



# EXHAUST ADVICE & FLUE MAINTENANCE GUIDE

Stone Heath Ovens—Gas & Wood Fired



# PRELIMINARY CHECKS

*WARNING: Improper installation, adjustment, alteration, service or maintenance can result in property damage, injury or death. Read the installation, operation and maintenance instructions thoroughly before installing or servicing this equipment.*

A MAJOR CAUSE OF OVEN RELATED FIRES IS FAILURE TO MAINTAIN REQUIRED CLEARANCES (AIR SPACES) TO COMBUSTIBLE MATERIALS.

IT IS VERY IMPORTANT THAT THIS OVEN BE INSTALLED ONLY IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED IN THE INSTALLATION & OPERATION MANUAL.

**NOTE:** Installation of the exhaust system should comply with local and national codes.

The minimum mantle extension areas to be covered with relationship to the door opening of the oven for combustible floors. At least the following areas shall be specified:

- ▶ 750 mm (30 inches ) to each side of the door opening.
- ▶ 1000mm (39 inches ) in front of the door opening.

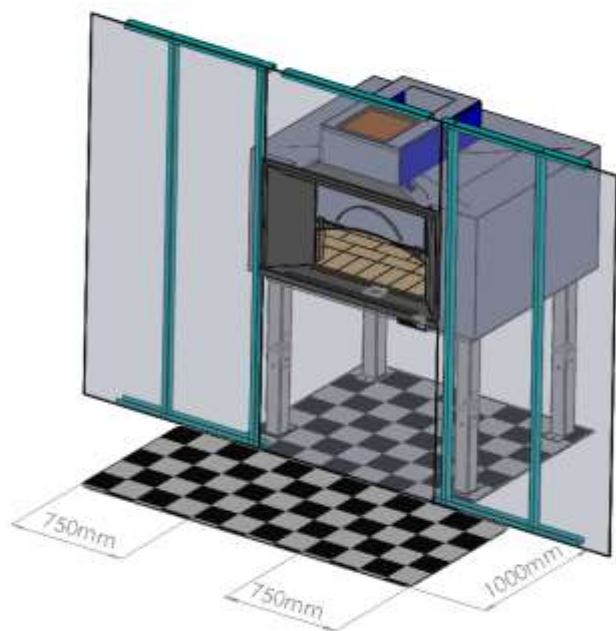
The Phoenix oven utilizes wood or gas or a combination of both to perform regular baking of foods in particular pizza. The basic oven is available in various different sizes.

**The oven comprises a ¼”(5mm) mild steel outer skin of two sections, top and base.**

The base includes four SHS legs supporting the floor of the pizza oven.

The refractory lining of the base utilizes **'High Alumina' bricks as the**

hot face. The floor is insulated by a layer of vacuum form board sheet.



The top section of the pizza oven has a steel outer shell as mentioned. The inside hot face cavity is made of ceramic castable. The castable used is rated by a factor of two to withstand the hottest possible burning in a naturally aspirated timber or gas fired environment.

# EXHAUST DESIGN



NOTE: Because of residual build-up in the flue, it is highly recommended that the flue be inspected after three (3) months and a cleaning schedule be implemented as required. Failure to properly maintain the flue, may result in flue failure and fire hazard.

The following section is for your guidance in establishing a design to suit your Exhaust duct design requirements.

Oven exhaust design should be carried out by a qualified, engineering consultant with knowledge of local authority requirements. The following information is supplied as a guide only.

Whichever exhaust system is to be used it is a primary consideration to allow access to the complete system that will allow regular cleaning and service to the whole exhaust system.

In the case of solid fuel (wood burning) ovens, this is critical consideration as there may be build up of creosote and ash which can become a fire hazard.

All Phoenix ovens utilize a proprietary exhaust design which under normal operation runs cooler than more conventional oven systems, This eliminates the need for water sprays and additional "make up air".

Additionally, Phoenix ovens are fitted with a mesh filter at the entry to the exhaust transition. This can be easily accessed by kitchen personal for regular cleaning. The performance of the filter is monitored by the interlock system.

