

GreaseShield™ 1000 Standard Series
GreaseShield™ 1850 Series
GreaseShield™ GS USA Series

GS1000
GS1000AST
GS1850
GS1850AST
GS1850AST-ECO
GS1850AST-WOK
GSUSA-Series
Options:
-PF (PreFilter)
-F (Defender)

GreaseShield™ Low Level Series

GS1000-LL
GS1850-LL
Options:
-PF (PreFilter)
-F (Defender)

Installation & Daily Operations Manual





Terms & Definitions

FOGs	–	Fats, Oils and Greases.
FSEs	–	Food Serving Establishments.
EPAS	–	Environmental Products & Services Ltd
AST	–	Automated Solids Transfer

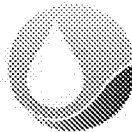
Foreword

The Installation and Operations manual includes descriptive literature, specification and drawings relating to the GreaseShield range. It is the responsibility of the installer, operator and maintenance personnel to read and fully understand these instructions before installing, commissioning or operating the GreaseShield. In the unlikely events of problems occurring with your GreaseShield you may either refer to this manual, your equipment supplier or directly to EPAS.

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Section 1: Contact Information

Manufacturer Details:

Manufacturer:	Environmental Products & Services Ltd
Address Line 1:	Unit 5 Shepherds Drive
Address Line 2:	Carnbane Industrial Estate
City:	Newry
County:	Down
Post Code:	BT34 6JQ
Country:	Northern Ireland, United Kingdom
Telephone:	
Fax:	
E mail:	
Website:	

Supplier Details:

Supplier::	Environmental Products & Services Ltd
Address Line 1:	Unit 5 Shepherds Drive
Address Line 2:	Carnbane Industrial Estate
City:	Newry
County:	Down
Post Code:	BT34 6JQ
Country:	Northern Ireland, United Kingdom
Telephone:	
Fax:	
E mail:	
Website:	

Section 2: Models Covered

GS1000
GS1000AST
GS1850 (Dual Mode)
GS1850AST
GS1850AST-ECO
GS1850AST-WOK
GSUSA-125(Dual Mode)
GSUSA-140(Dual Mode)
GSUSA-160(Dual Mode)
GSUSA-229(Dual Mode)
GS1000-LL
GS1850-LL

(Note 1) All base models can be suffixed with -PF or -F which denotes the inlet 'Add on' of a PreFilter or FilterShield to the Inlet. (e.g.: GS1850 AST-ECO-PF denotes a GS1850 AST ECO + PreFilter)

(Note 2) "AST "in 'Model No' denotes a model with Automatic Solids Transfer system included

Models Highlighted are “Dual” Models

“Normal Mode” = ECO Mode(No Refresh Function)and can replace old “ECO Range”.

“Deli Mode”= Water Refresh facility and can replace old “Standard Range”

AST Models can be replaced, if possible with a Duel Mode Machine with PreFilter or FilterShield).

Duel Models have a Menu system accessible from the PLC Screen.

Mode Selection:

Normal/Deli Modes
On/Off Time of Machine
Roller On/ Off Time
No of Starts/Hours Run Screen

Section 3: Introduction to FOGs

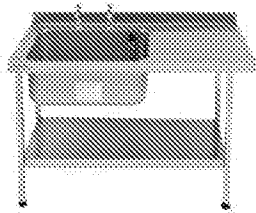
FOGs cause major problems to privately & publicly owned drains and sewerage systems. FOGs are generated from practices carried out in FSEs and are usually disposed of down kitchen sinks, drains and storm drains and can lead to the following problems:

- Reduced or blocked pipes leading to back flooding of premises and even pollution of natural watercourses.
- Malodours, unsanitary conditions and even closure of FSEs.
- Non Compliance with national/local authority's discharge requirements & regulations.
- FOGs are extremely difficult for private & publicly owned Sewage Treatment Plants to treat and can lead to failure or unexpected and increased maintenance costs.
- FOGs can effect level instrumentation & pumps within pumping stations leading to operational failure and possible overflows.
- Loss of a potentially reusable resource when it enters the waste stream.

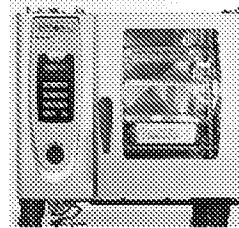
All of the problems are unnecessary because separating FOGs from waste water is easily accomplished by selecting, installing, operating & maintaining a GreaseShield correctly.

Section 4: GreaseShield Overview

Typical Appliances Installed to GreaseShield 1000 Series installed:

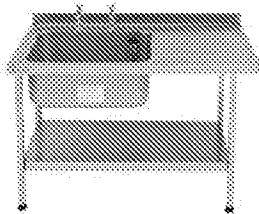


Small to Medium Single Bowl Washup Sink

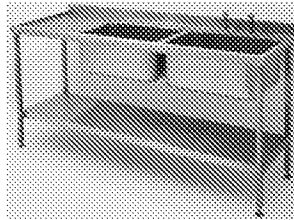


Combi Ovens

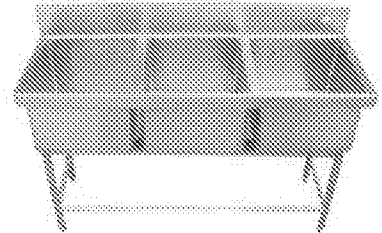
Typical Appliances Installed to GreaseShield 1850 Series installed:



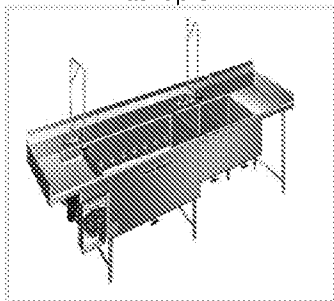
Small to Medium Single Bowl Washup Sink



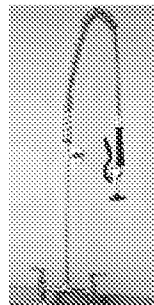
Double Bowl Washup Sink



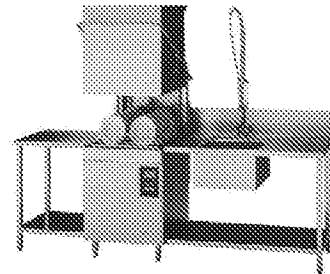
Triple Bowl Sink



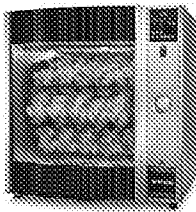
Continuous motion ware washing system



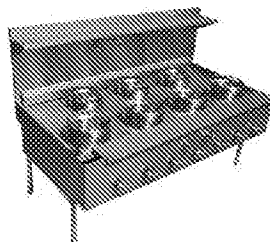
Pre Rinse



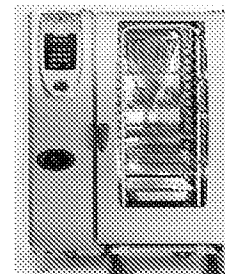
Dishwashers



Rotisseries



Wok Cooking Station



5,10 and 20 Grid Combi Ovens

GreaseShield Functions

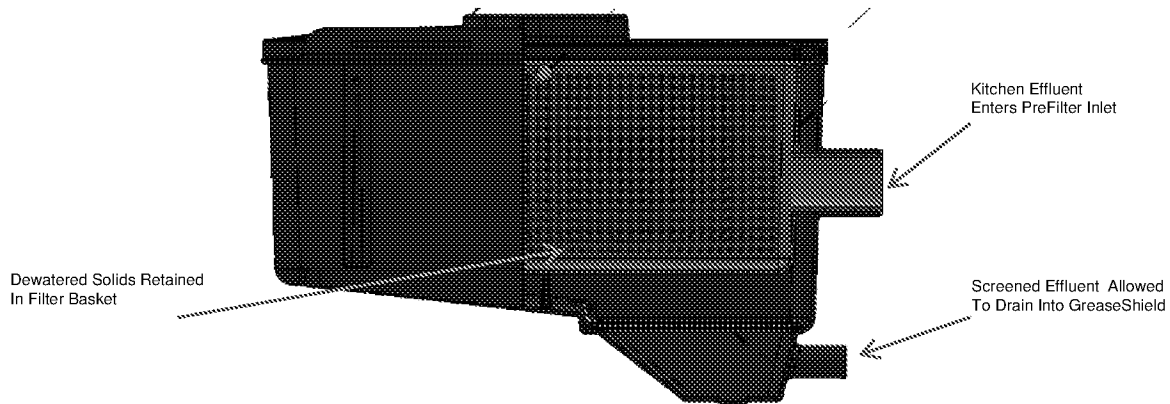
Solids Removal and Dewatering:

The GreaseShield™ works to remove and dewater organic solid matter that is typically entrained in the effluent preventing anaerobic foul smelling conditions. The GreaseShield™ products have several models with varying functionality for removing and dewatering organic solid matter as follows:

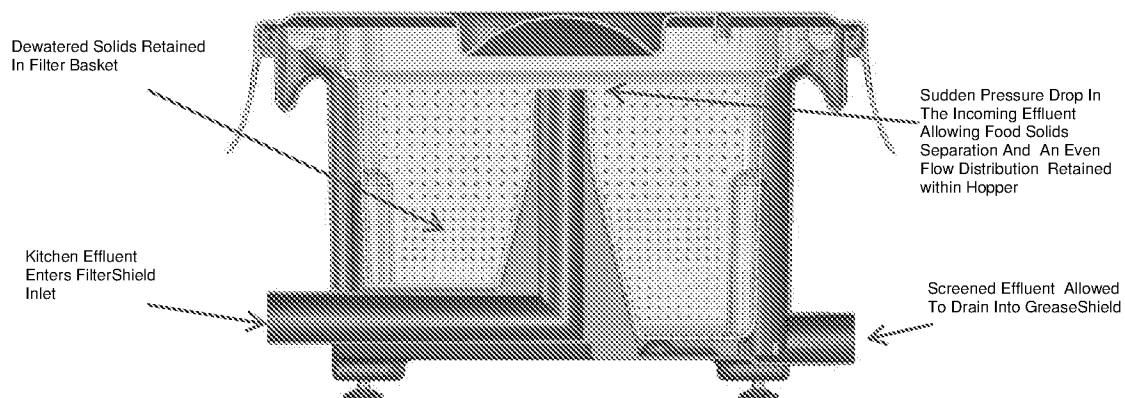
Base Model™ – Only to be installed in situations where the effluent does not contain solids.

Options

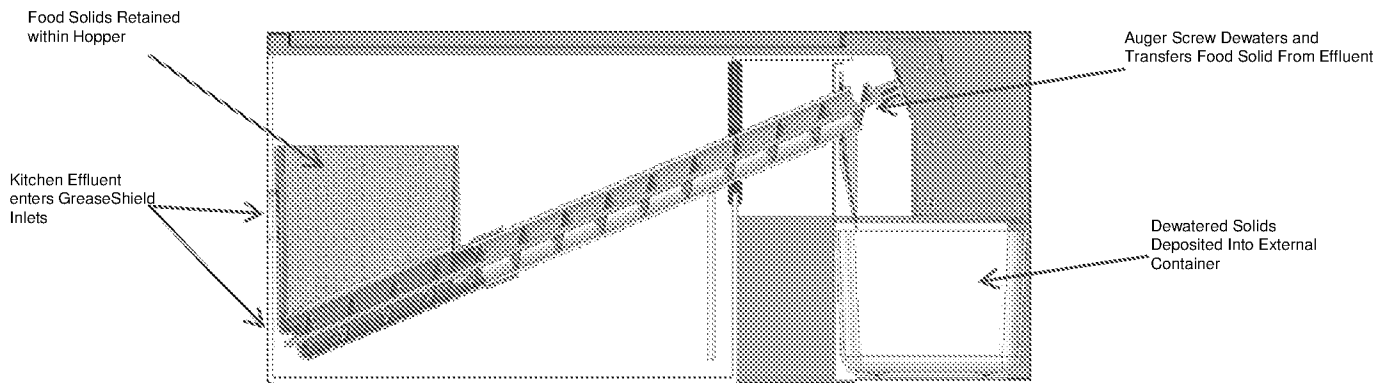
-PF (PreFilter)™ - The PreFilter™ Series is a combination of a PreFilter™ added to the GreaseShield™ 1000 and 1850 Series. The effluent enters the inlet of the PreFilter™ dewatering and retaining the solids and allowing the screened effluent to enter the GreaseShield™.



-F (Defender™) – The Defender™ Series is a combination of a FilterShield™ added to the GreaseShield™ 1000 and 1850 Series. The effluent enters the inlet of the FilterShield™ and gets evenly distributed over the Filter baskets with a sudden pressure drop allowing the solids to be dewatered and retained and allowing the screened effluent to enter the GreaseShield™.

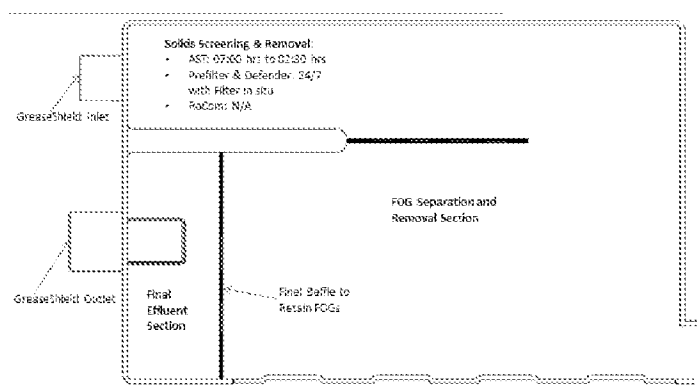


AST™ - Effluent from Grease Producing appliances / Sinks enters the inlet/s of the GreaseShield™. Food Solids get retained inside a hopper where an inclined auger automatically dewateres and removes the solids to an external solids cartridge from 07:00 hrs to 02:30 hrs as standard. The hopper has filtration holes allowing the screened effluent to pass through. Please note there is the additional option of adding or retrofitting a PreFilter™ / FilterShield™ to AST™ models.



