servicing, access to flue pipe etc.

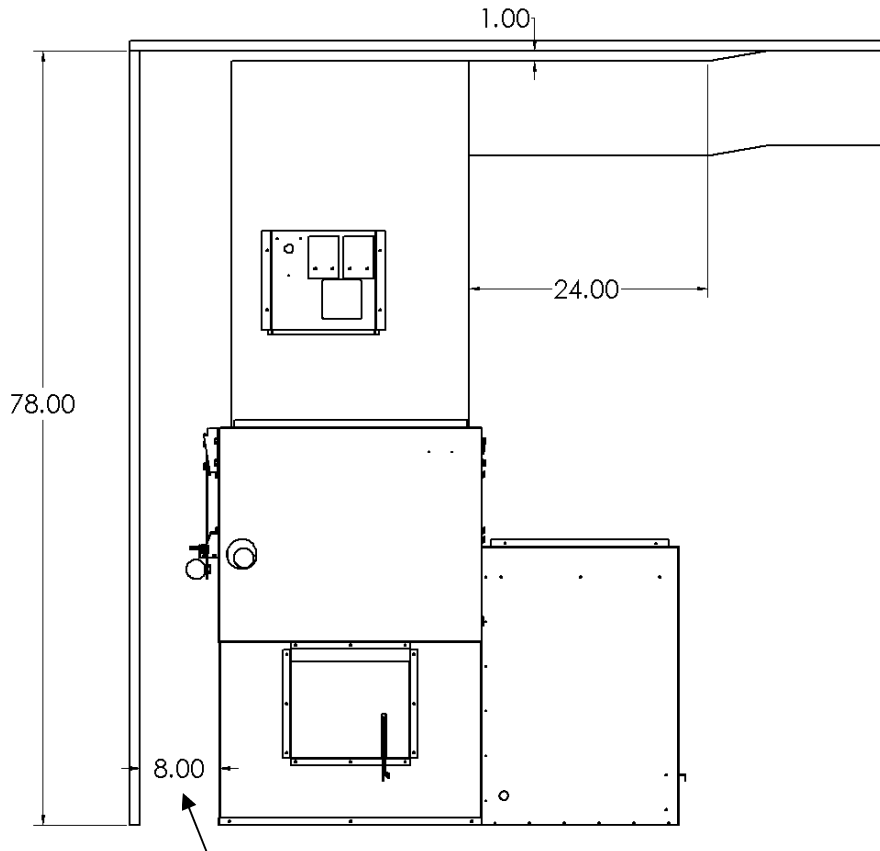
WOOD CHARGING END (DOOR)	48 IN. (1220 MM)
ONE SIDE (A)	6 IN. (150 MM)
OTHER SIDE	18 IN. (460 MM)
BACK (B)	3.5 IN. (90 MM)
PLENUM & FIRST 2 FT (0.6 M) OF DUCT	1 IN. (25 MM)
FLUE (D*)	10* IN. (250 MM)
FLUE (C)	18 IN. (460 MM) IN CANADA 16 IN. (410 MM) IN USA

check with local codes, 18" may be required for single wall pipe

If the furnace sits on a combustible floor, a non-combustible shield must be used underneath the furnace and extending 18 in. out from the charging end and 8 in. on either side of the fuel-loading door. A non-combustible shield is also required underneath the chimney connector and extending at least 2 in. on either side of the chimney connector. (minimum size floor protector= 65" x 31.5") This floor protection is required to prevent sparks from falling onto the combustible floor. See CSA B365-M87). It is not required to be a heat protective covering.

This furnace must be installed in compliance with all local codes and regulations.

INSTALLATION INSTRUCTIONS



Can be as little as 6" but 8" is recommended for easier access to the bypass handle

Fig. 1b

Always maintain sufficient space for servicing unit & accessing fluepipe for cleaning.

LOCATION FURNACE

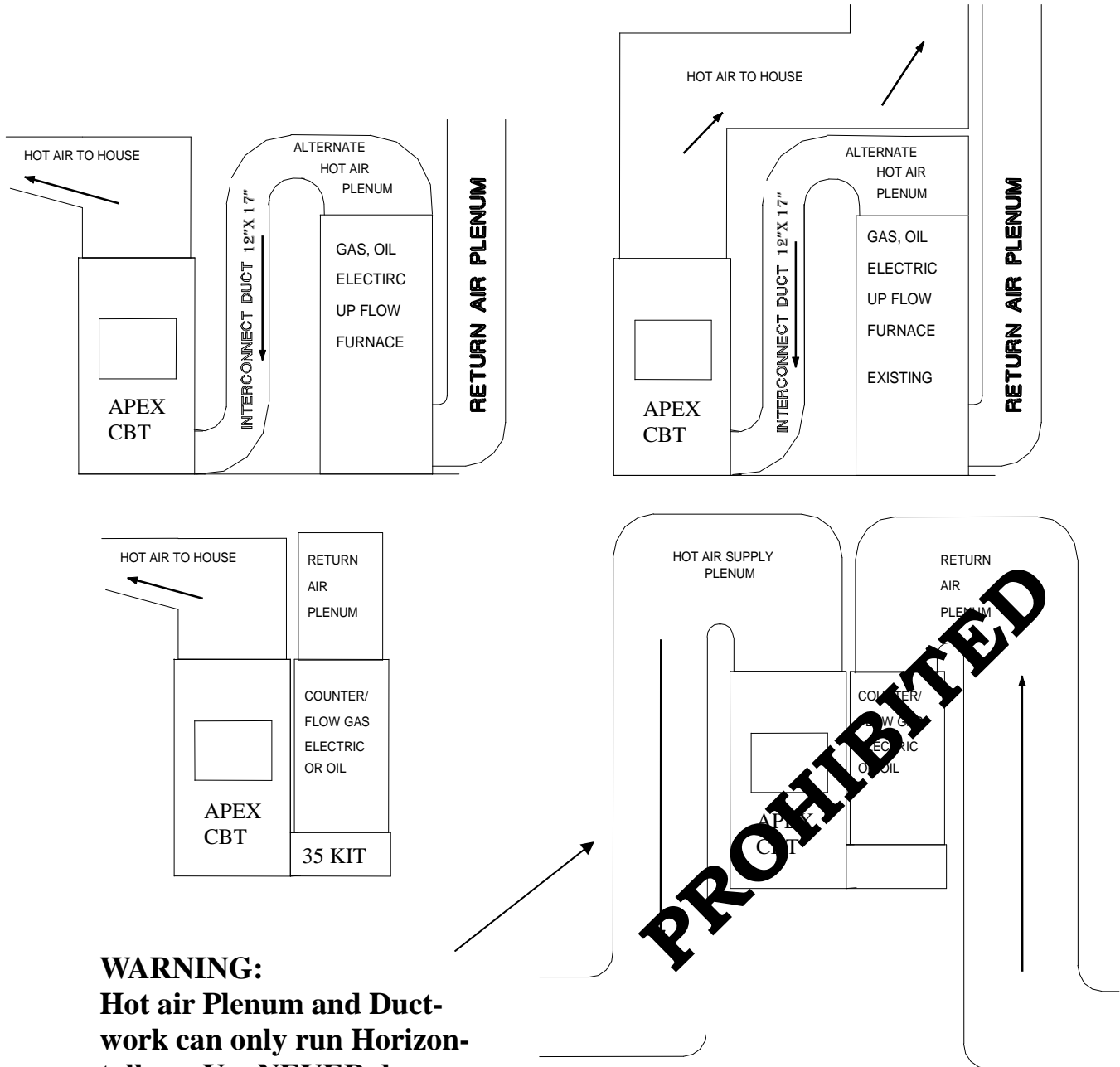
The Apex CBT is intended to be installed in a basement, the Apex is **NOT** approved for a counter flow installation. Ceiling height of the furnace room needs to be a minimum of 6' 6" (1.98 M). **Hot air Plenum and Ductwork can only run Horizontally or Up, NEVER down.**

The APEX CBT can be located on either side of the alternate furnace. Minimum size of the interconnect duct is 12 in. x 17 in. Typical installations see fig. 3.

The interconnect duct opening can be cut on either side of the Apex CBT, depending where the existing or alternate furnace is located. Cut the opening max. 1 1/2 inches from the floor and locate close to the front, about 8" (Distance A, see fig. 4). The side panel can be taken off for easier cutting.

Note the bypass handle is located on the left side of the Apex, but can be moved to the right side, this might be required in some installations to clear return air plenum or counter flow existing or alternate furnace. See page 14 for instructions.

INSTALLATION INSTRUCTIONS



WARNING:
 Hot air Plenum and Duct-
 work can only run Horiz-
 ontally or Up, NEVER down.

Fig. 3 Typical installation illustration

INSTALLATION INSTRUCTIONS

Apex CBT as independent furnace:

When the blower is installed on the left side of the Apex CBT, the bypass handle needs to be moved to the right side (see page 14), so if possible, install the blower on the right side.

Install the blower more to the front of the unit as that is where most of the heat is. When using the VB1000 blower cut an opening 13 1/4" W x 11 13/16" H in the side panel about 9" from the front (Distance A, see fig. 4). Check the height of the hole with the blower. The side panel can be taken off, it might be easier to cut the opening that way.

NOTE: After interconnect duct opening has been cut into the side of the Apex CBT, insulation must be fastened back to the furnace cabinet all around the opening. Use the metal strips provided to hold the insulation tightly against the cabinet inside. This will prevent the insulation from dislodging due to blower induced vibration. (see fig.5 below)

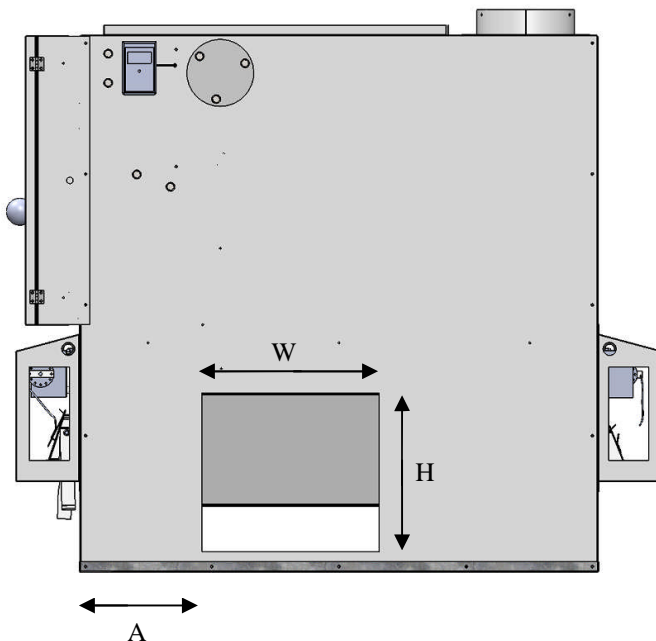


Fig. 4

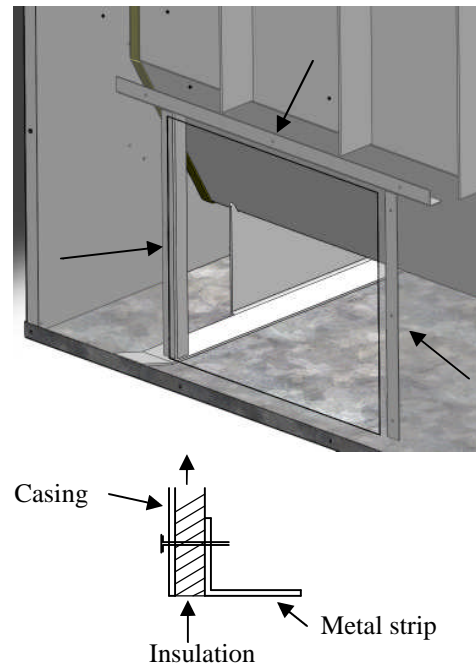


Fig. 5

DO NOT USE INTERCONNECT DUCT ELBOWS THAT HAVE AN INSIDE RADIUS OF LESS THAN 6" (150mm.). THE WARM-AIR SUPPLY OF THE APEX FURNACE SHALL NOT BE CONNECTED TO THE COLD-AIR RETURN INLET OF THE EXISTING OR ALTERNATE FURNACE. THE POSSIBILITY EXISTS THAT THE COMPONENTS OF THE EXISTING OR ALTERNATE FURNACE MAY OVERHEAT, CAUSING THE CENTRAL FURNACE TO OPERATE OTHER THAN INTENDED.

COMBUSTION AIR

Insure adequate combustion air allowing for all other exhausting type appliances in the dwelling (range hoods, dryers, etc). In airtight houses it is recommended to install a fresh air inlet into the basement room where the furnace is located.

INSTALLATION INSTRUCTIONS

MOVE BYPASS HANDLE SYSTEM FROM LEFT TO RIGHT SIDE FURNACE

In some installations it is necessary to move the bypass handle system from the left (default) to the right side of the furnace. This is possible by unbolting the system on the left and reinstall on the right (The round plate on the right makes place for the bypass handle but need to be installed on the left after the change-over) Make sure to adjust the handle position and latch so proper seal is achieved on bypass door. Reroute wiring. Fig. 7 shows the correct mounting of the handle latches when moved to right side.

