

Blaze King

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.



OPERATION & INSTALLATION MANUAL

This manual meets the 2015 U.S. Environmental Protection Agency's requirements for warm air furnaces sold after May 15, 2015.

Tested &
Listed By

OMNI-Test Laboratories, Inc.
Portland
Oregon USA
Report # 142-S-08b-2

**Installer: Please complete the details on the back cover
and leave this manual with the homeowner.**

Homeowner: Please keep these instructions for future reference.

The authority having jurisdiction (such a municipal building department, fire department, etc.) should be consulted before installation to determine the need to obtain a permit.

OPERATION & INSTALLATION MANUAL

Manufactured By

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

WARNING

- **THIS APPLIANCE IS HOT WHEN OPERATED AND CAN CAUSE SEVERE BURNS IF CONTACTED.**
- Do not operate appliance before reading and understanding operating instructions. Failure to operate appliance according to operating instructions could cause fire or injury.
- Risk of burns. The appliance should be turned off and cooled before servicing.
- Do not operate without fully assembling all components.
- Do not install damaged, incomplete or substitute components.
- Risk of cuts and abrasions. Wear protective gloves and safety glasses during installation. Sheet metal edges may be sharp.
- Young children should be carefully supervised when they are in the same room as the appliance. Toddlers, young children and others may be susceptible to accidental contact burns. A physical barrier is recommended if there are at risk individuals in the house. To restrict access to an appliance or stove, install an adjustable safety gate to keep toddlers, young children and other at risk individuals out of the room and away from hot surfaces.
- Clothing or other flammable material should not be placed on or near the appliance.
- Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.
- Ensure you have incorporated adequate safety measure to protect infants / toddlers from touching hot surfaces.
- Even after the appliance is out, it will remain hot for an extended period of time.
- Check with your local hearth specialty dealer for safety screens and hearth guards to protect children from hot surfaces. These screens and guards must be fastened to the floor.
- Any safety screen or guard removed for servicing must be replaced prior to operating the appliance.
- It is imperative that the control compartments, burners and circulating blower and its passageway in the appliance and venting system are kept clean. The appliance and its venting system should be inspected before use and at least annually by a qualified service person. More frequent cleaning may be required due to excessive lint from carpeting, bedding material, etc. the appliance area must be kept clear and free from combustible materials, gasoline and other flammable vapors and liquids.
- Under no circumstances should this appliance be modified.
- Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any parts which have been under water.
- Only doors certified with the unit are to be installed on the appliance.
- Keep the packaging material out of reach of children and dispose of the material in a safe manner. As with all plastic bags, these are not toys and should be kept away from children and infants.
- If the appliance is not properly installed, a house fire may result. Do not expose the appliance to the elements (ex. rain, etc.) and keep the appliance dry at all times. Wet insulation will produce an odor when the appliance is used.
- The chimney must be sound and free of cracks. Clean your chimney a minimum of twice a year and as required.
- The appliance is designed to burn natural wood only. Do not burn treated wood, coal, charcoal, coloured paper, cardboard, solvents or garbage.
- Do not start a fire with chemicals or fluids such as gasoline, engine oil, etc.
- Operate only with the doors tightly closed.
- Do not let the appliance become hot enough for any part to glow red.
- Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or too green or freshly cut hardwoods. Burning wet unseasoned wood can cause excessive creosote accumulation. When ignited it can cause a chimney fire that may result in a serious house fire.
- Do not use elevated grate or otherwise raise the fire.
- Do not store the wood within appliance installation clearances or within the space required for re-fueling and ash removal.
- Your appliance requires periodic maintenance and cleaning. Failure to maintain your appliance may lead to smoke spillage in your home.

SPECIFICATIONS

Model	APEX CBT (catalytic)
Height	40" (1016 mm)
Width	26 3/4" (680 mm)
Length	48" 1/4" (1226 mm)
Flue collar	7" I.D.
Flue pipe center to rear	10 1/4" (261 mm)
Recommended flue draft	.05" water column
Hot air plenum opening	25 3/4"L (654 mm) x 24"W (610 mm)
Fire door opening	12" x 13" (305 mm x 331 mm)
Firebox length	27" (686 mm)
Firebox width	16" (407 mm)
Firebox height	24" (610 mm)
Firebox capacity	6 cu. ft.
Recommended Fuel length	26" (661 mm)
Construction	12 gauge firebox, brick and cast lined. 20 gauge insulated cabinet.
Shipping Weight (Firebox only)	550 lbs. (249.5 kg)

This unit was tested and listed UL 391 and CSA B366.1 by OMNI-Test Laboratories. CSA B415.1-10

This manual describes the installation and operation of the APEX CBT catalytic equipped wood heater.

This manual is certified to comply with the 2015 U.S. Environmental Protection Agency's requirements for wood heaters sold after May 15, 2015.

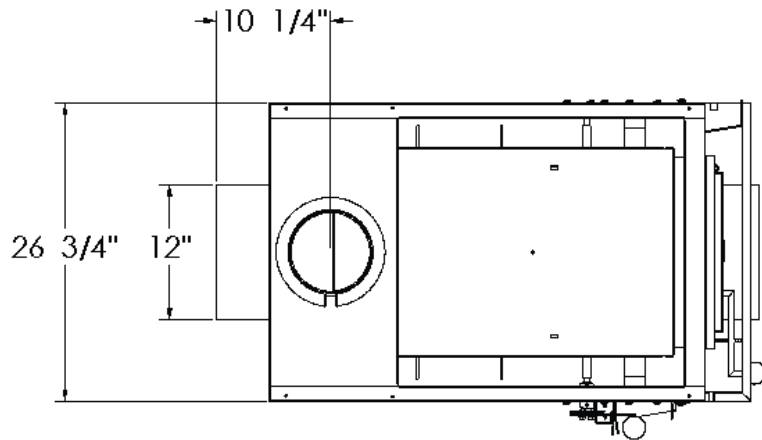
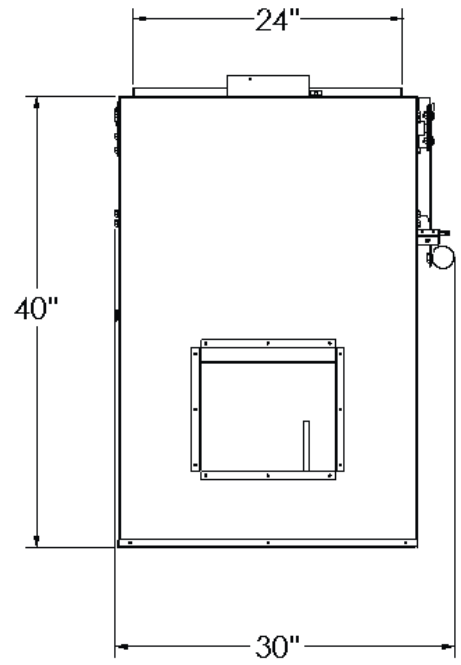
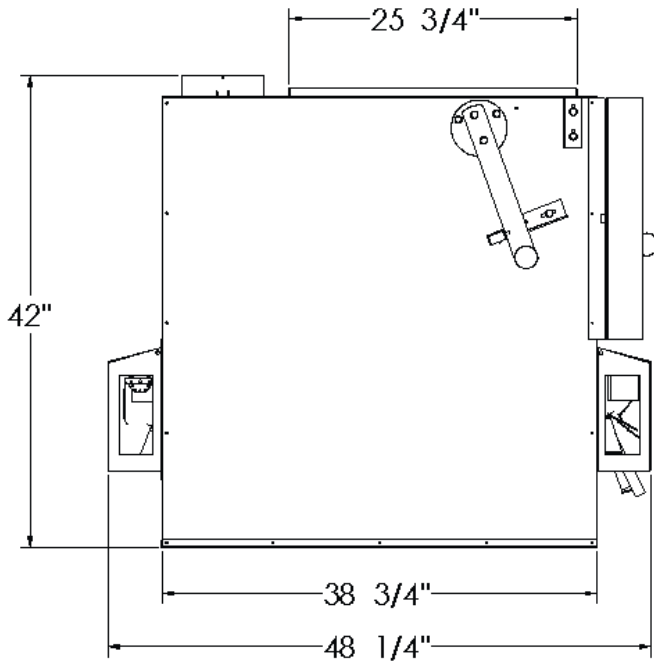
Under specific test conditions this heater has been shown to deliver heat at rates ranging from 13779 to 47996 Btu/hr. This wood heater has a manufacturer-set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.

This wood heater contains a catalytic combustor, which needs periodic inspection and replacement for proper operation. It is against federal regulations to operate this wood heater in a manner inconsistent with operating instructions in this manual, or if the catalytic element is deactivated or removed.

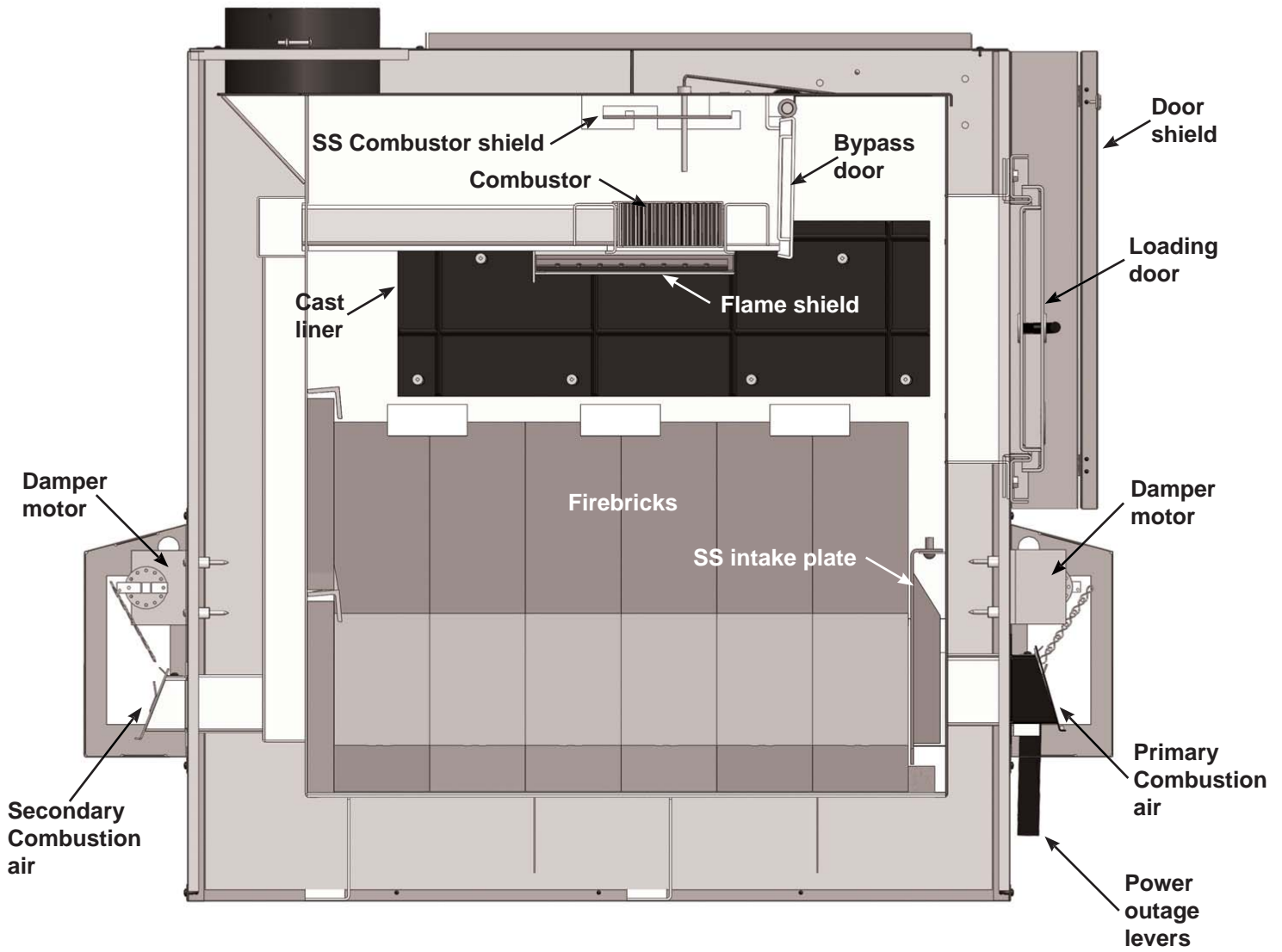
The combustor supplied with this heater is a Z8200 metal combustor. Consult the catalytic combustor warranty also supplied with this wood heater. Warranty claims should be addressed to:

in Canada	in USA
Blaze King Industries / Valley Comfort Systems Warranty Department, 1290 Commercial Way Penticton, BC Canada V2A 3H5, Ph: 250-493-7444	Blaze King Industries Warranty Department, 146A Street Walla, Walla, Washington 99362, Ph: 509-522-2730