FOG Separation Section:

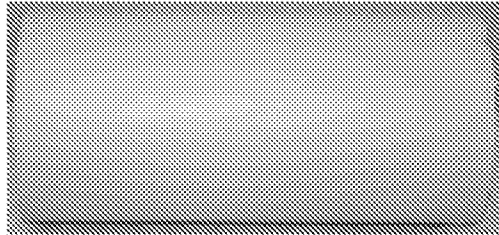
Effluent from FOG contamination points in commercial kitchens enters the GreaseShield usually in a temperature range from 40 Celsius to 85 Celsius. A number of co-operating Baffles and a Reverse Flow Direction together with the difference in specific gravities of FOGs and water assist in retaining FOGs in the FOG Separation Section for removal and allows treated effluent flow under the final baffle to the final effluent section.



The effluent is also magnetically treated to help prevent the build-up of scaling of pipework by calcium and metal deposits. The passing indigenous bacteria that get magnetically affected create a Bio remediation effect also helping to reduce slime build up in the pipework.

FOG Removal

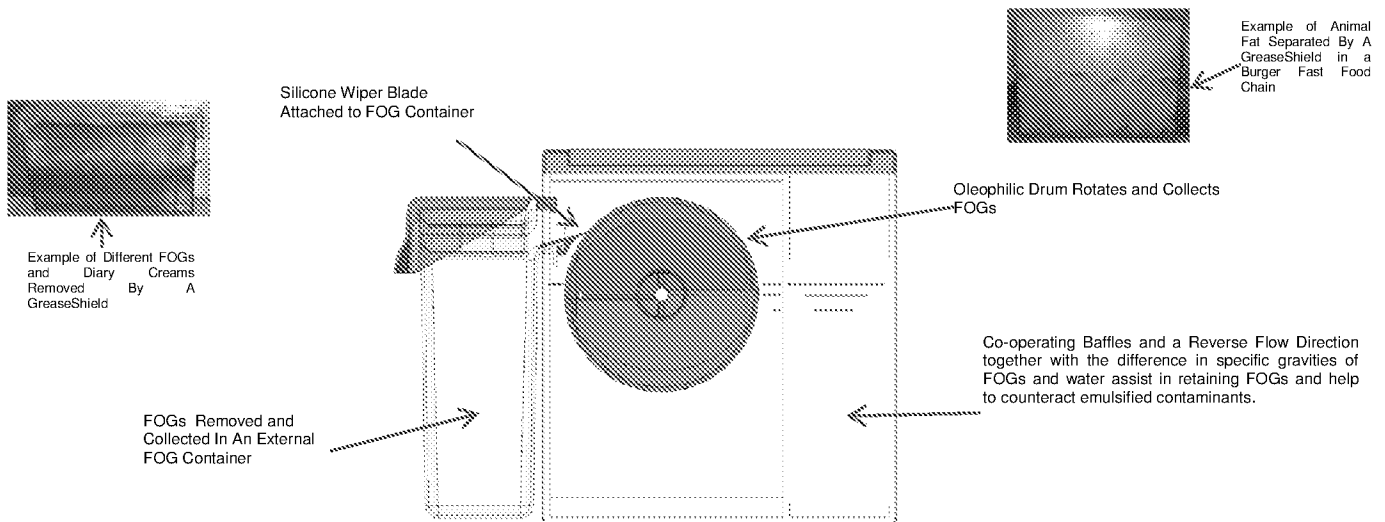
The GreaseShield is pro-active taking advantage of the waste thermal energy present in effluent by operating the FOG Removal system as standard from 07:00 hrs to 02:30 hrs (This can be tailored to specific site requirements) when the FOGs are liquid eliminating the need for troublesome and expensive to run heating elements.



The FOGs are retained within the GreaseShield where a large oleophilic (attracts FOGs) and hydrophobic (repels water) drum in contact with over 50% of the tanks area rotates and submerges itself in the effluent picking up the FOGs.



As the large oleophilic and hydrophobic drum rotates out of the effluent with the FOGs it meets a wiper blade attached to a FOG Container where the FOGs are scraped off and recovered.



Automated Self Cleaning

The GreaseShield has an automated Final effluent recirculation feature that processes the final effluent three times every five mins during the FOG removal operation ensuring only the highest compliant effluent discharges the GreaseShield.



The Final effluent recirculation feature also agitates and cleans the tank preventing the build-up of fine sedimentation.

The pulsing action of the Final effluent recirculation feature ensures that the FOGs are directed and removed by the FOG Drum ensuring a high efficiency removal preventing FOG and creams breaking down and becoming an odour nuisance within the GreaseShield.

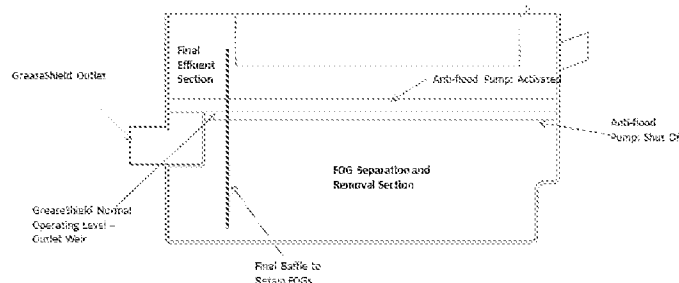
The automated Self Cleaning function eliminates the recurring need to pump grease traps, refill with clean water, and eliminates the costly use of biological agents, enzymes and chemicals.

GreaseShield™ does not smell in operation because it removes organic matter and FOGs typically entrained in the heated effluent leaving a commercial kitchen, thus inhibiting the biological degradation of organic matter in effluent and eliminating the conditions under which anaerobic conditions prevails.

There is no requirement for Kitchen Staff to access the inside of the GreaseShield™.

Anti-Flood System (Excludes ECO Range):

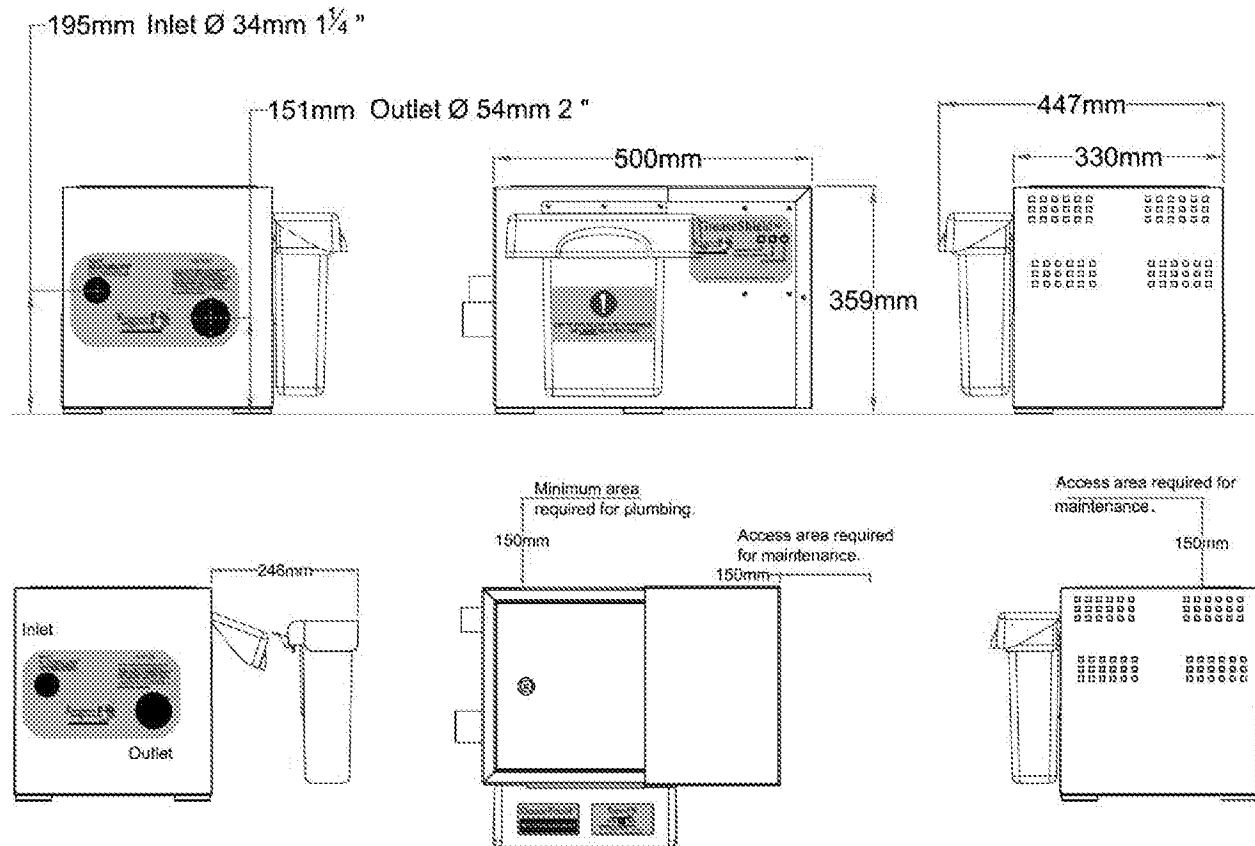
Anti-flood – If the water level reaches a high level internally in the GreaseShield due to excessive flow rate or incorrect installation an Anti-flood pump is activated removing water from the compliant final effluent section to drain. When the water level returns to normal operating level the Anti-flood pump deactivates.



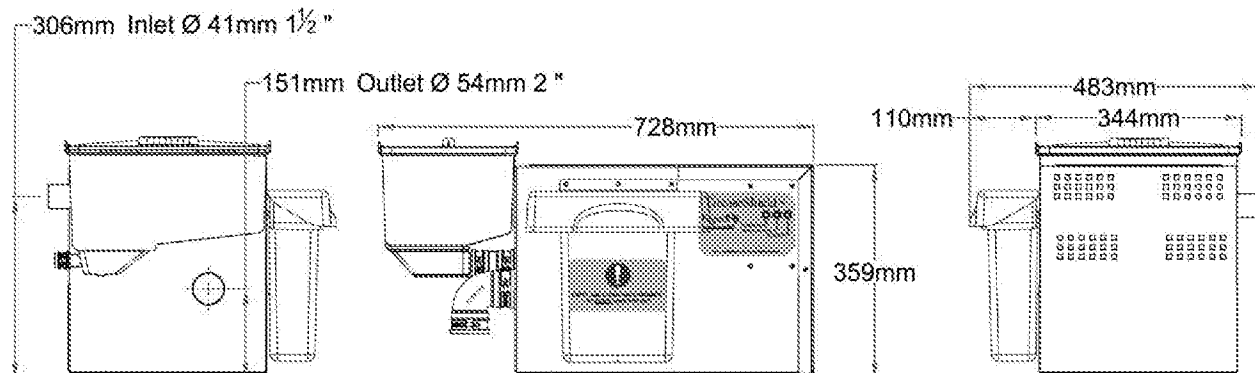
Low level - If the water level reaches a low level internally in the GreaseShield water is brought in to return the water level to the correct operating level ensuring optimum retention and FOG removal continues uninterrupted. The water intake is protected with a mechanical and non-mechanical backflow protection measures.

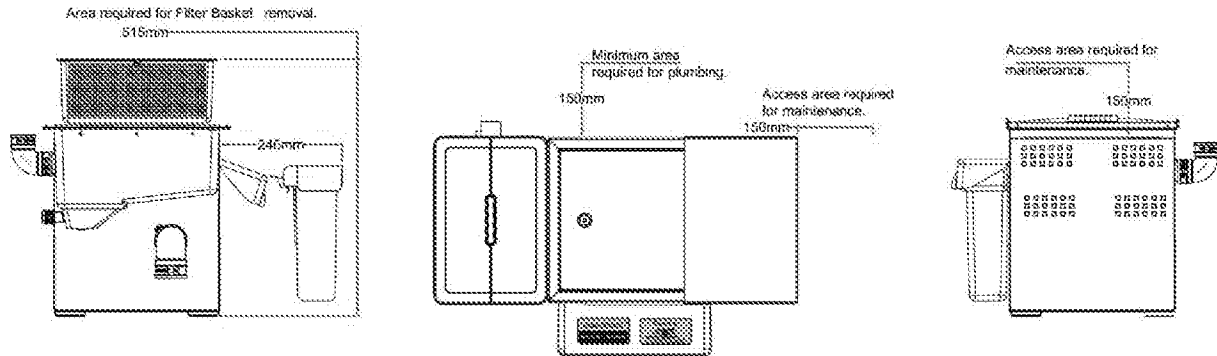
Section 5: GreaseShield 1000 Dimensional Drawings & Specifications