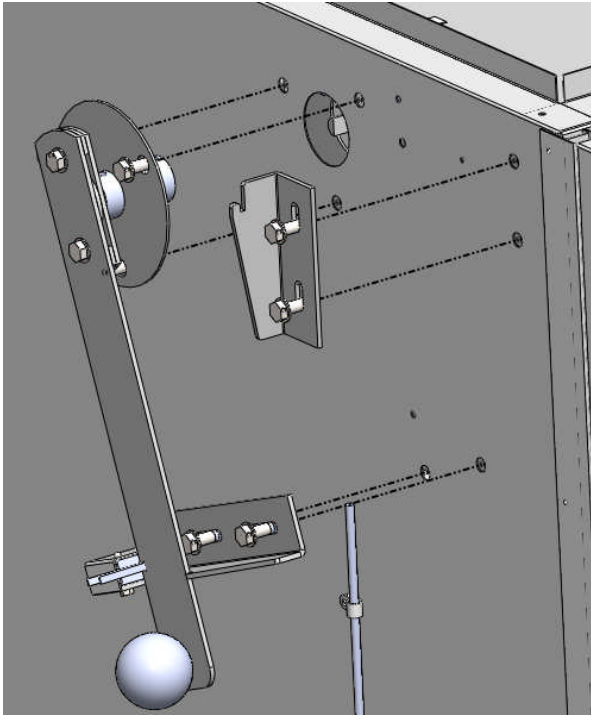


Fig. 6

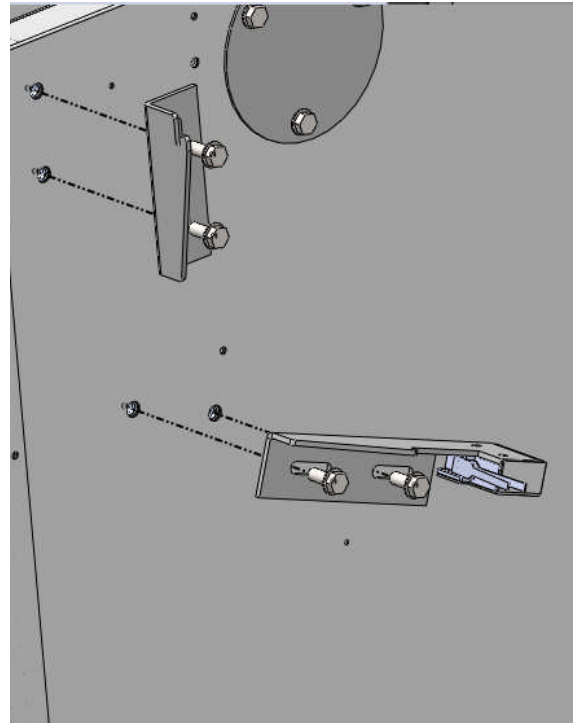


Fig. 7

PRESSURE LOSS

Before any changes are made to the existing furnace system you must establish the working parameters of that system. You can then insure that addition of the add-on has not degraded the operation of the original system, and correct air flow will be maintained. Change all filters in the system to insure maximum free air flow. Using an accurate manometer check the static pressure at the end of a typical duct near the exit to the house. Check the static pressure in the plenum above the existing furnace also.

Pressure drop = Static pressure at furnace -(minus) static pressure at duct exit

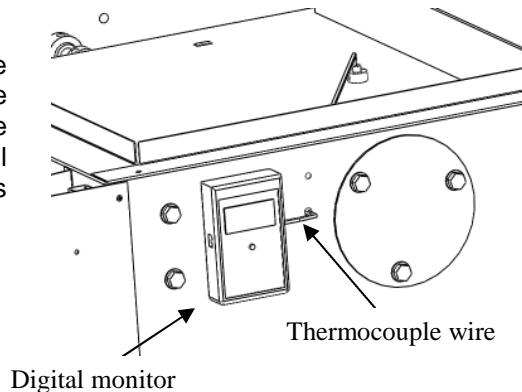
Record the pressure drop of the original system.

Addition of the add-on furnace will add airflow resistance in the system. After installation is complete measure the pressure drop in the same run measured before add-on installation. If the air flow has diminished the blower speed should be adjusted to compensate. When using a belted blower the pulley size should be changed or adjusted to speed up the blower. If the pulley size is adjusted measure the blower motor current to insure that it is still within the motor plate specification. It may be necessary to replace the motor with a more powerful motor. If a direct drive blower is used change to a higher motor speed. Do not change the blower size.

INSTALLATION INSTRUCTIONS - VENTING

DIGITAL MONITOR

Mount the digital monitor on either the left or right side of the cabinet and connect thermocouple wire to the monitor. This monitor shows the temperature of the catalyst. Press the red button and the temperature will be displayed for 30 minutes. When temperature is below 500 F, "COOL" will be displayed.



DRAFT

Draft is created by the heated air rising in the chimney system. This draft will pull fresh combustion air into the firebox. Recommended draft is .05 in. w.c at high fire. Too little draft results in a sluggish fire and smoking when the furnace door is opened. Too much draft (over 0.06 in. w.c.) makes it unsafe to operate the furnace. Use a barometric control if necessary to avoid excessive draft.

DO NOT OPERATE THE APEX WITH A DRAFT OF OVER .06 INCHES WATER COLUMN. HIGHER DRAFT LEVELS MAY CAUSE THE FIRE TO BURN OUT OF CONTROL AND CREATE A FIRE HAZARD.

VENTING SYSTEMS

The venting system consists of a flue pipe and a chimney. These get extremely hot during use. Temperatures inside the chimney may exceed 2000 degrees in the event of a creosote fire. To protect against the possibility of a house fire, the flue pipe and chimney must be properly installed and maintained. A listed thimble must be used when a connection is made through a combustible wall to a chimney. A chimney support package must be used when a connection is made through the ceiling to a listed prefabricated chimney. These accessories are absolutely necessary to provide safe clearances to combustible wall and ceiling material.

This furnace may be connected to a lined masonry chimney or a listed factory built chimney suitable for use with solid fuels and conforming to, ULC629 in Canada or UL-103HT in the USA. Do not connect it to a chimney serving another appliance. To do so will affect the safe operation of both appliances, and will void the furnace warranty. **You must comply with the local authority having jurisdiction and/or in Canada, CSA installation standard B365-M87.**

The flue pipe must be 7" diameter, 24/26 MSG Back/Blue steel. Do not use aluminum or galvanized steel. They cannot properly withstand the extreme temperatures of a wood fire. The flue pipe between the furnace and the chimney should be as short and direct as possible. Blaze King recommends the use of double wall pipe and two 45° elbows instead of a single 90° elbow. A minimum 36" rise is recommended prior to any elbows being used.

The flue pipe must be attached to either an approved masonry chimney or one of the listed factory built chimneys suitable for use with solid wood fuel. All joints must be tight and fastened with sheet metal screws.

WARNING: The flue pipe is to be used only within the room, between the furnace and ceiling/wall. Never use a flue pipe to pass through a combustible ceiling or wall. Always maintain the minimum clearances to combustibles as required by the applicable building codes.

INSTALLATION INSTRUCTIONS - VENTING

Flue pipe sections must be attached to the furnace and to each other with the crimped end toward the furnace (Fig. 8). This allows creosote to run into the furnace and not onto the outside of the pipe. All joints should be secured with three metal screws. Otherwise, in the event of a creosote fire, the connection may vibrate apart. Horizontal lengths of flue pipe should have an upward slope from the furnace of 1/4 inch per foot.

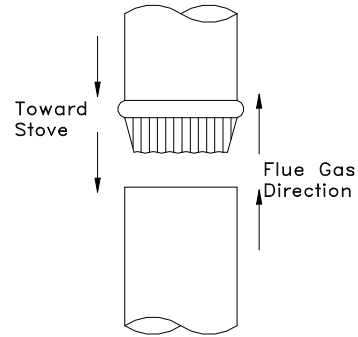


Fig.8 Flue Gas Direction

CONNECTION TO A MASONRY CHIMNEY

Should the furnace be connected to a masonry chimney, the chimney should be examined for cracks, loose mortar, other signs of deterioration, and blockage. The furnace should not be installed until it is determined that the chimney is safe for use. Since an oversized flue contributes to the accumulation of creosote, the size of the flue should be checked to determine that it is not too large for the furnace. For this furnace it is recommended that the flue size should not exceed the overall area of a 7" flue (38.5 square inches). The chimney should also be checked to assure it meets the minimum standards of the National Fire Protection Association (NFPA) Standard 211. Following is a list of the more critical minimum requirements for a properly constructed chimney.

1. The masonry wall of the chimney, if brick or modular block, must be a minimum of 4 inches nominal thickness. A mountain or rubble stone wall must be at least 12 inches thick.
2. The chimney must have a fire clay flue liner (or equivalent) with a minimum thickness of 5/8 inch and must be installed with refractory mortar. There must be at least 1/2-inch air space between the flue liner and the chimney wall (Fig. 9). An equivalent liner might be a listed chimney liner system or other approved material.
3. A chimney inside the house must have at least 2 inches of clearance to the combustible structure. A chimney outside the house must have at least one-inch clearance to the combustible structure. Fire stops must be installed at the spaces where the chimney passes through floors and/or ceiling (Fig. 10).

Remember that insulation must not contact the chimney. There must be air space around the chimney. Insulation must be 2 inches or more from the chimney (Fig. 11).

4. A chimney must be the required height above the roof or other obstruction for safety and for proper draft operation. The requirement is that the chimney must be at least 3 feet higher than the highest point where it passes through the roof and at least 2 feet higher than the highest part of the roof or structure that is within 10 feet of the chimney, measured horizontally (Fig. 12).

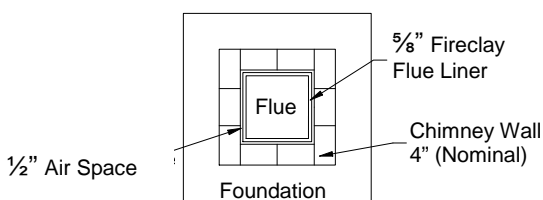


Fig. 9 Masonry Chimney Construction

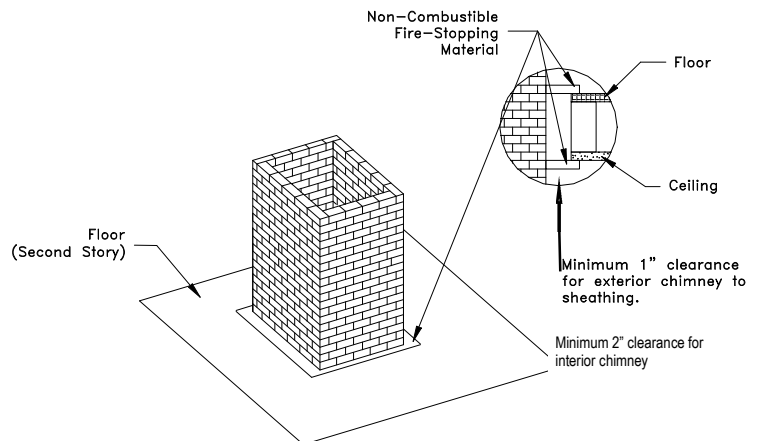


Fig.10 Fire Stopping

INSTALLATION INSTRUCTIONS - VENTING

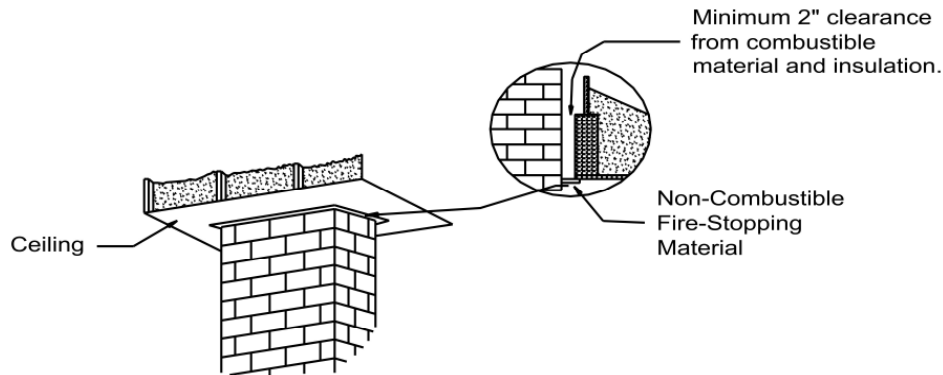


Fig. 11 Clearances—Masonry To Combustibles

THIMBLE

A thimble must be used when the connection from the furnace is made through a combustible wall to a masonry chimney. There are several methods to use for connection through a combustible wall, two of which are illustrated in this manual. Local building authorities may be consulted or NFPA 211 may be used for additional methods of chimney connection.

Also, listed prefabricated metal thimbles may be purchased for use with wood furnaces. The manufacturer's installation instructions for the thimbles must be strictly followed to assure the safety of the system. Be sure to maintain the designated clearance to combustible materials.

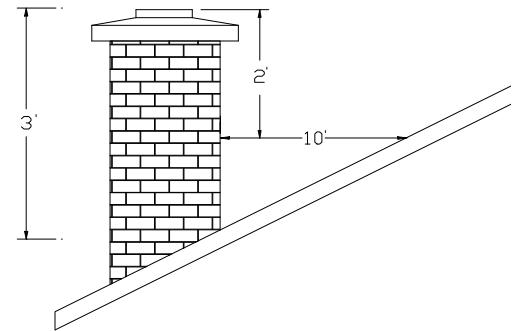


Fig. 12 Minimum Chimney Height

BRICK CHIMNEY THIMBLE ASSEMBLY

Construction of the brick thimble assembly requires 12 inches of brick around a fire clay liner. Be sure the point of penetration allows an 18 inch clearance from the connector to the ceiling. An appropriate opening for a chimney connector must be cut in the wall to maintain the required 12 inches of brick separation from combustibles. It will be necessary to cut wall studs and install a header and sill frame to maintain proper dimensions and to hold the weight of the brick (Fig. 13). NOTE: Whenever cutting through a wall, check first with local building authorities to be sure building integrity is maintained. Minimum 3 1/2-inch (4-inch nominal) thick solid bricks are to be used. The fire clay liner (ASTM C35 or equivalent), minimum 5/8 inch wall thickness, must not penetrate into the chimney beyond the inner surface of the chimney flue liner and must be firmly cemented in place. If it is necessary to cut a hole in the chimney liner, use extreme care to keep it from shattering. Refractory mortar must be used at the junction to the chimney liner (Fig. 14). After the assembly is complete, insert the chimney connector in the fire clay liner. Do not push it beyond the inside edge of the chimney liner because this will affect the draw of the chimney.