APPLIANCE DIMENSIONS




PRODUCT INFORMATION



Cutaway view

CERTIFICATION LABEL



Tested & Listed By
OMNI-Test Laboratories, Inc.
Report # 142-S-08b-2

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:
[REDACTED]

SAFETY TESTED TO / TESTÉ SELON: CSA B366. 1, UL 391-2006

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"):

- 1) Oil furnace having oil input as shown on original nameplate between 0.81 usgph & 1.2 usgph (Max.)
- 2) A gas fired forced air furnace with a maximum output of 120,000 Btu and a minimum fan size of 900 cfm.
- 3) 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")

- 1) Four à l'huile ayant une entrée d'huile comme indiqué sur la plaque signalétique originale entre (0.81 usgph & 1.2 usgph (Max.))
- 2) Un four à gaz à air forcé avec un résultat maximum de 120,000 BTU et un minimum d'évent de 900 cfm.
- 3) 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 ajoutez 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 brûlez sous aucune circonstance, des ordures, de la naphta, 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

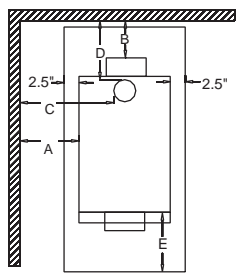
EN CAS D'INCENDIE DE CHEMINÉE OU UN FEU FILANT: Fermez tout l'air de combustion
Appelez les pompiers et soyez préparé pour évacuer la maison. Corrigez le problème avant la re-mise à feu

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	WHITE RODGERS : 1E78-140	REFER TO DETAILED INSTALLATION INSTRUCTIONS / RÉFÉREZ-VOUS AUX INSTRUCTIONS D'INSTALLATION DÉTAILLÉES
Damper motor	HONEYWELL: M847A1049B OR WHITE RODGERS 2070-5	INSTALLED BY / INSTALLÉ PAR [REDACTED]
Fan limit	WHITE RODGERS: 5D51-78	ADDRESS / ADRESSE [REDACTED]
		DATE / DATÉE [REDACTED]

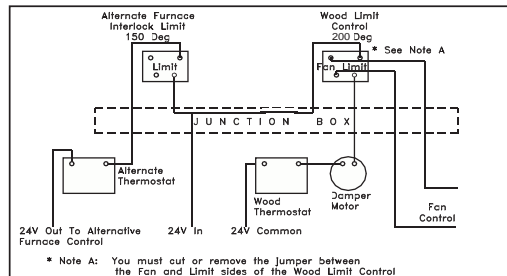


MINIMUM CLEARANCES / DEGAGEMENTS MINIMUM

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) 18 IN. (460 MM) IN CANADA, 16 IN. (410 MM) IN USA

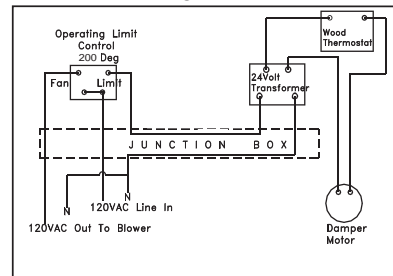
"check with local codes, 18" may be required for single wall pipe"/ vérifiez avec les codes locaux, 18" peut être exigé pour la conduite de cheminée"
IF INSTALLED ON COMBUSTIBLE FLOOR THE FLOOR MUST BE PROTECTED 18 IN. (460MM) IN FRONT OF WOOD CHARGING END (16 IN. (410MM) IN USA)
SI INSTALLÉ SUR UN PLANCHER 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



* Note A: You must cut or remove the jumper between the Fan and Limit sides of the Wood Limit Control

DIAGRAM B



"For Supply Connections Use No. 16 AWG Or Larger Wires Acceptable For At Least 220 °F (105 °C)"/ Pour les raccordements d'alimentation 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 B415.1-10

EMISSIONS RATE:	0.10 g/MJ / 0.21 lbs/million BTU
OVERALL THERMAL EFFICIENCY:	82.27 %
MINIMUM HEAT OUTPUT:	13779 BTU/hr
MAXIMUM HEAT OUTPUT:	47996 BTU/hr

MANUFACTURE DATE:

<input type="checkbox"/> JAN	<input type="checkbox"/> FEB	<input type="checkbox"/> MAR	<input type="checkbox"/> APR
<input type="checkbox"/> MAY	<input type="checkbox"/> JUN	<input type="checkbox"/> JUL	<input type="checkbox"/> AUG
<input type="checkbox"/> SEP	<input type="checkbox"/> OCT	<input type="checkbox"/> NOV	<input type="checkbox"/> DEC
<input type="checkbox"/> 2015	<input type="checkbox"/> 2016	<input type="checkbox"/> 2017	<input type="checkbox"/> 2018

0199 07 15

SAFETY PRECAUTIONS

WARNING

IF THE INFORMATION IN THESE INSTRUCTIONS ARE NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. PLEASE READ ENTIRE MANUAL BEFORE YOU INSTALL AND USE YOUR HEATER.

- **INSTALLATION IS TO BE PERFORMED BY A QUALIFIED INSTALLER**
- This furnace can be very hot when burning.
- 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.
- Children and pets must be kept from touching the heater when it is hot.
- The chimney must be sound and free of cracks. Before installing this unit, contact the local building or fire or other authority having jurisdiction and follow their guidelines.
- Operate only with the doors tightly closed.
- Do not use an elevated grate or otherwise raise the fire.
- This furnace is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods.
- Do not start a fire with chemicals or fluids such as gasoline, engine oil, etc.
- Do not burn treated wood, coal, charcoal, colored paper, cardboard, solvents or garbage.
- Do not let the furnace become hot enough for any part to glow red.
- Comply with all local codes and regulations.
- Never operate a furnace that has been improperly installed.
- 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.

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. Blaze King will not be held responsible for damage incurred once the product leaves our factories.

Blaze King grants no warranty, implied or stated, for the installation or maintenance of the appliance and assumes no responsibility of any consequential damage(s).

PARTS INCLUDED WITH THE APEX CBT
1. Two fan limit controls and bracket
2. Catalytic monitor
3. Thermostat
4. Rake
5. Ash shovel
6. Insulation strips (3 pieces)
7. Owners manual

OPTIONAL EQUIPMENT
1. Blower and cabinet for independent use (900 cfm. to 1200 cfm.)
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 "INSTALLATION INSTRUCTIONS - Combination APEX-Electric" on page 19)
 - B. A forced air gas furnace with a maximum output of 120,000 btu. and a minimum size fan of 900 cfm. (see "INSTALLATION INSTRUCTIONS - Combination APEX-Gas/Oil" on page 21)
 - 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 "INSTALLATION INSTRUCTIONS - Combination APEX-Gas/Oil" on page 21)
- 2. As an independent forced air wood furnace equipped with a blower of not less than 900 cfm. Capacity** (see "INSTALLATION INSTRUCTIONS - Wood only" on page 23).

INSTALLATION INSTRUCTIONS cont.

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.

CLEARANCES TO COMBUSTIBLES

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

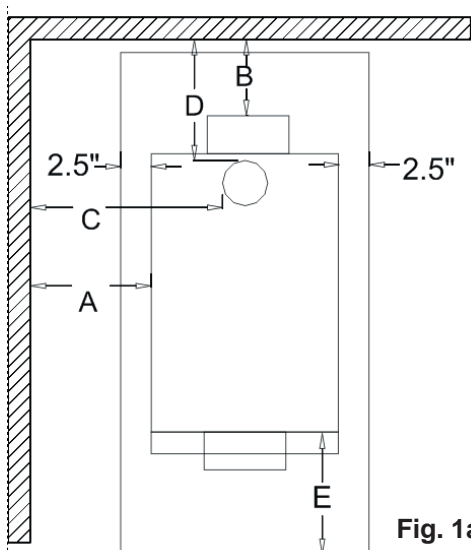


Fig. 1a

WOOD CHARGING END (DOOR) (E)	48" (1220 mm)
ONE SIDE (A)	6" (150 mm), 8" (204 mm) recommended
OTHER SIDE	18" (460 mm)
BACK (B)	3.5" (90 mm)
PLENUM & FIRST 2 FT (0.6 M) OF DUCT	1" (25 mm)
FLUE (D*)	10"* (250 mm)
FLUE (C)	18" (460 mm) IN CANADA 16" (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" out from the charging end and 8" on either side of the fuel-loading door. A non-combustible shield is also required underneath the chimney connector and extending at least 2" 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 cont.

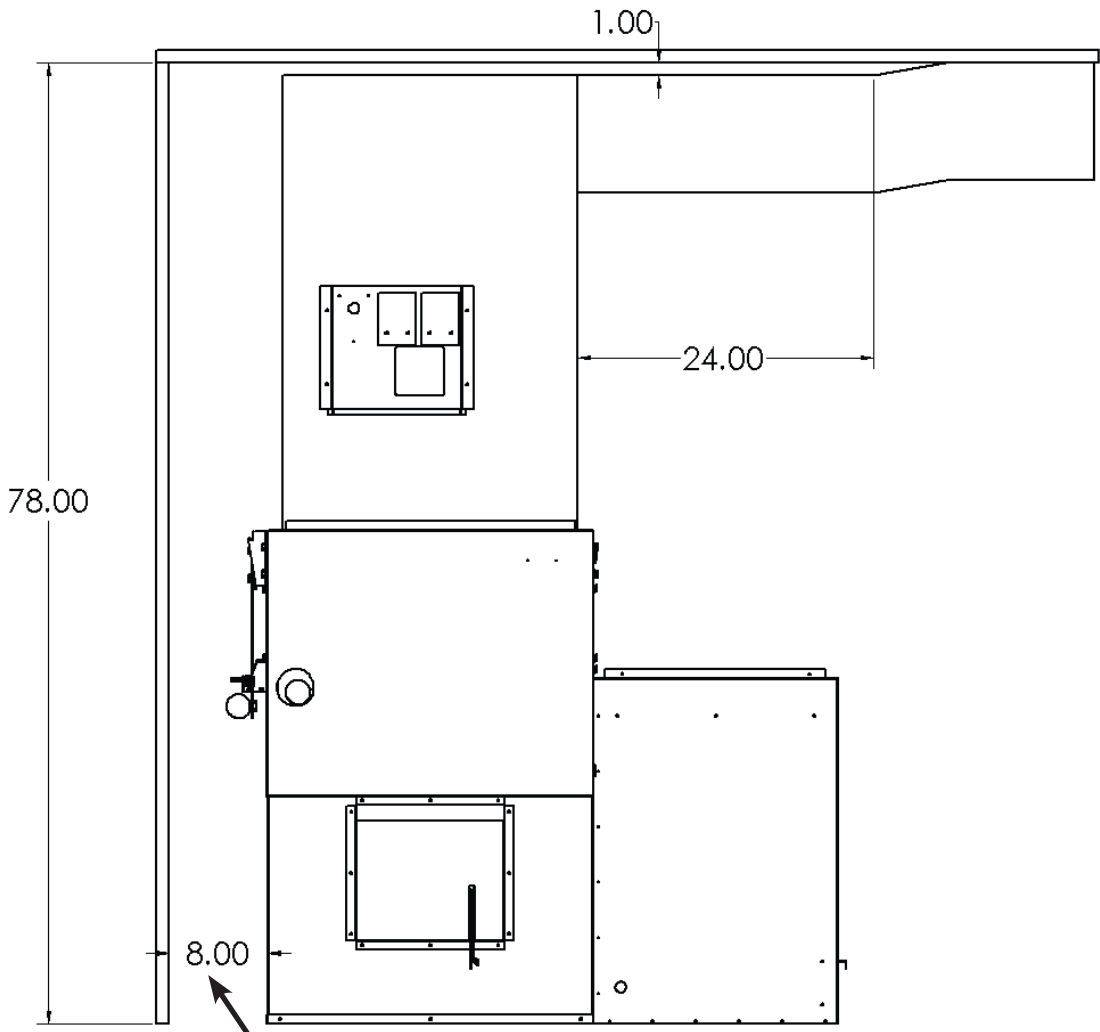


Fig. 1b

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

Always maintain sufficient space for servicing unit & accessing flue pipe for cleaning.