GreaseShield 1000 Dimensions

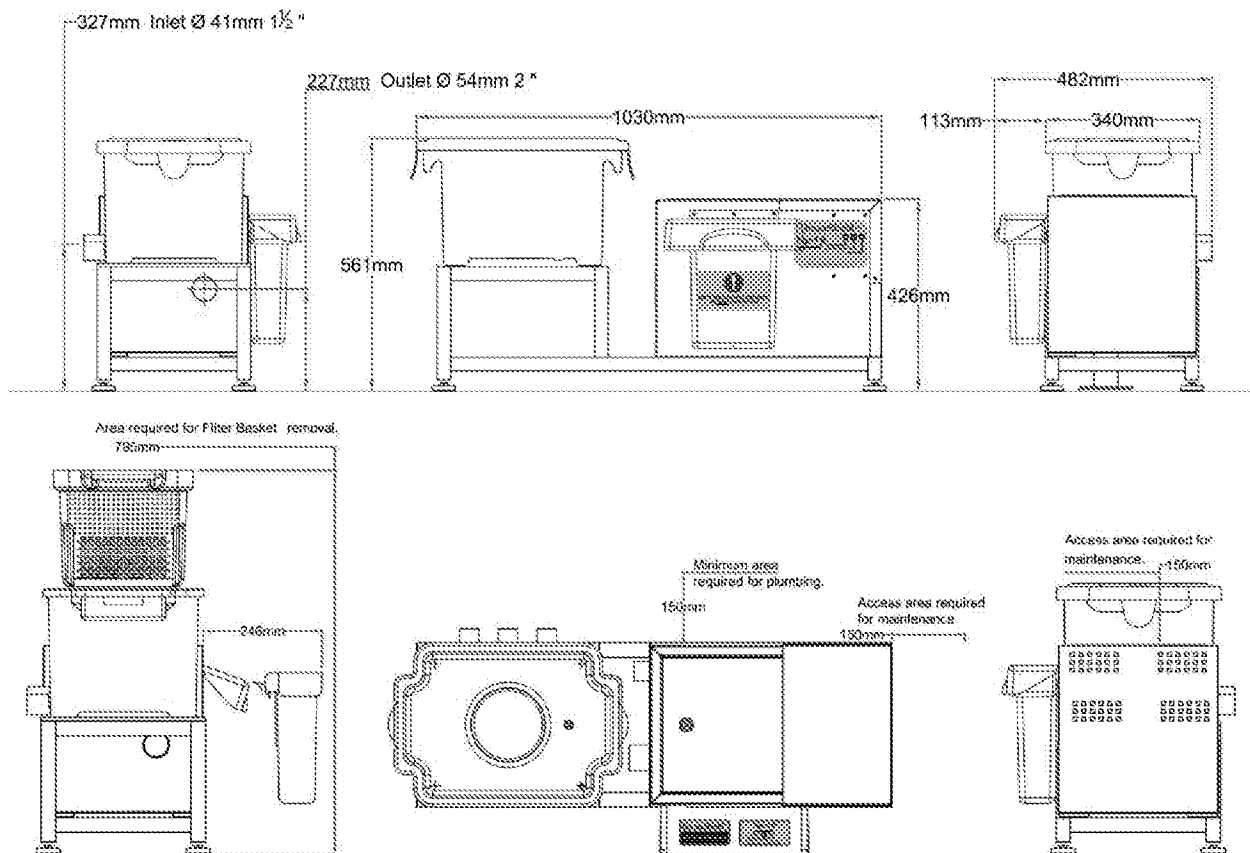


GreaseShield 1000-PF (PreFilter) Dimensions

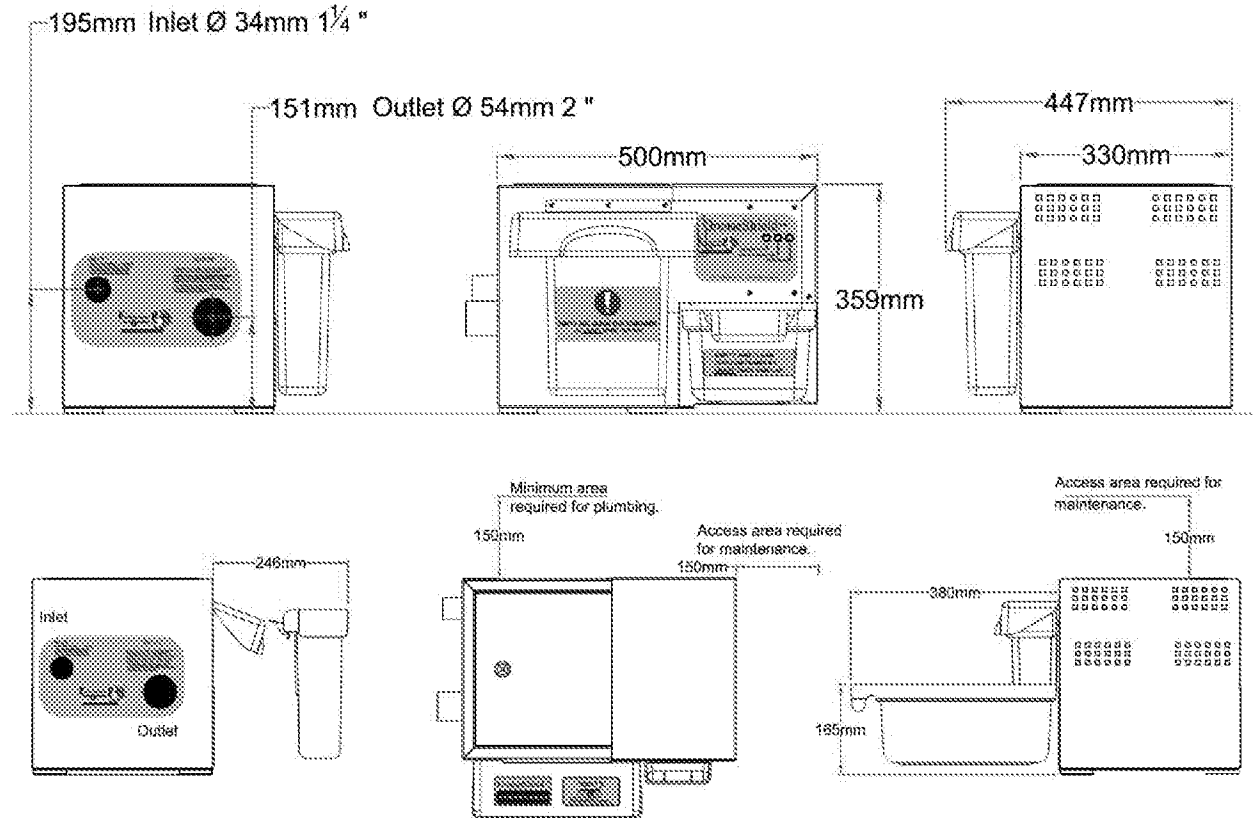




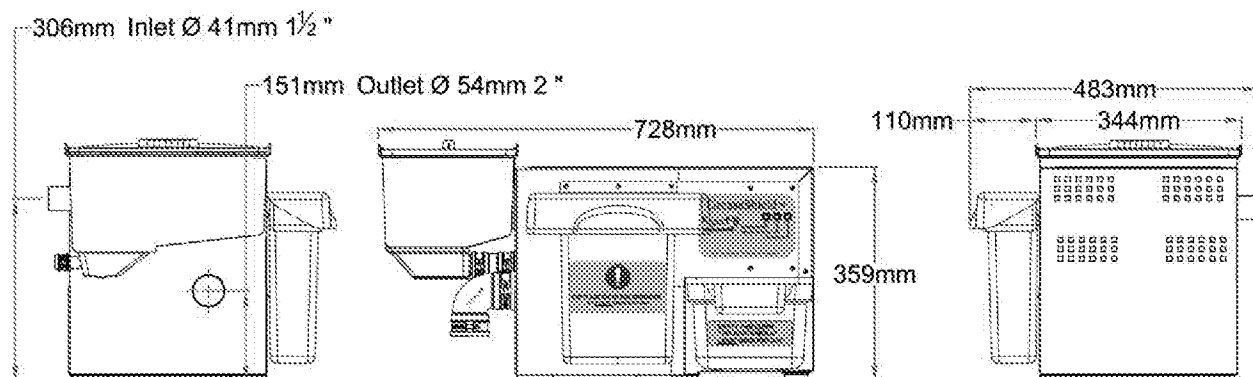
GreaseShield 1000-F (Defender) Dimensions