## Flue Material

Check your local authority requirements (Generally min 0.9mm Galv. steel or min 0.55mm S/S). Seams should be triple folded or fully welded.

Also available and highly recommended are a variety of specialised proprietary flue systems including stainless steel twin and triple skinned products (*Your local mechanical contractor should advise you of available systems*).

Phoenix Ovens advises to use best available material and ensure it is installed correctly to comply with local codes (for construction, mounting, joining and clearances to combustible materials).

## Recommended Flue size

300mm square or equivalent cross-sectional area in round or rectangular section. This can vary depending on fan capacity etc. Engineering principals should be adhered to. Some jurisdictions will specify exhaust velocity which will require different calculations to obtain correct sizing.

## Nominal airflow required

150Pa Static Pressure (**available at oven transition**)

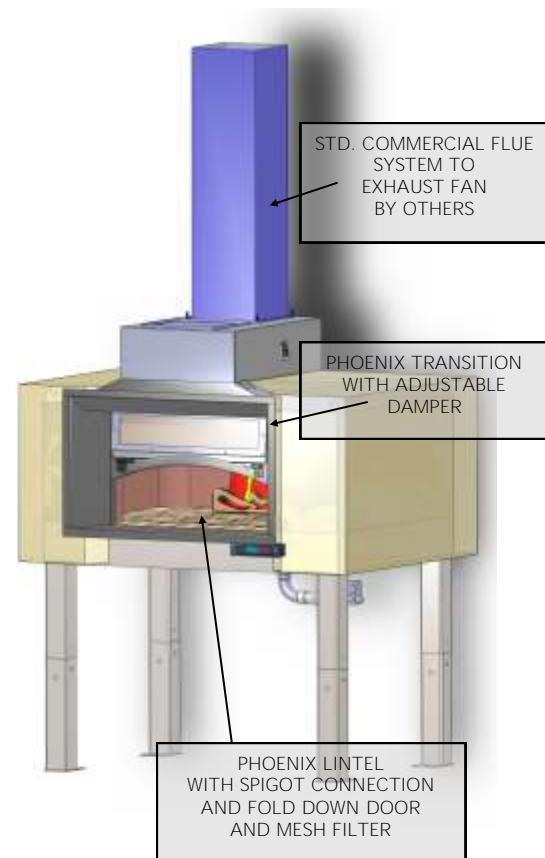
Maximum total flue airflow - 700 litres / second for a single opening.

Maximum total flue airflow - 1000 litres / second for multi-door ovens.

Air flow for canopy method of extraction should be compliant to the canopy manufactures recommendations consistent with canopy size and filter design.

The oven flue can be connected to any exhaust system with a much higher flow rate by controlling the suction utilising a damper.

Connection to common or community systems should be carefully planned so that solid fuel exhaust is not common with grease duct. Local authority approval should be obtained.



## The following methods are to be used ONLY as a guide

There are typically three (3) methods of exhaust ductwork for a Phoenix oven. These methods are using:

1. Directly connected power flue using dedicated flue and exhaust fan.
2. Directly connected power flue using existing flue and exhaust fan (common or communal share system).
3. Canopy method - Oven exhaust and spillage is captured by conventional overhead kitchen canopy system.



**NOTE:** *Because of the residual build-up in the flue, it is highly recommended that the flue be inspected after three (3) months and a cleaning schedule be implemented as required. Failure to properly maintain the flue, may result in flue failure and fire hazard.*

### Method 1: Direct Connection To Dedicated Flue Systems

For ovens that will be using solid/wood fuel, we recommend the use of a dedicated flue for the oven connecting to a dedicated fan.

**Fan Selection:** Should be made by the exhaust design team to supply correct specification to the system, accounting for size, length, height etc. (Biflacted air cooling vents are recommended on most designs)

### Method 2: Use of Existing System

In some instances it is possible to connect the oven exhaust to an established kitchen exhaust duct. These are generally available in kitchens that have canopy systems in place for other appliances.