FURNACE LOCATION

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 duct work can only run horizontally or up, NEVER down.

NOTE: THE APEX CBT IS NOT TO BE USED OUTSIDE OF THE HOME

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** on next page.

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 on existing or alternate furnace. See "INSTALLATION INSTRUCTIONS cont." on page 14 for instructions.

INSTALLATION INSTRUCTIONS cont.

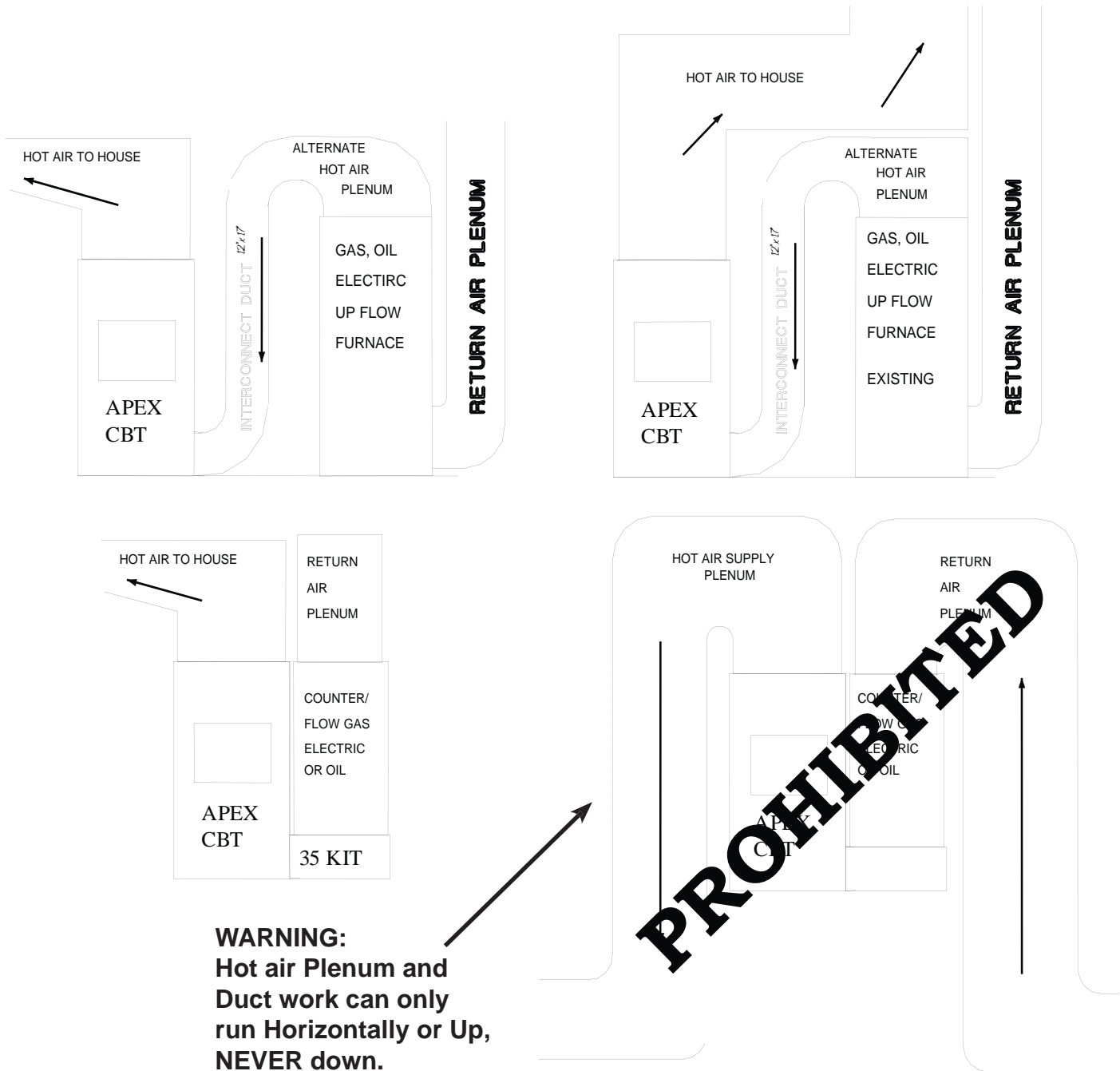


Fig. 3 Typical installation illustration

INSTALLATION INSTRUCTIONS cont.

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 “INSTALLATION INSTRUCTIONS cont.” on 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 Blaze King Part #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. Use the pre-punched cutouts if applicable.

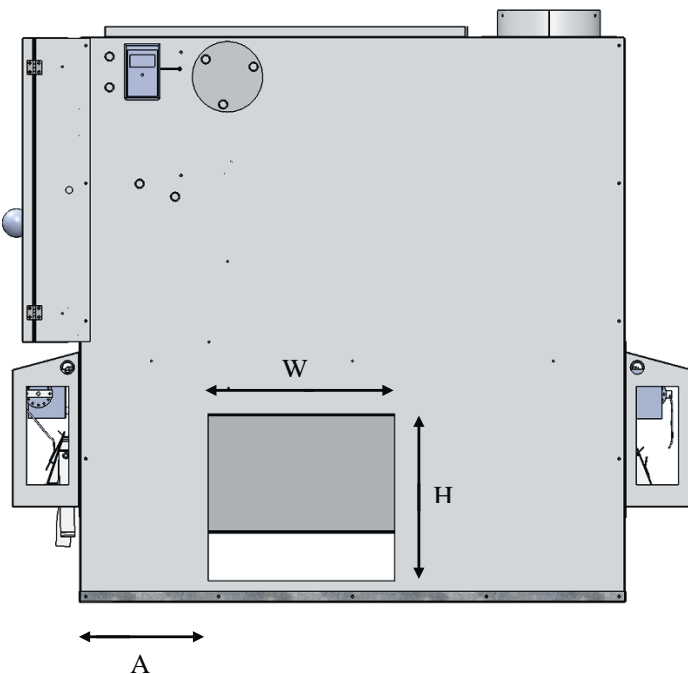


Fig. 4

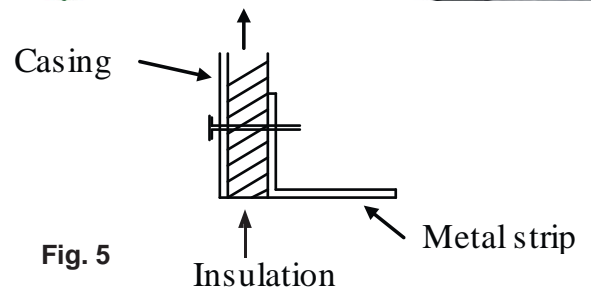
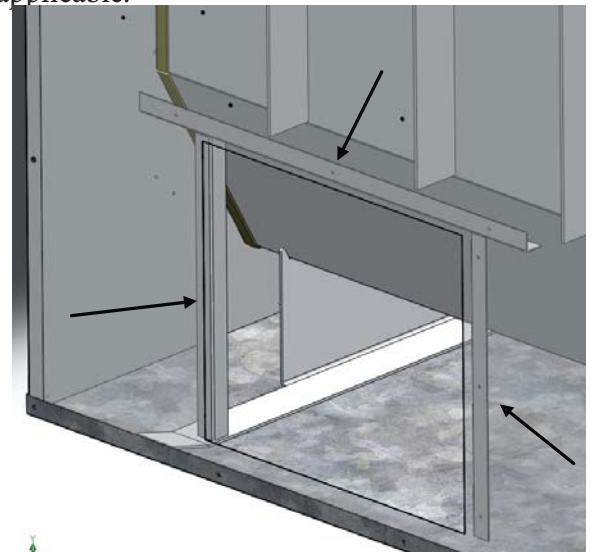


Fig. 5

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. Recommended intake size is 1.5 sq in² per 1000 BTU’s.

INSTALLATION INSTRUCTIONS cont.

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 side (default) to the right side of the furnace. This is possible by unbolting the system on the left side and reinstalling on the right side (the round plate on the right side conceals the bypass handle location and must 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.

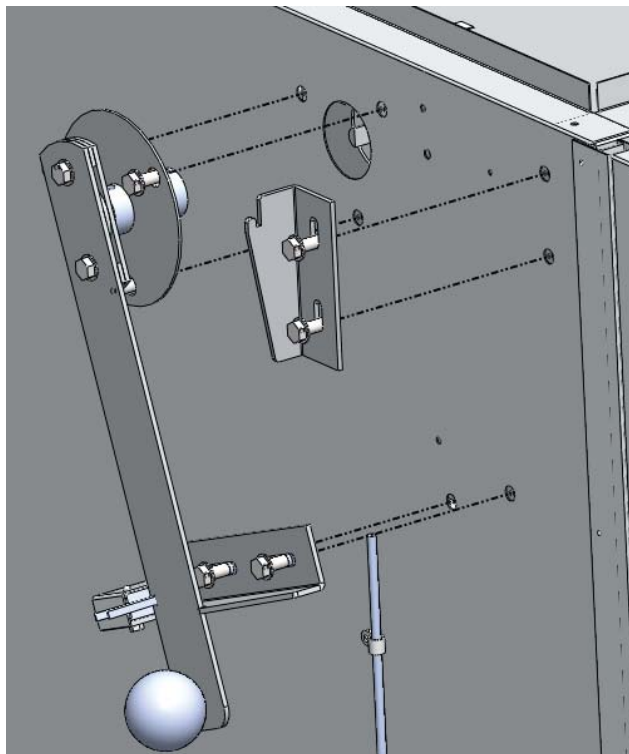


Fig. 6

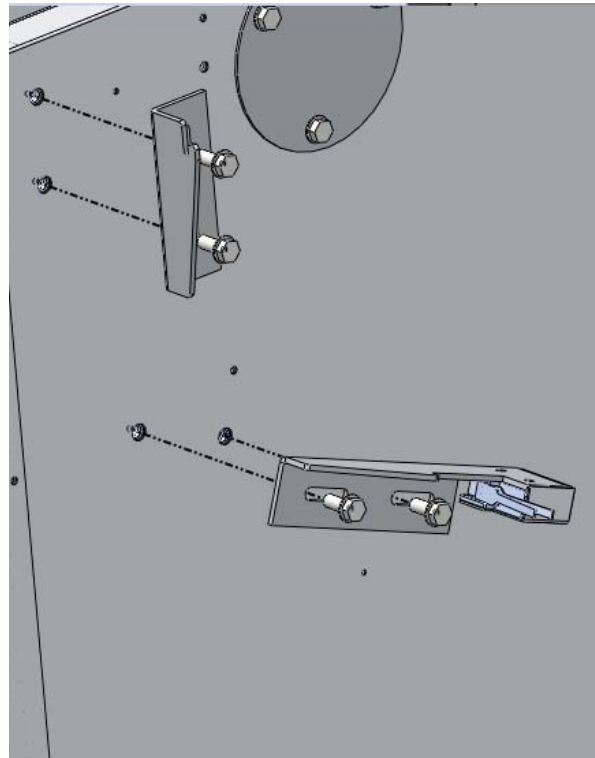


Fig. 7

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

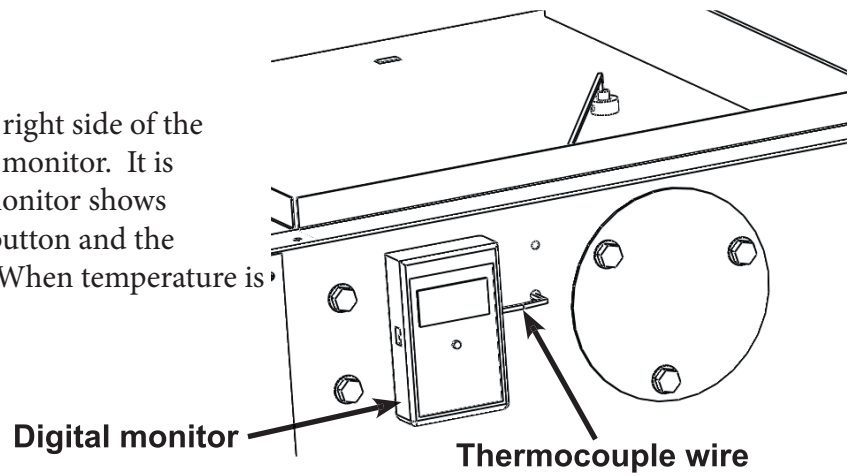
Record the pressure drop of the original system here: _____

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

CATALYTIC DIGITAL MONITOR

Mount the digital monitor on either the left or right side of the cabinet and connect thermocouple wire to the monitor. It is powered by a 9 volt battery (included). This monitor shows the temperature of the catalyst. Press the red button and the temperature will be displayed for 10 seconds. 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. Installation 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 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 cont.