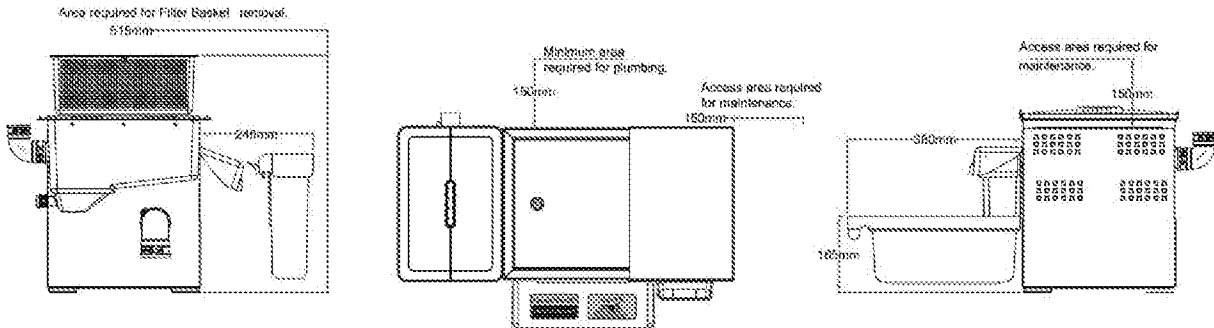


GreaseShield 1000 AST Dimensions

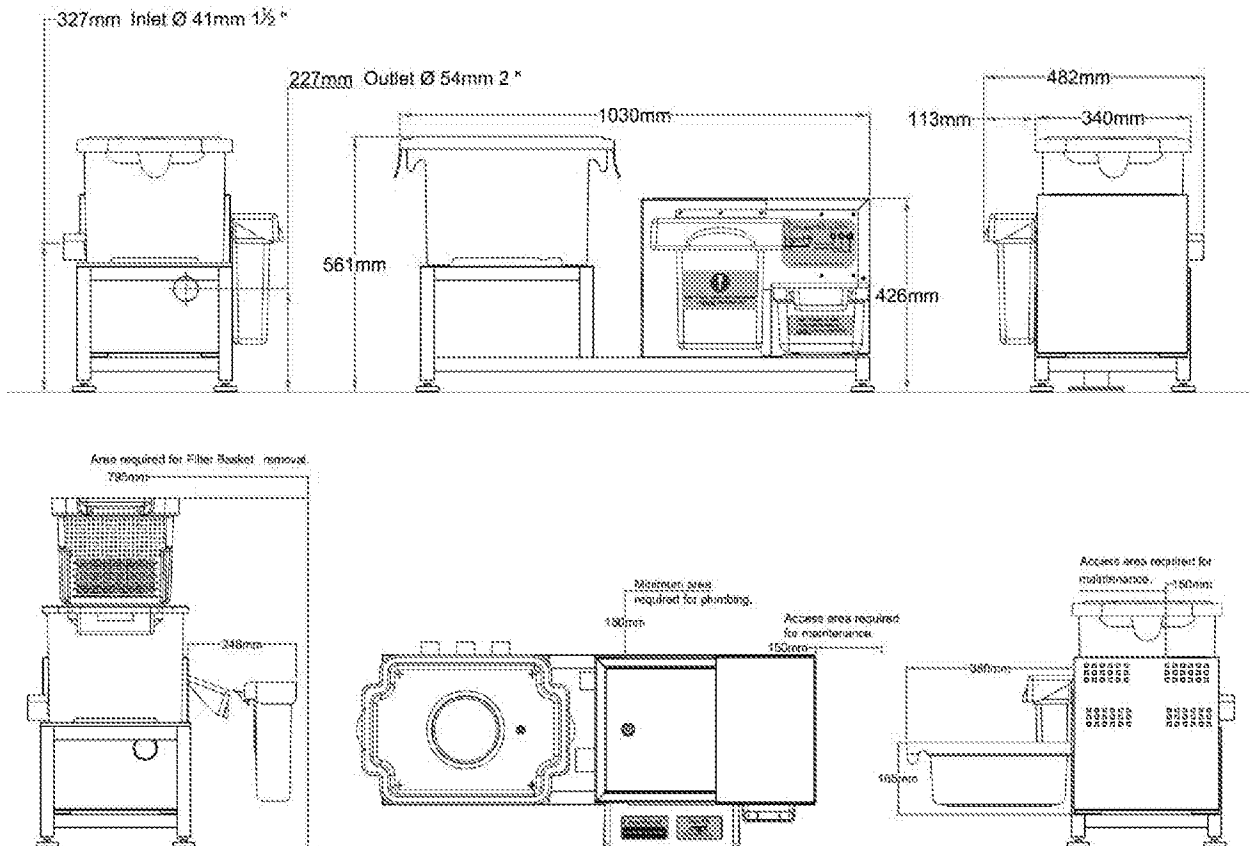


GreaseShield 1000 AST-PF (PreFilter) Dimensions





GreaseShield 1000 AST-F (Defender) Dimensions

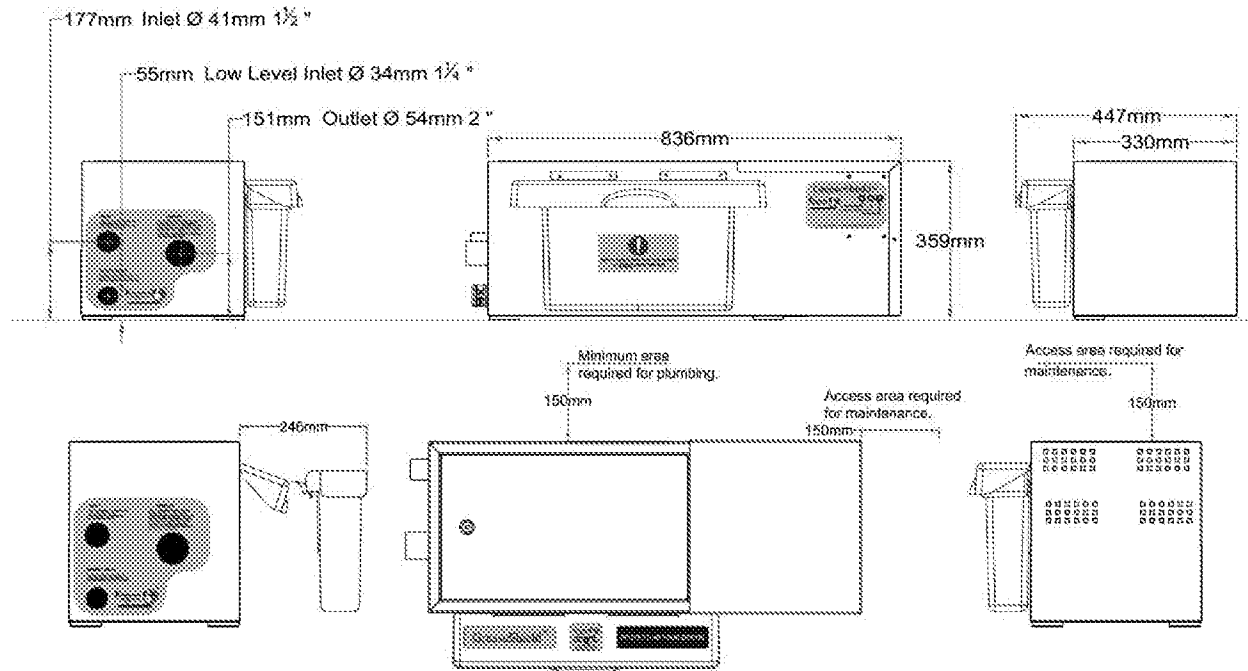


GreaseShield 1000 Specifications

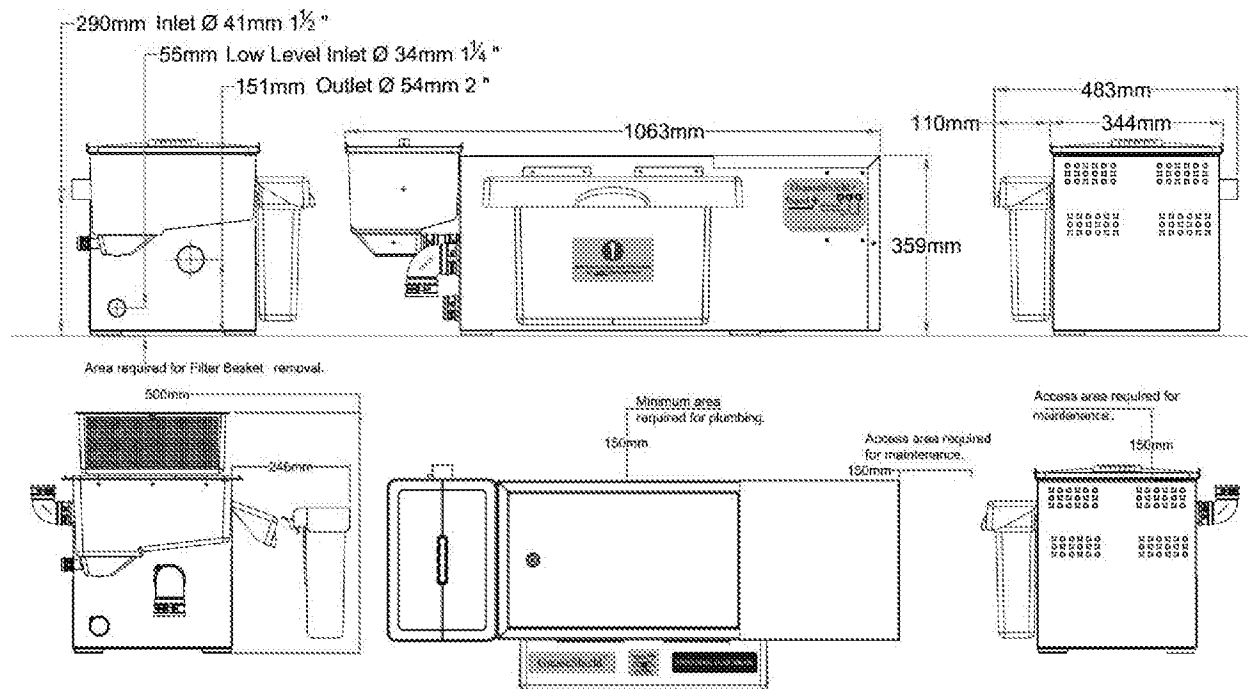
GreaseShield 1000 Standard				
Description	1000 Base	PreFilter	Defender	AST
Material External Tank	Brushed Finish Stainless Steel 304 Tank			
Material Internal Tank	Chemical Resistant Polypropylene Tank			
Weights				
Weight (empty) Kilograms	15.22	19.38	25.88	18.32
Weight (full) Kilograms	24.22	28.46	34.88	27.4
Flow Rates				
Flow Rate(Average) litres per sec):	0.95			
Flow Rate (Max) (litres per sec):	1.1			
Anti-flood Safe Guard:	Optional Extra			
FOG Removal				
FOG Removal Rate (litres per hour):	2			
FOG Removal Means:	The GreaseShield is pro-active taking advantage of the waste thermal energy present in effluent by operating the FOG Removal system as standard from 07:00 hrs to 02:30 hrs. A Slowly Rotating Oleophillic Drum attracts FOGs and recovers into a FOG Storage Container.			
FOG Storage Capacity (Litres):	3			
FOG Storage Container Graduated:	Yes			
Solids Removal				
Automated Solids Transfer & Dewatering Rate:	N/A			Yes
FilterShield:	Optional Extra	N/A	Yes	Optional Extra
PreFilter:	Optional Extra	Yes	N/A	Optional Extra
Solids Storage Capacity (litres):	N/A	7	15	7
Automated Cleaning				
Final Effluent Recirculation:	Cleaning In Place Bar to spray water to back clean filters.			
Staff Daily Maintenance:	No Requirement For Staff To Access Internal Of The GreaseShield™. Empty & Clean FOG & Solids Storage Containers A Minimum Of Once Per Day			
Operational and Installation Requirements				
PLC Control:	Control Smart Programmable Relay For total Control And Additional Flexibility To Be Programmed For Specific Customer Requirements (Opening Hours And Levels Of Contamination)			
Electrical Power (Watts):	15.1			39.1
Electrical Socket:	IP 56 Socket installed to Local Electrical codes and bylaws			
Motor Safety Protection:	Automatic thermal safety protection cut out and reset on all motors			
¾" BSP Hot Water Supply Connection	Yes for water make up (ECO Range Variants) and General Servicing.			
Inlet/s & Outlet Connectors:	Flexiplumb EPDM Universal Connectors provided			
Dimensions & Operational Requirements:	Please refer to Dimensional & Operational Requirements Drawings			
Installation & Sizing Requirements:	Please refer to Installation and Operations Manual			

Section 6: GreaseShield 1850 & ECO Dimensional Drawings & Specifications

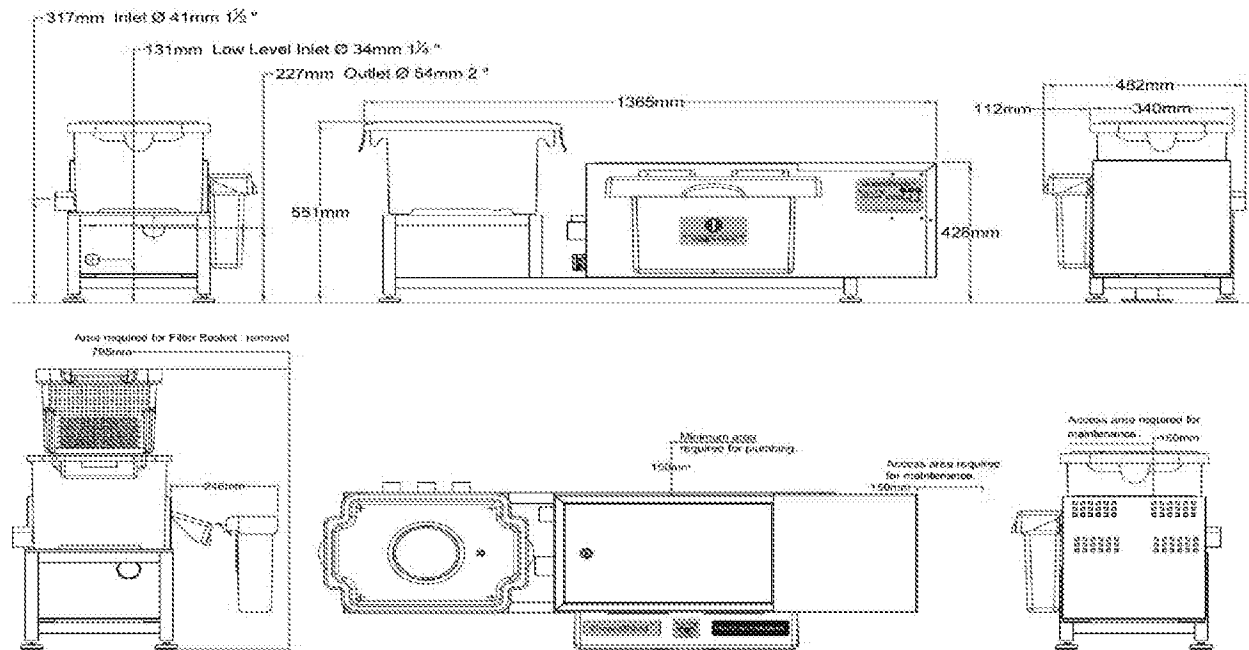
GreaseShield 1850 Dimensions



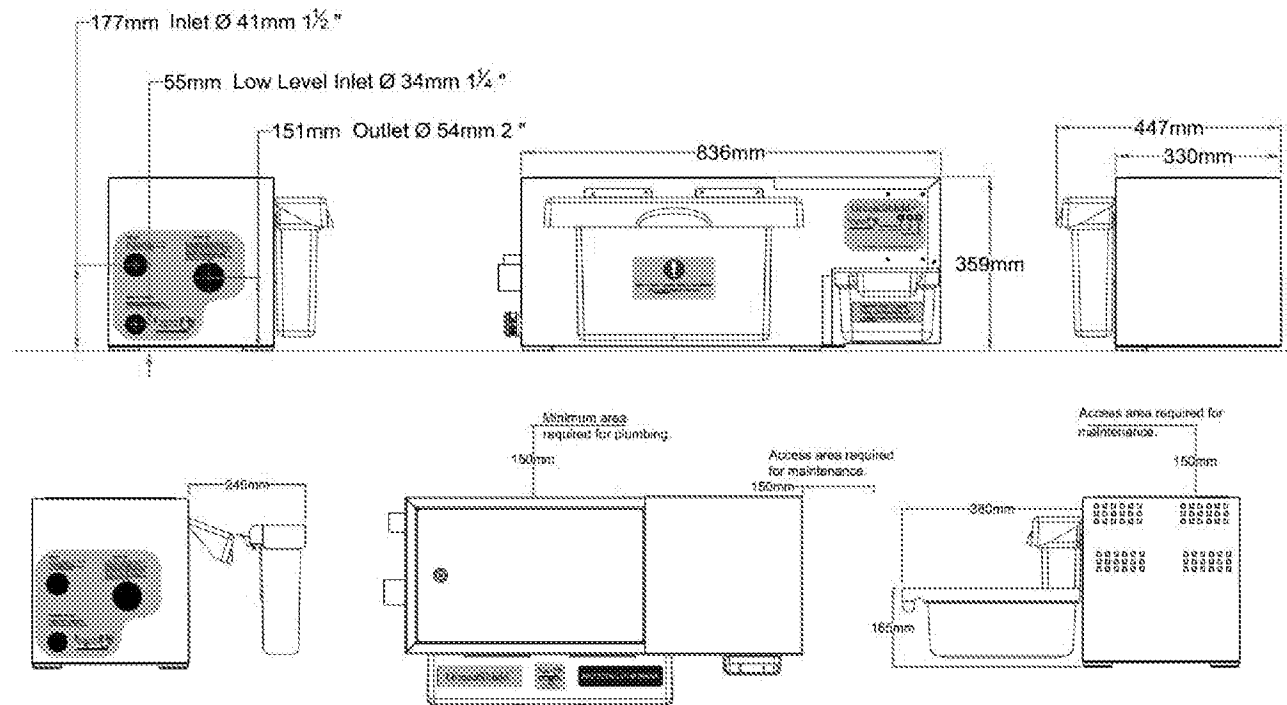
GreaseShield 1850-PF (PreFilter) Dimensions



