

Guidelines for the Capture of Emissions by Kitchen Exhaust Hoods



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This information is provided as a guide only. For complete details please refer to Australian Standard 1668.2-1991.

These guidelines set out the requirements for the design; construction and installation of kitchen exhaust hoods to ensure compliance with Australian Standard 1668.2-1991. Permission by Standards Australia to reproduce parts of the Standard is gratefully acknowledged.

1. GENERAL REQUIREMENTS

The *Health (Food Hygiene) Regulations 1993* require that all kitchens and cooking areas in food premises and food vehicles be provided with exhaust hoods in compliance with the requirements of the *Australian Standards AS 1668.2-1991* entitled “*The use of mechanical ventilation for acceptable indoor-air quality*”.

In accordance with *AS1668.2-1991*, a kitchen exhaust canopy is only required if the cooking appliances to be exhausted have a total maximum power input exceeding **8kW for electrical**, or a **total gas input of 29MJ/h** for a gas appliance. The local authority can however require the installation of a kitchen exhaust canopy if for particular circumstances it deems to be appropriate.

2. APPROVAL TO INSTALL AND USE AN EXHAUST HOOD

- a) Prior to the fabrication and installation of any kitchen exhaust in a food premises, plans and specifications must be submitted to the City's Health Service for approval.
- b) The exhaust system shall not be used until final approval has been provided and testing by an Environmental Health Officer has occurred upon completion of installation.
- c) Side draft type exhaust systems are required to have a canopy type hood.

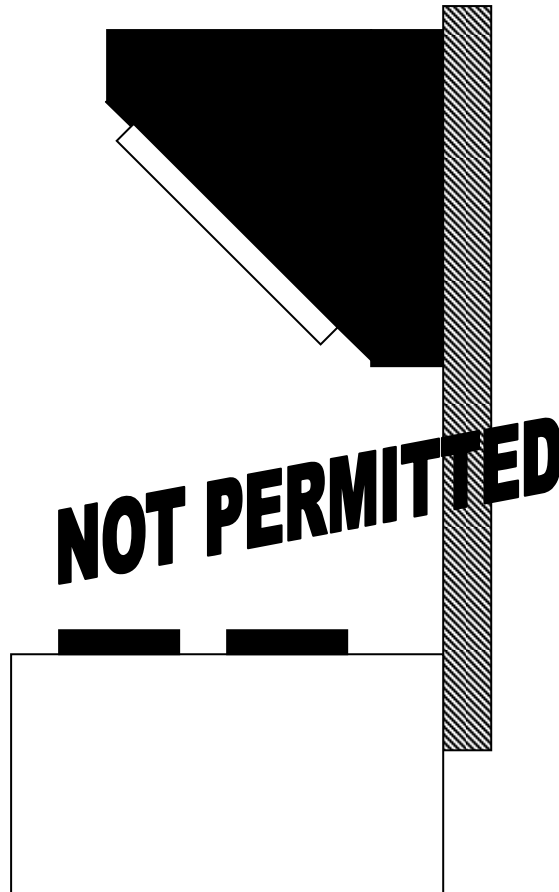


Figure 1.

3. CONSTRUCTION REQUIREMENTS

3.1 All Exhaust Hoods

- a) Hoods shall be manufactured of rigid, impervious, hard faced, non combustible material such as steel or stainless steel, reinforced where necessary to provide stability and rigidity with smooth faced, liquid tight seams and joints made by approved methods such as:
 - Continuous welding
 - Grooving or lapping, riveting and continuous soldering; or
 - Continuous jointing and sealing with a compound such as silicone rubber which is unaffected by grease, water or cleaning agents.

- b) Exhaust openings shall be designed to ensure uniform capture velocity is maintained and to prevent condensate falling through the exhaust opening. They shall not be more than 500mm for the

exhaust plenum extremities, not more than 1m apart and a minimum width of 75mm to permit access into the exhaust plenum for cleaning purposes.