CONNECTION TO A MASONRY CHIMNEY

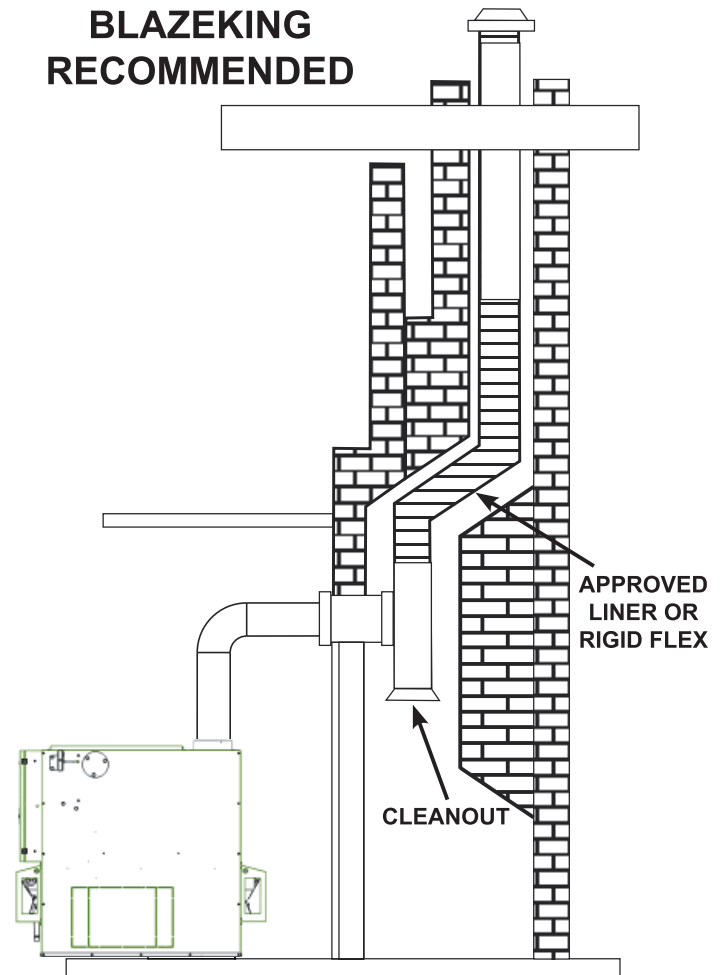
Masonry chimney***

Ensure that a masonry chimney meets the minimum standards (NFPA) by having it inspected by a professional. Make sure there are no cracks, loose mortar or other signs of deterioration and blockage. Have the chimney cleaned before the furnace is installed and operated. When connecting the furnace through a combustible wall to a masonry chimney, special methods are needed.

In Canada, the wall cut away is to provide 18" clearance for the connector. The resulting space must remain empty. A flush mounted sheet metal cover may be used on one side only. If covers are to be used on both sides, each cover must be mounted on noncombustible spacers at least 1" clear of the wall.

*****Blaze King recommends the use of a Stainless steel liner, preferably insulated, inside a masonry chimney. This to maintain proper draft and overall better operation of the unit.**

Your local dealer or local jurisdiction can provide details of approved methods of passing a chimney connector through a combustible wall in your area. In USA, the National Fire Protection Association has minimum standards to comply with. In Canada, this type of installation must conform to CAN/CSA-B365, Installation Code for Solid Fuel Burning Appliances and Equipment.



INSTALLATION INSTRUCTIONS cont.

THERMOSTATS

Your system uses two thermostats - one to control the wood add-on and one to control the alternate furnace (if applicable). 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.

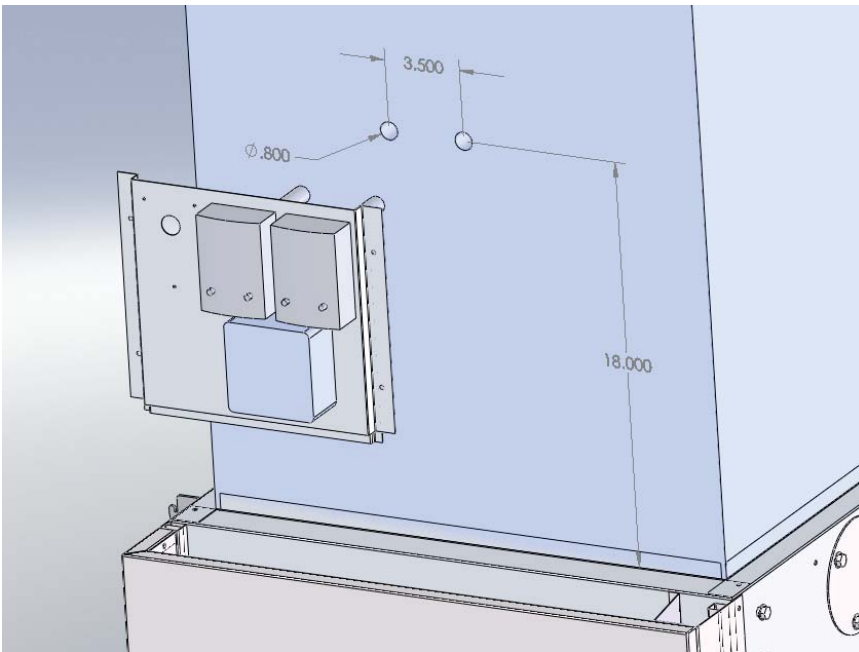
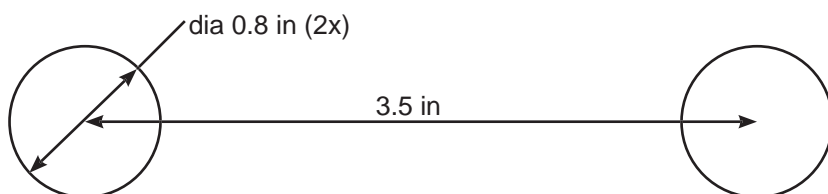


Fig. 19

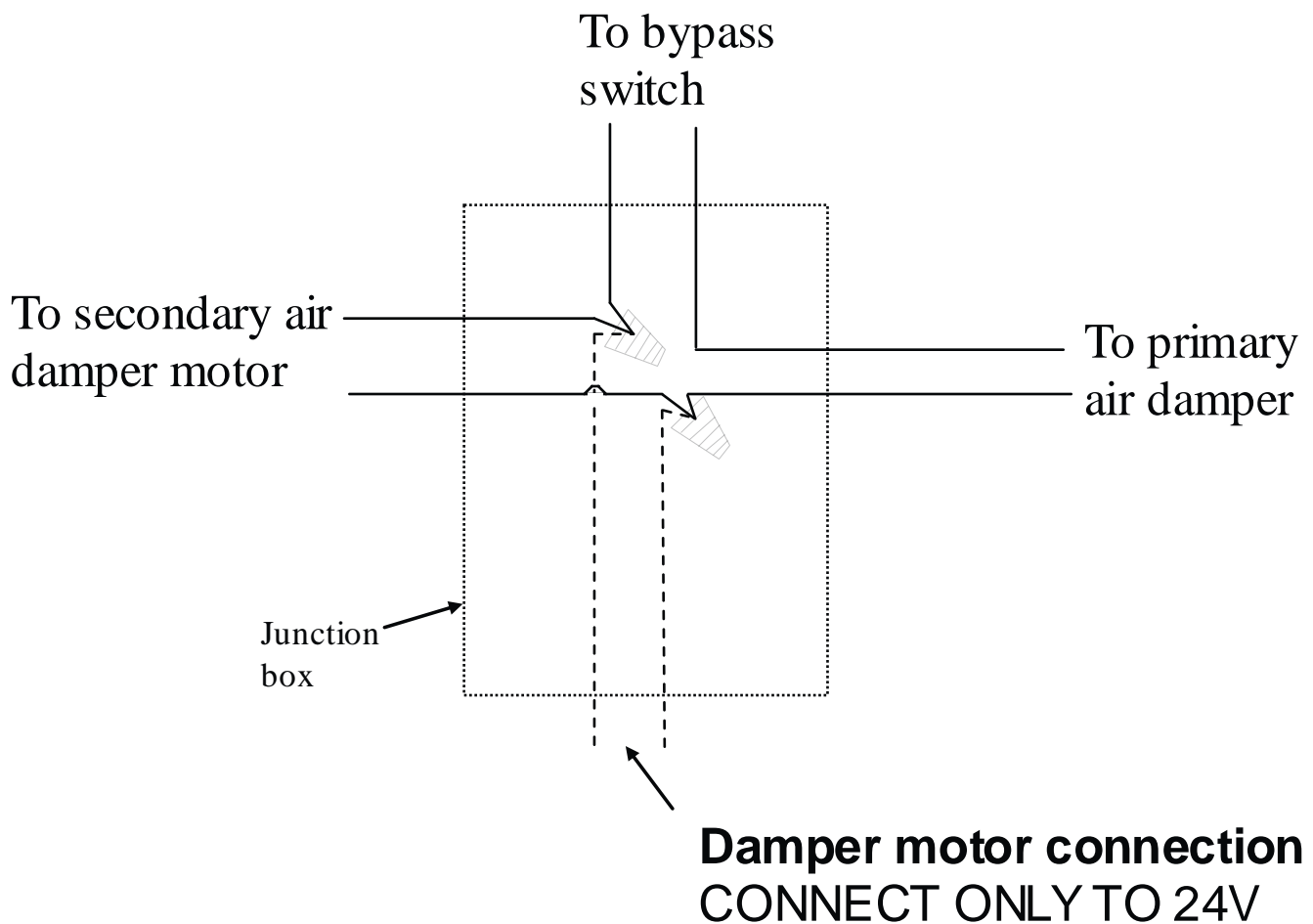
TEMPLATE FOR DRILLING HOLES—CUTOUT LINES



INSTALLATION INSTRUCTIONS cont.**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 - Combination APEX-Electric

