

# ADAMS

## SPEEDFLAME

### POWER GAS BURNERS

Certified for Natural & LP Gases



**G2T 300/600/850 Series**

#### WARNING !

If the information in these instructions are not followed exactly a fire or explosion may result, causing property damage, personal injury or death.

Code compliance is the sole responsibility of the installer.

#### If You Smell Gas!

- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone.
- If you cannot reach your gas supplier call the fire department.

## Installation, Operation, Maintenance Manual

#### CAUTION !

Do not store gasoline flammable liquids or vapors in the vicinity of this or any other fuel burning appliance.

Installation and service must be performed by a qualified installer, service agency or the gas supplier



US

**Installer:** Affix this manual adjacent to the burner!

Inform and demonstrate the correct operation and maintenance of the burner.

## GENERAL INFORMATION

The Models G2T-300,600,850 conversion burners are adjustable to most heating appliances that have a suitable combustion chamber. Do not use in sectional type heating appliances or on revertible (diving) flue design applications.

This design series of gas conversion burners are certified by the CTL Test Laboratories to the ANS Z21.17/CSA 2.7-1998 Gas Conversion Burner Standards.

The installation must conform to local codes, with the Standard for the Installation of Domestic Gas Conversion Burners, ANSI Z21.8, the National Fuel Gas Code, ANSI Z223.1, or the CAN/CGA-B149, Installation Codes.

If an external electrical source is utilized, the conversion burner, when installed must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or the Canadian Electrical Code, C22.1.

These publications are available from the Canadian Standards Association or from the National Fireprotection Association.



**WARNING**

**CARBON MONOXIDE  
POISONING HAZARD**

**CARBON MONOXIDE IS A COLORLESS, ODORLESS GAS THAT CAN KILL. FOLLOW THESE RULES TO CONTROL CARBON MONOXIDE.**

- ▲ Do not use this burner in an unvented, enclosed area. Carbon monoxide may accumulate.
- ▲ Do not adjust the pressure regulator. High pressures produce carbon monoxide.
- ▲ Check flue gases for carbon monoxide. This check requires specialized equipment.
- ▲ Allow only qualified burner service persons to adjust the burner. Special instruments and training are required.



**WARNING**

**OVERHEATING HAZARD**

**SHOULD OVERHEATING OCCUR:**

- (1) Shut off the manual gas control to the appliance.
- (2) Do not shut off the control switch to the pump or blower.

**REDUNDANT GAS VALVE**  
Provides back-up valve for added safety.

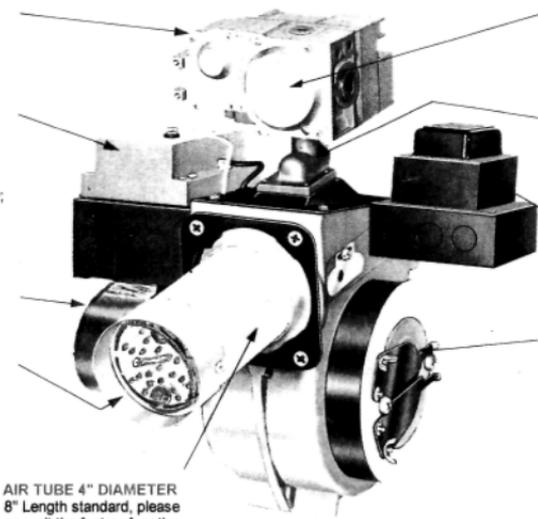
**ELECTRONIC PRIMARY CONTROL**

Meets the most stringent flame supervision specifications. Flame proving within four (4) seconds; supervises all ignition functions including .8 of a second relight capability; senses flame by rectification, providing positive flame monitoring.

**PRESSURE SWITCH**

Field-proven motor switch ensures blower operation.

**FLAME RETENSION HEAD**  
Adams time-proven, precision head positively locks the flame on the burner head to optimize efficient burner performance



**MANIFOLD PRESSURE REGULATION**  
C.S.A. Design Certified for operation at 3.5" W.C. for Natural and L.P. gases.

**EXTERNAL ORIFICE CHANGE**  
Adams special orifice in the manifold union permits orifice change without disassembling the burner.

