

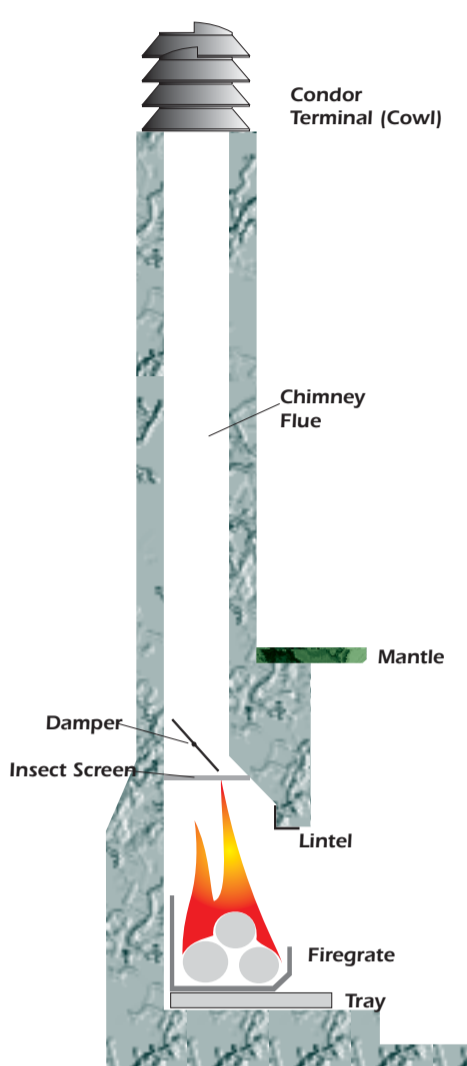
Condor Kinetic - Design Elements of an Open Fireplace

A Fireplace consists of two primary elements. **Fire Chamber and Flue.** The proportional relationship of these two elements dictates its performance.

Secondary element is the **Condor Fire Flue Terminal** on the top of the chimney which has a direct influence on the efficiency by determining the back pressure. Tertiary elements are **Flue Damper & Fire Grate**

A proportional relationship exists between the Fire Chamber and Flue as indicated in the chart below of the most common sizes.

Opening Width	Opening Height	Chamber Depth	Flue Dimensions Round / Square / Rect.		Condor Terminal
750mm	650mm	450mm	250mm	230x230mm	SF3
900mm	750mm	500mm	300mm	250x250mm	SF3
1050mm	800mm	540mm	310mm	300x300mm	SF4
1200mm	900mm	600mm	375mm	325x450mm	SF6



Fire Chamber

The area in which the fire is contained. Can be constructed in either masonry or steel and can be lined with suitable glazed tiles to enhance aesthetic presence.

Flue

The air corridor along which the combustion gases and smoke move up and out to atmosphere. The term chimney refers to an air corridor constructed in brick/masonry and 'steel flue' is the same constructed in stainless steel. Each type has its benefits and disadvantages.

Transition

The area where the Combustion Chamber converges to the Flue ensuring a smooth conversion from one configuration to another.

Condor Terminal

A device that diverts adverse air currents that would otherwise contribute to downdraft. Also assists in maintaining a more consistent heat and pressure value in the flue contributing to greater efficiency in performance. Eliminates necessity of 'smoke shelf' and of elevating chimney height to 'ridge' or 'above ridge'. Reduces likelihood of roof staining and water contamination. (ie where water is collected for human consumption.)

Damper

A steel plate mounted to open in a regulated fashion so as to regulate egress where flue sizes have been over designed. Also beneficial in sealing off unwanted drafts or insects when fireplace is not in use.

Firegrate & Tray

Appropriate to the extent that a chamber can be built of conventional brick or masonry materials and will not deteriorate providing the fire grate is appropriately constructed. The tray allows for easier housekeeping.

Construction of Chimney / Steel Flue

The flue should always be constructed or installed in a straight vertical manner avoiding bends or curves wherever possible. Even though the breast may be constructed of masonry materials, the use of a stainless steel liner is advised as this would optimise the safety features in respect to a flue fire and protect the chimney. In respect to flue configuration, whether it be steel or masonry the most efficient flue is a round one. A square or rectangular flue corridor would be the alternative in masonry construction. Avoid building an oblong section. Where fireplaces are on an outside wall and roof pitch is below 35 degrees the height of chimney/flue is 1 metre (3 feet) above roof line which has nothing to do with the ridge height.

Chamber Area

The area as shown in diagrams reduces the volumetric area of the fire chamber by eliminating the corners and promoting better heat radiation into the room. Final design should be with anticipation of fire grate and Tray being present. If a fire grate is not to be used in a masonry / brick chamber then it is recommended that the back wall have a steel liner to guard against deterioration. The protective steel plate is otherwise incorporated into the fire grate design.

Mantle

A protruding mantle as shown will serve to circulate warm air and protect hangings or artifacts above fireplace. A recessed mantle will only promote dust 'dumping' on any artifacts or hangings above fireplace.

Firegrate

A fireplace must have a pleasing presence when not in use. As a fire grate commands visual attention it is important that appropriate consideration be given to its design beyond function. A well designed fire grate will not only enhance the visual aesthetics but also promote greater efficiency and safety.

Fire grate construction should be of 12mm plate steel. (minimum) Tray is usually of 0.8mm galvanised or 0.5mm stainless steel. Should be such that their removal is free and independent of the fire grate. Tray(s) can also be fabricated as overlapping pair so as to allow for easier removal.

Removable grate insert has holes no more than 10mm (3/8") so as that ash only can fall through to the tray below.

Pressure equalization

Pressure equalization is far more critical when the fireplace is on an peripheral wall particularly if the flue height is kept low.

