



2120 Albany Highway
Gosnells WA 6110

Telephone: 9397 3021
Facsimile: 9397 3333

A GUIDELINE TO THE DESIGN, CONSTRUCTION AND INSTALLATION OF KITCHEN EXHAUST HOODS

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KITCHEN EXHAUST HOODS

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 part of that Standard is gratefully acknowledged.

NOTE: A mechanical exhaust system complying with these guidelines and requirements shall be required in any kitchen or cooking area for the purpose of the local exhaust of heat, fumes and vapours arising from cooking and/or heating appliances.

1. APPROVAL TO INSTALL AND USE AN EXHAUST HOOD

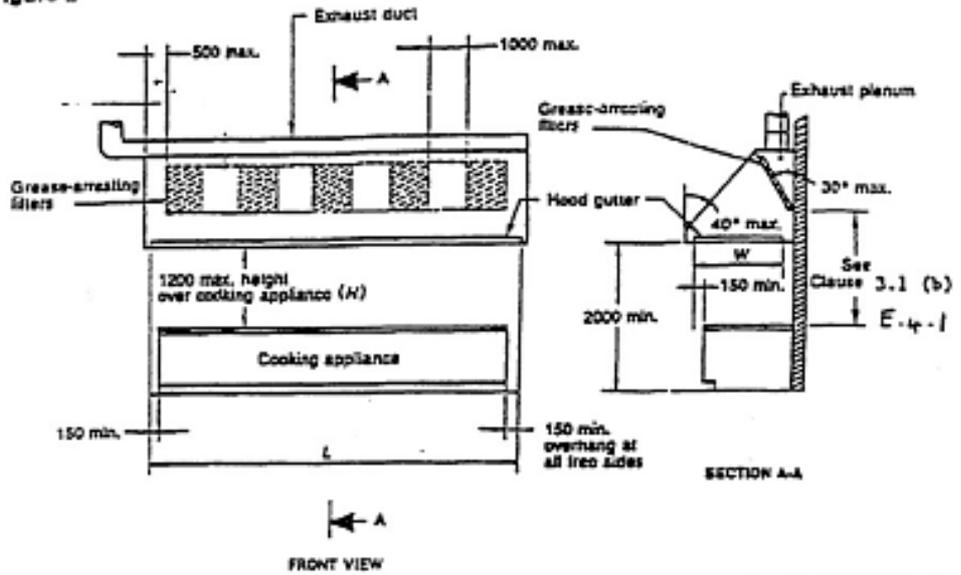
- (a) Prior to the fabrication and installation of any kitchen exhaust in a food premises, plans and specifications must be submitted to the City's Health Service for approval.
- (b) The exhaust system shall not be used until final approval and testing by an Environmental Health Officer upon completion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