**HIGH VOLTAGE IGNITION TRANSFORMER**  
Provides the most dependable direct spark ignition system available.

**POSITIVE-LOCK AIR CONTROL**  
Dual shutter and numerical scale for precise air inlet adjustment.

**AIR TUBE 4" DIAMETER**  
8" Length standard, please consult the factory for other lengths.

**PATENTED VACUUM MIXING METHOD**  
Adams innovative vacuum mix of air and fuel gives you the ultimate in combustion performance.

## Specifications – Model G2T

### 4" Blast Tube

Capacity 50M to 850MBtu/Hr

### Natural Gas

Model	Capacity M/BTU Max Min	Combination Gas Valve	Ignition	Motor HP
G2T-300	300 50	½" 2000DERHC	Direct Spark	1/7*
G2T-600	600 50	¾" VR8304M	Direct Spark	1/7
G2T-850	850 200	1" 7000ERHC	Direct Spark	1/7

### L.P. Gas

G2T-400LP	400 50	½" 2000DERHCLP	Direct Spark	1/7*
G2T-850LP	850 200	¾" VR8304MLP	Direct Spark	1/7

\*Air Spoiler Installed

Dimensions: Height 17" – Width 13" – Depth (Chassis only) 8"

## COMBUSTION AIR AND VENTILATION

Successful operation of any fuel burning heating systems depends on a continuous and adequate supply of air for both combustion and draft divider dilution. Open basements and below grade utility rooms or crawl spaces without storm windows or tight doors will generally permit adequate air infiltration.

If the heating system is located in a separate room with a tight door, ventilation must be provided to an open area within the building or to the outside. If the openings are within the building two open grills must be installed, one near the floor and one close to the ceiling. The open (non-adjustable) grills must have a free area of at least one square inch (6.45sq. cm) per 1,000 BTU of burner input. The area of each grill shall not be less than 100 square inches ( 645 sq. cm).

If the building is of unusually tight construction or has a large exhaust fan installed, on a basement, crawl space or slab home, provisions must be made for outside air supply that is ducted into the furnace room. It must have a permanent (non-adjustable) opening of at least one square inch (6.45 sq. cm) of free area per 1,000 BTU input. The area of each grill shall not be less than 100 square inches ( 645 sq. cm). Consult the National Fuel Gas Code latest edition, or the CAN/CGA-B149 Installation Codes for more detailed information.

With either standing pilot or electronic ignition systems the burner performs well under slight or momentary back draft conditions. However, it is not intended for operation under sustained reverse draft conditions. This condition is fairly common in buildings with large ventilation fans. The fans can create a sub-atmospheric pressure in the building causing a down draft in the chimney. This will cause hazardous flue gas products to be drawn into the building from the draft diverter. The conditions must be corrected promptly.

## PREPARATION OF THE HEATING APPLIANCE

During the preparation and installation of the burner be sure to provide adequate clearances for servicing the burner and an unobstructed flow of combustion air for proper operation.

- The heating appliance must be in good repair and have adequate capacity to heat the structure.
- Keep materials, combustible or otherwise, at least two feet (.61m) from the heating appliance.
- Thoroughly clean the heat exchanger and inspect for cracks or other defects - the installer must determine if the appliance is safe to upgrade.
- The combustion chamber must be free from deterioration and adequately sized.
- Domestic hot water coils in fire pots should be removed or disconnected. If disconnected, the ends must be left open.
- Remove all soot, scale and ash inside the furnace or boiler, particularly in the flue passages. If any cracks cannot be repaired, the part should be replaced.
- Stainless steel chambers must be lined with ceramic fiber material to prevent deterioration.
- All ceramics used for the gas combustion chambers should be capable of withstanding temperatures of at least 2,300°F (1261°C) in order to prevent disintegration.

## COAL FIRED UNITS (See Figure 1)

To convert an appliance that was coal fired, the following consideration needs to be observed:

- Select feed door or ash-pit door for burner mounting.

- **Ash-pit:** Remove grates, shaker base, ash pit door and install combustion chamber.

- **Feed Door:** Fill bottom with suitable material (vermiculite, etc.). Fasten or cement feed door slide in the closed position. File latch on the feed door so that it can be opened with reasonable pull without being lifted.

## WARM AIR FURNACES

- Ceramic or fire bricks inside the fire box should be inspected. Look for leaks in the fire pot and radiator.

- Remove part of the outer casing at two or three points. Insert an electric lamp inside the fire box and observe. Light will disclose any loose joints, cracks or holes.