ADD-ON TO ELECTRIC FURNACE

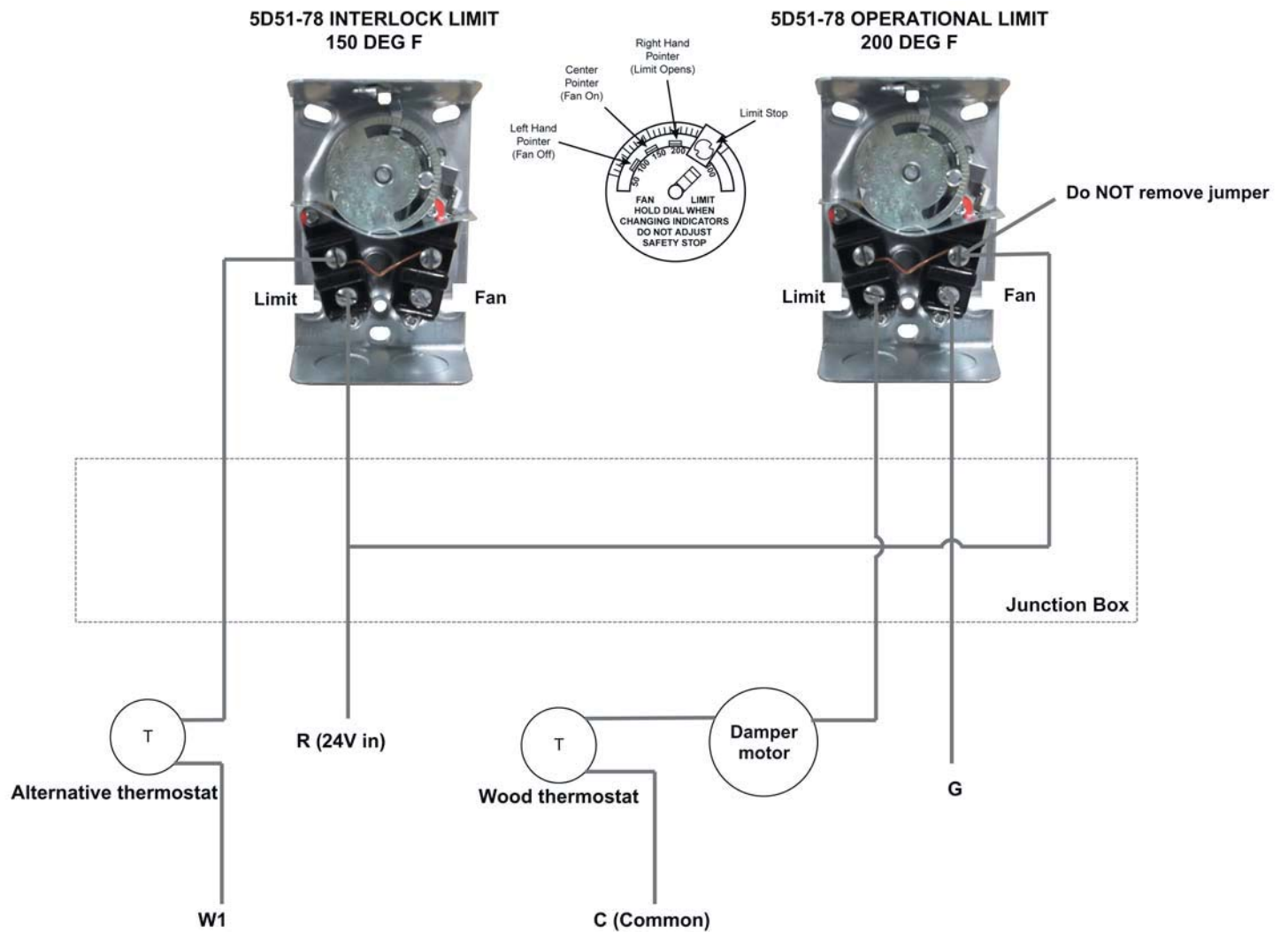
The APEX CBT may be added to an electric furnace with heating capacity between 15KW and 30KW. Minimum blower capacity must be at least 900 cfm. Electric furnaces approved for installation in any position can be inverted and used in a down flow position using an adapter duct between the furnace and the 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 portions of this manual also (see "INSTALLATION INSTRUCTIONS cont." on page 14) .

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 ALTERNATIVE FURNACE FROM OPERATING WHEN THE SYSTEM OUTPUT PLENUM TEMPERATURE IS ABOVE 150°F. TYPICAL WIRING DIAGRAM FOLLOWS: SEE FIG 21. IF YOUR ELECTRIC FURNACE DOES NOT HAVE AN R & G CONNECTION SEE FIG. 22.

INSTALLATION INSTRUCTIONS - Combination APEX-Electric

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



INSTALLATION INSTRUCTIONS - Combination 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: SEE 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.

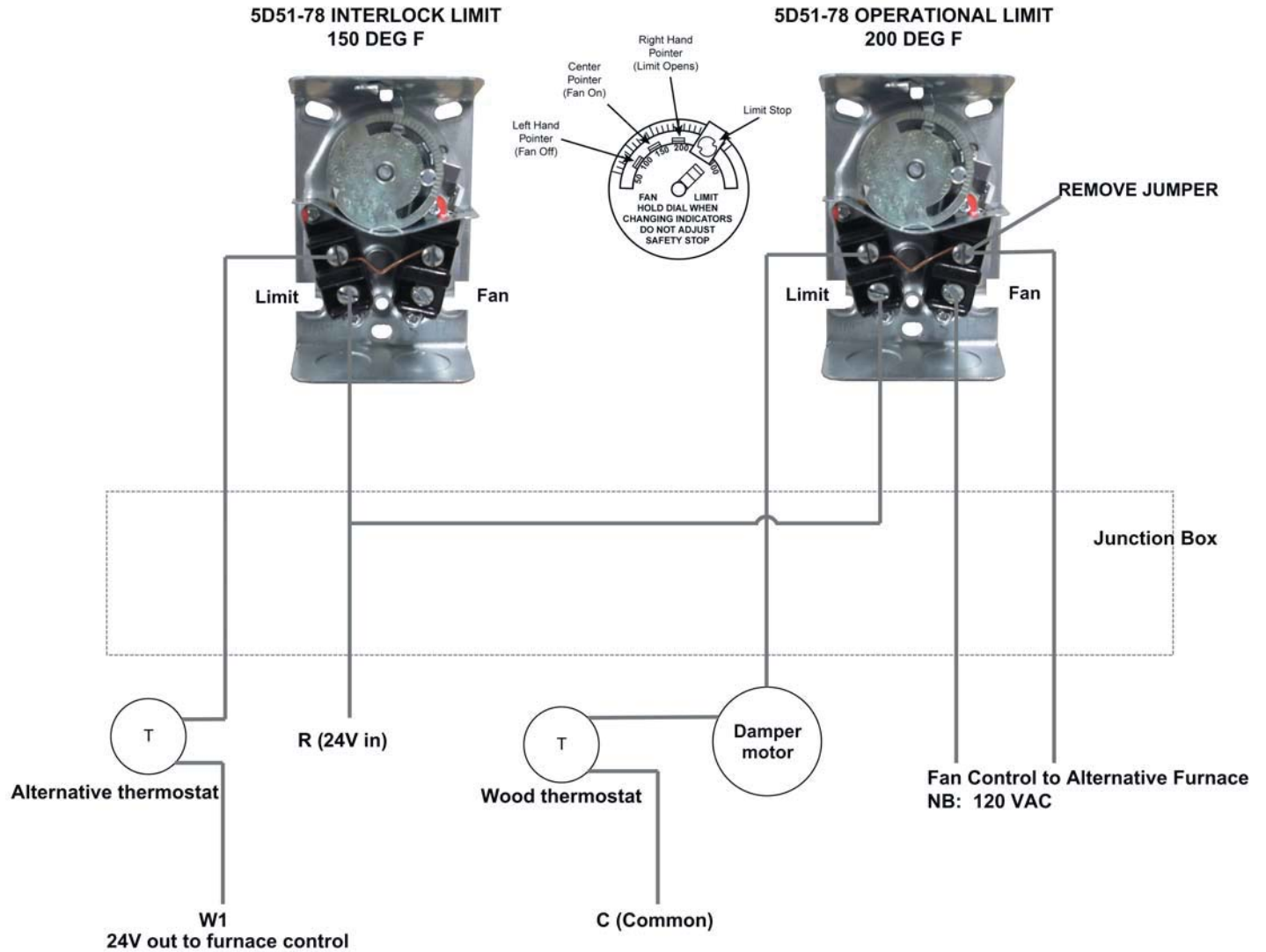
If changes are made to the installation of the oil furnace these changes must comply with CSA Standard B139.

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

INSTALLATION INSTRUCTIONS - Combination 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.



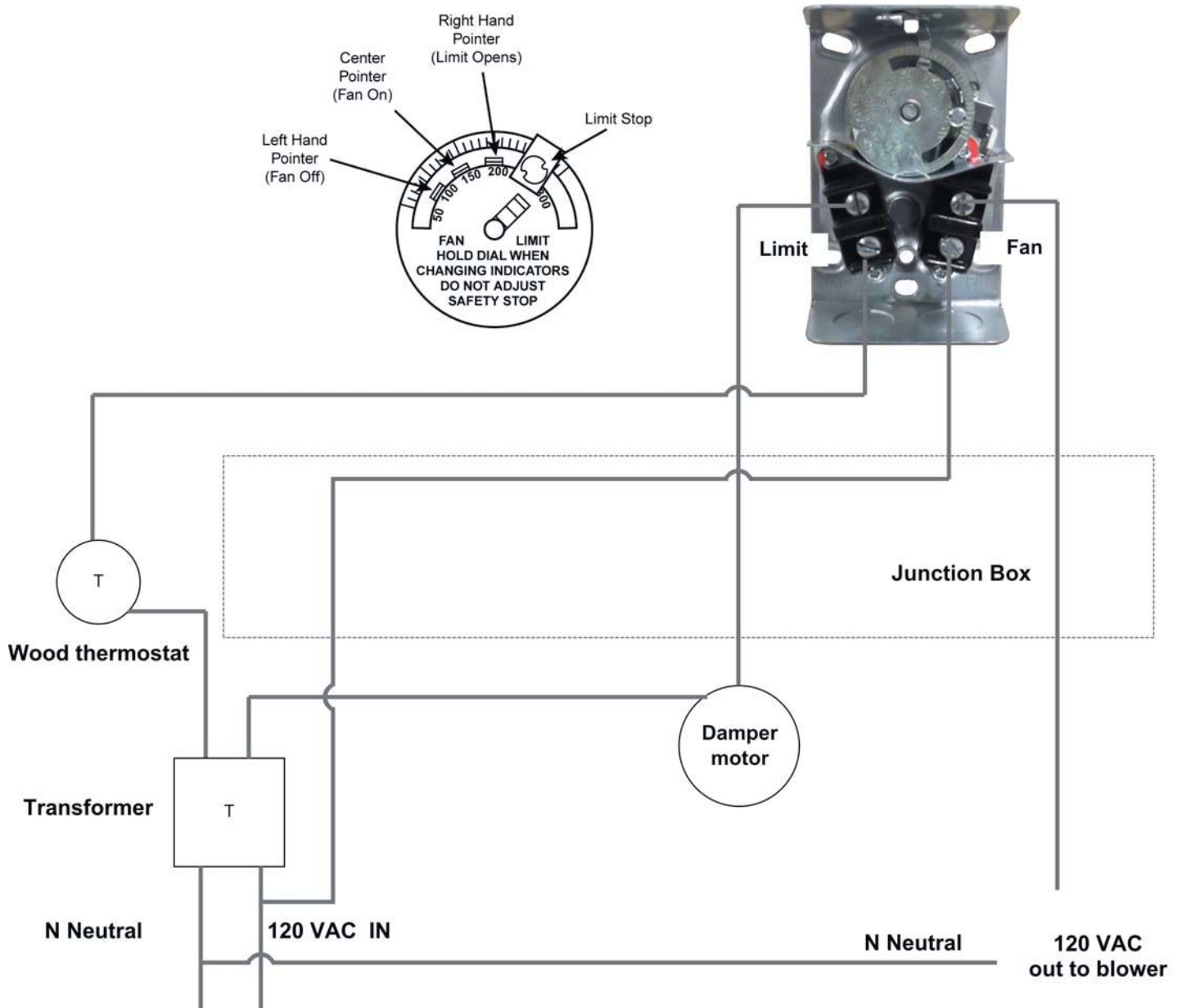
WIRING DIAGRAM FOR THE CONNECTION OF THE APEX CBT TO AN ALTERNATIVE GAS OR OIL FURNACE WITH 120 VAC FAN CONTROL.

INSTALLATION INSTRUCTIONS - Wood only

INDEPENDENT WOOD FURNACE

When installed with a Blaze King 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. **Fig. 23** shows the electrical connections, (use only 1 limit switch). **Fig. 23 ELECTRICAL CONNECTIONS INDEPENDENT WOOD**

**5D51-78 OPERATIONAL SAFETY LIMIT
200 DEG F**



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 Blaze King Apex CBT.