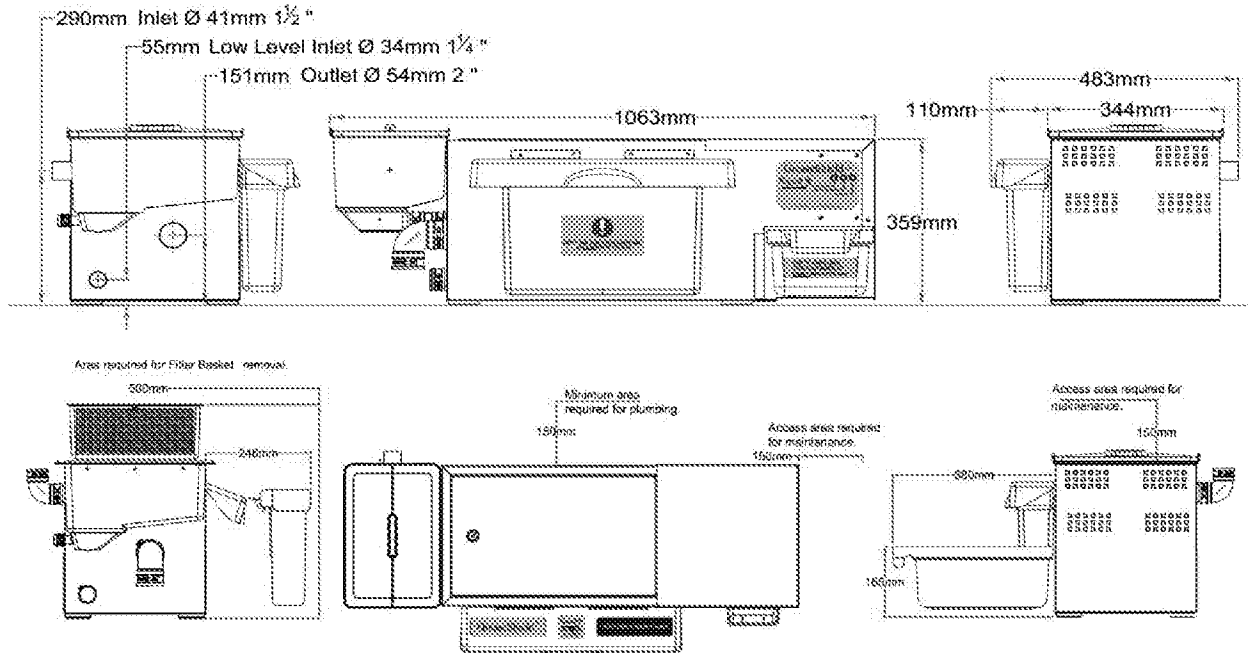
GreaseShield 1850-F (Defender) Dimensions



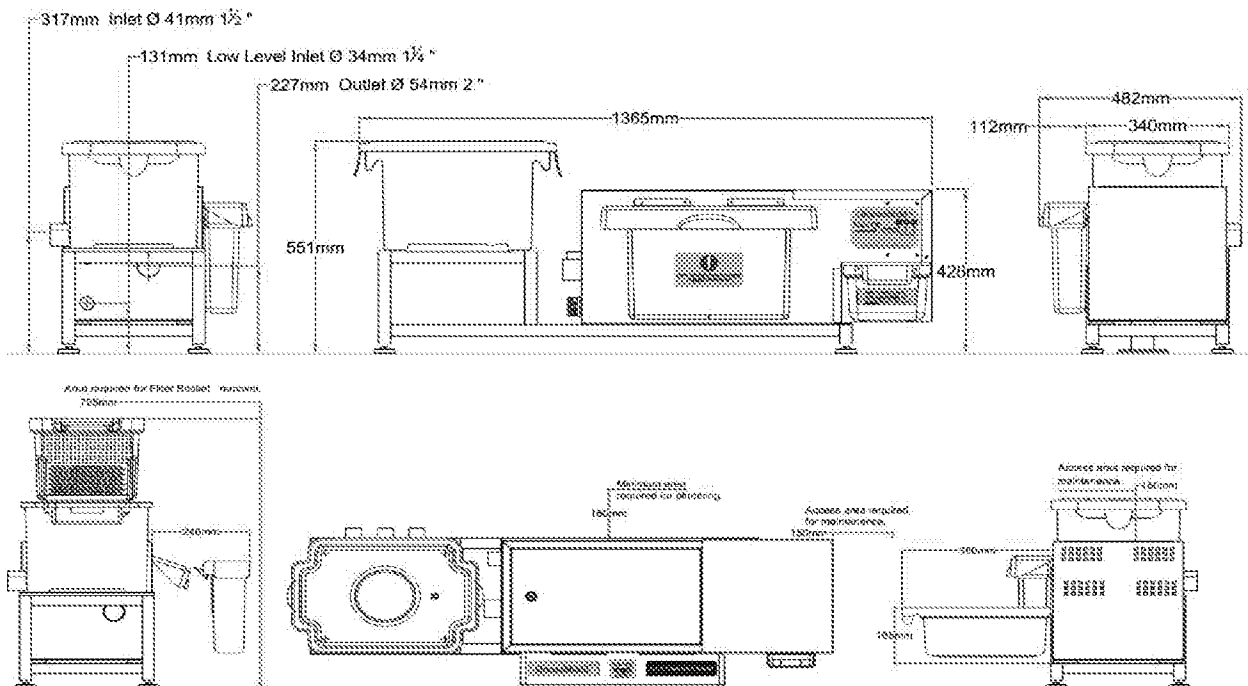
GreaseShield 1850 AST Dimensions



GreaseShield 1850 AST-PF (PreFilter) Dimensions



GreaseShield 1850 AST-F (Defender) Dimensions



GreaseShield 1850 ECO and Standard Specifications

GreaseShield 1850					
Description	1850 Base & ECO	PreFilter	Defender	AST	AST WOK
Material External Tank	Brushed Finish Stainless Steel 304 Tank				
Material Internal Tank	Chemical Resistant Polypropylene Tank				
Weight (empty) Kilograms	22.08	26.7	33.42	25.64	26.54
Weight (full) Kilograms	42.3	46.52	53.64	45.51	45.54
Flow Rates:					
Flow Rate(Average) litres per sec):	1.85				
Flow Rate (Max) (litres per sec):	2.29				2.4
Anti-flood Safe Guard:	Optional Extra				Yes
FOG Removal					
FOG Removal Rate (litres per hour):	4				
FOG Removal Means:	The GreaseShield is pro-active taking advantage of the waste thermal energy present in effluent by operating the FOG Removal system as standard from 07:00 hrs to 02:30 hrs. A Slowly Rotating Oleophilic Drum attracts FOGs and recovers into a FOG Storage Container.				
FOG Storage Capacity (Litres):	6				
FOG Storage Container Graduated:	Yes				
Solids Removal					
Automated Solids Transfer & Dewatering Rate(All Inlets Covered)	N/A			Yes	
FilterShield (40mm/1.5" Inlets covered, 32mm/1.25" Inlet not covered unless AST Function added)	Optional Extra	N/A	Yes	Optional Extra	Optional Extra
PreFilter (40mm/1.5" Inlets covered, 32mm/1.25" Inlet not covered unless AST Function added)	Optional Extra	Yes	N/A	Optional Extra	Optional Extra
Solids Storage Capacity (litres):	N/A	7	15	7	7
Automated Cleaning					
Final Effluent Recirculation:	Cleaning Cycles and re treating final effluent as standard: Improves effluent discharge, increases FOG removal efficiency and Eliminates The Requirement To Desludge By Licensed Waste Contractor And Prevents Foul Smells				
Staff Daily Maintenance:	No Requirement For Staff To Access Internal Of The GreaseShield™. Empty & Clean FOG & Solids Storage Containers A Minimum Of Once Per Day				
Operational and Installation Requirements					
PLC Control:	Control Smart Programmable Relay For total Control And Additional Flexibility To Be Programmed For Specific Customer Requirements (Opening Hours And Levels Of Contamination)				
Electrical Power (Watts):	15.1			39.1	
Electrical Socket:	IP 56 Socket installed to Local Electrical codes and bylaws				
Motor Safety Protection:	Automatic thermal safety protection cut out and reset on all motors				
¾" BSP Hot Water Supply Connection	Yes for water make up (ECO Range Variants) and General Servicing.				
Inlet/s & Outlet Connectors:	Flexiplumb EPDM Universal Connectors provided				
Dimensions & Operational Requirements:	Please refer to Dimensional & Operational Requirements Drawings				
Installation & Sizing Requirements:	Please refer to Installation and Operations Manual				

Section 7: Installation

Pre Installation Requirements

Local codes and bylaws: GreaseShield™ shall be selected in accordance with applicable plumbing, electrical and building codes, by-laws, and municipal ordinances.

Sizing and Selection Calculation: Before supplying & installing a GreaseShield™ a calculation is required to ensure correct sizing & selection for a trouble free installation (Please refer to Appendix 3).

Location of GreaseShield™: The GreaseShield™ to be located as close as possible to the FOG contamination ingress point/s and should not be further than 6 metres / 22 feet away. The GreaseShield™ is not intended for use outside of FSEs and may require sufficient external housing to protect it from the elements. The GreaseShield™ is not intended to be buried underground or support any loads.

Electrical: An IP56 Socket with an operating Voltage of 240 Volts AC 10 Amp Plug is required to connect the GreaseShield™ electrical plug into.

Water Supply: A ¾" BSP connection complete with isolation from a hot water supply to be located within 1 metre of the GreaseShield™ location. This is to facilitate cleaning during servicing. The water supply is also required for GreaseShield units with an AntiFlood Feature. The water pressure should not exceed 29.5 psi / 2 Bar and be not less than 4 psi/ 0.28 Bar. Water hardness to be less than 7° KH and Chlorides being less than 30 ppm.

Dimensions & Operational Requirements: Please refer to Section 4 for GreaseShield™ drawings for Dimensions & Daily Operational Requirements:

Inlet Pipe work: The Installer shall be responsible for the design, supply, installation, testing and commissioning of the inlet pipe work. The GreaseShield™ is provided with Flexiplumb EPDM hub-less couplings to allow various materials with different wall thickness to be connected to the inlet/s and outlet pipe work.

Outlet Pipe work: The Installer shall be responsible for the design, supply, installation, testing and commissioning of the outlet pipe work. The GreaseShield™ is provided with Flexiplumb EPDM hub-less couplings to allow various materials with different wall thickness to be connected to the inlet/s and outlet pipe work.

N.B. A drain size of >50mm/2" is required to accept the 50mm/2" outlet piping of the GreaseShield™.

Handling Requirements: Adhere to all local & national Manual Handling Regulations to prevent injuries with safe lifting.

Installation

Selection of Installer: Where the service provider selected by the FSEs to install, commission & provide staff training on the GreaseShield™ is not the manufacturer of the equipment, the FSE should ensure that the service provider has been authorised by the manufacturer or deemed competent to do so.

Risk Assessments: A Risk assessment should be carried out by the installer prior to the installation to: Identify the hazards, Decide who might be harmed and how, Evaluate the risks and decide on precaution, Record your findings and implement them and Review your assessment and update if necessary.

Method Statement: A Method Statement (safe system of work) should be completed by the installer prior to the installation detailing the way a work task is to be undertaken, Identify the hazards, Step by step guide on how to do the job safely, Control measures to be introduced to ensure the safety of anyone who is affected by the task.

Insurances: It is highly recommended the installer has adequate coverage for Public & Employers Liability prior to the installation.

GreaseShield 1850 Series Inlet Pipe work 40mm/1.5": The 40mm/1.5" Inlet is provided with a 40mm/1.5" Flexiplumb Vortex Controller. The inlet piping to the 40mm/1.5" Inlet must not be greater than 40mm/1.5". Non-return valves or a Tundish to be fitted to prevent back flooding. The inlet piping must have a fall greater than 1 in 40 into the GreaseShield™. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

GreaseShield 1850 Series Inlet Pipe work 32mm/1.25": The 32mm/1.25" Inlet is provided with a 32mm/1.25" Flexiplumb 90 degree bend. The inlet piping to the 32mm/1.25" Inlet must not be greater than 32mm/1.25". Non-return valves or a Tundish to be fitted to prevent back flooding. Ovens and dishwashers to be plumbed into this inlet only when the GreaseShield has the AST function to screen and dewater solids. The inlet piping must have a fall greater than 1 in 40 into the GreaseShield™. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

GreaseShield 1000 Series Inlet Pipe work 32mm/1.25": The 32mm/1.25" Inlet is provided with a 32mm/1.25" Flexiplumb 90 degree bend. The inlet piping to the 32mm/1.25" Inlet must not be greater than 32mm/1.25". Non-return valves or a Tundish to be fitted to prevent back flooding. The inlet piping must have a fall greater than 1 in 40 into the GreaseShield™. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

Outlet Pipe work 50mm/2": The 50mm/2" Outlet is provided with a 50mm/2" Flexiplumb 90 degree bend and 50mm/2" Flexiplumb Running Trap. The Outlet piping from the 50mm/2" Outlet must not be reduced at any time. The outlet piping must have a fall greater than 1 in 40 from the GreaseShield™. 50mm/2" Flexiplumb Running Trap to be fitted on outlet pipe to prevent smells from drains. 50mm/2" Flexiplumb Sampling Points can also be additionally purchased to fit onto the Outlet Pipe Work. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

Hot Water Connection for AntiFlood Feature (Not required for Standard ECO models) : A ¾" BSP water intake hose has been provided - connect to the ¾" BSP fitting (solenoid valve) to the rear of the GreaseShield™ and then to the ¾" BSP fitting on the hot water supply. Switch on hot water supply. Note: the solenoid valve will not allow water into the GreaseShield™ until the unit is electrically connected. Check for any leaks & fix.

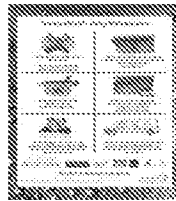
Electrical Connection: Connect the GreaseShield™ electrical socket into the IP56 Socket provided.

Commissioning of Installation: Ensure GreaseShield™ is removing FOGs. Ensure GreaseShield™ is removing Solids (Excludes RoCom). Ensure GreaseShield™ can handle the max operational flow from connected appliances. Ensure the GreaseShield™ has been installed correctly.