- Under no circumstances should refractories be installed in an attempt to repair a cracked fire pot. Bad cracked or broken castings should be replaced.

- Seal all joints and cracks with boiler putty or furnace cement. Do not use asbestos.

- If combustion chamber upgrade is necessary, do not reduce the original height of outlet configuration.

## BOILERS, CAST IRON & STEEL, STEAM OR HOT WATER

- Inspect for water leaks and repair any that are found.

- Inspect refractory liner and/or fire brick combustion chambers. Replace if not in good condition. **NOTE** - Do not remove the chamber from a dry base boiler.

- Clean the gauge glass on steam boilers so that all safety devices and controls are operating to the manufacturer's specifications.

- Make sure safety valve is in good operating condition.

## OIL - FIRED FURNACES & BOILERS (See Figure 1)

- Inspect refractory liner. Repair or replace if damaged. The combustion chamber must be left in the dry leg of boilers.

- Where there is space between the combustion chamber, it will be necessary to provide a tube between the two so that the combustion air must go into the combustion chamber.

## INSTALLING VENT (FLUE) PIPE AND DRAFT DIVERTER/DOUBLE ACTING BAROMETRIC DAMPER

Select the proper size of galvanized vent pipe from Table I. Any reduction of the vent pipe size must be made at the furnace vent outlet by means of a fixed collar reducer. Flue pipe should be 24 gauge or heavier steel.

**NOTE:** If the vent pipe is more than 10 feet (3.04m) long or contains more than two elbows, use next larger vent pipe and draft diverter

**NOTE:** Where local codes permit, install a double acting barometric damper, rather than a draft diverter. Less heated air is lost up the chimney with a barometric damper than with a draft diverter.

## WARNING: SPILL SWITCH

A device which will automatically shut off gas to the burner in the event of sustained backdraft is required. It shall be of the listed manual reset type and installed and adjusted by a qualified service technician in accordance with the manufacturer's instructions.

For revertible or diving type furnace (down draft type), use one size larger vent pipe and draft diverter.