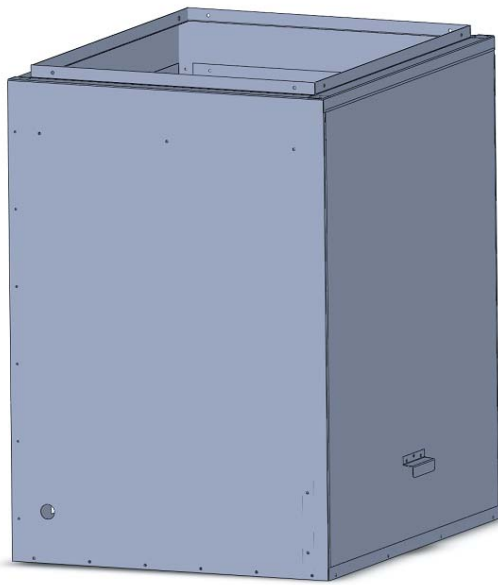
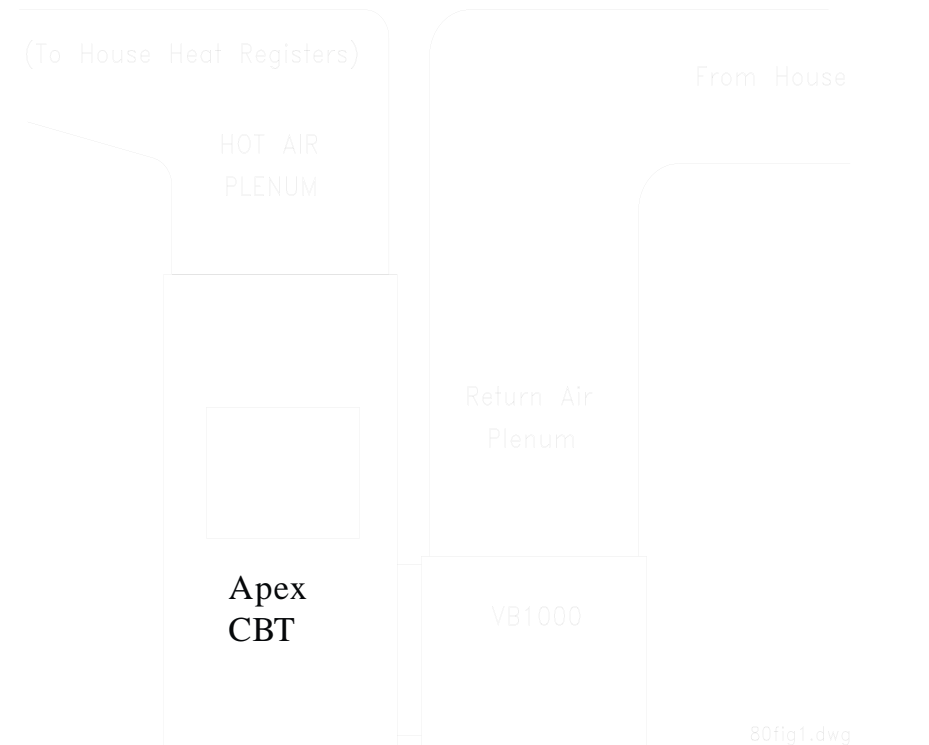


Fig. 24



- 1/3 HP 110V Motor
- Adjustable from 900 cfm 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.

OPERATING INSTRUCTIONS

YOUR FIRST FIRE!

The following pages contain information on the major components and operation of your heater. Please take time to read about them as it will give you a better understanding of how your furnace works. This understanding will help you to operate your furnace properly thus will extend the life of your furnace and allow you to get the highest efficiencies from your heater.

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 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 "MAINTENANCE cont." on page 33) for adjusting bypass handle and gasket.

CATALYTIC DIGITAL MONITOR (THERMOMETER)

This monitor is located on the side of the furnace, it is powered by a 9 volt battery (included). 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 10 seconds. When temperature is below 500°F, "COOL" will be displayed. The bypass should remain open during startup until the temperature exceeds 500°F.

OPERATING INSTRUCTIONS cont.**SELECTING WOOD****⚠ WARNING**

- **THIS APPLIANCE IS DESIGNED TO BURN NATURAL WOOD ONLY. DO NOT BURN TREATED WOOD, COAL, CHARCOAL, COLORED PAPER, CARDBOARD, SOLVENTS OR GARBAGE.**
- **HIGHER EFFICIENCIES AND LOWER EMISSIONS WILL GENERALLY RESULT WHEN BURNING AIR DRIED SEASONED WOODS, AS COMPARED TO WET, GREEN OR FRESHLY CUT WOODS.**
- **BURNING WET UNSEASONED WOOD CAN CAUSE EXCESSIVE CREOSOTE ACCUMULATION. WHEN IGNITED IT CAN CAUSE A CHIMNEY FIRE THAT MAY RESULT IN A SERIOUS HOUSE FIRE.**

Use dry seasoned wood, split and stacked and protected from rain for at least 24 months with a moisture content of 20% 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 problems. The only accurate method to determine moisture content in wood is to use a moisture meter.

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 and while the catalytic thermometer is still active range. There will be very little smoke at this stage in the burn cycle.

Both hardwood and softwood burn equally well in this appliance but hardwood, which is more dense, will weigh more per cord and burn a little slower and longer.

Firewood should be split and stacked in a manner that air can get to all parts of it and covered in early spring to be ready for burning that fall.

The only accurate way to determine wood moisture is to purchase a moisture meter.

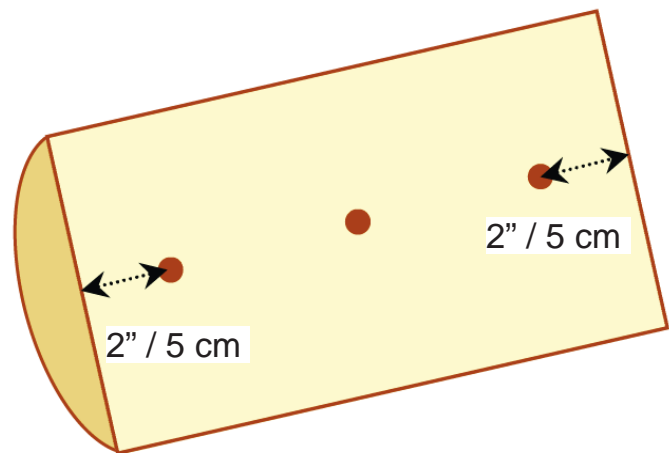
⚠ WARNING

- **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 THE CATALYTIC THERMOSTAT IS ABOVE 500°F.**

OPERATING INSTRUCTIONS cont.

HOW TO USE MOISTURE METERS

1. Take a random selection of around 3-4 logs per cubic yard or cubic meter.
2. Split each log down the middle.
3. In the center of log push pins of meter along grain - three measurements are taken on the freshly split surface: 2" or 5 cm in from each end of the log and in the middle of the split surface with sufficient contact (see figure).
4. Do this to all the logs and take an average of the readings (this will be only an approximate indication but a good guide).



EFFICIENCY

Efficiency was determined using the method outlined in B415.1-10 test method. It is represented by the Higher Heating Value (HHV) as the fuel used during testing contains between 19% - 25% water moisture included in the total calculated fuel weight. (Other test methods such as LHV or Low Heating Value, does not take the water moisture into account).

Annual Fuel Utilization Efficiency (AFUE) attempts to represent the actual, season long, average efficiency of an appliance. HHV is the actual, calculated average efficiency obtained under test conditions. Using correctly seasoned wood is important when trying to gain efficiency. The more seasoned (dry) the wood, the higher the efficiency (less energy wasted on eliminating moisture during combustion). Operating your Blaze King at lower settings will result in higher efficiencies as the fuel will undergo a more complete combustion. For maximum efficiency, the appliance should be installed in a location that provides adequate intake/combustion air as well as a location that will allow for the straightest run of optimal chimney length to establish necessary draft .

OPERATING INSTRUCTIONS cont.

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.

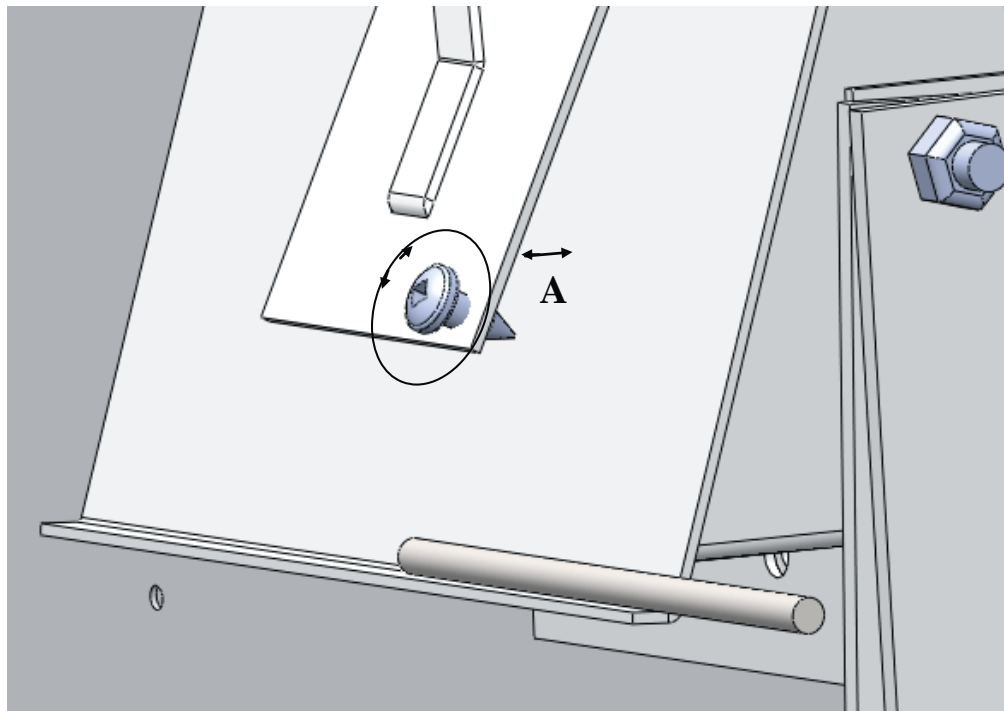


Fig. 25 Low output adjustment

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 CBT will fire up before the alternate furnace will. This will give the Apex CBT time to build up a hot fire after being in standby mode.

OPERATING INSTRUCTIONS cont.

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 "AIR SETTINGS" on page 28, **Fig. 25**)

PLEASE NOTE: The limit /safety switches have an auto / manual switch. Normal operation is set to AUTO.

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 ONCE THE CATALYTIC MONITOR TEMPERATURE IS 500°F OR HIGHER.

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) open.
- 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.

OPERATING INSTRUCTIONS cont.

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.