- c) Light fittings within the canopy shall be **flush mounted** and be free from any obtrusions.
- d) A signal light or other indicator shall be provided on the external surfaces of the hood or nearby to indicate whether the system is operating.
- e) Where the exhaust hood abuts a wall, the back and /or end shall be unsheeted so that the existing wall forms part of the hood.
- f) A condensate gutter shall be provided around the base of the hood not less than **50mm wide** and **25mm deep** with **25mm diameter drainage holes fitted with removable screw caps**.

3.2 EXHAUST HOODS WHERE GREASE VAPOUR IS PRESENT

In addition to the preceding, where grease vapour is likely to be generated:

- a) Grease arresting filters shall be incorporated in the design as follows:
 - I. The filter holding frame shall be constructed of a rigid non-combustible material.
 - II. The number, size and distribution of the filters shall be such that the air temperature and flow rate through each filter is within the manufacturers design limits.
 - III. The filter area required is calculated in accordance with the following:

$$\text{Filter Area (m}^2\text{)} = \frac{\text{Volume of air exhausted m}^3\text{}}{\text{Rated capacity of filter m}^3\text{/min}}$$

Where volume of air exhausted = area of canopy (length x width) x required face velocity of the hood.

- IV. The filters shall be easily removable by hand while at the same time being snug fitting to prevent significant perimeter leakage.

- V. Provision shall be made for grease draining from the filters to be collected and disposed of without any spillage, eg. A channel to convey grease into the hood gutter.
 - VI. The filters and the filter retaining devices shall not project beyond the surface of the hood exposed to the surface being ventilated.
 - VII. Unless otherwise approved, the faces of filters shall be either vertical or sloped at an angle not greater than 30° from the vertical.**
- b) **All internal hood surfaces** exposed to the appliance being ventilated shall be **sloped at an angle not greater than 40° from the vertical** unless designed to prevent condensate on such surfaces.
 - c) In a canopy type exhaust hood, the **inside edge of the grease gutter shall not extend less than 150mm beyond the perimeter of the appliance over which the hood is installed.**

3.3 DUCTING

- a) Ducts shall be constructed of an approved metal, which is smooth and has an interior free from any obstructions. All joints shall provide satisfactory mechanical strength and shall be made airtight.
- b) Accessible, grease tight clean outs shall be provided every 3m and near each elbow, angle or duct junction of all horizontal sections of ductwork.
- c) Flexible ducts or connections, where required and approved, shall be non-collapsible, grease proof and fire resistant and shall be kept to a minimum.

4.0 INSTALLATION REQUIREMENTS

4.1 Canopy

- (a) The **canopy shall be installed so that the lowest front edge is not less than 2m above floor level.**
- (b) The distance between the lowest edge of the grease filters and the cooking surface shall not be less than:
 - i) For charcoal or similar open fire = 1350mm
 - ii) Where heating is by a naked flame = 1050mm

- iii) Where heating is via a fixed plate, or electronically operated equipment = 600mm
- (c) To achieve minimum distances the top of the canopy shall either:
 - I. Project through the ceiling into the roof space and be effectively sealed around the perimeter, or
 - II. Be placed so there is a minimum space of 150mm provided from the ceiling.
- (d) All walls forming part of an exhaust canopy where it is abutting a wall shall be tiled to produce a smooth impervious finish (refer to 3.1(d)).
- (e) The hood shall be installed so that there are no cross draughts between it and the appliance(s) being ventilated.

4.2 EXHAUST DISCHARGE

- a) The point of exhaust discharge shall be in an approved position and be **at least 1m above the ridge of a pitched roof or 3m above a flat roof**. The City may approve a discharge at a lower level provide the discharge point is more than 15m from any adjacent higher structure located on the site.
- b) The **point of discharge shall be at least 6m from property boundaries** and fresh air intakes (i.e. air conditioning systems).