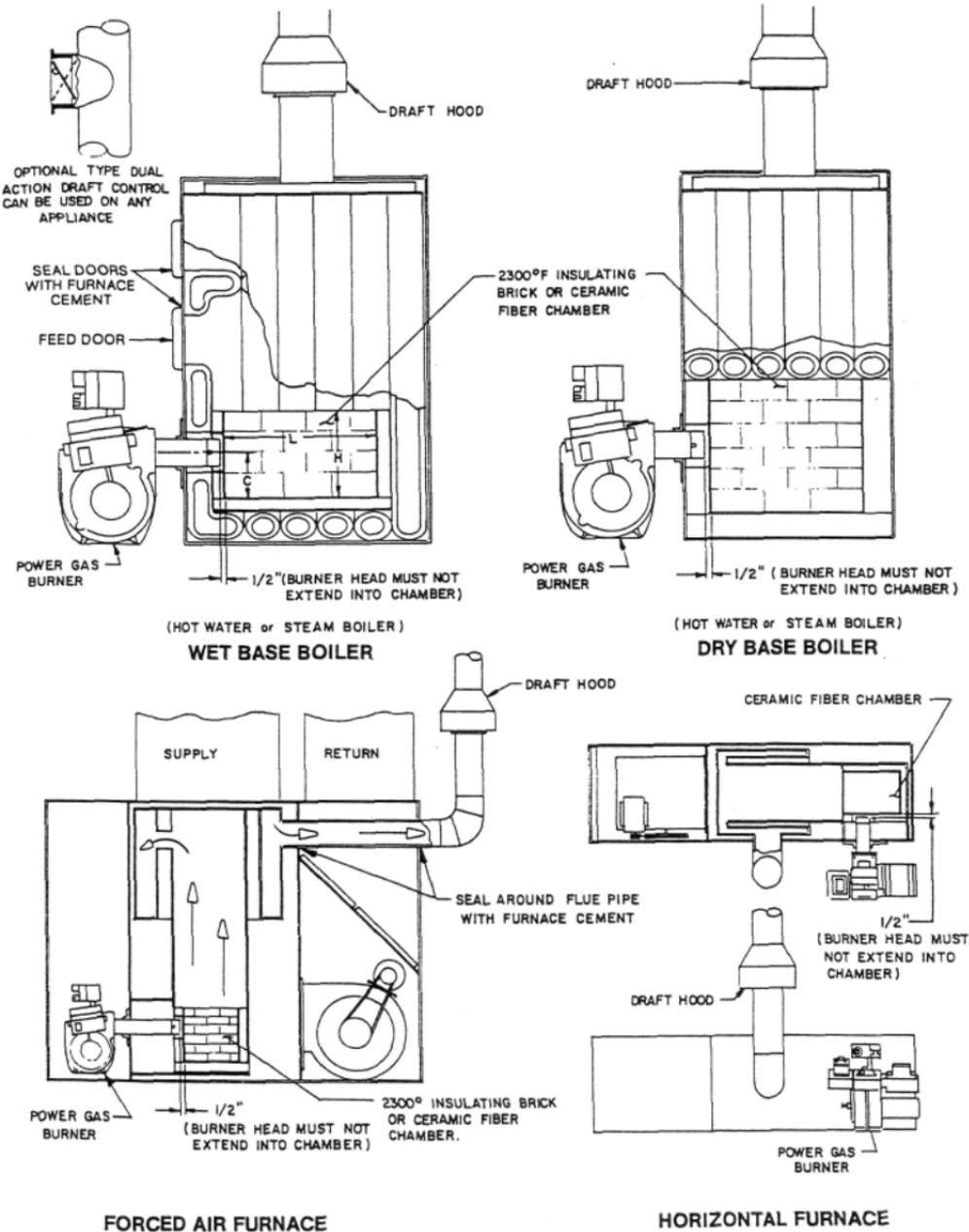


FIGURE 1

TABLE 1

6500 BTU Per Square Inch (CM) of flue area is the maximum allowed:	
BURNER INPUT	DRAFT DIVERTER
UP TO 120,000	5 INCH (12.7CM)
120,000-160,000	6 INCH (15.2CM)
160,000-250,000	7 INCH (17.8CM)
250,000-325,000	8 INCH (20.3CM)
325,000-400,000	9 INCH (23.0CM)
400,000-510,000	10 INCH (25.4CM)
510,000-610,000	11 INCH (27.9CM)
610,000-730,000	12 INCH (30.5CM)
730,000-850,000	13 INCH (33.0CM)

Flue pipe should be spaced at least 6 inches (15.2cm) from any combustibles. If flue pipe passes through a combustible partition, a ventilated thimble should be used. Consult the local codes in your area. Flue pipe should be firmly cemented into the chimney but must not extend past inner wall surface. All vent pipe should slope upward toward the chimney at least 1/4 inch (.64cm) per foot of length.

The draft diverter must be CSA certified. Draft diverters should be galvanized and the size should correspond to that of the vent pipe. Horizontal diverters should be placed as close to the outlet of the furnace or boiler as possible.

On reverted type furnaces or boilers the diverter should be above the highest flue passage.

Vertical draft diverters should have two pipe diameters between the skirt and any surface under it. This spacing can be reduced to one diameter for horizontal or horizontal to vertical diverters.

Reverted flue furnaces sometimes have a knockout between the combustion chamber and the heat exchanger. This should be removed when converting to gas. If the reversion creates an unvented pocket an opening should be cut and a pipe run directly to the flue pipe ahead of the draft diverter. This vent line should be at least 1 inch (2.54cm) pipe and connected between the furnace. The relief pipe must be gas tight.

After the diverter and flue pipe are in place, secure all sections together with self-tapping metal screws. Any draft or check doors or other openings in the vent pipe or chimney should be sealed shut.

## CHIMNEYS

A chimney of adequate draft and in good condition is essential to the proper operation of your heating plant. If the chimney does not meet the following standards, we suggest that the necessary changes be made.

Each central heating plant should have its own flue without any other vent pipe or vent pipe connections to the same chimney. The suggestions outlined in detail 4 of figure 2 should be followed.

All joints of the chimney must be tightly cemented. The inside of the chimney should be free of all obstructions, such as, loose bricks and broken pieces of tile.