Figure 1



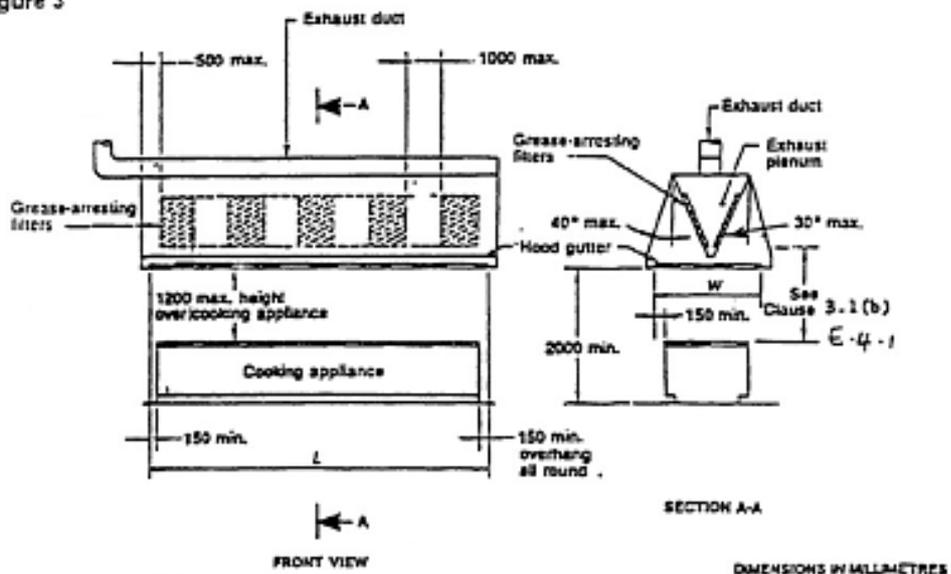
**CONVENTIONAL CANOPY TYPE HOOD AGAINST WALL
INCORPORATING GREASE FILTERS**

Figure 2



**CONVENTIONAL ISLAND TYPE CANOPY HOOD
INCORPORATING GREASE FILTERS**

Figure 3



Reproduced from AS 1468.2 - 1991

Figure 4

Depicting Angles of Exhaust Canopies
(Not to any scale)