Ovens connected to "communal systems should be "Gas Only" fired. Solid fuel burning ovens should not be connected to communal flue systems.

Professional advice should be sought to ascertain the compatibility of the existing system to accept the additional load of the oven system inclusion. It should also be acceptable to local certifying engineers.

When connecting direct to a dedicated or existing exhaust system most customers use a flue transition or spray filter accessory supplied with the oven.

### 2a. Flue Transition

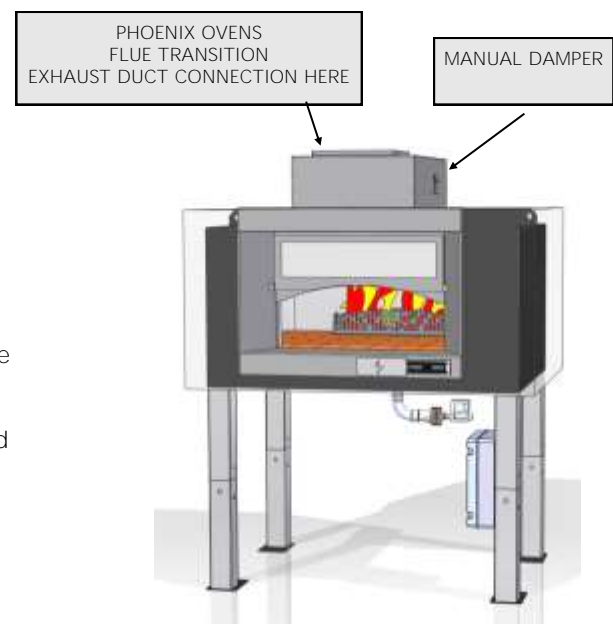
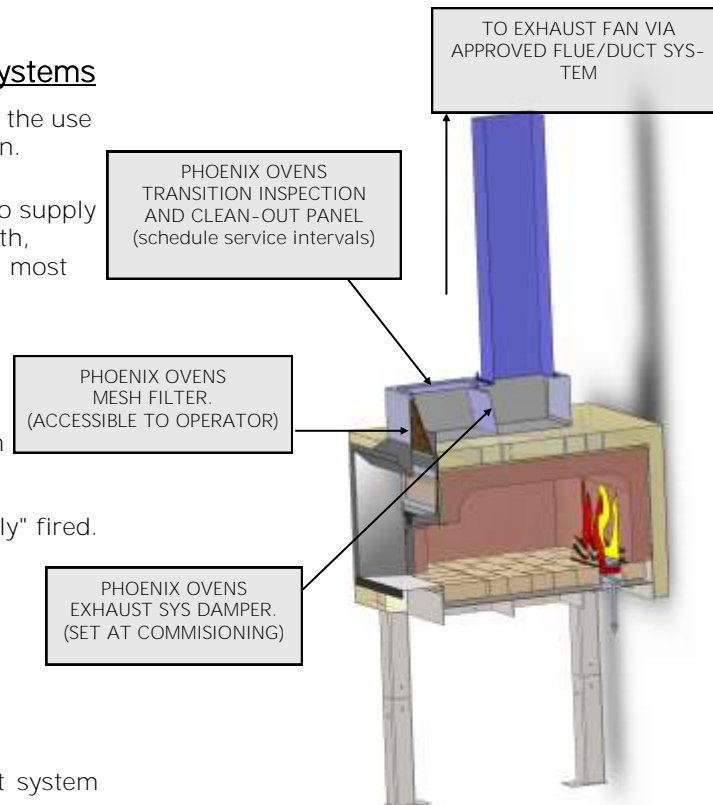
Many Phoenix ovens are supplied with a Flue Transition.

The main function of the Flue Transition is to form a transition from the oven lintel spigot to a standard commercial exhaust duct.

The exhaust connection point is directly above the oven.

An integrated damper and inspection/ cleaning port is included in the transition piece.