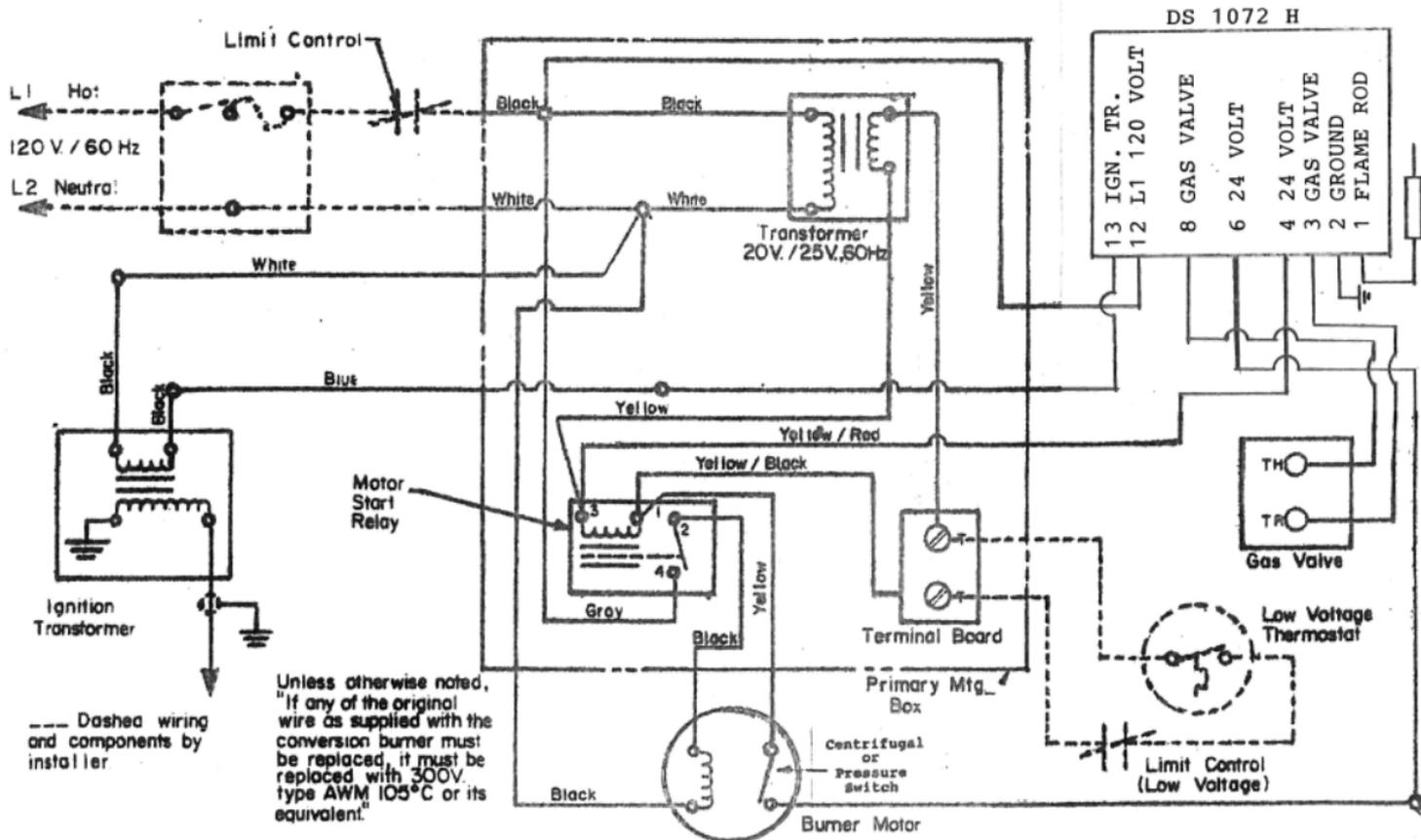
Be sure there are no openings in the partition separating flues. All cleanout doors must fit tightly.

A thimble (detail 3) should be used to connect the chimney so that the vent pipe is readily removable.

Where the chimney is inadequate, a chimney liner should be installed in accordance with local codes and regulations.

The internal construction of the chimney should be corrosion resistant tile, stainless steel or some other material that will withstand flue gas products. If the chimney is unlined, consult the local gas company for their recommendations.

# WIRING DIAGRAM | DS 1072 H



## FIGURE 2 CHIMNEYS

24" = 61m  
12" = 30m

24"

1) The chimney height will be determined by surrounding roof and trees. Chimney should extend at least 24-in. above high point of roof with no obstructions from nearby roofs, trees.

FROM WATER HEATER

THIMBLES

FROM FURNACE OR BOILER

AREA OF FLUE IN CHIMNEY MUST AT LEAST EQUAL THE LARGEST FLUE PLUS 50% OF THE AREA OF THE ADDITIONAL FLUES.