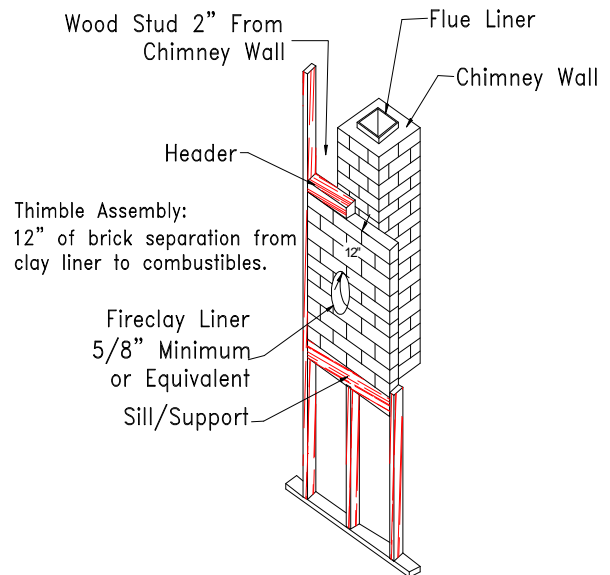


Fig. 13 Brick Chimney Thimble

INSTALLATION INSTRUCTIONS - VENTING

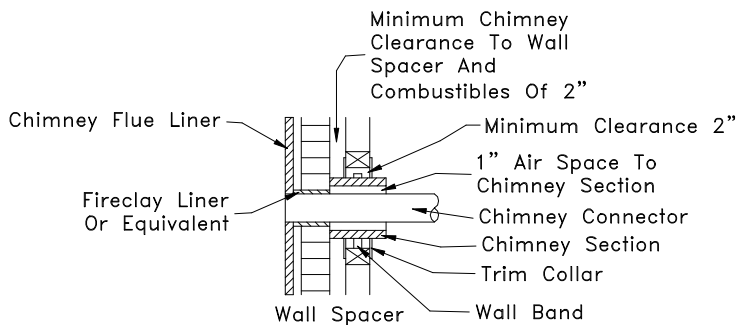
PREFABRICATED CHIMNEY WITH METAL CHIMNEY SUPPORT AS THIMBLE

For the method of installation to a masonry chimney, it will be necessary to purchase a 12-inch long section of prefabricated listed chimney to use as a thimble. Purchase a wall spacer, trim collar and wall band that are manufactured to fit the chimney section you purchase.

The safety features of this system are: the 2-inch air space between the chimney section and combustible wall, and the 1-inch air space around the chimney connector as it passes through the chimney section to the chimney.

The location of the opening through the wall to the chimney must leave a minimum 18 inch vertical clearance between the flue pipe and the ceiling to prevent the ceiling from catching fire.

For instructions on installation of the thimble, refer to chimney manufacturer's instructions.



If an exterior masonry chimney is used you may have draft problems due to the chimney being too cold. Exterior masonry chimney's should be lined with a listed stainless steel liner for better operation of these units.

Fig. 15 Metal Prefabricated Thimble

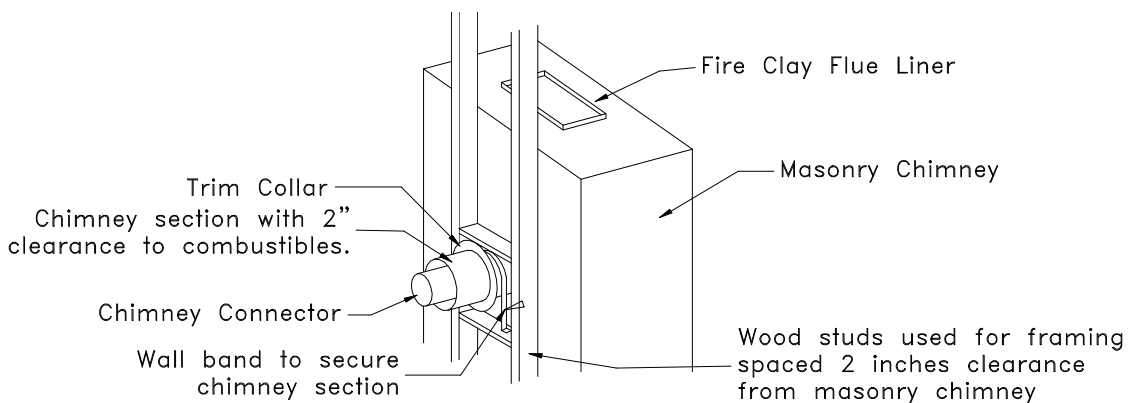


Fig. 16 Metal Prefabricated Thimble

INSTALLATION INSTRUCTIONS - VENTING

CONNECTION TO A METAL PREFABRICATED CHIMNEY

When a metal prefabricated chimney is used, the manufacturer's installation instructions must be followed precisely. You must also purchase (from the same manufacturer) and install the ceiling support package or wall pass through and "T" section package, fire stops (when needed), insulation shield, roof flashing, chimney cap, etc. Maintain the proper clearance to the structure as recommended by the manufacturer. This clearance is usually a minimum of 2 inches, although it may vary by manufacturer or for certain components.

There are basically two methods of metal chimney installation. One method is to install the chimney inside the residence through the ceiling(s) and the roof. The other method is to install an exterior chimney that runs up the outside of the residence (**not recommended**). If it is necessary to run the chimney outside, build an outside chase around the chimney.

The chimney must be the required height above the roof or other obstruction for safety and for proper draft operation. The requirement is that the chimney must be at least 3 feet higher than the highest point where it passes through the roof and at least 2 feet higher than the highest part of the roof or structure that is within 10 feet of the chimney, measured horizontally (Fig. 12). The height requirement is necessary in the interest of safety and does not necessarily assure proper flue draft. Use a minimum total system height of 12 feet, measured from the furnace flue collar to the top of the chimney, not including the chimney cap.

THIMBLE

When a wall exit installation is used, a listed assembly thimble must be installed. In a roof exit installation, the ceiling support box supplied with the manufactured chimney acts as a thimble.

REMEMBER: Follow the manufacturer's installation instructions and maintain the manufacturer's specified clearance distances.

Install an attic insulation shield to maintain the specified clearance to insulation. Insulation in this air space will cause a heat buildup which may ignite the ceiling joists

The "Through The Roof" method of installation requires at a minimum a ceiling support package, an Insulation shield and roof flashing.

The "Through The Wall" method requires at a minimum a wall pass through device, a wall support package and insulated "T" section and roof flashing.

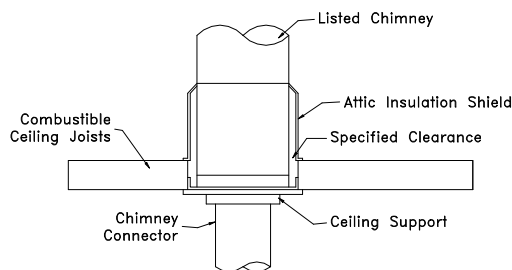


Fig. 17 Detail Of Connection Through Roof

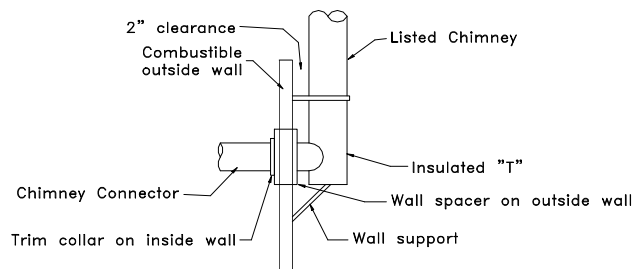


Fig. 18 Detail Of Connection Through Wall

INSTALLATION INSTRUCTIONS

THERMOSTATS

Your system uses two thermostats - one to control the wood add-on and one to control the alternate furnace. The alternate (electric, gas or oil) thermostat must be interlocked to the limit switches provided on the wood furnace plenum (see wiring diagrams). This is to prevent the alternate furnace from operating when the plenum temperature rises above 150°F. Thermostats should be mounted side by side on an inside wall out of direct sunlight or other heat sources.

ELECTRICAL GENERAL

All wiring on the Apex CBT shall be fastened to the outside of the insulated cabinet surfaces only. This is to prevent overheating by direct contact with firebox components.

Electrical installation must be done by a qualified licensed electrician, experienced in control circuit wiring.

FAN LIMIT INSTALLATION

Drill 2 holes into the front of the plenum 18" above unit. Using the bracket provided, install the fan limit junction box assembly onto the furnace warm air plenum. All wiring must be routed on the outside of the cabinet surface. Installation of wiring must be by a qualified electrician. See instructions for wiring diagrams which apply to your specific installation (page 23-26).

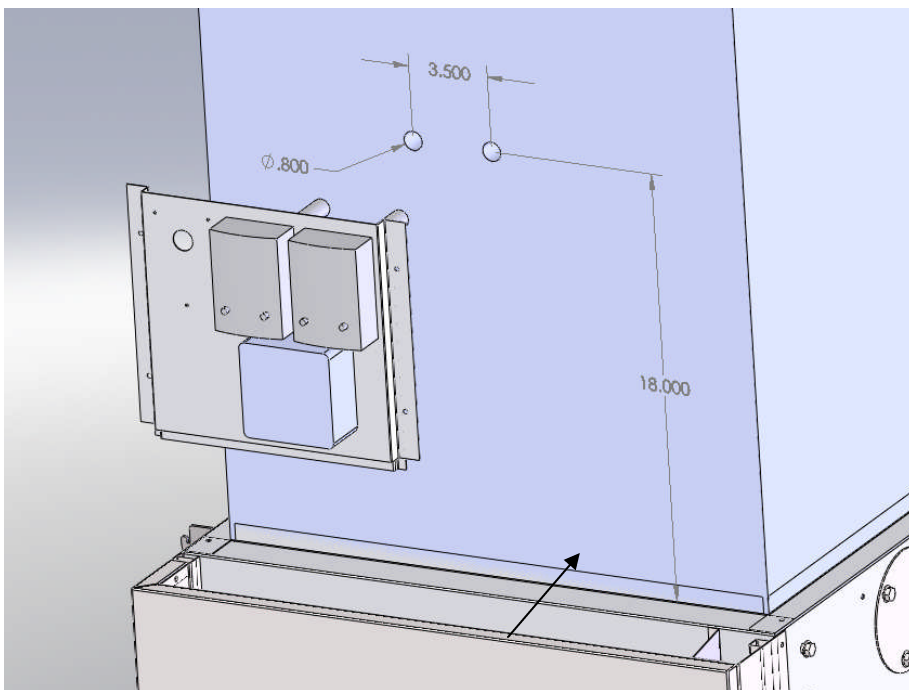
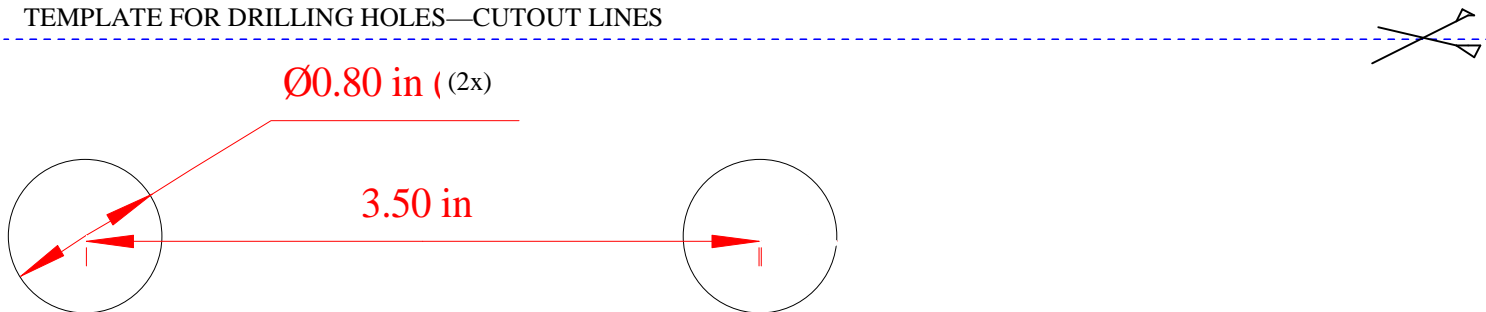