The System Damper is designed to regulate the amount of air allowed to be drawn from the oven to achieve a correct operational balance.



## 2b. Spray Filter/Wet Scrubber

A Spray Filter/Wet Scrubber accessory may be ordered with an oven. The main function of the Spray Filter is to form a transition from the oven lintel spigot to a standard commercial flue duct and purify the exhaust air from particles and debris using water.

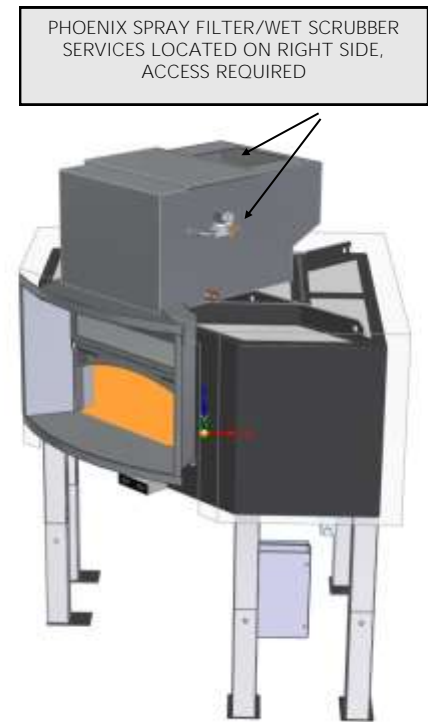
The spray filter connection point is directly above the oven. The unit requires connection of services as follows:

- ▶ Mains Water (32L/hr)
- ▶ 40mm copper drain to kitchen waste via Tundish
- ▶ Solenoid connection to Exhaust Fan

Maintenance inspection/ cleaning port is included in the spray filter unit.

It is important to ensure that an access panel is located above the oven (min. size 600mm x 600mm)

PLEASE REFER TO SPRAY FILTER SUPPLIMENT FOR FURTHER INFORMATION & INSTALLAION ADVICE



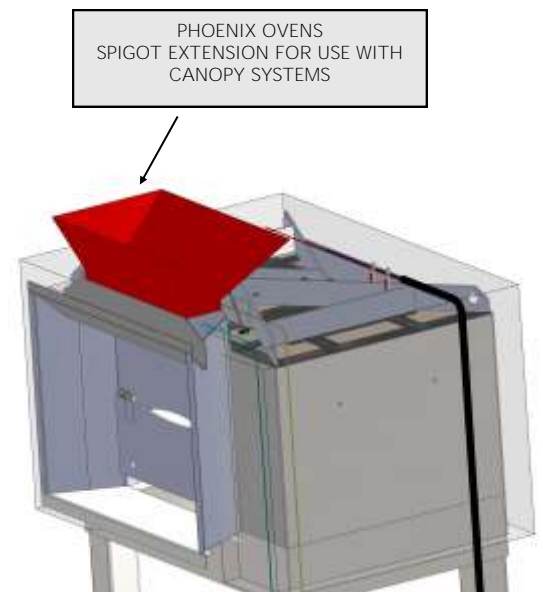
## Method 3: Canopy Method

By using a standard kitchen canopy equipment, this type of oven will perform perfectly and the exhaust system will be safe and familiar to most contractors. The only negative of this method is that designers are often not able to include the overhead fixture into the specific I.D. requirements.

As with the direct connection systems, it is not appropriate to mix exhaust from wood/solid fuel ovens with other systems (ie. grease duct). Dedicated system from canopy to exhaust fan is recommended.

Phoenix can supply a special spigot for the oven lintel to enhance a canopy operation. There is no transition or filter required. The interlock system is still appropriate for use with canopy systems.

Canopy maintenance and service is std. Procedure in all commercial kitchens. Canopy specifications vary by make and model. Generally canopy should extend 250mm each side of door and 300mm forward. The canopy can be blended into the architecture or be stand alone. Phoenix Ovens can supply **“funnelled” spigot extension to increase the canopy performance** at the oven door.