4) If chimney is used for a tank heater, in addition to boiler or furnace, smoke pipe from tank heater must connect into chimney above smoke pipe from boiler or furnace.

2) Trim or remove any nearby trees that would interfere with the chimney draft.

12"

FILL WITH SAND TO THIS POINT

5) In cases where flue extends to basement floor, draft can usually be improved by filling base of chimney with sand to within 12 inches of smoke pipe and relocating cleanout door.

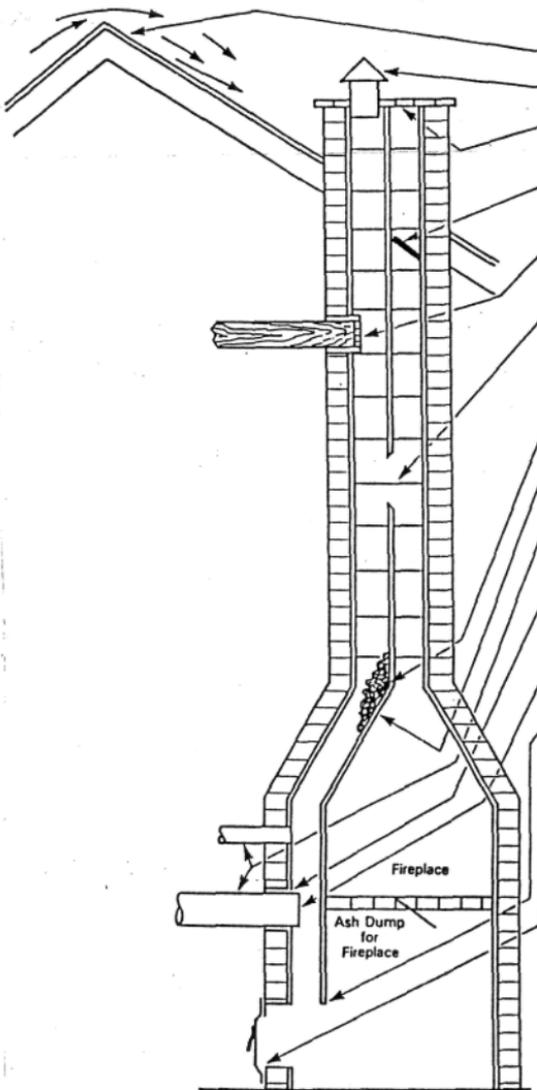
THIMBLE

3) Vent pipe should extend only to (and not beyond) inside wall of chimney. Cement vent pipe tightly into chimney opening.

DRAFT DIVERTER

6) Gas-fired units will require less draft than coal-fired, however, a chimney flue of adequate draft and capacity is required. An CSA draft diverter must be installed on all gas-fired heating units.

FIGURE 3  
COMMON CHIMNEY TROUBLES AND THEIR CORRECTIONS



Troubles	Examination	Corrections
Top of chimney lower than surrounding objects.	Observation.	Extend chimney above all objects within 30 feet.
Chimney cap or ventillator.	Observation.	Remove.
Coping restricts opening.	Observation.	Make opening as large as inside of chimney.
Obstruction in chimney.	Can be found by light and mirror reflecting conditions in chimney.	Use weight to break and dislodge.
Joist projecting into chimney.	Lowering a light on extension cord.	Must be handled by a competent brick contractor.
Break in chimney lining	Smoke test/build smudge fire blocking off other opening, watching for smoke to escape.	Must be handled by a competent brick contractor.
Collection of soot at narrow space in flue opening.	Lower light on extension cord.	Clean out with weighted brush or bag of loose gravel on end of line.
Offset.	Lower light on extension.	Change to straight or to long offset.
Two or more openings into same chimney.	Found by inspection from basement.	The least important opening must be closed, using some other chimney flue.
Loose seated pipe in flue opening.	Smoke test.	Leaks should be eliminated by cementing all pipe openings.
Smoke pipe extends into chimney.	Measurement of pipe from within or observation of pipe by means of a lowered light.	Length of pipe must be reduced to allow end of pipe to be flush with inside of tile.
Failure to extend the length of flue partition down to the floor.	By inspection or smoke test.	Extend partition to floor level.
Loose-fitted clean-out door.	Smoke test.	Close all leaks with cement.
Severe down draft condition.	By draft meter test.	Install a Birdert type vent cap.

30' = 9.1m