Fig. 19

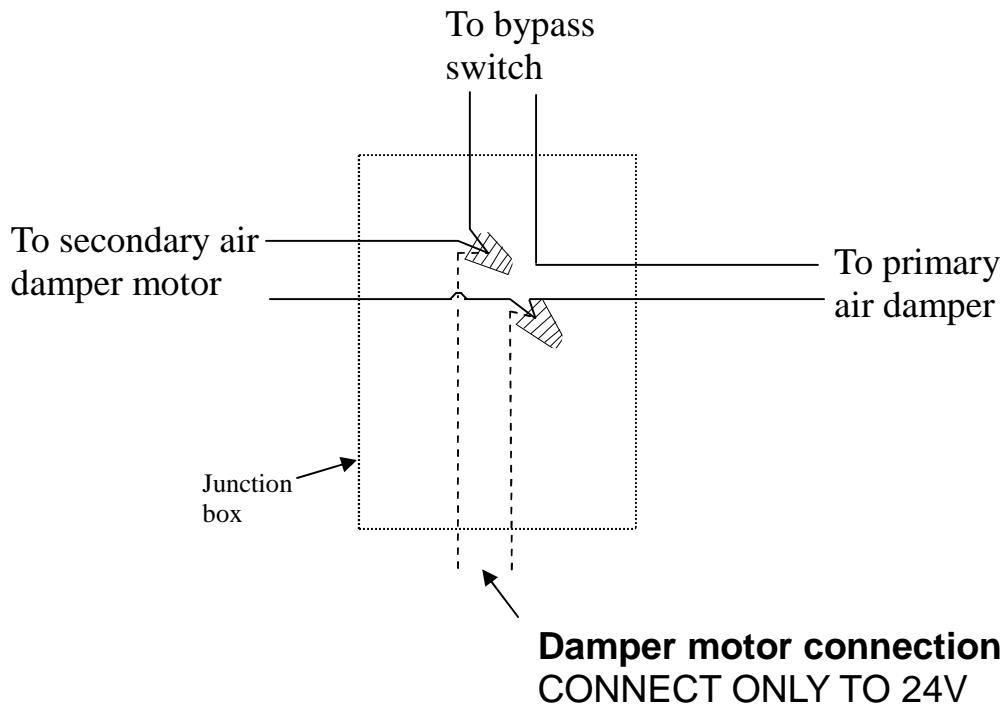
TEMPLATE FOR DRILLING HOLES—CUTOUT LINES



INSTALLATION INSTRUCTIONS

DAMPER MOTOR(S) CONNECTION

The damper motor opens and closes the flap which controls the combustion air. Both primary air (front of unit) and secondary air (back of unit) are controlled by a damper motor. There is a central connection for the damper motors in the junction box on the side of the furnace. This connection is in later diagrams referred to as "damper motor". It controls both damper motors and involves a bypass switch, which prevents the primary air damper motor from opening when the bypass is open. NEVER CONNECT DAMPER MOTORS TO 120V. CONNECT ONLY TO 24V



INSTALLATION INSTRUCTIONS - COMBINATON APEX-ELECTRIC

ADD-ON TO ELECTRIC FURNACE

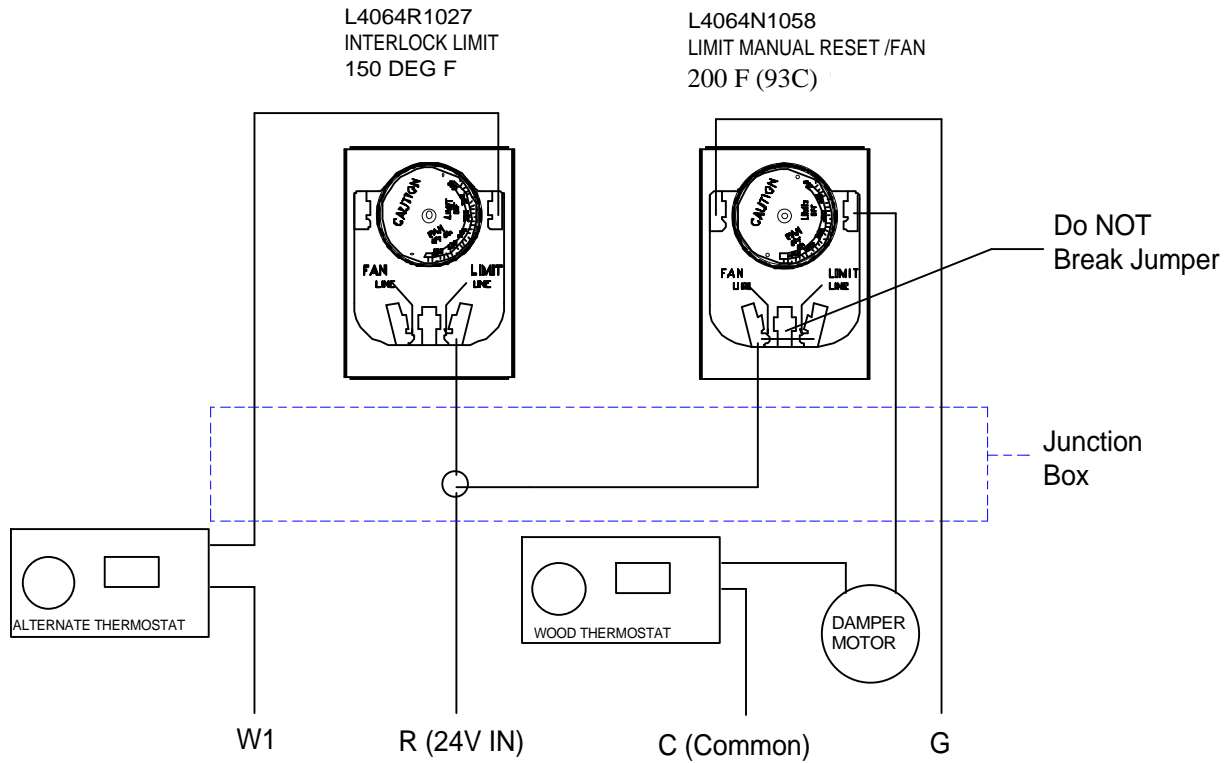
The APEX CBT may be added to an electric furnace with heating capacity between 15KW and 30KW. Minimum blower capacity must be at least 900 cfm. Electric furnaces approved for installation in any position can be inverted and used in a down flow position using an adapter duct between the furnace and the add-on as indicated in fig. 3. The electric furnace may be located on either side of the APEX CBT but clearances to combustibles must be maintained. Refer to general and pressure loss (pg 14) instruction portions of this manual also.

If changes are made to the installation of the electric furnace they must comply with CSA Standard C22.1.

AN INTERLOCK LIMIT SWITCH MUST BE INCLUDED IN THE CONTROL CIRCUITRY PREVENTING THE GAS FURNACE FROM OPERATING WHEN THE SYSTEM OUTPUT PLENUM TEMPERATURE IS ABOVE 150°F. TYPICAL WIRING DIAGRAM FOLLOWS: FIG 21. IF YOUR ELECTRIS FURNACE DOES NOT HAVE AN R AND G CONNECTION< SEE FIG. 22.

INSTALLATION INSTRUCTIONS -COMBINATON APEX-ELECTRIC

Fig. 21 ELECTRICAL CONNECTIONS WOOD/ELECTRIC WITH R AND G CONNECTIONS



INSTALLATION INSTRUCTIONS - COMBINATON APEX-GAS/OIL

ADD-ON TO GAS FURNACE

The APEX CBT may be connected to a gas furnace having a max. rated input of 120,000 BTU. Minimum blower capacity must be at least 900 cfm. A counter flow gas furnace may be used with an interconnect duct as indicated in Fig 3. A regular up flow gas furnace may be used and connected as per Fig 3. The APEX CBT can be located on either side of the gas furnace. Minimum interconnect duct size is 12" x 17" with minimum 6" inside radius elbows. Do not, under any circumstances, connect the APEX CBT flue to a chimney that also vents the gas furnace. The wood furnace requires a chimney approved for solid fuel use. Maintain clearances to all combustibles. Refer to general instructions portions of this manual also.

THE OPERATION OF THE GAS FURNACE MUST BE VERIFIED FOR ACCEPTABLE OPERATION, BEFORE AND AFTER INSTALLATION OF THE ADD ON, BY A GAS FITTER WHO IS RECOGNIZED BY THE REGULATORY AUTHORITY. DO NOT CONNECT TO ANY FURNACE THAT HAS NOT BEEN CERTIFIED INITIALLY AS COMPLYING WITH CGA STANDARD CAN1-2.3 OR ITS PRECEDENTS. DO NOT CONNECT TO ANY FURNACE THAT IS NOT EQUIPPED WITH AN AIR CIRCULATION BLOWER. DO NOT CONNECT, UNDER ANY CIRCUMSTANCES, TO A CHIMNEY SERVING A GAS FURNACE OR OTHER GAS APPLIANCE.

AN INTERLOCK LIMIT SWITCH MUST BE INCLUDED IN THE CONTROL CIRCUITRY PREVENTING THE GAS FURNACE FROM OPERATING WHEN THE SYSTEM OUTPUT PLENUM TEMPERATURE IS ABOVE 150°F. TYPICAL WIRING DIAGRAM FOLLOWS: FIG 22.

ADD-ON TO OIL FURNACE

The APEX CBT may be connected to an oil furnace having a rated input of up to 1.2 USGPH. Minimum blower capacity must be at least 900 cfm. A regular up flow oil furnace may be used and connected as per fig. 3. The APEX CBT can be located on either side of the oil furnace. Minimum interconnect duct size is 12" x 17" with minimum 6" inside radius elbows. The wood furnace requires a chimney approved for solid fuel use. Maintain clearances to all combustibles. Refer to general instructions portions of this manual also.

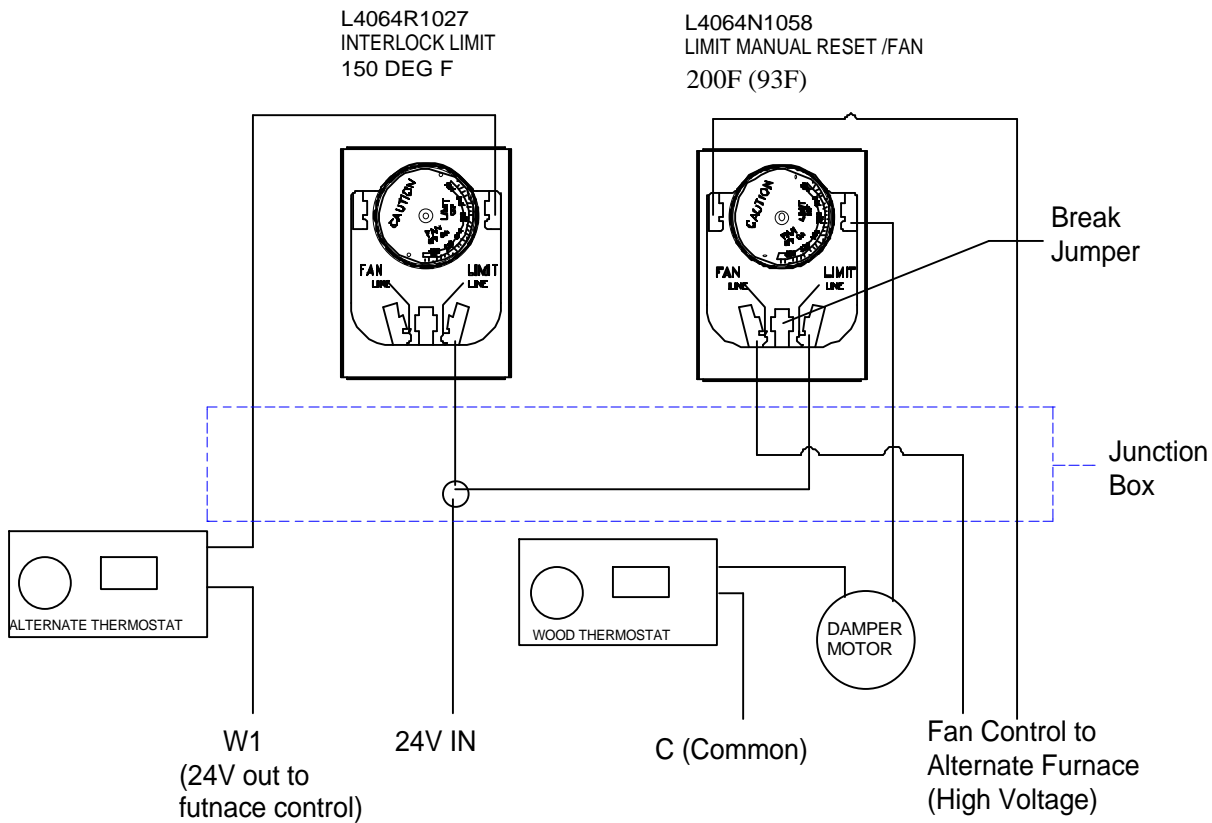
If changes are made to the installation of the oil furnace these changes must comply with CSA Standard B139.

AN INTERLOCK LIMIT SWITCH MUST BE INCLUDED IN THE CONTROL CIRCUITRY PREVENTING THE GAS FURNACE FROM OPERATING WHEN THE SYSTEM OUTPUT PLENUM TEMPERATURE IS ABOVE 150°F. TYPICAL WIRING DIAGRAM FOLLOWS: FIG 22.

INSTALLATION INSTRUCTIONS - COMBINATON APEX-GAS/OIL

**Fig. 22
ELECTRICAL CONNECTIONS WOOD/OIL WOOD/GAS (WOOD/ELECTRIC)**

This Figure is not a physical representation of your electrical connections. Limit switches and relays may be laid out differently than shown. The words and letters marked on the switches and relays should be followed and connections made to the proper locations.