# INTERLOCK SYSTEM: Gas System Safety

The Phoenix gas system is compliant with all required CE gas directives (EN 60335-1). For additional safety, Phoenix Ovens are fitted with a Power Interlock device that monitors:

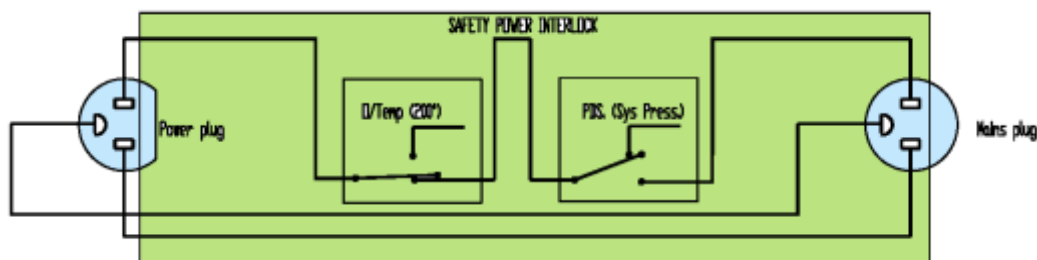
- 1. The temperature of the exhaust gas entering the flue system.**  
 As this is normally quite cool at  $< 100^{\circ}\text{C}$  if there is a problem with the system (flue, particle filter or over firing) the temperature in this area will quickly rise and the interlock device will cut the electrical power to the gas control system. This will cause a non-volatile lock out situation where the gas will not re-light until the control is manually reset (turned on). The interlock device will automatically reset when the temperature situation is controlled.
- 2. The pressure difference (PD) inside the supplied exhaust transition.**  
 This insures the fan extraction system is operating at all time that the gas system is active. If the fan fails or PD drops below 60Pa. the interlock will cut the electrical power to the gas control system. This will cause a non-volatile lock out situation where the gas will not re-light until the control is manually reset (turned on). The interlock device will automatically reset when the exhaust flue situation is rectified.



- INTERLOCK SAFETY SYSTEM**
- LINKED TO GAS SYSTEM
  - THERMAL INTERLOCK SENSOR
  - PRESSURE DIFFERENTIAL SWITCH
  - SPOTLIGHT TRANSFORMER located within cabinet

The interlock device is a stand alone module that connects to the mains power by standard power supply lead and to the Phoenix control module by special cables supplied. This interlock device meets the additional requirements of many national and local authorities.

The interlock module also contains the 230-12V transformer that powers the internal spotlight for the oven. This makes the connections to the oven very safe by keeping all 230-240V wires and plugs below the oven and the only power connection above the oven is the 12V spotlight (High voltage connections above



# BUILDING IN

The oven can be surrounded in any form of fire resistant building material including Brick, stainless steel, colorbond (sheet metal) corrugated iron, Plasterboard or Fibro-Cement. External temperature would normally be 80-100°F (30-40°C).

The **minimum** mantle extension areas to be covered with relationship to the door opening of the oven for combustible floors. At least the following areas shall be included:

1. 750 mm (30") to each side of the door opening.
2. 1000mm (39") in front of the door opening.

In all instances of design and construction it is necessary to allow access panels for service both above and below the oven.

1. Above the oven for flue maintenance and scheduled clean outs.
2. Below the oven for gas system servicing.

Access for technician should be min. 600mm X 600mm.

It is important to allow some ventilation to the below oven area for proper gas system function.

Ventilation should come from the area of the room that the oven is operating (ventilation through a side or rear wall from other room is not acceptable).

