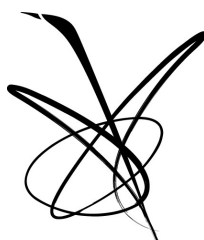


CITY of SWAN

GUIDELINES FOR CAPTURE OF
EMISSIONS BY KITCHEN
EXHAUST HOODS



city of swan

Health Services
November 2007

SCOPE

These guidelines outline the requirements for the design, construction and installation of kitchen exhaust systems to ensure compliance with Australian Standard 1668.2-2002. Permission by Standards Australia to reproduce parts of that Standard is gratefully acknowledged.

These guidelines must be read in conjunction with the Australian Standards and any proponent intending to install local exhaust must satisfy themselves of compliance with the Australian Standards where required and the City takes no responsibility for decisions based solely on these guidelines.

Certification of the kitchen exhaust system to confirm compliance with the AS 1668.2 2002 may be required upon completion of installation.

TYPES OF EFFLUVIA REQUIRING LOCAL EXHAUST

Hoods complying with AS 1668.2 – 2002 are required above appliances to remove heated air, with or without water, or grease vapour produced by cooking equipment for the preparation of food and having a total maximum input exceeding 8kW for an electrical appliance, or total gas input 29 MJ/h for a gas appliance, or any deep fryer appliance.

Many electrical appliances have a maximum power input as Ampere (amps) within the specifications. This can be converted into kilowatts (kW) by using the following formulae:

$$P = I \times V$$

P = watts

I = amps in specification

V = volts (usually 240V)

Example: a 15-amp rotisserie connected to the normal 240V main works out to be

$$P \text{ (watts)} = 15\text{amps} \times 240V$$

$$= 3600 \text{ Watts or } 3.6kW$$

COOKING PROCESS TYPES

Cooking process types for the purpose of these guidelines are grouped as follows:

- a) **Process Type 1** – Non grease producing equipment
- b) **Process Type 2** – Equipment producing low-grease, medium heat eg. griddles, ranges, conventional fryers, tilting skillets, steam kettles and gas ovens.
- c) **Process Type 3** – Equipment producing high grease, low heat eg. electric deep fat fryers, grooved griddles, hot tops and hot top ranges.
- d) **Process Type 4** – Equipment producing high grease, medium heat eg. counter- top BBQ and gas fired deep fryers.

- e) **Process Type 5** – Equipment producing high grease, high heat eg. woks, salamanders, and open flame charcoal equipment using solid fuels.

KITCHEN EXHAUST HOODS

APPLICATION

Kitchen exhaust hoods shall comply with the following Parts 1, 2 and 6, and in addition where grease vapour is present, it shall also comply with Parts 3, 4 & 5.

1. HOOD CONSTRUCTION REQUIREMENTS

Manufacture

Hoods shall be manufactured of rigid, impervious, hard faced, non-combustible material such as 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.

Openings

Exhaust openings in hoods shall be:

- suitably located to ensure uniform capture velocity is maintained;
- not be more than 500mm from the exhaust plenum extremities, not more than one metre apart and of dimensions that permit access into the exhaust plenum for cleaning purposes; and
- designed to prevent condensate falling through the exhaust opening.

Internal surfaces

- a) 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 condensation on such surfaces and be free of stiffeners or any protrusions.
- b) A condensation 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 caps.
- 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 for cooking processes Types 1 – 4, and 300mm for process Type 5, except on the side adjoining a wall.
- d) Internal light fittings where fitted, shall be flush mounted.

Kitchen exhaust hood airflow (see Table 5.1 AS 1668.2 – 2002)

The minimum exhaust flow rate for a hood shall be calculated using one of the equations set out in the following table. Where multiple cooking Process Types are to be used then the equation selected shall be based upon the most demanding Process Type.

Hood type	Cooking process			
	Type 1 & 2	Type 3	Type 4	Type 5
Low Sidewall	$Q = 400 \times L$	$Q = 600 \times L$	$Q = 800 \times L$	$Q = 800 \times L$
Corner mounted, sidewall & island	$Q = 190 \times P \times H$	$Q = 250 \times P \times H$	$Q = 375 \times P \times H$	$Q = 375 \times P \times H$

LEGEND

Q = exhaust airflow rate, in Litres per second

L = length of hood, in metres

P = inside perimeter of hood over all exposed sides, in metres

H = height of hood above cooking appliance in metres

Replenishment air

Where the make-up air is itself supplied by a ventilation system –

- a) the outdoor airflow rate to this supply ventilation system shall be increased as necessary, to accommodate the amount of make-up air required for the exhaust ventilation system, and
- b) the system shall be interlocked so that both systems always operate together.