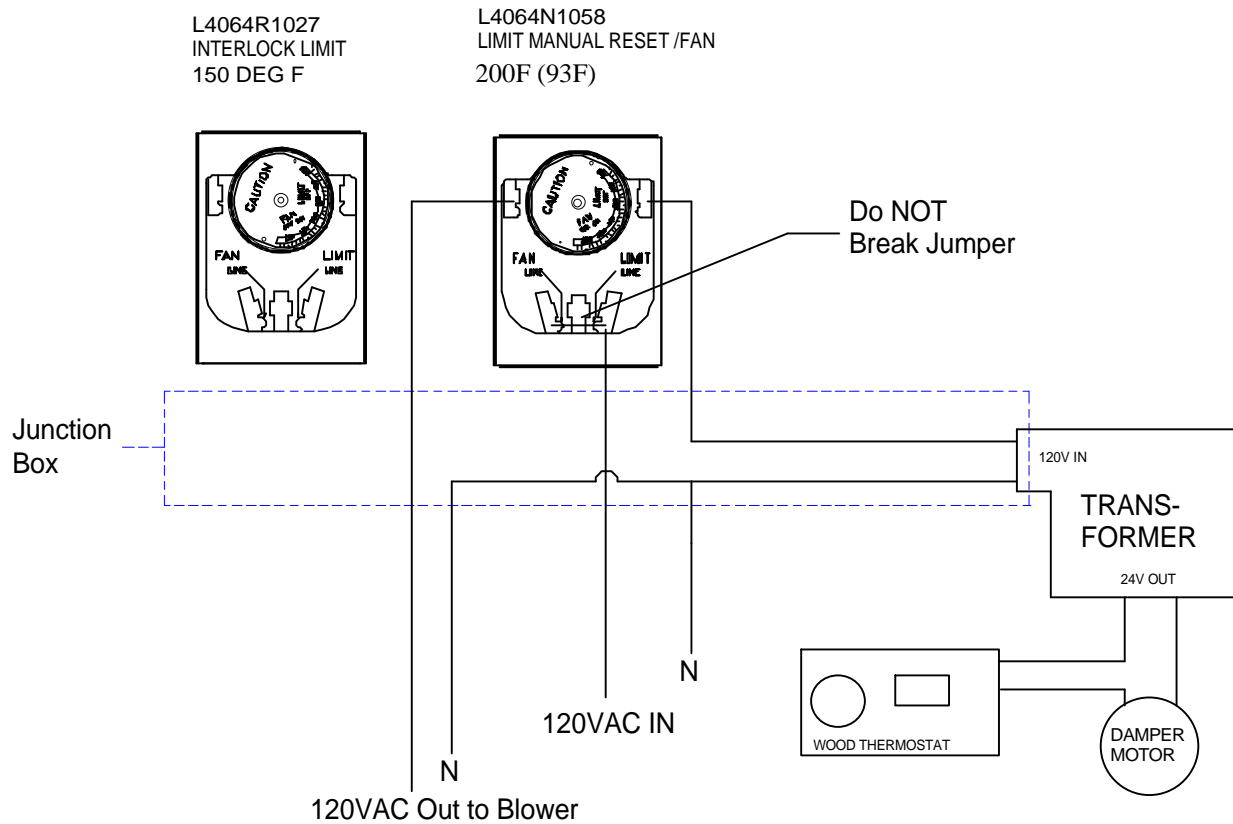
WIRING DIAGRAM FOR THE CONNECTION OF THE APEX CBT TO AN ALTERNATIVE GAS OR OIL FURNACE WITH 120 VAC FAN CONTROL.

INSTALLATION INSTRUCTIONS - WOOD ONLY

INDEPENDENT WOOD FURNACE

When installed with a VB1000 blower cabinet mounted on either side, the APEX CBT becomes an INDEPENDENT wood only furnace. The blower must have a minimum 900 cfm. capacity (1/3 hp.). In this configuration the interlock limit is not used. Figure 23 shows the electrical connections, (use only 1 limit switch).

Fig. 23 ELECTRICAL CONNECTIONS INDEPENDENT WOOD



VB1000 BLOWER

When the Apex CBT is used as an independent furnace, the VB1000 blower is required. The VB1000 blower is built by Blaze King for the following models: Blaze King Apex CBT, Valley Comfort MP80 & VC120 Wood Furnace (Stand Alone Applications)

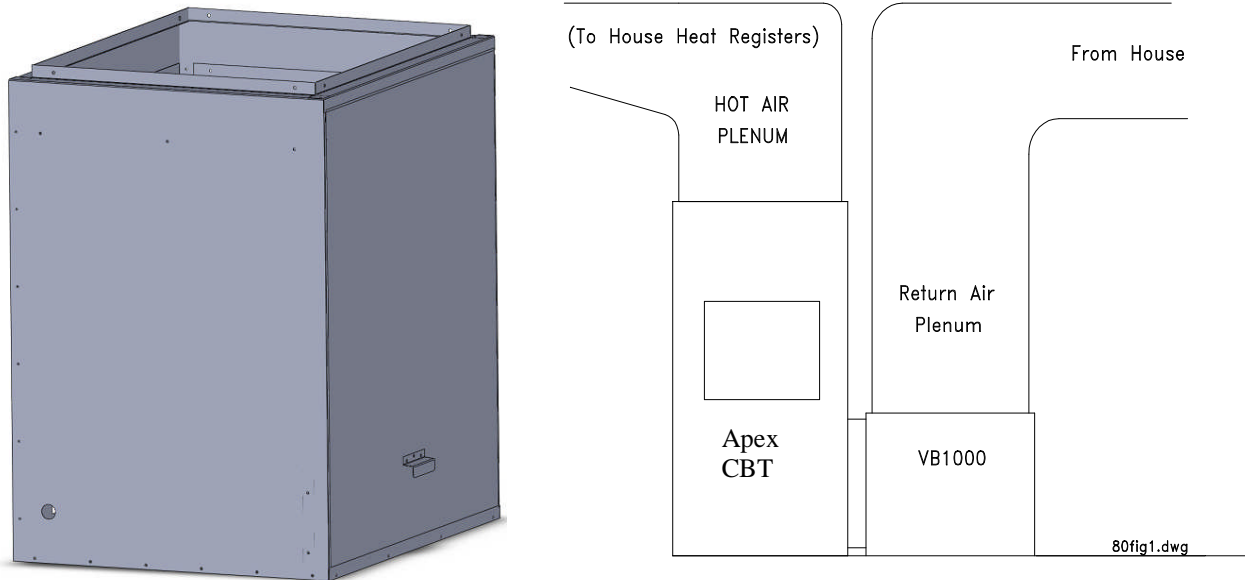


Fig. 24

- 1/3 HP 110V Motor
- Adjustable from 900cfm to 1200 cfm
- 20ga Steel Cabinet Construction
- High Quality Baked Enamel Finish
- Complete with 24" X 20" Air Filter

Inlet Duct size: 22" x 17 15/16"

Please check the dimensions on this drawing against the unit you are installing, as there may be some slight variation in the dimensions due to manufacturing tolerances and or changes.

OPERATION INSTRUCTIONS

In order to get peak performance out of your Blaze King furnace you will need to follow a few basic steps outlined in the following chapters. Forget everything you learned about how to burn or operate a regular wood furnace. You cannot just throw in some newspaper and a log or two, light a match and expect your Blaze King to work the same way an inefficient wood furnace would. Your Blaze King was designed to burn more efficiently, saving you time and money.

BYPASS

All catalytic wood burning appliances have a bypass device for allowing the smoke from the fire to temporarily bypass, or go around, the catalyst. The bypass is located inside the top front of the firebox. The bypass is a steel plate door, hinged inside the furnace, and is controlled by the bypass handle on the left or right side of the furnace. When the handle is lifted up, the bypass is open, when pushed down, it is closed.

Other than during the initial startup sequence, DO NOT burn the furnace with the by-pass open. Leaving the by-pass open may APPEAR to achieve a hotter fire, but in fact, just the opposite is true. Bypassing the catalyst allows as much as 50% of the potential fuel - and therefore heat - to go directly up the chimney. This Blaze King catalytic furnace produces the greatest amount of heat when the by-pass is closed, and the catalyst is active.

The bypass system also contains a built in switch which reduces the combustion air when the bypass is opened to avoid over firing.

See page 35 for adjusting bypass handle and gasket.

CATALYTIC MONITOR (THERMOMETER)

This monitor is located on the side of the furnace. Its purpose is to show you the temperature of the catalyst. Depending on the temperature you know if the catalyst is active or not. Press the red button and the catalyst temperature will be displayed for 30 minutes. When temperature is below 500 F, "COOL" will be displayed.

FUEL

Blaze King recommends using dry seasoned wood, split and stacked and protected from rain for at least 24 months with a moisture content of 13% or lower. It takes a great deal of energy to evaporate the moisture contained in green wood and that energy will not be heating your house. Also, green or wet wood will greatly increase creosote & combustor problems. Blaze King moisture meters are available at your Blaze King dealer.

Our wood furnaces are not designed for burning coal and doing so will void the warranty.

Never burn salt-water driftwood. It is very corrosive and will damage the firebox. Burning salty wood also voids the warranty.

This controlled combustion firebox has been designed for high efficiency and long burn times. The proper time to add more wood is when the last charge has been reduced to a glowing charcoal bed. There will be very little smoke at this stage in the burn cycle.

WARNING: BURNING WET UNSEASONED WOOD CAN CAUSE EXCESSIVE CREOSOTE ACCUMULATION. WHEN CREOSOTE IS IGNITED IT CAN CAUSE A CHIMNEY FIRE WHICH MAY RESULT IN A SERIOUS HOUSE FIRE.

OPERATION INSTRUCTIONS

AIR SETTINGS

The high output (when there is a heat demand) is set in the factory and can not be adjusted. The low output (standby) can be adjusted with the screw on the primary air blade (see fig 25) situated behind the draft box underneath the loading door. It controls the gap A. The bigger the gap, the more combustion air enters into the firebox, the higher the low burn. Every installation is different because of draft, kind of wood being used and geographic location. Adjust the flap in a way that it maintains a fire overnight on standby but not using high amounts of wood.

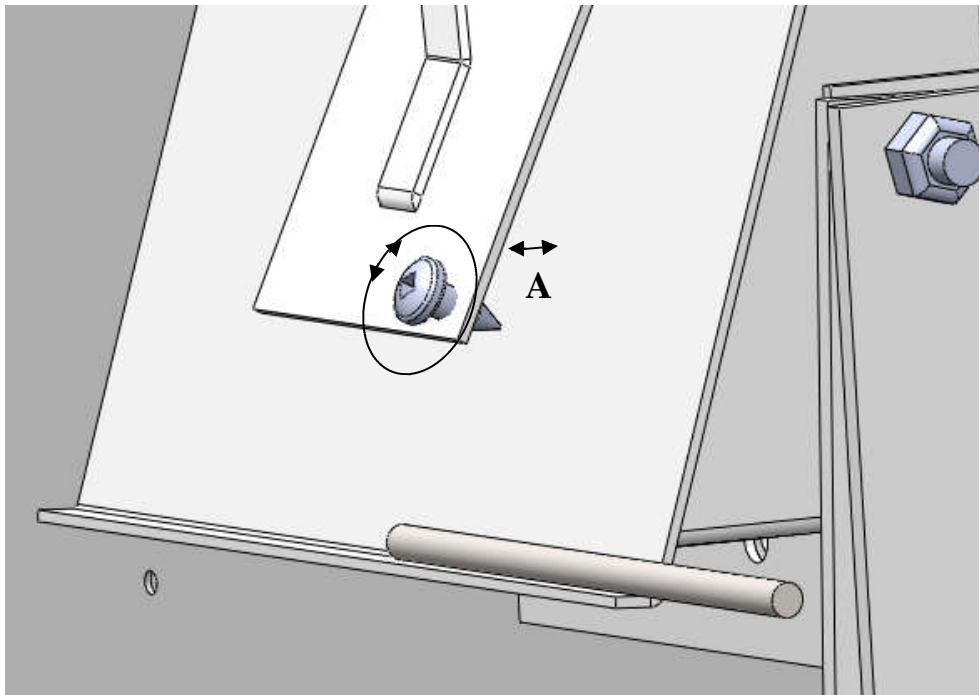


Fig. 25 Low output adjustment

THERMOSTATS

If your furnace is operating as a combination unit remember both units will not fire at the same time. If the wood furnace is to be your main source of heat, set the wood thermostat at your desired room temperature and set the thermostat from your alternate furnace approximately 5° F (3°C) lower.

Note: If the alternative furnace is running and the wood furnace is starting to heat up after (re-)loading, the alternate furnace will shut off automatically.

When programmable thermostats are used, it is recommended that the wood thermostat is programmed so the Apex will fire up before the alternate furnace will. This will give the Apex time to build up a hot fire again after being in standby mode.

OPERATION INSTRUCTIONS

FAN OPERATION

The blower will be turning on and off automatically based on the heat output off the wood furnace. At 150 F in the plenum the fan will turn on and at 100 F it will turn off.

If the fan turns on regularly in standby mode (no call for heat) adjust the low output so less heat will be produced at low. (see page 29, fig. 25).

OPERATION INSTRUCTIONS

LIGHTING THE FIRE

NEVER START A FIRE UNLESS ALL BRICKS ARE CORRECTLY PLACED INSIDE THE FIREBOX. CHECK THE INSTALLATION INSTRUCTIONS CAREFULLY. ALWAYS OPEN THE BYPASS DOOR BEFORE OPENING THE LOADING DOOR. ONCE THE LOADING DOOR IS CLOSED, CLOSE THE BYPASS DOOR DIRECTLY AFTER.

BUILD A SMALL FIRE THE FIRST TIME YOU USE YOUR APEX CBT. STARTING OFF WITH A HOT INTENSE FIRE CAN DAMAGE THE CAST-LINERS.