5.0 PERFORMANCE REQUIREMENTS

5.1 All Exhaust Hoods

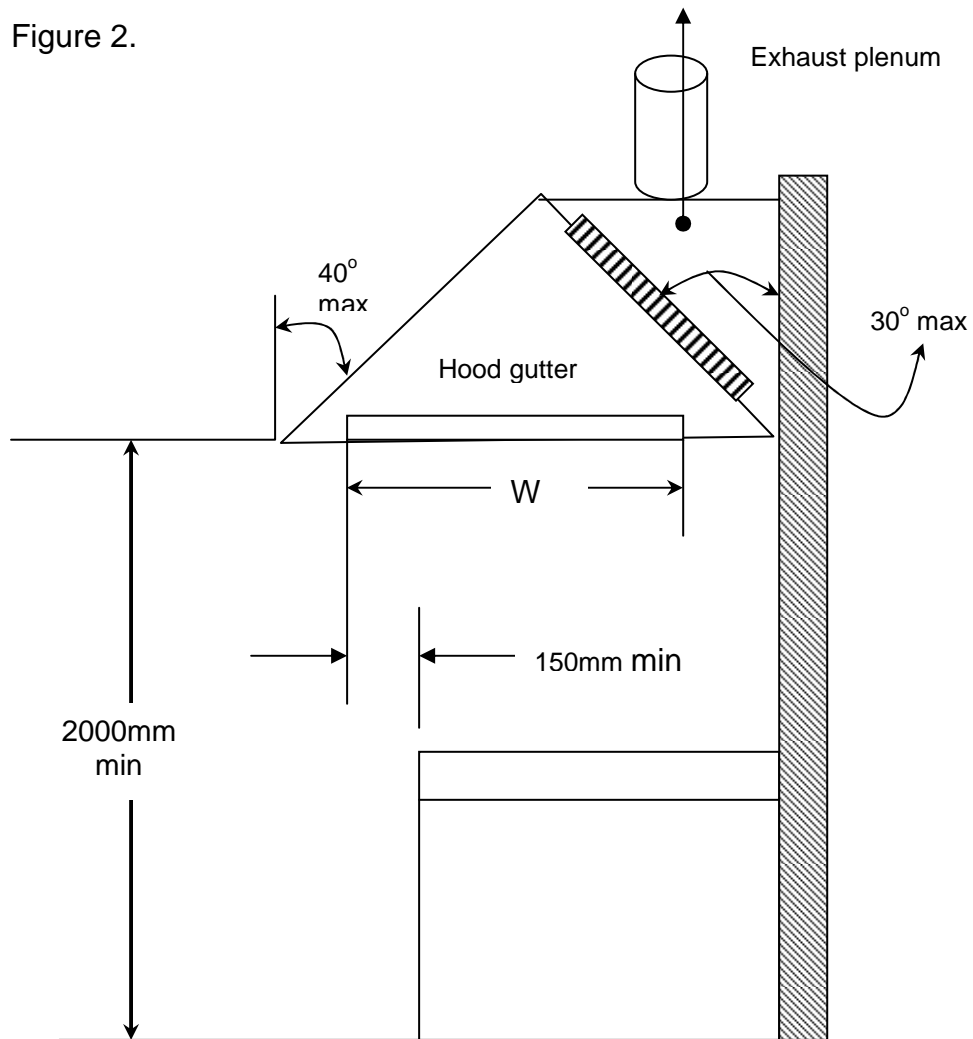
- (a) The exhaust airflow rate for kitchen exhaust canopies shall be at least $0.38\text{m}^3 / \text{second} / \text{m}^2$ of the top surface area of the cooking equipment to be ventilated.
- (b) Exhaust velocity at the point of discharge shall be at least 5m/second.
- (c) Make up air shall be supplied to the kitchen or cooking area by either permanent natural ventilation or an approved mechanical ventilating supply system

capable of supplying not less than 10 complete air changes per hour, where the make up air is free from contamination and impurity.

6.0 OPERATING AND MAINTENANCE REQUIREMENTS

- (a) The filters shall be removed and thoroughly cleaned on a regular basis to ensure they are kept in a clean condition at all times.
- (b) The internal surfaces of the exhaust ductwork shall be cleaned on at least a six monthly basis.
- (c) The mechanical exhaust system shall operate at all times when cooking or heating is carried out.

Figure 2.



Designed to AS1668.2-1991