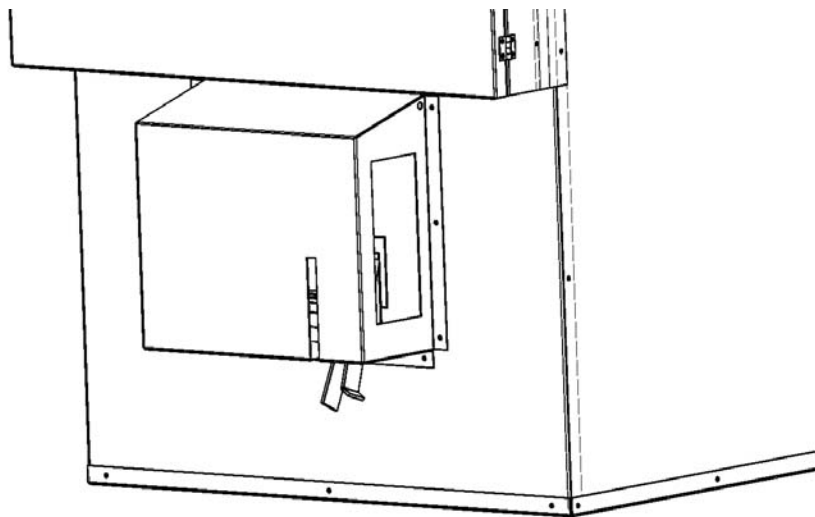
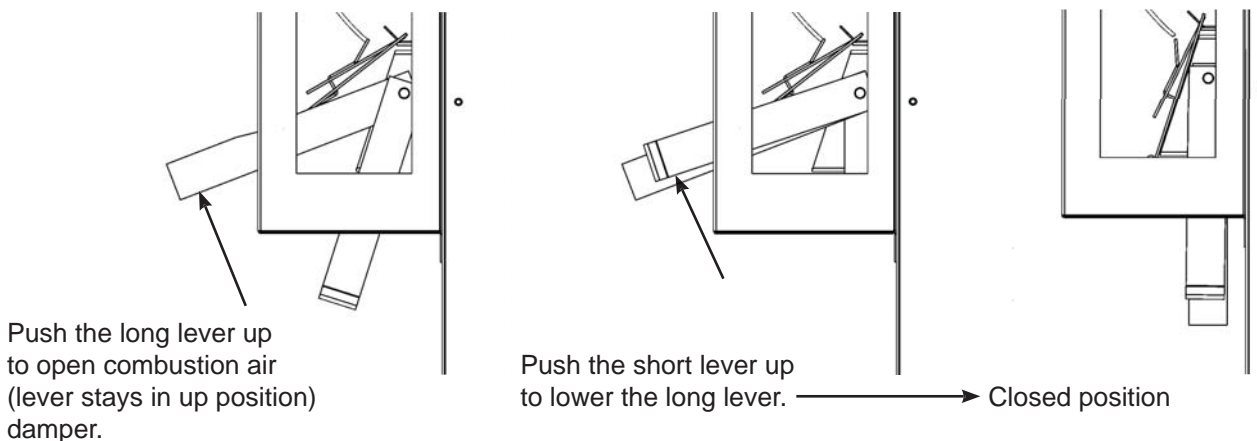


Fig. 26 Power outage control levers



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 same 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.

MAINTENANCE cont.

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**. For bypass door adjusting see “ADJUSTING BYPASS HANDLE” on page 33

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. If the door is difficult to close, adjust the tension (see next step).
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.

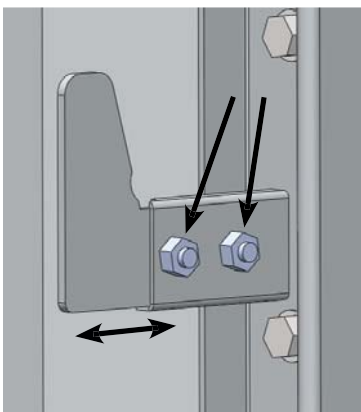


Fig. 28

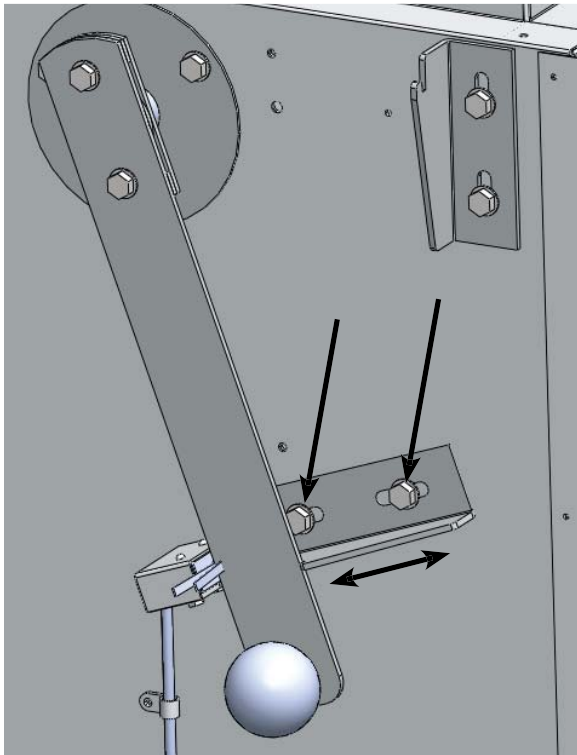
WARNING:
DO NOT OPERATE THIS WOOD FURNACE IF THE DOOR GASKET IS MISSING OR DAMAGED.

DANGEROUS OVER FIRING CAN OCCUR WHICH CAN DAMAGE THE APPLIANCE OR IGNITE CREOSOTE IN THE CHIMNEY, POSSIBLY CAUSING A HOUSE FIRE. IF ANY PART OF THE WOOD FURNACE OR FLUE SYSTEM IS GLOWING THE FURNACE IS BEING OVER FIRED.

MAINTENANCE cont.

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.



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 trying to pull 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.

Fig. 29

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 gases (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.

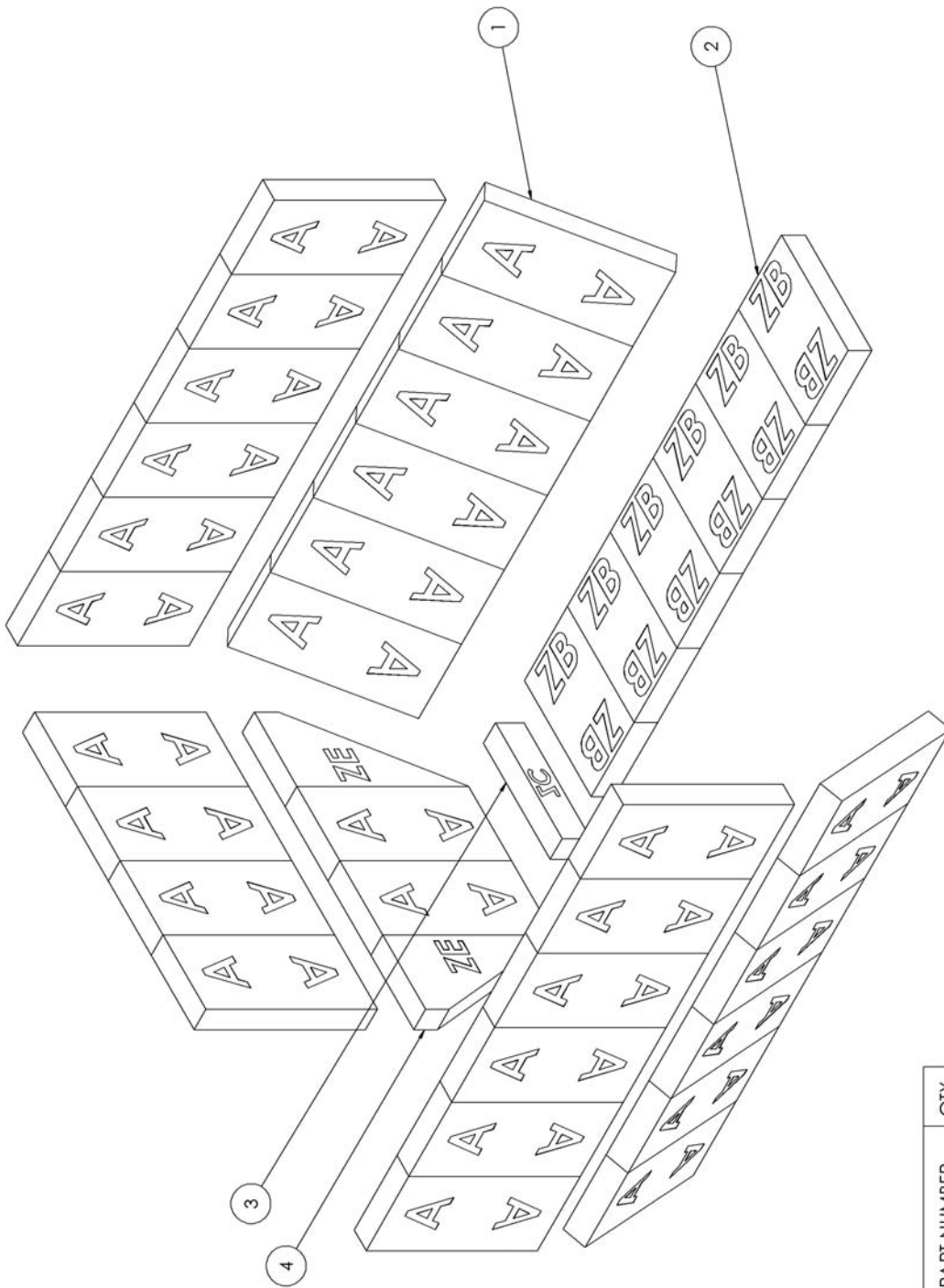
Always assure safety by having a clearly understood plan of how to handle a chimney fire, should one occur.

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.

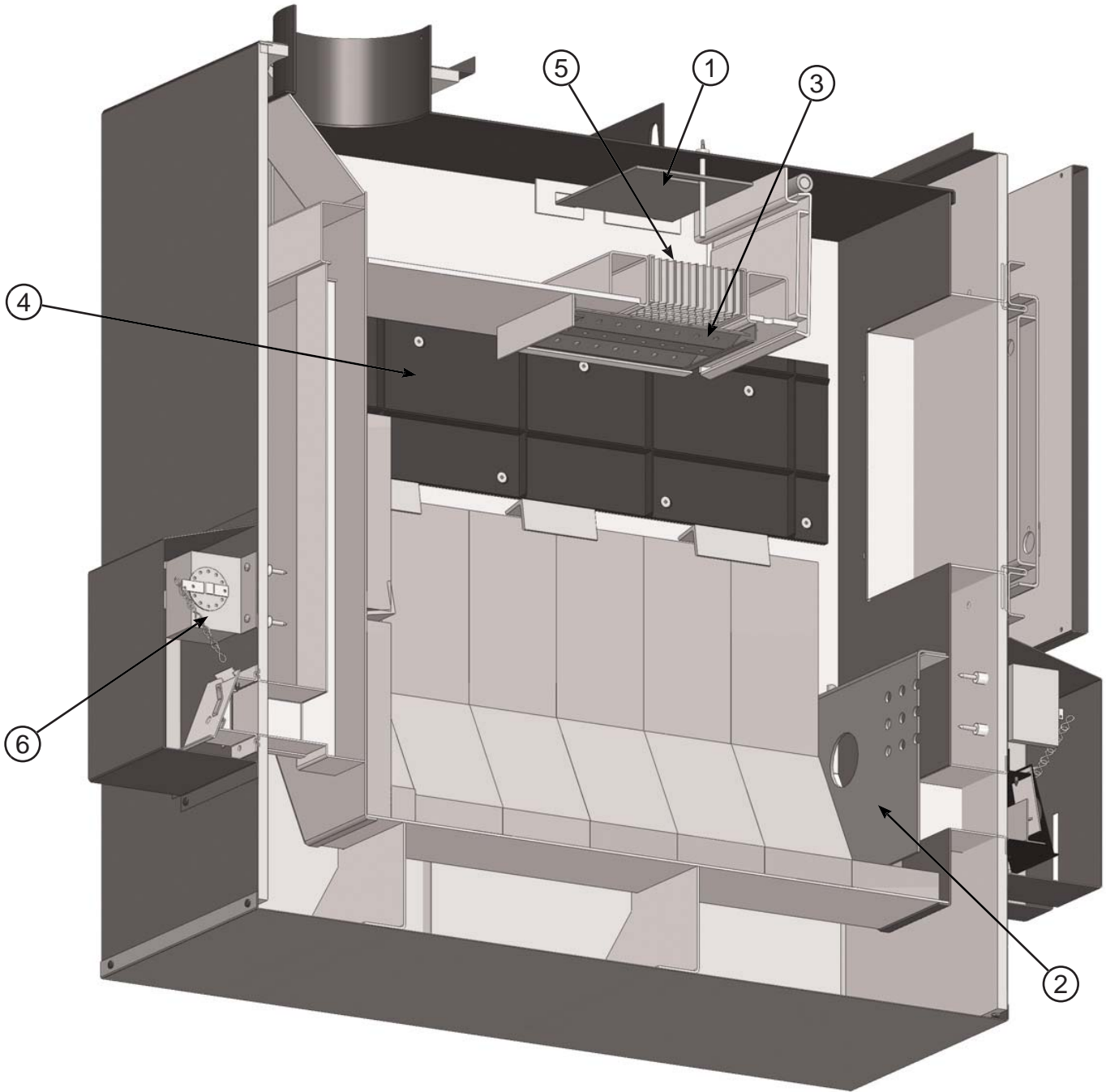
WARNING: FAILURE TO INSPECT AND CLEAN YOUR CHIMNEY SYSTEM REGULARLY CAN RESULT IN A SERIOUS FIRE WHICH MAY DAMAGE YOUR CHIMNEY OR CAUSE A HOUSE FIRE

BRICK LAYOUT



ITEM NO.	PART NUMBER	QTY.
1	A Size Brick	30
2	ZB Size Brick	6
3	ZC Size Brick	1
4	ZE Size Brick	2

REPLACEMENT PARTS



See next page for list referring to these item numbers

REPLACEMENT PARTS cont.