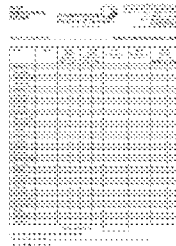
Section 8: GreaseShield Daily Operations

General: If there are any dirt/debris/liquids on or around the GreaseShield™ please remove and clean on a daily basis. To obtain the maximum removal efficiency from a GreaseShield™ facility need to establish and adhere to a regular schedule of cleaning and maintenance. Ensure that maintenance staff or external contractors follow the operating and maintenance (cleaning) instructions provided. Frequency of maintenance depends not only on the amount of FOG and Solids generated but on the facility's implementation of Best Management Practices to reduce the FOG and Solids discharged into the sanitary sewer system. Signs should be posted in the kitchen, especially over the sinks & major FOG & solids contamination ingress points, informing staff what can and what cannot be poured down the drains.

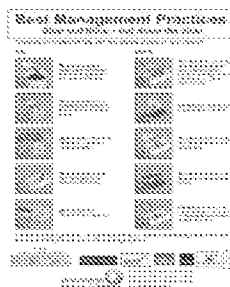
GreaseShield™ Daily Maintenance: Posters are available from EPAS to show the demonstrating the required GreaseShield™ Daily Maintenance to assist staff. Alternatively the GreaseShield Daily Maintenance Poster can be downloaded from: www.EPAS-LTD.com. Please also refer to EPAS YouTube channel to view the video on GreaseShield™ Daily Maintenance requirements: <http://www.youtube.com/EPASLtd>.



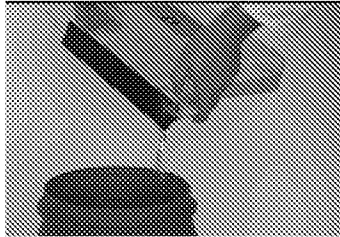
GreaseShield™ Daily Maintenance Record: Duplicate Log Books are available from EPAS to record the amount of FOGs and Solids removed and Daily Maintenance tasks are being completed by staff. Alternatively the GreaseShield™ Daily Maintenance Record can be downloaded from: www.EPAS-LTD.com.



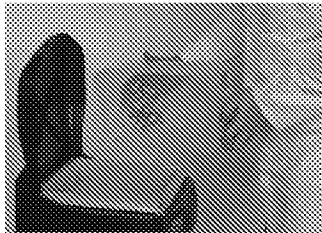
Best Management Practices: Posters are available from EPAS to demonstrate the required Best Management Practices to assist staff in implementing an effective Grease Management Programme. Alternatively the Best Management Practices Poster can be downloaded from: www.EPAS-LTD.com.



FOG Container: Empty & Clean FOG Container at least once daily. Operational experience may require the FOG Container to be emptied and cleaned more than once per day depending on quantities of FOG being removed. Remove FOG Container & empty contents into a FOG Storage Container. Record the amount of FOGs removed into a Daily Maintenance Log. Clean the FOG Container with water not exceeding 60 °C, sanitise & check for wear and tear. Ensure wiper blade is clean & check for wear and tear. Re attach FOG Container correctly to GreaseShield™.



Solids Container, FilterShield and PreFilter: Empty & Clean Solids Container, FilterShield and PreFilter baskets at least once daily. Operational experience may require the Solids Container, FilterShield and PreFilter baskets to be emptied and cleaned more than once per day depending on quantities of Solids being removed. Remove Solids Container, FilterShield and PreFilter baskets & empty contents into Food Waste Collection Bin. When the Solids Container is removed, check & clean to ensure no solids has landed on the shelf & fallen to the rear of the unit. Record the amount of Solids removed into a Daily Maintenance Log. Clean the Solids Container, FilterShield and PreFilter baskets with water not exceeding 60oC, sanitise & check for wear and tear. Locate Solids Container correctly to GreaseShield™.



Staff Training: To contribute to the goal of managing waste responsibly and minimizing the frequency of required cleaning and maintenance, the facility shall provide training to its employees in:

- the proper function, operation and maintenance of GreaseShield™;
- the benefits of Best Management Practices within different locations within FSEs
- the proper storage, handling, and disposal of wastes;

Disposal of intercepted substances: FOGs & other intercepted substances removed from the GreaseShield™ shall be disposed of:

- in accordance with applicable regulations and bylaws;
- by a licensed waste hauler; and
- At a licensed waste disposal facility.

Note: FOGs and Solids removed shall not be discharged into sanitary sewers, storm sewers, drainage ditches, or surface water.

Section 9: Servicing Schedule

Annual Service Requirements: EPAS recommends that the GreaseShield™ is serviced by a trained and competent service engineer at least once annually. The purchaser should also check and comply with local codes and bylaws on mandatory maintenance requirements. If the FSE does not adhere to Best Management Practices this may require additional service visits per year, but this would be based on operational experience.



Selection of Trained Servicing Engineer: Where the service provider selected by the FSEs to service the GreaseShield™ is not the manufacturer of the equipment, the FSE should ensure that the service provider has been authorised by the manufacturer or deemed competent to do so.

Service Pump (Only applicable in ECO Models): A service Pump is fitted to aid service personnel to empty and clean the GreaseShield tank into a storage drum. First remove plug from the grey hose and locate hose into a Storage Drum. To operate press the Service button located at the rear of the GreaseShield which will operate after three seconds for a run time of thirty seconds. At no time is this pump to be used empty contents into the drain system. After you have finished with the Grey hose replace plug and locate back to original position.

Levels of Protection: The Company recommends that before working with / on / or inside the GreaseShield™ it should be isolated from the power supply by disconnecting its electrical plug from the IP56 socket electrical supply.

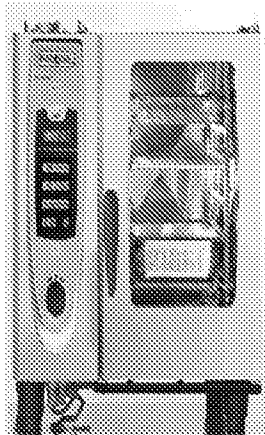
Section 10: Trouble Shooting Guide

Problem	Cause	Solution
No FOG being removed	No Power	Ensure IP56 electrical socket is receiving power and is not tripped. If tripped get a qualified electrician to examine cause of trip.
		Ensure GreaseShield is plugged in to an IP56 Socket receiving power.
		Please check and ensure 5amp fuse in Motor Mounting Plate, 5amp fuse in plug (only applicable to UK) has not blown. Qualified electrician or engineer to check and replace blown fuses.
	FOG Container not located correctly on GreaseShield	Please locate FOG Container correctly on the front of the GreaseShield ensuring the Wiper blade makes contact with the FOG Roller. If the wiper blade is worn please order replacement.
	PLC Timer Operating Time	GreaseShield Standard operating time is 07:30 hrs to 02:00 hrs 7 days a week with the FOG Roller operating 5 mins on/off. Please observe for 10mins to see if FOG Removal system operates.
	Mechanical or Electrical Part Failure	It is recommended you contact EPAS or Supplier to organise a service engineer. Please refer to exploded parts diagrams to diagnose mechanical problems. Please refer to wiring diagram to diagnose electrical problems.
Problem	Cause	Solution
Odour	No Power	Ensure IP56 electrical socket is receiving power and is not tripped. If tripped get a qualified electrician to examine cause of trip.
		Ensure GreaseShield is plugged in to an IP56 Socket receiving power.
		Please check and ensure 5amp fuse in Motor Mounting Plate, 5amp fuse in plug (only applicable to UK) has not blown. Qualified electrician or engineer to check and replace blown fuses.
	Best Management Practices not being adhered to by staff	Training of staff and implementation of best management practices in the kitchen.
	GreaseShield Daily Maintenance not being adhered to by staff	Training of staff and implementation of GreaseShield Daily Maintenance in the kitchen.
	Incorrect Installation	Please ensure Flexiplumb Running Trap 2"/50mm is fitted on the outlet pipe to prevent foul smells from sewer. Please also survey the kitchen to ensure there is no other drains/pipes that are uncapped/untrapped allowing foul smells from sewers, if so blank off or fitting water traps to prevent foul smells entering the kitchen.
	Mechanical or Electrical Part Failure	It is recommended you contact EPAS or Supplier to organise a service engineer. Please refer to exploded parts diagrams to diagnose mechanical problems. Please refer to wiring diagram to diagnose electrical problems.

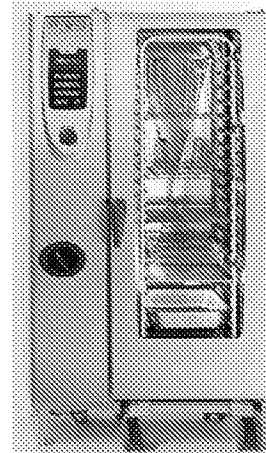
Problem	Cause	Solution
Excessive Water observed in the FOG Collection Container	PLC	GreaseShield Standard operating time is 07:30 hrs to 02:00 hrs 7 days a week. It is recommended you contact EPAS or Supplier to organise a service engineer to reduce and tailor to your specific requirements to suit your premises.
	FOG Removal Drum	A film may build up on the FOG roller resulting in an excessive amount of water being lifted into the FOG Container. An FOG Removal Drum Service Kit can be used to clean and service the drum.
Problem	Cause	Solution
Water Overflows/ Leaks	No Power	Ensure IP56 electrical socket is receiving power and is not tripped. If tripped get a qualified electrician to examine cause of trip.
		Ensure GreaseShield is plugged in to an IP56 Socket receiving power.
		Please check and ensure 5amp fuse in Motor Mounting Plate, 5amp fuse in plug (only applicable to UK) has not blown. Qualified electrician or engineer to check and replace blown fuses.
	Incorrect Installation	Please refer to Section 5 Installation to ensure GreaseShield has been installed correctly, if not it will be required to be installed correctly.
	Solids Removal	Training of staff and implementation of GreaseShield Daily Maintenance in the kitchen.
		Training of staff and implementation of best management practices in the kitchen.
	Flow Rate Exceeded	Please ensure the GreaseShield unit has been sized and selected correctly to handle the incoming flows.
	Reduced/blocked/collapsed drains	Drain Cleaning/Jetting/repair company required to clean or repair drains.
	Mechanical or Electrical Part Failure	It is recommended you contact EPAS or Supplier to organise a service engineer. Please refer to exploded parts diagrams to diagnose mechanical problems. Please refer to wiring diagram to diagnose electrical problems.

Section 11: GreaseShield-Low Level Overview

Typical Appliances Installed to GreaseShield LL Series:



Combi Ovens



5, 10 and 20 Grid Combi Ovens

Rational:

The GS -XX-LL, units have been designed to work with 20 grid ovens, 10 grid ovens and in general with ovens that have a very low level outlet to drain. Accurate and thoughtful consideration has to be given to the kitchen drain outlet height prior to fitting to ensure a reasonable fall on the pipe runs can be achieved.

Operating Principal:

In addition to the NORMAL inlet, The GS-LL incorporates a Low level tank to which the outlet from a 20 grid floor level oven is connected. The low level tank includes a bypass outlet to the normal drain as a backup overflow system should the GS-LL malfunction.

The tank also includes a final baffle so that should bypass occur grease will not be passed to drain.

The GS-LL also includes a normal level inlet which facilitates a 10 grid oven to be connected as normal to the main tank within the GS.

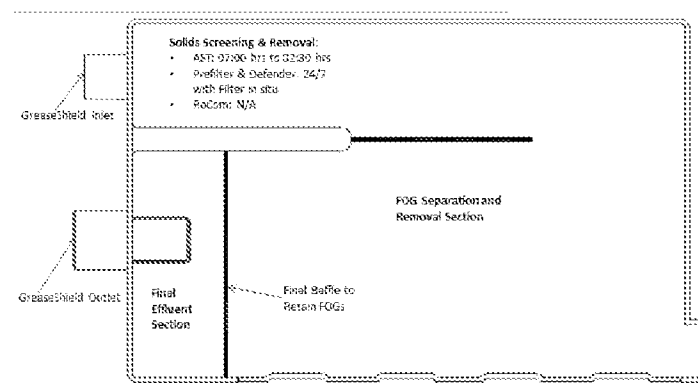
Thus a 20 grid and a 10 grid oven can be accommodated in the one GS –XX-GS-LL unit.

In Place of a 10 grid oven on the normal inlet a small sink may be plumbed if necessary with due regard to the flow sizing calculation of the sink dealt with later in this manual.

GreaseShield Functions

FOG Separation Section:

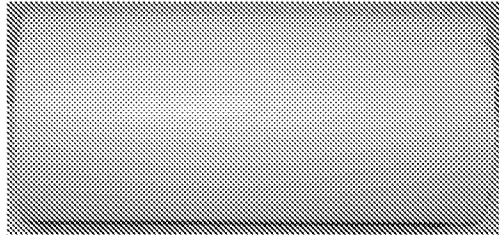
Effluent from FOG contamination points in commercial kitchens enters the GreaseShield usually in a temperature range from 40 Celsius to 85 Celsius. A number of co-operating Baffles and a Reverse Flow Direction together with the difference in specific gravities of FOGs and water assist in retaining FOGs in the FOG Separation Section for removal and allows treated effluent flow under the final baffle to the final effluent section.



The effluent is also magnetically treated to help prevent the build-up of scaling of pipework by calcium and metal deposits. The passing indigenous bacteria that get magnetically affected create a Bio remediation effect also helping to reduce slime build up in the pipework.