- Turn up the wall thermostat to open the draft
- Open the bypass door
- NEVER USE FLAMMABLE FLUIDS TO START THE FIRE
- On top of crumpled paper place split dry kindling and then small wood.
- Light the fire as low as possible and leave the door 1/2" (13 mm) opened.
- Once the kindling is well ignited or the coals revived, load 2 or 3 fire logs in such a way that the flames can work their way between the logs, then close the door and immediately close the bypass door after (this will supply more combustion air)
- After a few minutes check to see if the catalytic monitor indicates 500 F or higher, if not, repeat the last two steps.
- When a decent fire is going, add larger pieces of wood.
- High temperature paints will give off an odor the first time you light your furnace. Open a window to ensure adequate ventilation.
- The damper will close when either the plenum temperature reaches the limit level or the room temperature reaches the thermostat setting.
CAUTION: Air dampers are set in the factory, never adjust or open dampers manually to increased firing for any reason.
- The circulation blower should cycle off and on automatically, according to plenum temperature.

OPERATION DURING POWER FAILURE CONDITIONS

- Your system was designed as a forced air system; do not expect regular performance without the fan running. Do not over fire to compensate for the lack of a fan. Your system will perform at a lower capacity in the gravity mode.
- During a power failure never fill the firebox above the top of the firebox liner bricks.
- Remove the cabinet door from the blower. Remove the air filter and open all registers to facilitate free air flow.
- Lift the left manual draft control lever until it stays up. This will open the draft to a pre set level, see fig. 26
- When the power returns the damper motor will open (after pressing the reset button on the limit switch) and the manual control will return to normal position. Even without the manual control open the factory adjusted bleed air system will provide some combustion air. When power is restored reinstall the blower system, air filters, and door.

Without the blower running, high temperature in the system builds up quickly and over firing will result in permanent damage to the firebox. Maintain a small fire only. Over firing voids all product warranties.

OPERATION INSTRUCTIONS

ONLY USE LEVERS DURING POWER OUTAGE AND OPEN UP ALL REGISTERS AND REMOVE AIR FILTER FIRST. MAINTAIN A SMALL FIRE ONLY.

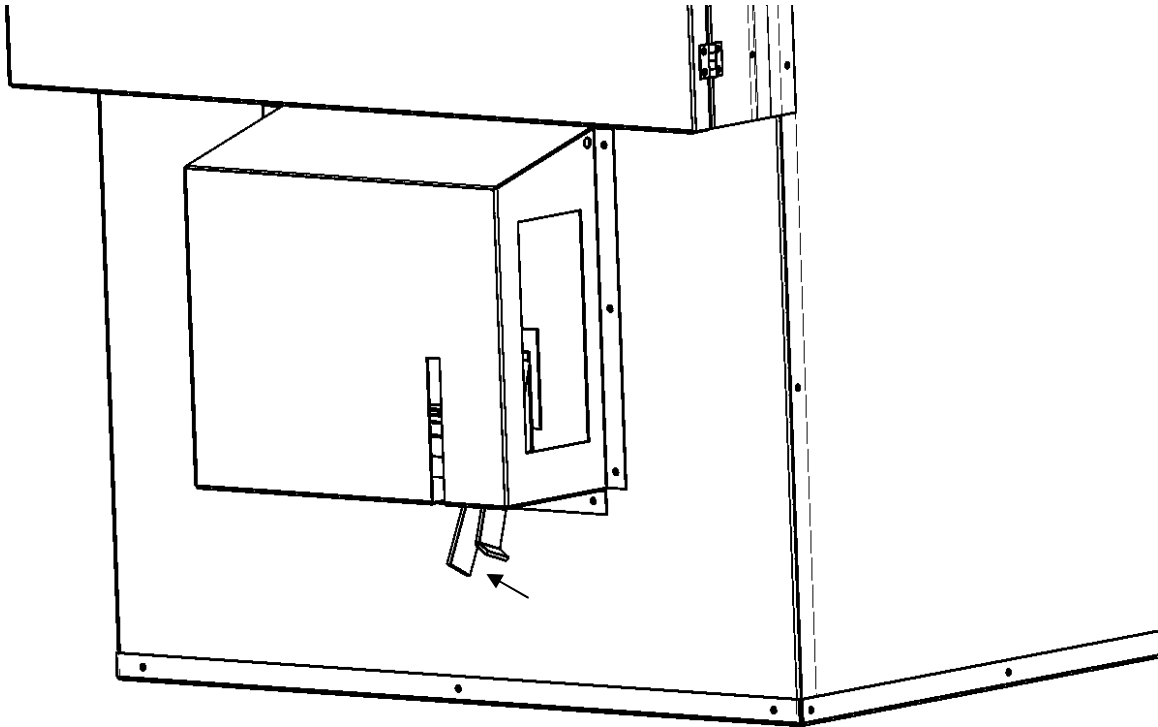
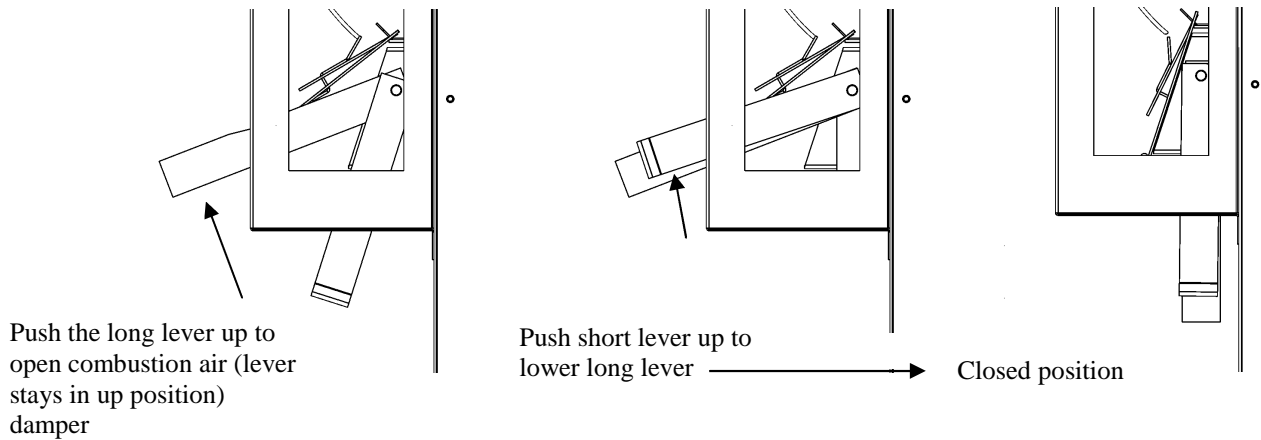


Fig. 26 Power outage control levers



MAINTENANCE

Your appliance has been manufactured in the Blaze King tradition of high quality. To ensure years of trouble free operation, have your furnace serviced regularly by your Blaze King dealer.

Periodically during heating season thoroughly clean the chimney and firebox so your system is ready for next fall. Inspect all firebricks and replace any damaged bricks. A broken firebrick should be replaced to prevent warping of the firebox.

OPERATE THE ALTERNATE ELECTRIC, GAS OR OIL FURNACE PERIODICALLY TO ENSURE THAT IT WILL OPERATE SATISFACTORILY WHEN NEEDED.

INSPECT VENT PIPES, VENT PIPE JOINTS AND VENT PIPE SEALS REGULARLY TO ENSURE THAT SMOKE AND FLUE GASES ARE NOT DRAWN INTO, OR CIRCULATED BY, THE AIR CIRCULATION SYSTEM

ASHES

Ashes should be cleaned out when they reach a depth of 4" in the firebox (half way up the lower bricks). Disposal of Ashes - Ashes should be placed in a metal container with a tight-fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

CATALYTIC COMBUSTOR REPLACEMENT

If the combustor must be examined or replaced, follow this procedure;

1. Allow the furnace to burn out and cool down.
2. Open the door and the bypass door. Remove the flame shield underneath the combustor.
3. The combustor may now be seen. Push the combustor from underneath up into the area behind the bypass door. The combustor can now be taken out thru the bypass opening.
4. The gasket material around the stainless band will probably disintegrate as the combustor is removed. If the combustor is placed back in the furnace, the gasket material **MUST** be replaced. Obtain a piece of gasket from your dealer. When installing the gasket ensure the ends are butted closely together.
5. Do not burn the furnace with the combustor removed, or without the gasket around the combustor.
6. To replace the combustor, first clean the combustor seat and the area around it. Also take this opportunity to clean the area around the by-pass -- use a vacuum cleaner.
7. Lift the new combustor into position, with the stainless flanges up. The combustor should easily slide into position. Don't be concerned if it appears a bit loose. The insulation around the outside of the stainless band will expand during the first fire and will hold the combustor in.
8. Reinstall the flame shield

For cleaning procedures for the combustor, see pages 39-41

MAINTENANCE

GASKET INSPECTION

Inspect the door and bypass door gasket for physical deterioration, missing sections or obvious leakage. The furnace front should make a groove in the gasket material - one side of the groove (toward the inside) will often be dark or black, and the other side (toward the outside) should be light or white. Dark smudges on the outside of the groove may indicate a smoke leak. If the groove is very shallow or missing, or if there is a heavy ash or creosote deposit along the bottom edge of the gasket, it may need to be replaced. Frayed or broken gasket material, or a gasket that is hard and unyielding, will also indicate need for replacement. Any time a piece of gasket is missing or is broken anywhere, the entire gasket must be replaced.

To check the gasket further, insert a piece of paper (a dollar bill will work) into the door opening and close and latch the door. Obvious resistance should be felt when pulling the paper out. Repeat this check several times around the perimeter of the door.

Loading door gasket tightening instructions can be found below under point 8 and fig. 28
Bypass door adjusting can be found on page 35.

LOADING DOOR GASKET REPLACEMENT

1. If the door gasket is to be replaced, be sure you have some 7/8" fiber glass gasket material, ready to re-install. See your Blaze King dealer.
2. Be sure the fire is out and the furnace has cooled down. The door does not have to be removed from the furnace.
3. With a pair of pliers, pull the old door gasket out of the channel and dispose of it.
4. Thoroughly clean out the channel so the new silicone adhesive will adhere and the gasket will fit smoothly
5. Run a small bead of a high temperature silicone adhesive (such as G.E. Silicone Sealer, or the equivalent) along the center of the channel. **DO NOT USE HOUSEHOLD SILICONE CAULKING.** High temperature silicone may be obtained from most auto parts stores.
6. Start the new gasket in the lower right corner. Do not stretch or cut the gasket. Distribute the gasket evenly around the frame.
7. Close the Loading Door and allow the adhesive to dry.
8. Door adjustment: the door seal is adjusted by moving the latch catch on the furnace in or out. To do this, undo the two bolts (see fig.28). The gasket should be just tight enough to test ok as in step 9, do not over tighten the latch which makes the door difficult to latch.
9. Check the fit of the door gasket. Insert a narrow strip of paper into the door opening and close and latch the door. Obvious resistance should be felt when pulling the paper out. Repeat this check several times around the perimeter of the door.

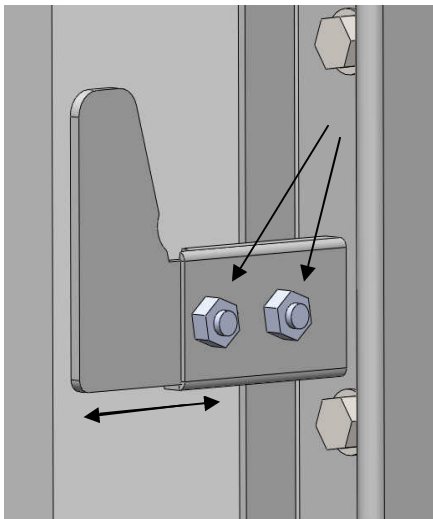


Fig. 28

WARNING:

DO NOT OPERATE THIS WOOD FURNACE IF THE DOOR GASKET IS MISSING OR DAMAGED.

DANGEROUS OVERFIRING CAN OCCUR WHICH CAN DAMAGE THE APPLIANCE OR IGNITE CREOSOTE IN THE CHIMNEY, POSSIBLY

CAUSING A HOUSE FIRE. IF ANY PART OF THE WOODFURNACE OR FLUE SYSTEM IS GLOWING THE FURNACE IS BEING OVERFIRED.

MAINTENANCE

BYPASS DOOR GASKET REPLACEMENT

1. If the bypass door gasket is to be replaced, be sure you have some 7/8" fiber glass gasket material, ready to re-install. This gasket is different than the door gasket. Both are 7/8" but the bypass door gasket is a denser material. See your Blaze King dealer.
2. Be sure the fire is out and the furnace has cooled down. The door does not have to be removed from the furnace. Open the bypass as far as possible for easy access.
3. With a pair of pliers, pull the old door gasket out of the channel and dispose of it.
4. Thoroughly clean out the channel so the new silicone adhesive will adhere and the gasket will fit smoothly.
5. Run a small bead of a high temperature silicone adhesive (such as G.E. Silicone Sealer, or the equivalent) along the center of the channel. **DO NOT USE HOUSEHOLD SILICONE CAULKING.** High temperature silicone may be obtained from most auto parts stores.
6. Start the new gasket in a corner. Do not stretch or cut the gasket. Distribute the gasket evenly around the channel.
7. Close the bypass door and allow the adhesive to dry.