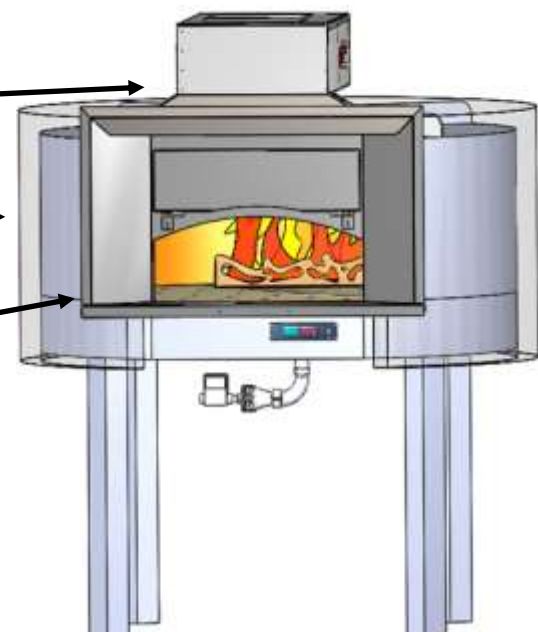
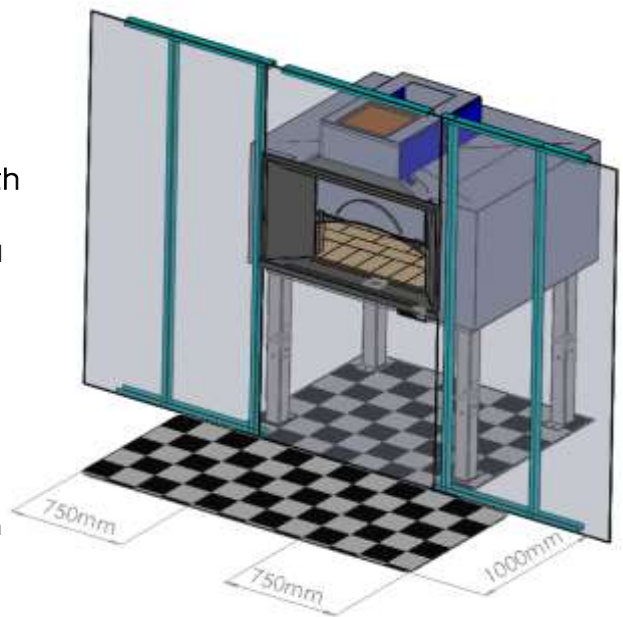
Ventilation area required min. 0.01M<sup>2</sup> (usually area below hearth is hidden and open to air flow).

## IMPORTANT!

The air gap above the oven should be 14" (350mm) clearance to combustibles from the top.

An air gap of 25mm (1") is to be provided external of the 50mm (2") of "superwool" insulation.

Where the façade meets the oven at the door, non combustible material should be used.



# REGULAR FLUE MAINTENANCE

The Phoenix oven is designed to reduce the risk of fire in the flue system. By following a regular cleaning and maintenance schedule you can greatly guard against the risk of a flue fire.