FOG Removal

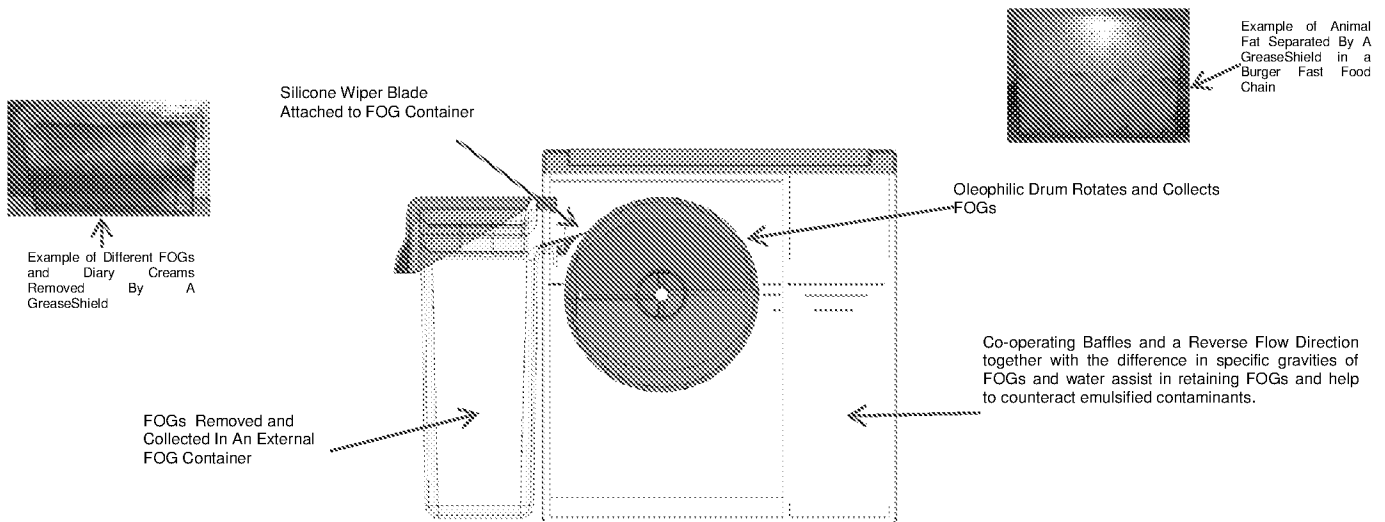
The GreaseShield is pro-active taking advantage of the waste thermal energy present in effluent by operating the FOG Removal system as standard from 07:00 hrs to 02:30 hrs (This can be tailored to specific site requirements) when the FOGs are liquid eliminating the need for troublesome and expensive to run heating elements.



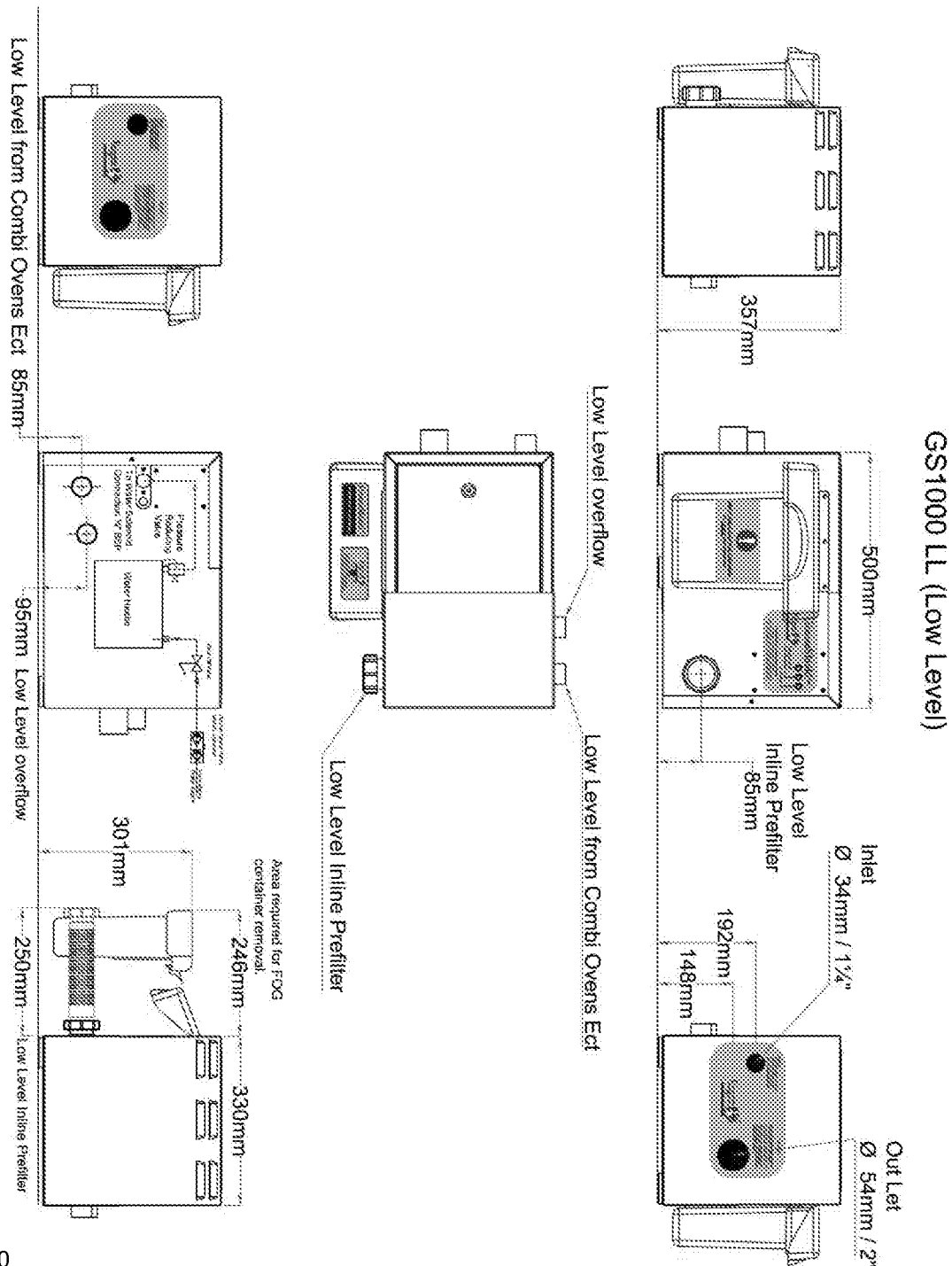
The FOGs are retained within the GreaseShield where a large oleophilic (attracts FOGs) and hydrophobic (repels water) drum in contact with over 50% of the tanks area rotates and submerges itself in the effluent picking up the FOGs.



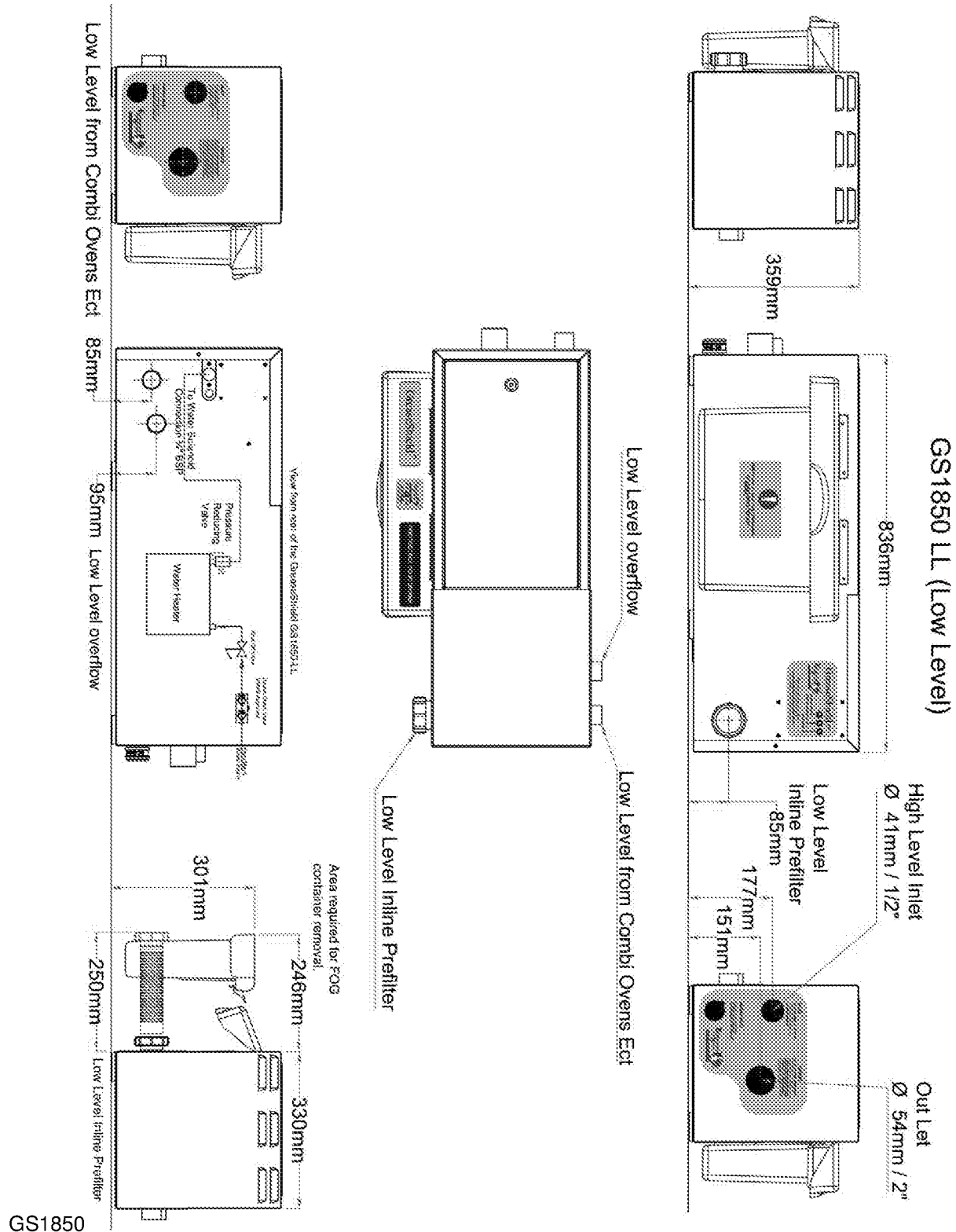
As the large oleophilic and hydrophobic drum rotates out of the effluent with the FOGs it meets a wiper blade attached to a FOG Container where the FOGs are scraped off and recovered.