AUSTRALIAN STANDARD 1668.2 - 1991

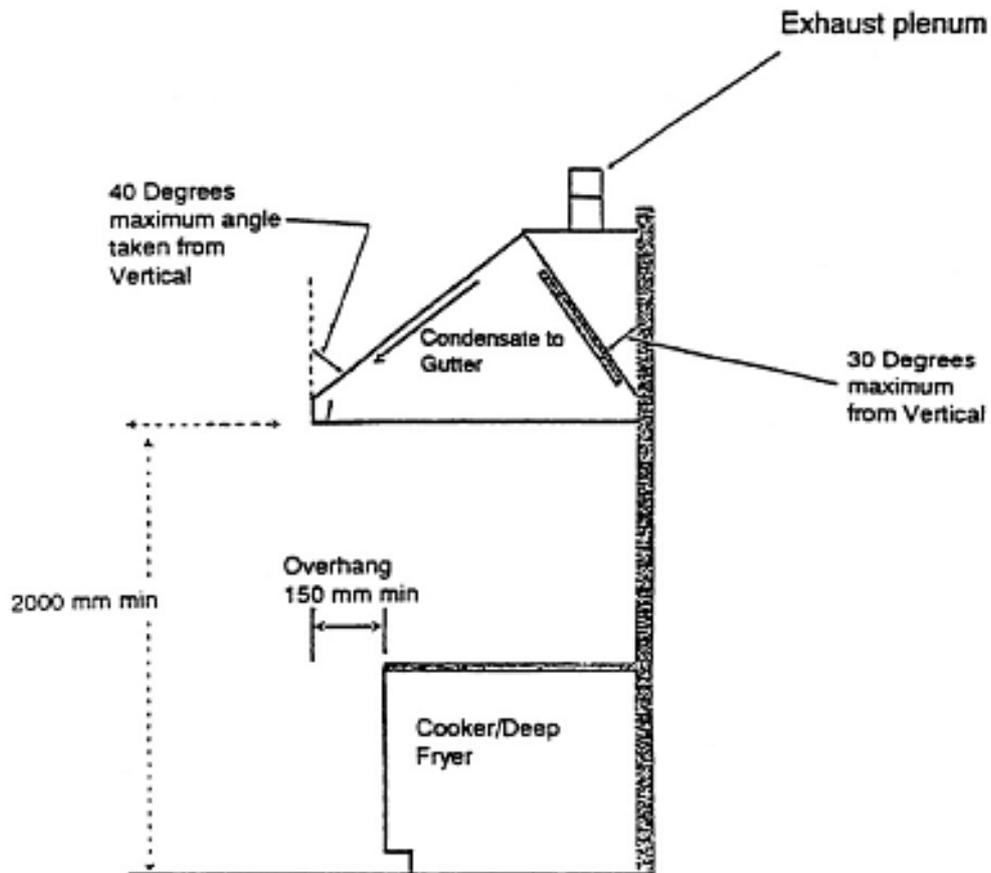
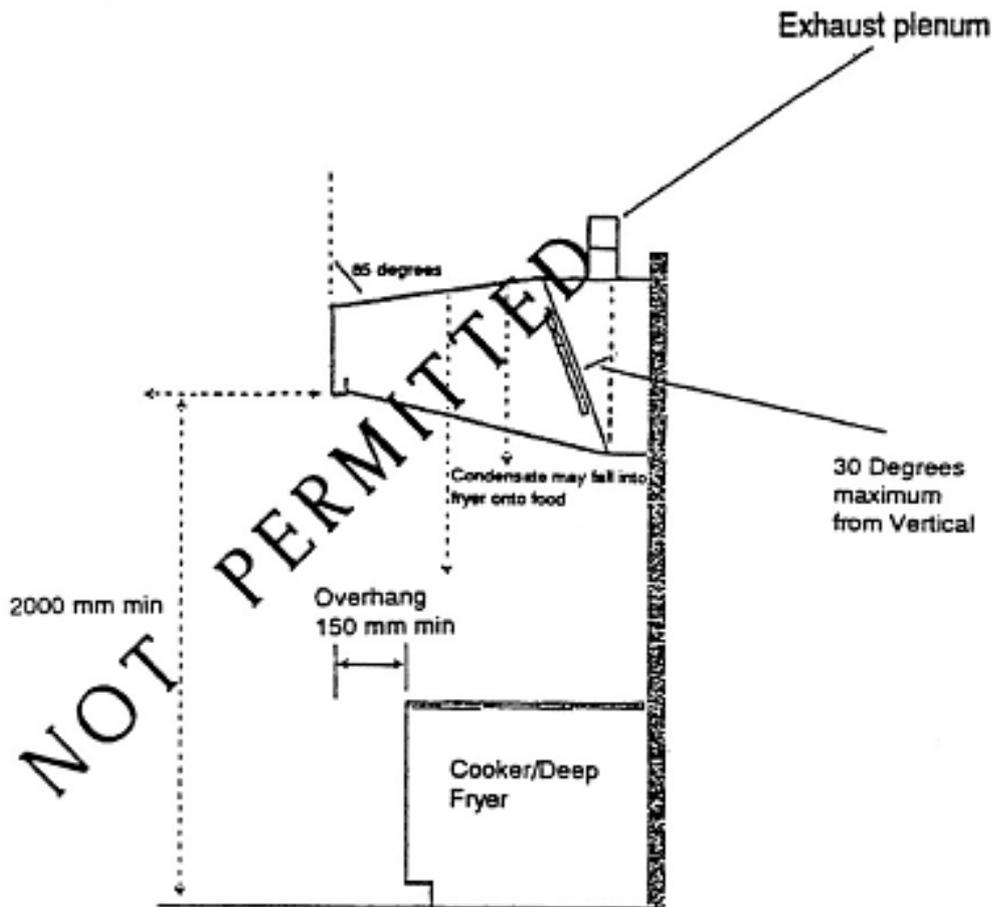


Figure 5

Depicting Angles of Exhaust Canopies
(Not to any scale)

NON COMPLIANCE WITH 1668.2 - 1991



2. AUSTRALIAN STANDARD 1668.2-1991 REQUIREMENTS

APPENDIX E - KITCHEN EXHAUST HOODS (Normative)

E1 SCOPE: *This Appendix sets our requirements for the design, construction and installation of kitchen exhaust hoods (hereinafter referred to as 'hoods'), where their provision is required under Clause 3.3.2.3.*

The Regulatory Authority may approve other designs which effectively meet the requirements of Clause 3.3.