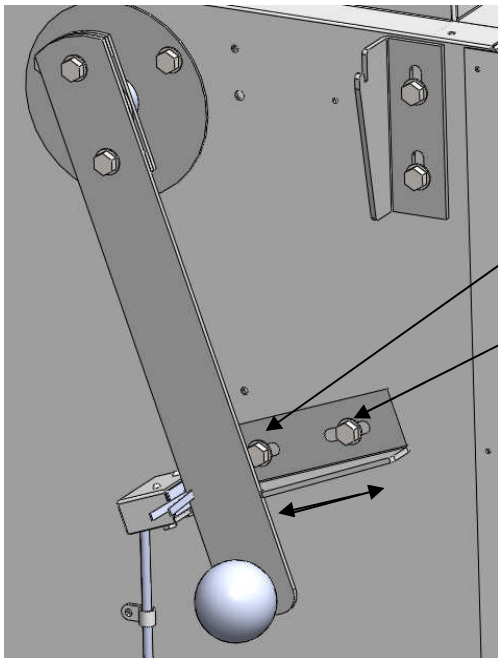


Fig. 29

ADJUSTING BYPASS HANDLE

The bypass handle has to be adjusted over time to achieve a good seal on the bypass door gasket. The "latch" where the bypass handle is positioned into when closing the bypass door can be adjusted. Undo the two bolts so the latch can be moved to the required position.

Check the fit of the door gasket. Insert a narrow strip of paper into the bypass door opening and close and latch the bypass door. Obvious resistance should be felt when pulling the paper out. Repeat this check several times around the perimeter of the bypass door.

When further adjustment is not possible anymore with the latch, unbolt the handle, rotate the required angle and tighten bolts again.

CREOSOTE

Creosote can be a problem in any wood-burning appliance. Creosote is a black, foul smelling liquid that results from distillation of wood gases during the combustion process. It solidifies depending on temperature and in either state is highly combustible. The best way to prevent or minimize creosote build up is to follow proper firing methods. The amount of creosote depends on several factors that include:

- 1) Moisture content of the fuel
- 2) Stack or flue temperature
- 3) Amount of draft
- 4) Efficiency of the appliance
- 5) Turbulence of smoke

At stack temperature below 120°C (250°F), the creosote will condense out of the gasses (smoke). Once a flue pipe becomes heavily coated with creosote, the only safe way to remove it is mechanically with a proper chimney cleaner or brush. A combination of wet fuel and poor operating procedure may necessitate weekly cleaning to remove creosote buildup.

Remember - the hotter the fire the less creosote. Small intense fires create less creosote than large, smoldering fires. We recommend that each day a small intense fire be built, preferably in the morning. This daily practice should burn out the small deposits of creosote before they build to a dangerous level. The combustion air inlet should be opened for at least 30 minutes by turning the thermostat up in the morning and evening. NEVER "burn out" large deposits of more than one days accumulation.

Always assure safety by having a clearly understood plan of how to handle a chimney fire, should one occur.

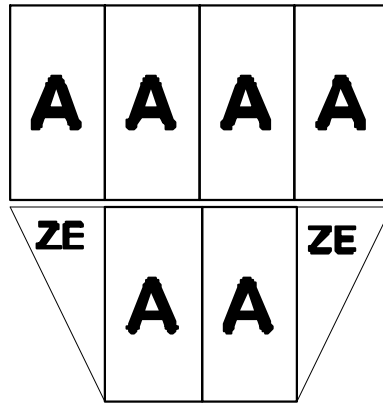
In conclusion, creosote can best be controlled as follows:

1. Burning dry split wood.
2. Mixing small and large pieces of wood.
3. During warm weather using smaller split wood.
4. Establish a routine for the storage of fuel, care of the appliance, and firing techniques.
5. Keeping stack temperature up by using double wall pipe on flue runs and protect outside chimney installations in a chase. Minimize elbows and keep flue runs as short as possible and ensure tight connections.
6. Checking daily for creosote until experience shows how often cleaning is required. Remember a clean chimney is a safe chimney.
7. Having a clearly understood plan should a chimney fire occur.

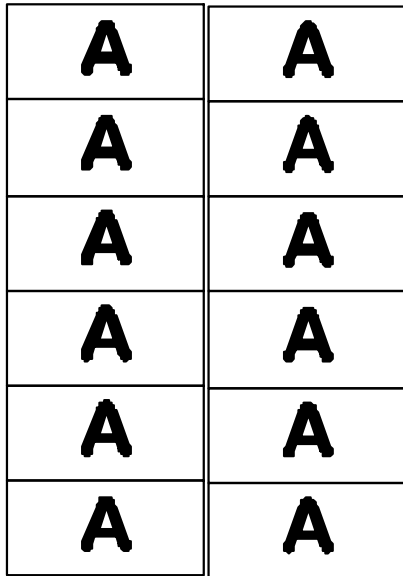
WARNING: FAILURE TO INSPECT AND CLEAN YOUR CHIMNEY SYSTEM REGULARLY CAN RESULT IN A SERIOUS FIRE WHICH MAY DAMAGE YOUR CHIMNEY OR CAUSE A HOUSE FIRE

BRICK LAYOUT

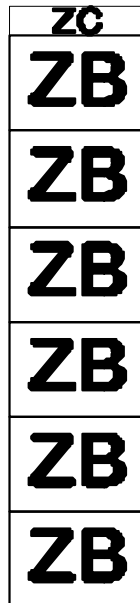
BACK



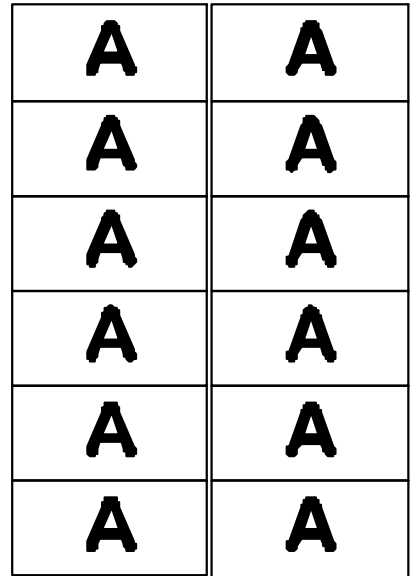
**LEFT
SIDE**



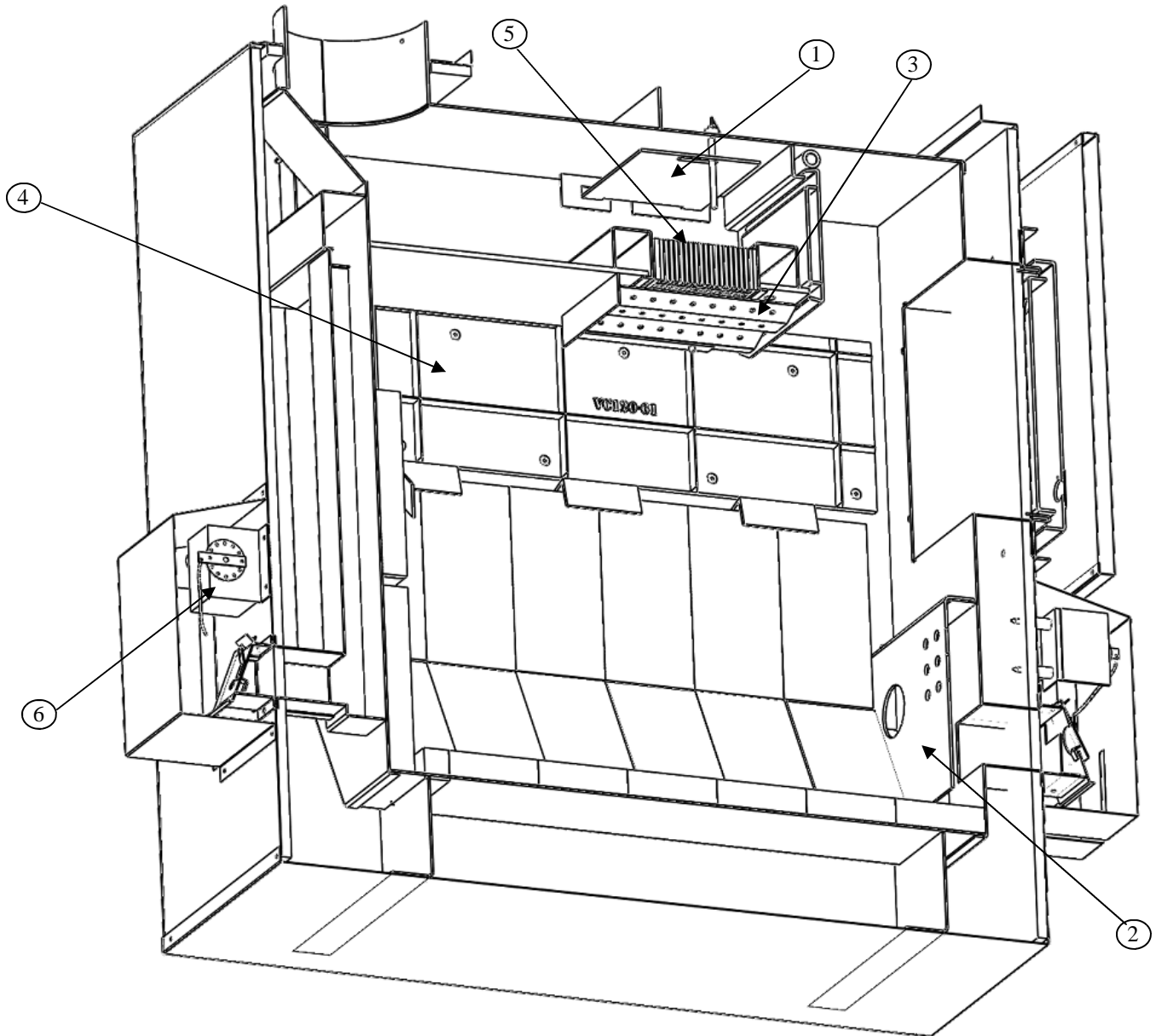
BOTTOM



**RIGHT
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REPLACEMENT PARTS

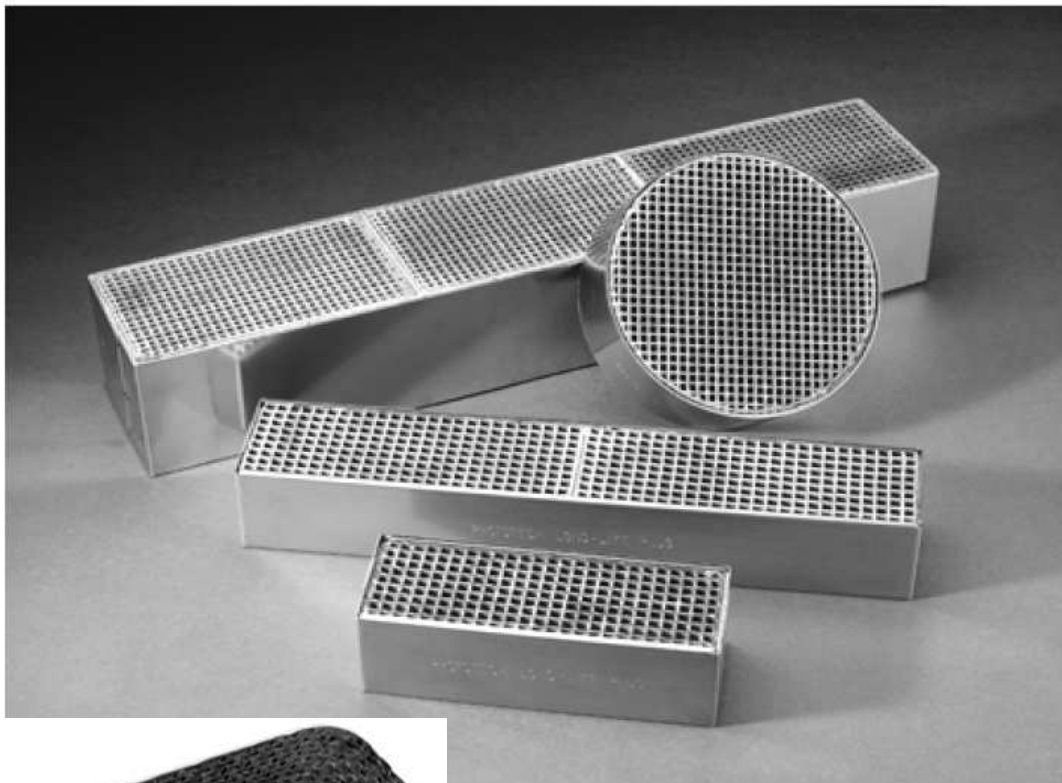


See next page for list referring to these item numbers

Süd Chemie Prototech

Major Cleaning Procedures for

Süd Chemie Prototech Catalytic Combustors



< **Stainless steel**
(same cleaning procedure)

Major Cleaning Procedure for Süd-Chemie Prototech's Catalytic Combustors

The catalytic activity and effectiveness of a two to three year old Süd-Chemie Prototech Catalytic Combustor can be improved by following this "MAJOR CLEANING PROCEDURE". For normal maintenance, refer to your stove manufacturer's operation manual. Major cleaning should not be required more than once a year for heavy-use stoves and every two years for light-use stoves. This procedure should be followed only if the owner feels comfortable with performing this procedure. If not, a trained chimney sweep should be contacted.

Before attempting this cleaning procedure, familiarize yourself with your stove manufacturer's operation manual. Improper removal, handling or reinstallation of the catalytic combustor can damage it or your stove.

This cleaning procedure is for the catalytic combustor only, and it does not reduce or eliminate the need for regular chimney inspection and cleaning.