Air discharge

All exhaust air shall be discharged in a manner that does not cause a nuisance or cause ill effect to others.

Refer AS 1668.2 – 2002, Paragraph 5.10, for minimum separation distances from discharges to intakes, boundary or natural ventilation devices and minimum discharge flow rates.

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 mechanical exhaust system shall operate at all times when cooking or heating is carried out.

2. HOOD INSTALLATION

The lower edge of a canopy type kitchen exhaust hood shall be fitted a minimum 2m above floor level at the operator side and no higher than 1.2m above the cooking appliance.

3. HOODS INCORPORATING GREASE-ARRESTING FILTERS WHEN REQUIRED

Grease arresting filters shall be incorporated in the design as follows:

- a) the filter holding frame shall be constructed of a rigid non-combustible material.
- 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 limited.
- c) the filters shall be easily removable by hand while at the same time being snug fitting to prevent significant perimeter leakage.
- d) 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.
- e) the filters and the filter retaining device shall not project beyond the surface of the hood exposed to the surface being ventilated.
- f) unless otherwise approved the faces of filters shall be either vertical or sloped at an angle not greater than 30° from vertical.

4. EXHAUST HOODS INCORPORATING GREASE-REMOVAL DEVICE

Refer: AS 1668.2 – 2002, Paragraph C6 for installation requirements.

5. DISTANCE FROM GREASE ARRESTING DEVICE TO HEAT SOURCE

General

Unless otherwise approved the distance between the lowest edge of a grease-arresting device and the cooking surface shall be not less than –

- | | |
|---|----------|
| a) for charcoal or similar open fire | - 1350mm |
| b) where heating is by a naked flame | - 1050mm |
| c) where heating is via a fixed plate, or electronically operated equipment | - 600mm |

Reduction in distances

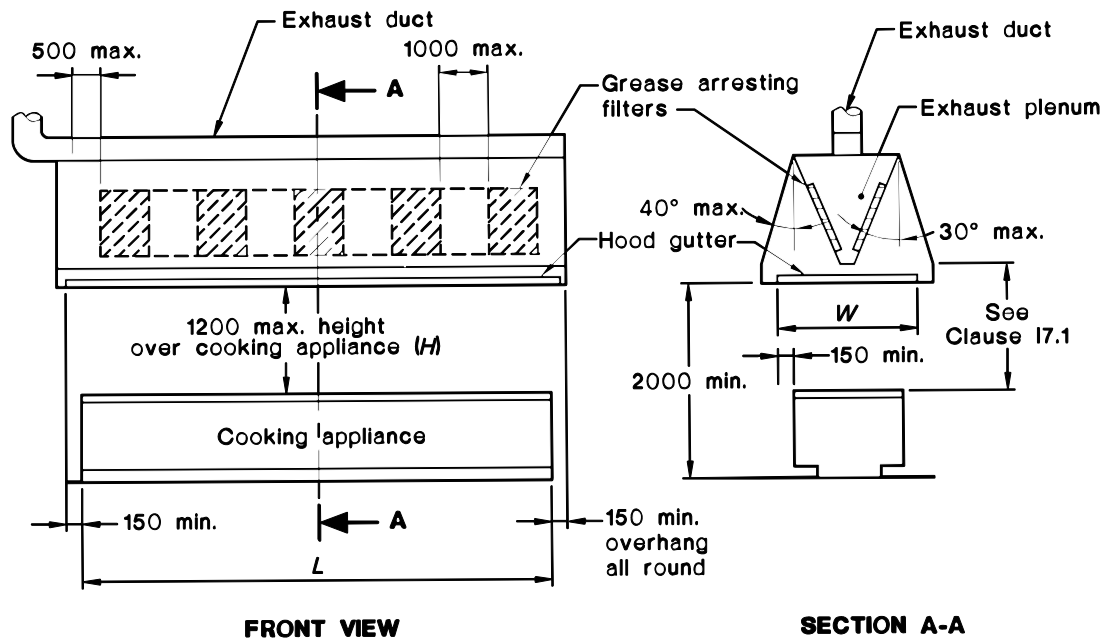
The distance of grease arresting filters from the heat source outlined above may be reduced where the kitchen exhaust system is provided with an approved fire protection system (refer AS 1668.2)