No Expl. View	Item #	Description	QTY	Unit
1	8215	Stainless steel combustor shield	1	EA
2	Z8222	Stainless steel intake plate	1	EA
3	8216	Stainless steel flame shield	1	EA
4	12061	Cast liner	2	EA
5	Z8200	Combustor	1	EA
6	dmpmtr	Damper motor	1	EA
	doorknob	Doorknob (same for door and bypass handle)	2	EA
	0186	Gasket loading door (5 feet)	1	EA
	0186A	Gasket bypass door (4 feet)	1	EA
		Fire Brick "A"	29	EA
		Fire Brick "ZB"	6	EA
		Fire Brick "ZC"	1	EA
		Fire Brick "ZE"	2	EA

WARRANTY

BLAZE KING WOOD LIMITED WARRANTY

Blaze King and Valley Comfort’s respective brands extend the following warranty for wood fired appliances purchased from an authorized Blaze King / Valley Comfort dealer and installed in the United States of America or Canada. Warranty starts with date of purchase by the original owner (End User) except as noted for replacement parts.

Warranty Period		Components Covered	
Parts	Labor	Wood	
1 Year		X	All parts, materials and surface finishes (flaking and peeling) Subject to Conditions, Exclusion, and Limitations listed.
2 Years		X	Motors, thermal sensors, catalytic thermometer, bi-metallic thermostat assembly, door handle metal components.
5 Years	2 Years	X	Firebox & Heat Exchanger, Bypass Door Steel Components
6 Years		X	Catalyst Combustor (see Conditions, Exclusions, and Limitations)
1 Year		X	Other Replacement Parts
See Conditions, Exclusions, and Limitations			

WARRANTY cont.

Blaze King Wood Limited 5 Year Warranty

Blaze King is the manufacturer of the Blaze King line of heating products. At Blaze King, our commitment to the highest level of quality and customer service is the most important thing we do. Each Blaze King furnace is built on a tradition of using only the finest materials and is backed by our limited warranty to the original purchaser. With Blaze King, you're not just buying a furnace; you're buying a company with years of unequalled performance and quality.

Limited Six (6) Year Warranty:

The CATALYTIC COMBUSTOR is under warranty by Blaze King for six (6) years from the date of original retail purchase. The purchaser shall pay the following share of the then current retail price for the combustor: The first three (3) years no charge, 4th year 60%; 5th year 70%, 6th year 80%. The Combustor must be returned to your dealer along with a completed COMBUSTOR FAILURE REPORT and original proof of purchase document.

Limited (5) Year Warranty:

Under this warranty, Blaze King covers the furnace body and accessories against defects in materials and workmanship, for part repair or replacement for the first five (5) years *** to the original purchaser. This Warranty covers: All Steel firebox components against defects in material and workmanship. Please see the exclusions and limitation section below as certain restrictions and exclusions apply this warranty.

Limited Two (2) Year Warranty:

Under this warranty, Blaze King covers against defects in materials and workmanship, for part repair or replacement and limited labor for the first two (2) years to the original purchaser. Please see the exclusions and limitation section below as certain restrictions and exclusions apply to this warranty.

Limited One (1) Year Warranty:

Under this warranty, Blaze King covers all parts and materials against defects in materials and workmanship including exterior paint finishes, for part repair or replacement and limited labor for the first year to the original purchaser. Please see the exclusions and limitation section below as certain restrictions and exclusions apply to this warranty.

How the Warranty Works

1. All warranties by the manufacturer are set herein and no claim shall be made against the manufacturer on any oral warranty or representation. All claims under this Limited Warranty must be made in writing by your dealer.
2. Any furnace or part thereof that is repaired or replaced during the Limited Warranty period will be warranted under the terms of the Limited Warranty for a period not exceeding the remaining term of the original Limited Warranty or six (6) months, whichever is longer.
3. For any part or parts of this furnace, which in our judgment show evidence of defects, Blaze King reserves the option to repair or to replace the defective part(s) through an accredited distributor or agent, provided the defective part is returned to the distributor or agent, transportation prepaid, if requested.
4. If you discover a problem that you think may be covered by the Limited Warranty, you MUST REPORT it to your Blaze King dealer WITHIN 30 DAYS from the date the problem was first detected, giving them proof of purchase and the date of purchase. The dealer will investigate the problem and work with Blaze King to determine whether the problem:
 - a) Is covered by the Limited Warranty or
 - b) Can be fixed in your home or does the product need to be returned to Blaze King for repair.
5. If Blaze King determines that the furnace needs to be returned to Blaze King for repair, the customer has the responsibility and the expense of removing it from their home and shipping it to Blaze King. If the problem is covered by the Warranty, Blaze King will repair or replace the item at their discretion and the customer will be responsible for return shipping and re-installation in their home.
6. If the problem is not covered by the Limited Warranty, the customer will be responsible for all repair costs, as well as all storage, shipping and the cost of removing and re-installing the furnace.

If you are not satisfied with the service provided by the Blaze King dealer, write to Blaze King at the address listed on the last page of the Owner's Manual. Include a copy of the original purchase invoice and a description of the problem.

WARRANTY cont.

Exclusions and Limitations:

1. This Warranty does not cover tarnish, discoloration or wear on the plated surfaces. Painted finishes will change color after initial firing and will continue to change through the lifetime of the furnace. This is normal occurrence for all high temperature coatings.
2. This Warranty does not cover gasket material or firebrick.
3. Blaze King strongly recommends installation by a certified installer. Failure to comply may adversely affect coverage under the terms of this warranty. This Limited Warranty covers defects in materials and workmanship only if the product has been installed in accordance with local building and fire codes; in their absence refer to the owner's manual. If the product is damaged or broken as a result of any alteration, wilful abuse, mishandling, accident, neglect, or misuse of the product, the Limited Warranty does not apply.
4. The furnace must be operated and maintained at all times in accordance with the instructions in the Owner's Manual. If the unit shows signs of neglect or misuse, it is not covered under the terms of this Warranty policy. Performance problems due to operator error will not be covered by the Limited Warranty policy.
5. Some minor expansion, contraction, or movement of certain parts and resulting noise, is normal and not a defect and, therefore, is not covered under this Limited Warranty.
6. Misuse includes over-firing. Over-firing can be identified later by warped plates and paint pigment being burnt off. Over-firing this appliance can cause serious damage and will nullify the Limited Warranty.
7. This warranty does not cover products made or provided by other manufacturers and used in conjunction with the operation of this furnace without prior authorization from Blaze King. The use of such products may nullify the Limited Warranty on this furnace. If unsure as to the extent of this Limited Warranty, contact your authorized Blaze King dealer before installation.
8. Blaze King will not be responsible for inadequate performance caused by environmental conditions.
9. The Limited Warranty does not cover installation and operational related problems such as use of downdrafts or spillage caused by environmental conditions. Environmental conditions include but are not limited to nearby trees, buildings, roof tops, wind, hills, mountains, inadequate venting or ventilation, excessive offsets, negative air pressures or other influences caused by mechanical systems such as furnaces, fans, clothes dryers etc.
10. The Limited Warranty does not cover damage caused by burning salt-saturated wood, corrosive driftwood, chemically treated wood or any fuel not recommended in the Owner's Manual (use cord wood only).
The Limited Warranty is void if:
 - a) The furnace has been operated in atmospheres contaminated by chlorine, fluorine or other damaging chemicals.
 - b) The furnace is subject to submersion in water or prolonged periods of dampness or condensation.
 - c) Any damage to the unit, combustion chamber or other components due to water, or weather damage which is the result of, but not limited to, improper chimney/venting installation.
 - d) Salt air in coastal areas or high humidity can be corrosive to the finish; these environmental conditions can cause rusting. Damage caused by salt air or high humidity is not covered by the Limited Warranty.
11. Exclusions to the Limited Warranty include: injury, loss of use, damage, failure to function due to accident, negligence, misuse, improper installation, alteration or adjustment of the manufacturer's settings of components, lack of proper and regular maintenance, alteration, or act of God.
12. The Limited Warranty does not cover damage caused to the furnace while in transit. If this occurs, do not operate the furnace and contact your courier and/or dealer.
13. The Limited Warranty does not extend to or include paint, gaskets, or firebrick damage caused by normal wear and tear, such as paint discoloration or chipping, worn or torn gaskets, chipped or cracked firebrick, etc.
14. The Limited Warranty does not include damage to the unit caused by abuse, improper installation, or modification of the unit.
15. Damage to plated surfaces caused by fingerprints, scratches, melted items, or other external scores and residues left on the plated surfaces from the use of abrasive cleaners or polishes is not covered in this warranty.
16. Blaze King is free of liability for any damages caused by the furnace, as well as inconvenience expenses and materials. The Limited Warranty does not cover incidental or consequential damages.
17. The Limited Warranty does not cover any loss or damage incurred by the use or removal of any component or apparatus to or from the Blaze King furnace without the express written permission of Blaze King and bearing a Blaze King label of approval.

WARRANTY cont.

18. Any statement or representation of Blaze King Products and their performance contained in Blaze King advertising, packaging literature, or printed material is not part of the Limited Warranty.
19. The Limited Warranty is automatically voided if the furnace's serial number has been removed or altered in any way. If the furnace is used for commercial purposes, it is excluded from the Limited Warranty.
20. No dealer, distributor, or similar person has the authority to represent or warrant Blaze King Products beyond the terms contained within the Limited Warranty. Blaze King assumes no liability for such warranties or representations.
21. Blaze King will not cover the cost of the removal or re-installation of the furnace, venting or other components.
22. Labor to replace or repair items under this Limited Warranty will be covered per our warranty service fee reimbursement and labor rates are set per component schedule. Labor rates vary from location to location and as such total labor costs may not be covered. Please consult with your dealer or service technician for any additional charges such as travel time or additional labor charges that may apply.
23. For parts of the Blaze King furnace warranted beyond the first year, the five year limited warranty will have the same obligations as described in this document, 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 the which the defect is brought to the attention of Blaze King.*** During the 2nd year----purchaser pays 20%.
3rd year ----purchaser pays 40%. 4th year ----purchaser pays 60%. 5th year---- purchaser pays 80%.
24. If a defect or problem is determined by Blaze King to be non warrantable, Blaze King is not liable for travel costs for service work. In the event of in-home repair work, the customer will pay any in-home travel fees or service charges required by the Authorized Dealer.
25. At no time will Blaze King be liable for any consequential damages which exceed the purchase price of the unit. Blaze King has no obligation to enhance or modify any furnace once manufactured (example: as a furnace model evolves, field modifications or upgrades will not be performed).
26. This Limited Warranty is applicable only to the original purchaser and it is non-transferable.
27. This warranty only covers Blaze King Products that are purchased through an authorized Blaze King dealer.
28. If for any reason any section of the Limited Warranty is declared invalid, the balance of the warranty remains in effect and all other clauses shall remain in effect.
29. The Limited Warranty is the only warranty supplied by Blaze King, the manufacturer of the furnace. All other warranties, whether express or implied, are hereby expressly disclaimed and the purchaser's recourse is expressly limited to the Limited Warranty.
30. Blaze King and its employees or representatives will not assume any liability for damages, either directly or indirectly, caused by improper usage, operation, installation, servicing or maintenance of this furnace.
31. Blaze King reserves the right to make changes without notice. Please complete and mail the warranty registration card and have the installer fill in the installation data sheet in the back of the manual for warranty and future reference.
32. Blaze King is responsible for stocking parts for a maximum of seven (7) years after discontinuing the manufacture or incorporation of the item into its products. An exception to this would be if an OEM supplier is not able to supply a part.