Important Tips for Maximum Combustor Effectiveness:

1. Burn natural wood only. Do not burn trash, garbage, artificial or paper logs, gift wrappings, coal, lighter fluids, chemical starters, treated or painted wood, driftwood or chemical cleaners. These may contain chemicals that could deactivate the catalyst.
2. Catalytic combustor temperatures above 1800°F. (1000°C.) will shorten the life of a combustor. Combustor temperatures between 1400°F. and 1600°F. (760°C - 870°C.) are common, but operating temperatures between 700°F. and 1400°F. (371°C. - 760°C.) are recommended.
3. Full catalytic operation occurs at catalytic combustor temperatures above 700°F. (371°C.). Combustor glowing only occurs at temperatures above 1000°F. (538°C). With aged combustors, there will be less glowing, but as long as the combustor reaches light-off temperature of 500-700°F. (260 - 371°C.) catalytic operation is very effective. **THE COMBUSTOR DOES NOT HAVE TO BE GLOWING TO BE OPERATING EFFICIENTLY.**
4. To prevent damage to your combustor, **do not**
 - drop the combustor
 - run water through the combustor
 - remove the metal band from the combustor
 - scrape the inside walls of the combustor
 - use compressed air to clean the combustor

Major Cleaning Procedure

- Inspection
- Necessary Equipment
- Cleaning Steps

■ Inspection – Prior to Major Cleaning:

CAUTION: DO NOT REMOVE THE COMBUSTOR WHILE IT OR ANY PORTION OF THE STOVE IS HOT.

Carefully remove the combustor from the stove (see your Use & Care Manual). *Do not remove the stainless steel band or manufacturer's combustor holder from around the outside of the combustor.* It is very important that the unit is handled CAREFULLY. The combustor is a brittle ceramic and could break if it is handled roughly or dropped. Replace the combustor with a new part if it is damaged or worn out. Consult your Use & Care Manual or Süd-Chemie Prototech's Trouble Shooting Guide.

For the major cleaning to be effective, the combustor must not be coated with creosote, but should be light gray or beige in color. If the combustor is coated with creosote (dark black or dark brown), operate the stove with the combustor in place at a higher than your normal burn rate to burn-off the accumulated soot and creosote (see Süd-Chemie Prototech's Troubleshooting Guide). **USE CAUTION** — do not overheat the stove or chimney. Allow the stove and ashbed to cool completely before proceeding. Re-inspect the combustor. If the creosote build-up remains, repeat the burn-off procedure.

■ Necessary Equipment:

- Combustor removal instructions from the Use & Care Manual for your stove.
- Distilled water — 2 to 3 gallons, enough to completely cover the combustor by at least ½", three separate times. Do not use tap water — it may contain minerals that will reduce the effectiveness of the cleaning.
- White vinegar — 2 to 3 quarts, enough to make a 50/50 solution with the distilled water to cover the combustor once.
- A pot — large enough to preheat the cleaning solution and the rinse water.
- An old pot or roasting pan — large enough for the combustor to be covered with at least ½" of cleaning solution. The top surface of the combustor must be covered with cleaning solution at all times. Do not reuse the pot for cooking purposes.
- Plastic-coated wire (16 gauge multi-strand works well) — for use as a grab handle. Do not scrape the inside walls of the combustor.
- Tools and materials required to remove and reinstall the combustor.
- Vacuum cleaner (one used in the home)

Süd-Chemie Prototech

■ Cleaning Steps

STEP 1

GENTLY REMOVE ANY LOOSE ASH FROM THE COMBUSTOR.

A home vacuum cleaner is effective, using either suction or exhaust. USE CAUTION – high air velocities can strip catalyst off the ceramic. (Never use a high pressure air hose!!) Any cells that are still plugged should be gently cleared using a cotton swab or pipe cleaner. Never scrub or abrade any part of the catalytic combustor, since this may remove the catalyst or damage the cells.

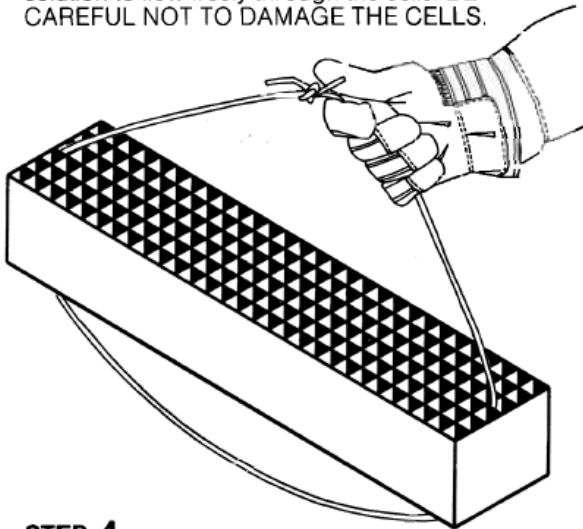
STEP 2

PREPARE THE CLEANING SOLUTION.

Make a 50/50 mixture of vinegar and distilled water in the large pot. Heat the mixture to a boil.

STEP 3

THREAD THE WIRE THROUGH THE COMBUSTOR TO MAKE A GRAB-HANDLE FOR LIFTING THE COMBUSTOR IN AND OUT OF THE HOT CLEANING SOLUTION. The wire will elevate the combustor off the bottom of the large pot, allowing the cleaning solution to flow freely through the cells. BE CAREFUL NOT TO DAMAGE THE CELLS.



STEP 4

GENTLY PLACE THE COMBUSTOR INTO THE CLEANING SOLUTION.

The cleaning solution will evaporate slightly. Keep the combustor covered with at least $\frac{1}{2}$ " of solution. Reduce the heat to just below boiling. It is not necessary to boil the cleaning solution once the combustor has been placed into the pot. Allow the combustor to remain in the hot cleaning solution for thirty (30) minutes.

NOTE: While the combustor is in the cleaning solution, heat to a boil enough distilled water for the two rinses (STEP 6 & STEP 7).

STEP 5

After THIRTY MINUTES, remove the combustor from the cleaning solution.

Place it on a towel. Discard the used cleaning solution and rinse out the pot.

STEP 6

Fill the pot with the boiling rinse water and gently place the combustor in the rinse water.

Allow the combustor to remain in the rinse water for 15 minutes. Keep the rinse water at just below boiling.

Meanwhile, preheat enough water for the second rinse cycle.

STEP 7

AFTER 15 MINUTES, remove the combustor from the rinse water and gently shake out the excess water.

Repeat STEP 6.

It is unlikely that you will notice a visible difference in the combustor after this cleaning procedure.

STEP 8

Reinstall the combustor.

After the cleaning procedure, follow the manufacturer's instructions for replacing the combustor and reassembling the stove.

Don't operate the stove for at least 24 hours. This will allow the combustor to dry and prevent steam from causing damage to the combustor. If the stove must be returned to operation immediately the combustor can be dried in an oven. Place the combustor in an oven at 300°F for 60 minutes. Turn off the oven and let it cool to room temperature.

This procedure has been found to be effective for non-damaged and non-worn out catalytic combustors. It will not revitalize a catalytic combustor if the catalyst has been worn out or damaged by use with improper combustibles or otherwise. Check the performance of your catalytic combustor regularly after cleaning. Reduced effectiveness as a result of age or damage may result in an increased rate of creosote accumulation in your chimney.

**BLAZE KING
LIMITED WARRANTY - APEX CBT**

WARNING: TO VALIDATE THIS WARRANTY YOU MUST COMPLETE AND RETURN THE WARRANTY CARD WITHIN 20 DAYS OF THE DATE OF PURCHASE.

WHAT THE WARRANTY COVERS:

This warranty contains different terms that cover different parts of the furnace. BLAZE KING warrants the STEEL COMPONENTS including the COMBUSTION CHAMBER and CAST LINERS of the BLAZE KING furnace, which is delivered with this warranty, against defects in material or workmanship to you, the original retail purchaser (hereafter referred to as purchaser), for a period of up to five (5) years following the date of original retail purchase, subject to the provisions of RESPONSIBILITIES OF THE COMPANY below. BLAZE KING warrants the FAN LIMIT CONTROLS, THERMOSTAT, DAMPER MOTOR, DOOR GASKETS, ELECTRICAL RELAYS (if applicable) and the BLOWER MOTOR (if applicable) of the BLAZE KING furnace, which is delivered with this warranty, against defects in material or workmanship, to the purchaser, for a period of one (1) year following the date of original retail purchase, subject to the provisions of RESPONSIBILITIES OF THE COMPANY below.

No person is authorized to modify this warranty or to make any additional warranties on behalf of the manufacturer, BLAZE KING.

WHAT THE WARRANTY DOES NOT COVER:

Unless otherwise provided by law or covered by this warranty, BLAZE KING is not responsible for removal, transportation or re-installation of any product repaired or replaced pursuant to this warranty. BLAZE KING shall in no event be liable for special, incidental, consequential, indirect or other similar damages arising from the breach of the warranty, even if BLAZE KING has been advised of the possibility of such damages. Some provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. BLAZE KING limits all implied warranties, if any, including the warranties of merchantability or fitness for particular purpose, to one (1) year from the date of original retail purchase. Some provinces do not allow limitations on how long implied warranty lasts, so the above limitation may not apply to you. Actions for breach of this warranty must be brought within one (1) year of the expiration of this warranty.

HOW YOU CAN GET SERVICE:

If this product requires repair or replacement due to defects in material or workmanship covered by this warranty, contact your BLAZE KING dealer and explain the defect. If the dealer does not repair or replace the product to your satisfaction, contact the Service Department of BLAZE KING at 1-250-493-7444 or write to 1290 Commercial Way, Penticton, BC, V2A 3H5. Please explain the defect and state the model, serial number, date of retail purchase, and the name and address of your BLAZE KING dealer. BLAZE KING may request that the defective part, parts, or the entire furnace, be shipped to BLAZE KING at the purchaser's expense.

RESPONSIBILITIES OF THE COMPANY:

IF the purchaser has complied with all of the terms and conditions of this warranty and IF the purchaser has notified BLAZE KING of a defect prior to the expiration of the respective warranty period and after shipment, BLAZE KING will either repair or replace the product, AT ITS ELECTION, or MAY ELECT to refund a portion of the purchase price, based on the formula below, if it cannot readily and quickly provide the purchaser with a replacement, if the purchaser is willing to accept such a refund. The repaired product or replacement will be returned to a BLAZE KING dealer nearest the purchaser at Blaze King's expense. IF it is determined by BLAZE KING that there is no defect, or that the defect resulted from causes not within the scope of this warranty, THEN the purchaser must bear the cost of storing the product and of returning the product to the purchaser. For parts of this furnace warranted beyond the first year, BLAZE KING will have the same obligations as described in this paragraph, provided, however, that the purchaser shall pay the following percentage of the then-current retail cost of the repair or the replacement, according to the year after purchase in which the defect is brought to the attention of BLAZE KING:

- during the 2nd year..... purchaser pays 20%
- during the 3rd year purchaser pays 40%
- during the 4th year..... purchaser pays 60%
- during the 5th year..... purchaser pays 80%

BLAZE KING

LIMITED WARRANTY - APEX CBT

MISUSE OF FURNACE NULLIFIES WARRANTY:

The above warranty is conditional upon the proper installation and use of the furnace according to the manufacturer's directions embodied in the Owner's Installation and Operation Instructions published by BLAZE KING and in compliance with the local building or fire codes in the area where it is installed. The furnace should be inspected by the Local Building Inspector or Fire Department prior to beginning use. A copy of the Owner's Installation and Operation Instructions is provided with each unit, or can be obtained by writing to BLAZE KING at the address shown below. READ THE OWNER'S INSTALLATION AND OPERATION INSTRUCTIONS BEFORE INSTALLING OR USING THE FURNACE. SAVE THESE INSTRUCTIONS FOR FURTHER MAINTENANCE AND SAFETY PROCEDURES. Alteration of, abuse of, damage to, lack of maintenance of, faulty repair, OR misuse of the furnace, VOIDS this warranty. Use of fuel other than natural untreated wood (such as artificial logs, wood exposed to salt water, or coal that may burn at excessively high temperatures or may release fumes that can explode) will VOID this warranty. Burning the furnace with the loading door open (other than during the brief start-up period) will also VOID this warranty.

OTHER LEGAL RIGHTS OF THE PURCHASER:

This warranty gives you specific legal rights, and you may have other rights that vary from province to province. All parts of this warranty are to be interpreted in accordance with the laws of British Columbia/Canada. If you do not agree to the purchase of the furnace on the terms and conditions set out in this warranty, then you must return the furnace to the dealer prior to use or installation, and the purchase price will be refunded.

THIS WARRANTY ONLY COVERS UNITS INSTALLED IN CANADA OR THE U.S.A.

**PLEASE KEEP YOUR RECEIPT AS PROOF OF PURCHASE.
ALL WARRANTY CLAIMS SHOULD BE MADE THROUGH THE DEALER YOU
ORIGINALLY PURCHASED YOUR HEATER FROM.**

NOTICE

**TO VALIDATE THIS WARRANTY YOU MUST
COMPLETE AND RETURN THE WARRANTY CARD
WITH 20 DAYS OF THE DATE OF PURCHASE**

MANUFACTURED IN CANADA BY:

Valley Comfort Systems Inc.
1290 Commercial Way
Penticton, BC
V2A 3H5

Ph# 1-250-493-7444
Email sales@blazeking.com

Patents Pending

MANUFACTURED IN USA BY:

Blaze King Industries
146 A Street
Walla Walla, WA.
99362

Ph# 1-509-522-2730
Email ussales@blazeking.com