NOTE: *Appendix F described the purpose and function of hoods, and provides guidelines on the capture (by hoods) of emissions.*

E2 APPLICATION: *Where a kitchen exhaust hood is required, it shall comply with Clauses E3, E5, and E6, and where grease vapour is present, also with Clauses E4 and E7, or Clause E8.*

E3 HOOD DESIGN AND MANUFACTURE

E3.1 General: *Hoods shall be designed:*

- (a) *to capture cooking vapours and associated products of combustion;*
- (b) *to exhaust cooking vapours and associated products of combustion together with dilution air;*
- (c) *to prevent condensate falling onto the food, cooking appliance(s) or the floor;*
- (d) *to permit easy access to cleaning spaces where condensate may accumulate;*
- (e) *with vertical flat sides where walls abut; and*
- (f) *to be free of insulation material on the internal surface of the hood or exhaust plenum between the hood and connecting duct.*

E3.2 Manufacture: *Hoods shall be manufactured from rigid impervious hard-faced material not deemed combustible when tested in accordance with AS1530.1, 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 the following:*

- (a) *Continuous welding.*
- (b) *Grooving or lapping, riveting and continuous soldering.*

- (c) *Continuous jointing and scaling with an appropriate compound unaffected by grease, water or cleaning agents eg. silicone rubber which is in compression at the joint.*

E3.3 Openings: *Exhaust openings in hoods shall be:*

- (a) *suitably located in relation to the types of cooking and heating appliances being ventilated and positioned so that a uniform capture velocity is maintained;*
- (b) *not more than 500mm from the extremities of the exhaust plenum, not more than 1m apart, and of dimensions which permit access into the exhaust plenum for cleaning purposes; and*
- (c) *designed to prevent condensate from the top surface of the exhaust plenum or duct from falling through the exhaust opening.*

E3.4 Internal lights: *Where fitted light fittings shall be flush mounted to comply with E7.4.2.*

NOTE: *Access from the outside face of the hood avoids disturbing the vapour seal to the inside face of the hood during servicing.*

E4 DISTANCE FROM GREASE ARRESTING DEVICE TO HEAT SOURCE

E4.1 General: *Unless otherwise approved (see E4.2), the distance between the lowest edge of a grease arresting device and the cooking surface shall be not less than:*

- a) *for charcoal and similar type of open fires; 1,350mm*
- b) *where the heat source is provided by means of a naked flame, eg. gas stove; and 1,050mm*
- c) *where the heat source is provided by electrically operated equipment or a fixed plate or pan above gas flame (eg. solid grill plate or deep fryer) 600mm*

E4.2 Reduction of distances: *In variation to Clause E4.1 above the subject to approval, the distance of grease arresting filters from the heat source given in Clause E4.1 may be reduced where the kitchen exhaust system is provided with an approved fire protection system which in the event of fire:*

- (a) *automatically floods the cooking appliance and the exhaust plenum between the filters and the exhaust duct with fire 'quenching' media; or*
- (c) *is automatically activated to inhibit fire.*

E5 **DISTANCE TO FLOOR LEVEL:** *The lower edge of a canopy-type exhaust hood shall be not less than 2 m above floor level at the operator side of the appliance being ventilated.*

E6 **OPERATION INDICATOR:** *A signal light or other indicator shall be provided on the external surface of the hood, or in close proximity to it to indicate whether the system is operating. (See also 3.5.4)*

E7 **KITCHEN EXHAUST HOODS INCORPORATING GREASE FILTERS**

E7.1 Grease filters: *Grease filters shall comply with UL 1046.*

E7.2 Grease arresting filters: *The hoods shall incorporate approved grease arresting filters as follows:*

- (a) *Filter holding frame shall be constructed of rigid material not deemed combustible when tested in accordance with AS 1530.1.*
- (b) *The number, size and distribution of the filters shall be such that the air temperature and flow rate through each filter is within the manufacturer's design limits.*
- (c) *The filters shall be installed so as to prevent significant leakage of air around their perimeter.*
- (d) *Unless otherwise approved, the faces of filters shall be either vertical or sloped at an angle not greater than 30 degrees from vertical.*
- (e) *The filters shall be fitted at exhaust openings of the hood so that any grease draining from filters is collected and disposed of without spilling or otherwise contaminating the kitchen area (eg. filter support channel designed to collect and convey grease into hood gutter).*
- (f) *The filters and the filter devices shall not project beyond the surface of the hood exposed to the appliance being ventilated.*
- (g) *The filters shall be removable by hand without the need of tools for the purpose of their cleaning and the cleaning of the supports and the grease-drainage devices, unless an approved in situ washing system is provided.*