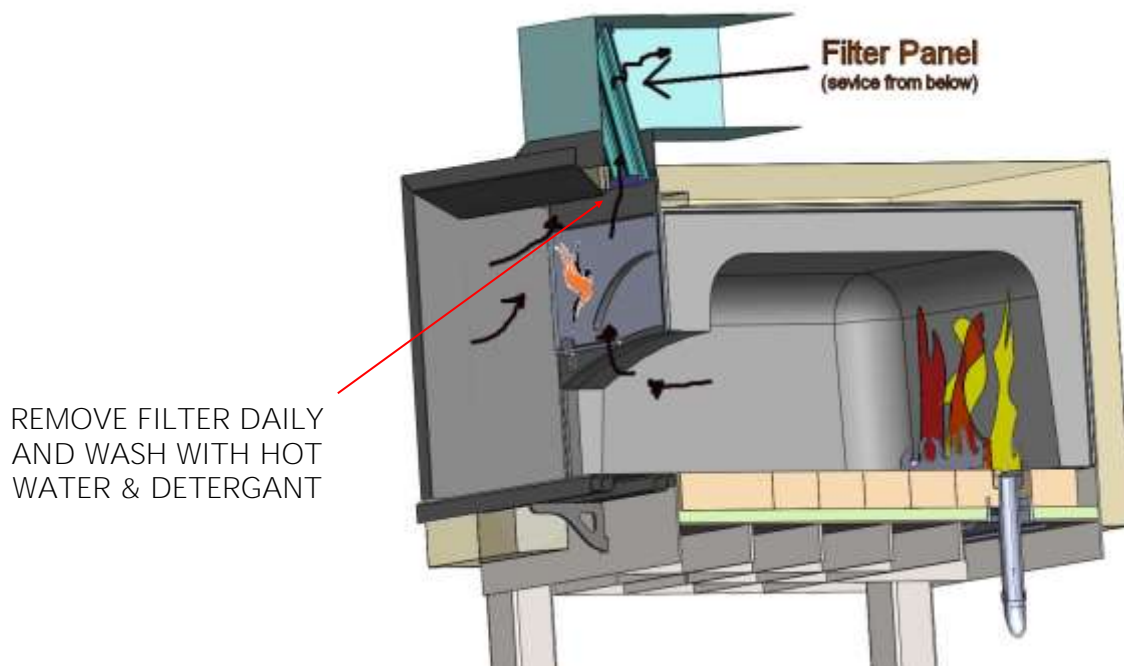
## **IMPORTANT!**

It is critical that the flue be cleaned on a three (3) monthly basis to reduce the danger of flue fire caused by the build up of soot and grease in the flue. With experience you will be able to customize a schedule to suit your particular requirements. Initially three (3) month inspections are recommended.

Contact Phoenix Technical Support if you require more information on this matter (technical@phoenixfocus.com.au).

## **CLEANING THE PARTICLE FILTER PANEL**

- ▶ There is a particle filter located just above the oven door/mouth.
- ▶ This filter is very easy for the operator to access from standing in front of the oven and reaching up into the exhaust spigot, always do this when the oven is cool ie. Start of day before switching on.
- ▶ Remove the filter by adjusting the angle and gently pulling down, no special tools are required.
- ▶ Removal and washing of the filter panel can be done daily or once a week (recommended minimum).
- ▶ The SS area between the door/mouth and spigot also requires regular cleaning by kitchen staff.



The open area between the oven door and the exhaust spigot entry gives a clear visual inspection / aspect to ensure "over firing" does not occur. Over firing is when flames extend outside the oven door. In traditional ovens this commonly goes unnoticed and flames are drawn directly into the spigot and flue system often with disastrous results. On the Phoenix oven this area is easily cleaned and if over firing is observed there is a swing down door that will quickly contain any flames. This **exclusive "break" design between the oven chamber and the flue system results in the air entering the exhaust to be much cooler than other stone hearth ovens.**

Phoenix Ovens with Gas or Electric operation are also fitted with additional safety features including a thermal interlock sensor, flue system pressure differential switch and oven OT sensor. These devices are connected in series and mounted inside a separate interlock cabinet below the oven. The gas or electrical system will enter "lock-out mode" if either sensor detect abnormal operation.



# REGULAR FLUE MAINTENANCE—FILTER CLEANING

## REMOVING & CLEANING THE FILTER PANEL

**IMPORTANT:** The filter panel will be hot during operation, recommend cleaning to be done in the morning prior to turning the oven on for the day.

**STEP 1:** Locate the filter panel positioned inside the exhaust spigot at the top of the oven door.

**STEP 2:** Gently remove the panel by pushing the filter “up” to dislocate the panel from the centre holding bracket.

*You may want to use a heat protective glove or towel to cover your hand if you are concerned about the panel being hot to touch.*

**STEP 3:** Slide the filter panel down and out of the spigot.

Clean mesh filter in sink with warm soapy water to remove as much soot, grease and debris as possible. The filter can also be placed in commercial dishwasher.

**STEP 4:** Slide filter panel back up into position inside the exhaust spigot making sure to rest on the centre holding bracket. The angled tabs on the side of the panel will position the panel into the required angled location.

*Do not force the panel, if there is resistance look for any obstructions inside the spigot, take care to avoid the thermal interlock sensor probe on the far right of the spigot.*

