

## Grease Arresters

### Trade Waste Guideline No. 12

#### INTRODUCTION

Waste waters from business activities such as meal preparation and dish washing contain oil/grease and suspended solids at levels that can build up in sewer pipes, restricting flows and causing blockages. For the purpose of this Guideline, a “**grease arrester**” refers to a pre-treatment device, which permits the separation by gravity of oil/grease and suspended solids from the waste water stream. Some designs have additional features that reduce servicing frequency. The best choice of arrester type, design and size will vary depending on the nature of the application. The following are typical types of grease arresters that might be installed above or below ground:

- Conventional underflow grease arrester
- Grease arrester with bio-filter
- Grease arrester with mechanical skimming device
- Vertical Gravity Separator (VGS)

This Guideline chiefly applies to retail businesses that produce greasy waste water, such as;

- Restaurants
- Cafes
- Take away food shops
- Fast food chain outlets
- Cafeterias/canteens
- Butchers
- Bakeries
- Delis and Supermarkets
- Hotels, Motels
- Function centres
- Hospital & nursing home kitchens
- Ice cream & coffee shops

Pre-treatment requirements for food manufacturing/processing businesses, wholesalers etc. may be significantly different. These operators should seek advice from the Trade Waste Branch regarding their particular circumstances.

#### MINIMUM PRETREATMENT REQUIREMENTS

- Only arresters with “type approval” from SA Water shall be used.
- Conventional underflow arresters are the default choice for most applications. SA Water may authorise the use of alternative devices in situations where it is unreasonable to install a conventional underflow arrester.
- Upstream removal of larger solids from the waste water stream significantly assists arrester performance, plus reducing odours and servicing costs. Fitting silt traps and/or strainers (maximum 1.5mm hole/mesh size) is usual practice.
- The grease arrester is to be appropriately sized to provide effective separation of grease/oil and/or solids. Generally, the minimum retention time in a conventional underflow arrester is one hour at peak usage times.

#### DETERMINING GREASE ARRESTER SIZE

Appropriate sizing of grease arresters is necessary to satisfy a number of needs, such as providing adequate retention time to allow separation of grease/oil and suspended solids, reducing outgoing water temperature and having adequate holding capacity for separated materials – to minimise service frequency. A range of factors influences arrester performance, making it difficult to arrive at a simple “formula” that will work in all situations. The following calculation methods are **for guidance only** and apply to conventional underflow grease arrester designs. Operators should seek further advice from a suitably qualified consultant or the Trade Waste Branch.

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Further information  
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### Method 1 – Peak hourly flow

Add the flow ratings for all fixtures feeding the arrester. This gives the minimum arrester size needed to satisfy the one hour retention requirement. Choose the nearest (equal to or larger) available arrester size.

Fixture	Litres per hour	Fixture	Litres per hour
Bain Marie	50	Sink - single bowl	200
Bin wash area	200	Sink - double bowl	300
Dishwasher commercial/domestic	500	Sink - pot, single	300
Dishwasher - tunnel	1000	Sink – pot, double	400
Floor waste	50	Sink – cleaner's	50
Hand basin	50	Steamer/steam oven	100
Rinse sink	300	Wok table	100 per burner

### Method 2 – number of meals per day

For this method, average daily number of meals should be used.

Meals per day	Recommended arrester size
Up to 70	1000 Litres
71 to 200	1800 Litres
201 to 400	2400 Litres
401 to 600	5000 Litres
Over 600, or multi-tenant food court	Contact the trade Waste Branch. DAF or similar devices may be required

Where calculations are made by both methods, the larger calculated arrester size should be used.

### GREASE ARRESTER SIZING RULES

SA Water generally applies the following rules when approving installation of grease arresters;

- Arresters have a minimum hydraulic capacity equivalent to discharges from one hour of peak use. Additional capacity may be required to moderate high temperatures or for other reasons.
- The minimum capacity for arresters is **1000 litres**
- Specific minimum capacities for certain activities are;
  - **1800 litres** – Cooking of Asian food, Rotisserie/BBQ chickens
  - **2400 litres** – Fast food chain outlet
  - **5000 litres** – Large dine-in operations.

### FOOD WASTE DISPOSAL UNITS

In non-domestic applications, these units (sometimes called garbage grinders) must discharge to sewer via a grease arrester. Hourly water flow through these units should be included in the calculations for Method 1.

The additional load of material contained in this discharge typically requires an increased arrester size, to safely accommodate larger amounts of grease/oil and settled solid material between service (pump out) calls by the licensed liquid waste contractor. In addition to Methods 1 and 2, arrester selection includes an estimation of the amount of material discharged from food waste disposal units, based on the envisaged usage pattern.

Similarly, the use of **potato peelers** can also add significant a load to the arrester and consideration of arrester holding capacity is also necessary in such circumstances.

As an approximate indication, the following quantities of material can be safely held in regular underflow grease arresters before requiring servicing.

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Arrester Size	Maximum Total Grease/Oil & Solids
1000 Litres	220 kg
1800 Litres	280 kg
2400 Litres	360 kg
5000 Litres	740 kg

## COVERS

- Grease arrester covers must be suitable for the expected weight loadings e.g. galvanised checker plate covers for pedestrian traffic and “Gatic style” covers for vehicular traffic.
- Covers must be removable to allow full access for servicing and maintenance and be appropriately sized to allow safe removal by one person. Handles or lifting holes are necessary.
- Gas-tight covers are required for indoor systems to contain odours and may be necessary for outdoor installations. Refer to [Trade Waste Venting of Sealed Arresters Guideline No.13](#) for ventilation requirements.
- Where circular gas-tight inspection covers are fitted (450 mm diameter for 400 litre arrester and 600 mm diameter for larger arresters) a minimum of 600mm vertical clearance between the underside of the cover and the static water level in the arrester is necessary to facilitate routine servicing.
- Rectangular “Gatic style” covers shall have integrally cast portholes of 230mm diameter positioned over both the inlet and outlet of the arrester.

## OTHER CONSIDERATIONS

- The use of biological additives is restricted to specific products and applications approved by SA Water.
- Grease arresters shall be located to facilitate maintenance operations and be accessible for inspection. This includes adequate clearance space above and around the arrester.
- An appropriate backflow prevention device must be fitted to taps/hoses used for washing an arrester. Water hoses must never be immersed in the arrester’s contents.

## MAINTENANCE

- It is the responsibility of the Permit holder to ensure the effective operation of each unit i.e. ongoing removal of grease and solids and if applicable, cleaning of bio-filter, servicing mechanical skimmers or other components etc. by a qualified technician in accordance with the manufacturer’s specifications.
- The Trade Waste Branch will set a maintenance schedule, which ensures correct operation of the grease arrester. This will be reviewed as part of routine compliance audit inspections.
- In a conventional underflow grease arrester, the maximum build up of wastes shall not exceed
  - 100mm of grease/oil and/or solids accumulation in the last chamber or
  - 200mm of grease/oil and/or solids accumulation in the first chamber.
- When pumping out the grease arrester, the entire contents must be removed, including scraping down material adhering to the vertical surfaces.

## ADDITIONAL INFORMATION

Mains Water Protection (ASNZS3500 – 2003 Part 1), [Trade Waste Biological Additives Guideline No.7](#), [Trade Waste General Policy](#), [Standards of Acceptance of Liquid Waste to Sewer](#), [Trade Waste Fact Sheet No 7 – Arresters/Separators, Their Function and Operation](#).

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