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6. HOOD DESIGN Refer schematics attached

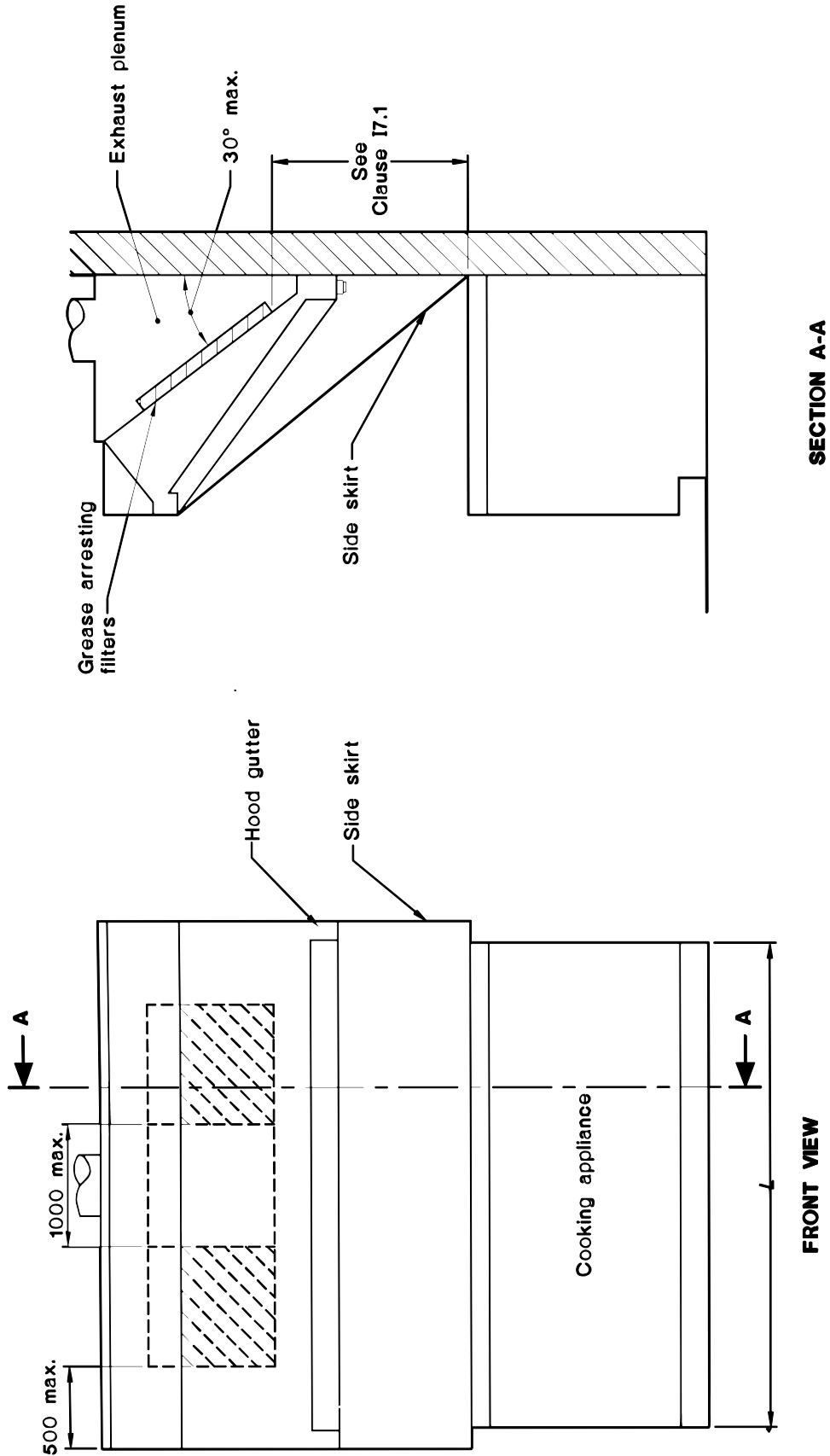
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AS 1668.2—2002



DIMENSIONS IN MILLIMETRES

FIGURE C6 TYPICAL ISLAND-TYPE CANOPY HOOD INCORPORATING GREASE FILTERS



DIMENSIONS IN MILLIMETRES

FIGURE C3 TYPICAL LOW SIDEWALL (BACK SHELF) TYPE HOOD INCORPORATING