NOTE: *Cleaning system should be automated and at least as effective as the manual cleaning.*

E7.3 Hood gutters: *Hood gutters not less than 50mm wide and not less than 25mm deep shall be provided around the lower edges of the canopy-type hoods and shall include 25mm minimum diameter drainage holes fitted with removal caps.*

For side-draught hoods, grease may be drained into removable collection containers.

E7.4 Internal Surface

E7.4.1 Sloping: *All surfaces of hoods exposed to the appliance being ventilated shall be sloped at an angle not greater than 40 degrees from the vertical, unless the design and performance of hoods prevent the formation of any condensate on such surfaces.*

E7.4.2 Profile: *The surfaces of the canopy hood exposed to the appliance being ventilated shall be free of stiffeners or any protrusions, other than fire-extinguisher heads, which shall be installed to approval.*

E7.5 Distance from grease gutter to perimeter of appliance: *In a canopy-type kitchen exhaust hood, the inside edge of the grease gutter shall be not less than 150mm beyond the plan perimeter of the appliance over which the hood is installed, except on sides adjoining a wall.*

E8 KITCHEN EXHAUST HOODS INCORPORATING GREASE REMOVAL DEVICES: *Kitchen exhaust hoods incorporating grease removal devices other than those in Paragraph E7 shall:*

- (a) remove grease from the cooking vapours;*
- (b) prevent grease from falling back onto food, the cooking appliance or floor;*
- (c) provide for manual or automatic cleaning of grease trapping devices, and all internal surfaces of the device housing, and*
- (d) be demonstrated to capture and remove cooking vapours and grease with efficiency at least equal to that of kitchen exhaust hoods complying with Paragraph E7.*

NOTE:

Where only heating and/or boiling is carried out with chiefly heat or water vapour being produced a lesser system of mechanical exhaust ventilation may be permitted.

NB.: Approval for these types of systems will only be considered for cooking/heating appliances such as pizza and pastry ovens, microwaves, small rotisseries and similar equipment.

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.

All walls forming part of an exhaust hood where it is abutting a wall shall be tiled to provide a smooth impervious finish.

The top of the exhaust hood shall either:

- (i) Project through the ceiling into the roof space and be effectively sealed around the perimeter; or
- (ii) Be placed so a space of 150mm is provided from any ceiling.

NB.: Where the above conditions cannot be met and an inaccessible cavity is formed between the top of the hood and the ceiling, any such cavity shall be filled with fibreglass wool and sealed with an approved sealant.

3. DISCHARGE OF EXHAUST HOODS

- (a) The point of discharge shall be at least one metre above the ridge of a pitched roof or three metres above a flat roof. Council may approve discharge at a lower level provided that this is more than 15 metres from any adjacent higher structure located on the site.
- (b) The point of discharge shall be at least 6 metres from property boundaries and fresh air intakes.
- (c) The exhaust vent of a mechanical ventilating system shall be located so as not to create an insanitary condition or produce an environmental nuisance.

4. PERFORMANCE REQUIREMENTS

All kitchen exhaust hoods shall meet the performance requirements of AS1668.2 - 1991.

Appendix F – “Capture of Emissions by Kitchen Exhaust Hoods” (Informative) unless otherwise approved by an Environmental Health Officer.

5. OPERATING AND MAINTENANCE REQUIREMENTS

- (a) All filters, hoods and ducts must receive regular cleaning and maintenance and be kept in a clean condition at all times.
- (b) The mechanical exhaust system shall operate at all times when cooking or heating is carried out.

6. NOISE LEVELS

The noise levels created by mechanical exhaust systems should not exceed permitted levels laid down under the Environmental Protection Act and Occupational Health, Safety and Welfare Act.

For further information and details please contact the City's Health Service.