Section 12: GreaseShield Low Level Drawings & Specifications

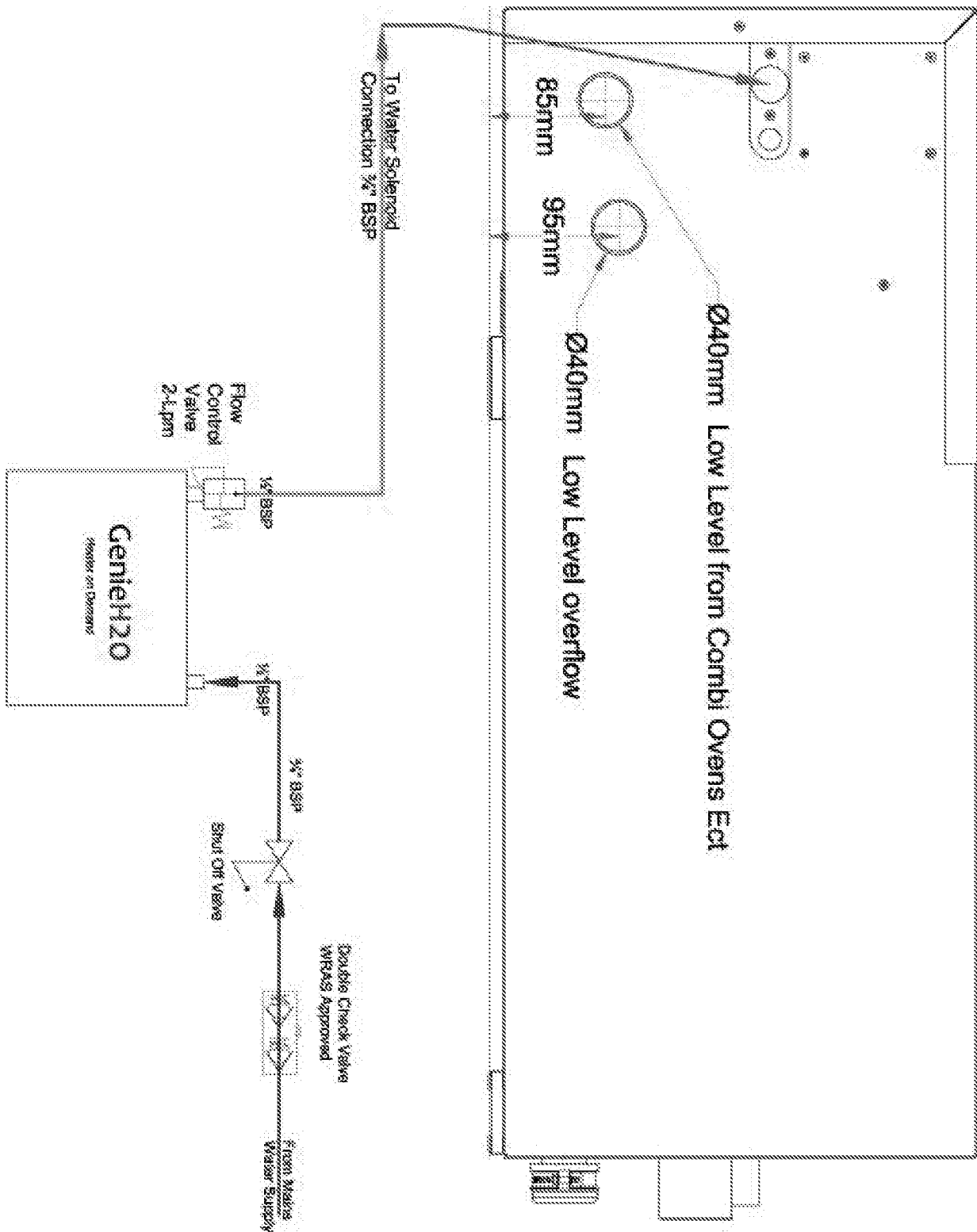


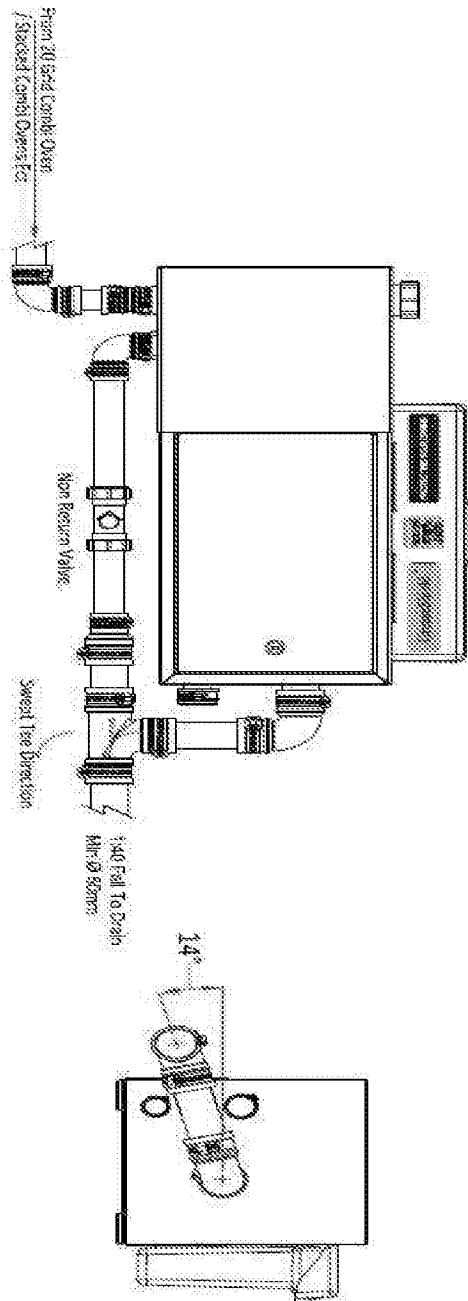
GS1000





View from rear of the GreaseShield GS.XXXX-LL





GreaseShield 1000 –LL Specifications

GreaseShield 1000 -LL			
Description	GS1000-LL	-PF(PreFilter)	-F(Defender)
Material External Tank	Brushed Finish Stainless Steel 304 Tank		
Material Internal Tank	Chemical Resistant Polypropylene Tank		
Weights			
Weight (empty) Kilograms	15.22	19.38	25.88
Weight (full) Kilograms	24.22	28.46	34.88
Flow Rates Main Tank			
Flow Rate(Average) litres per sec):	0.95		
Flow Rate (Max) (litres per sec):	1.1		
Flow Rate from Genie H2o(Litres/min)max	2		
Anti-flood Safe Guard:	Sensor Controlled		
Low Level Tank			
Capacity	4.5 Litres		
Pump Max Capacity	9.0 litres/Min		
Max Flow & Tank Baffle	Flow rate may exceed pump stated capacity on oven clean down cycles without passing grease due to internal baffle(25.0litres/min for short periods).		
FOG Removal			
FOG Removal Rate (litres per hour):	2		
FOG Removal Means:	The GreaseShield is pro-active taking advantage of the waste thermal energy present in effluent by operating the FOG Removal system as standard from 07:00 hrs to 02:30 hrs. A Slowly Rotating oleophilic Drum attracts FOGs and recovers into a FOG Storage Container.		
FOG Storage Capacity (Litres):	3		
FOG Storage Container Graduated:	Yes		
Solids Removal			
Solids(Low Level Tank)	Inline Filter		
FilterShield(Main tank)	Optional Extra	N/A	Yes
PreFilter⊗Main Tank)	Optional Extra	Yes	N/A
Solids Storage Capacity (litres):	N/A	7	15
Automated Cleaning			
Final Effluent Recirculation:	N/A.		
Staff Daily Maintenance:	No Requirement For Staff To Access Internal Of The GreaseShield™. Empty & Clean FOG & Solids Storage Containers& Low Level Filter A Minimum Of Once Per Day		
Operational and Installation Requirements			
PLC Control:	Control Smart Programmable Relay For total Control And Additional Flexibility To Be Programmed For Specific Customer Requirements (Opening Hours And Levels Of Contamination)		
Electrical Power (Watts):	22.5		
Electrical Socket:	IP 56 Socket installed to Local Electrical codes and bylaws		
Motor Safety Protection:	Automatic thermal safety protection cut out and reset on all motors		

¾" BSP Hot Water Supply Connection	Yes for water Conditioning of Unit
Inlet/s & Outlet Connectors:	Flexiplumb EPDM Universal Connectors provided
Dimensions & Operational Requirements:	Please refer to Dimensional & Operational Requirements Drawings
Installation & Sizing Requirements:	Please refer to Installation and Operations Manual

GreaseShield 1850 –LL Specifications

GreaseShield 1850 -LL			
Description	GS1850-LL	-PF(PreFilter)	-F(Defender)
Material External Tank	Brushed Finish Stainless Steel 304 Tank		
Material Internal Tank	Chemical Resistant Polypropylene Tank		
Weights			
Weight (empty) Kilograms	24.50	28.49	35.84
Weight (full) Kilograms	44.67	48.89	56.22
Flow Rates Main Tank			
Flow Rate(Average) litres per sec):	1.85		
Flow Rate (Max) (litres per sec):	2.29		
Flow Rate from Genie H2o(Litres/min)max	2		
Anti-flood Safe Guard:	N/A		
Low Level Tank			
Capacity	4.5 Litres		
Pump Max Capacity	9.0 litres/Min		
Max Flow & Tank Baffle	Flow rate may exceed pump stated capacity on oven clean down cycles without passing grease due to internal baffle(25.0litres/min for short periods).		
FOG Removal			
FOG Removal Rate (litres per hour):	2		
FOG Removal Means:	The GreaseShield is pro-active taking advantage of the waste thermal energy present in effluent by operating the FOG Removal system as standard from 07:00 hrs to 02:30 hrs. A Slowly Rotating oleophilic Drum attracts FOGs and recovers into a FOG Storage Container.		
FOG Storage Capacity (Litres):	6		
FOG Storage Container Graduated:	Yes		

Solids Removal			
Solids(Low Level Tank)	Inline Filter		
FilterShield(Main tank)	Optional Extra	N/A	Yes
PreFilter®Main Tank)	Optional Extra	Yes	N/A
Solids Storage Capacity (litres):	N/A	7	15
Automated Cleaning			
Final Effluent Recirculation:	YES		
Staff Daily Maintenance:	No Requirement For Staff To Access Internal Of The GreaseShield™. Empty & Clean FOG & Solids Storage Containers& Low Level Filter A Minimum Of Once Per Day		
Operational and Installation Requirements			
PLC Control:	Control Smart Programmable Relay For total Control And Additional Flexibility To Be Programmed For Specific Customer Requirements (Opening Hours And Levels Of Contamination)		
Electrical Power (Watts):	15.1		
Electrical Socket:	IP 56 Socket installed to Local Electrical codes and bylaws		
Motor Safety Protection:	Automatic thermal safety protection cut out and reset on all motors		
¾" BSP Hot Water Supply Connection	Yes for water Conditioning of Unit		
Inlet/s & Outlet Connectors:	Flexiplumb EPDM Universal Connectors provided		
Dimensions & Operational Requirements:	Please refer to Dimensional & Operational Requirements Drawings		
Installation & Sizing Requirements:	Please refer to Installation and Operations Manual		

Section 13: Low Level Installation

Pre Installation Requirements :General

Local codes and bylaws: GreaseShield™ shall be selected in accordance with applicable plumbing, electrical and building codes, by-laws, and municipal ordinances.

Sizing and Selection Calculation: Before supplying & installing a GreaseShield™ a calculation is required to ensure correct sizing & selection for a trouble free installation (Please refer to Appendix 3).

Location of GreaseShield™: The GreaseShield™ to be located as close as possible to the FOG contamination ingress point/s and should not be further than 6 metres / 22 feet away. The GreaseShield™ is not intended for use outside of FSEs and may require sufficient external housing to protect it from the elements. The GreaseShield™ is not intended to be buried underground or support any loads.

Electrical: An IP56 Socket with an operating Voltage of 240 Volts AC 10 Amp Plug is required to connect the GreaseShield™ electrical plug into.

Water Supply: A ¾" BSP connection complete with isolation from a water supply to be located within 1 metre of the GreaseShield™ location. The water supply is required as the inlet source to the Heater On Demand (HOD) unit which provides a conditioning water supply at approximately 50 degrees C . The water pressure should not exceed 17.5 psi / 1.2 Bar and be not less than 8.8 psi/ 0.6 Bar. The pressure is controlled to the inlet of the HOD by a pressure regulating valve set to 1 bar. Water hardness to be less than 7° KH and Chlorides being less than 30 ppm.

Dimensions & Operational Requirements: Please refer to Section 4 for GreaseShield™ drawings for Dimensions & Daily Operational Requirements:

Inlet Pipe work: The Installer shall be responsible for the design, supply, installation, testing and commissioning of the inlet pipe work. The GreaseShield™ is provided with Flexiplumb EPDM hub-less couplings to allow various materials with different wall thickness to be connected to the inlet/s and outlet pipe work.

Outlet Pipe work: The Installer shall be responsible for the design, supply, installation, testing and commissioning of the outlet pipe work. The GreaseShield™ is provided with Flexiplumb EPDM hub-less couplings to allow various materials with different wall thickness to be connected to the inlet/s and outlet pipe work.

N.B. A drain size of >50mm/2" is required to accept the 50mm/2" outlet piping of the GreaseShield™.

Handling Requirements: Adhere to all local & national Manual Handling Regulations to prevent injuries with safe lifting.

Selection of Installer: Where the service provider selected by the FSEs to install, commission & provide staff training on the GreaseShield™ is not the manufacturer of the equipment, the FSE should ensure that the service provider has been authorised by the manufacturer or deemed competent to do so.

Risk Assessments: A Risk assessment should be carried out by the installer prior to the installation to: Identify the hazards, Decide who might be harmed and how, Evaluate the risks and decide on precaution, Record your findings and implement them and Review your assessment and update if necessary.

Method Statement: A Method Statement (safe system of work) should be completed by the installer prior to the installation detailing the way a work task is to be undertaken, Identify the hazards, Step by step guide on how to do the job safely, Control measures to be introduced to ensure the safety of anyone who is affected by the task.

Insurances: It is highly recommended the installer has adequate coverage for Public & Employers Liability prior to the installation.

GreaseShield 1850 Series Inlet Pipe work 40mm/1.5": The 40mm/1.5" Inlet is provided with a 40mm/1.5" Flexiplumb Vortex Controller. The inlet piping to the 40mm/1.5" Inlet must not be greater than 40mm/1.5". Non-return valves or a Tundish to be fitted to prevent back flooding. The inlet piping must have a fall greater than 1in 40 into the GreaseShield™. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

GreaseShield 1850 Series Inlet Pipe work 32mm/1.25": The 32mm/1.25" Inlet is provided with a 32mm/1.25" Flexiplumb 90 degree bend. The inlet piping to the 32mm/1.25" Inlet must not be greater than 32mm/1.25". Non-return valves or a Tundish to be fitted to prevent back flooding. Ovens and dishwashers to be plumbed into this inlet only when the GreaseShield has the AST function to screen and dewater solids. The inlet piping must have a fall greater than 1in 40 into the GreaseShield™. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

GreaseShield 1000 Series Inlet Pipe work 32mm/1.25": The 32mm/1.25" Inlet is provided with a 32mm/1.25" Flexiplumb 90 degree bend. The inlet piping to the 32mm/1.25" Inlet must not be greater than 32mm/1.25". Non-return valves or a Tundish to be fitted to prevent back flooding. The inlet piping must have a fall greater than 1in 40 into the GreaseShield™. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

Outlet Pipe work 50mm/2": The 50mm/2" Outlet is provided with a 50mm/2" Flexiplumb 90 degree bend and 50mm/2" Flexiplumb Running Trap. The Outlet piping from the 50mm/2" Outlet must not be reduced at any time. The outlet piping must have a fall greater than 1in 40 from the GreaseShield™. 50mm/2" Flexiplumb Running Trap to be fitted on outlet pipe to prevent smells from drains. 50mm/2" Flexiplumb Sampling Points can also be additionally purchased to fit onto the Outlet Pipe Work. Straps or clips for supporting the inlet piping should be fixed about every 510mm (20"). Check for any leaks & fix.

Hot Water Connection: A ¾"BSP water intake hose has been provided - connect to the ¾"BSP fitting (solenoid valve) to the rear of the GreaseShield™ and then to the HOD(Heater On demand)unit . Please see procedure below to set up the HOD unit with the GS -LL

Electrical Connection: Connect the GreaseShield™ electrical socket into the IP56 Socket provided.

Commissioning of Installation: Ensure GreaseShield™ is removing FOGs. Ensure GreaseShield™ is removing Solids (Excludes RoCom). Ensure GreaseShield™ can handle the max operational flow from connected appliances. Ensure the GreaseShield™ has been installed correctly.

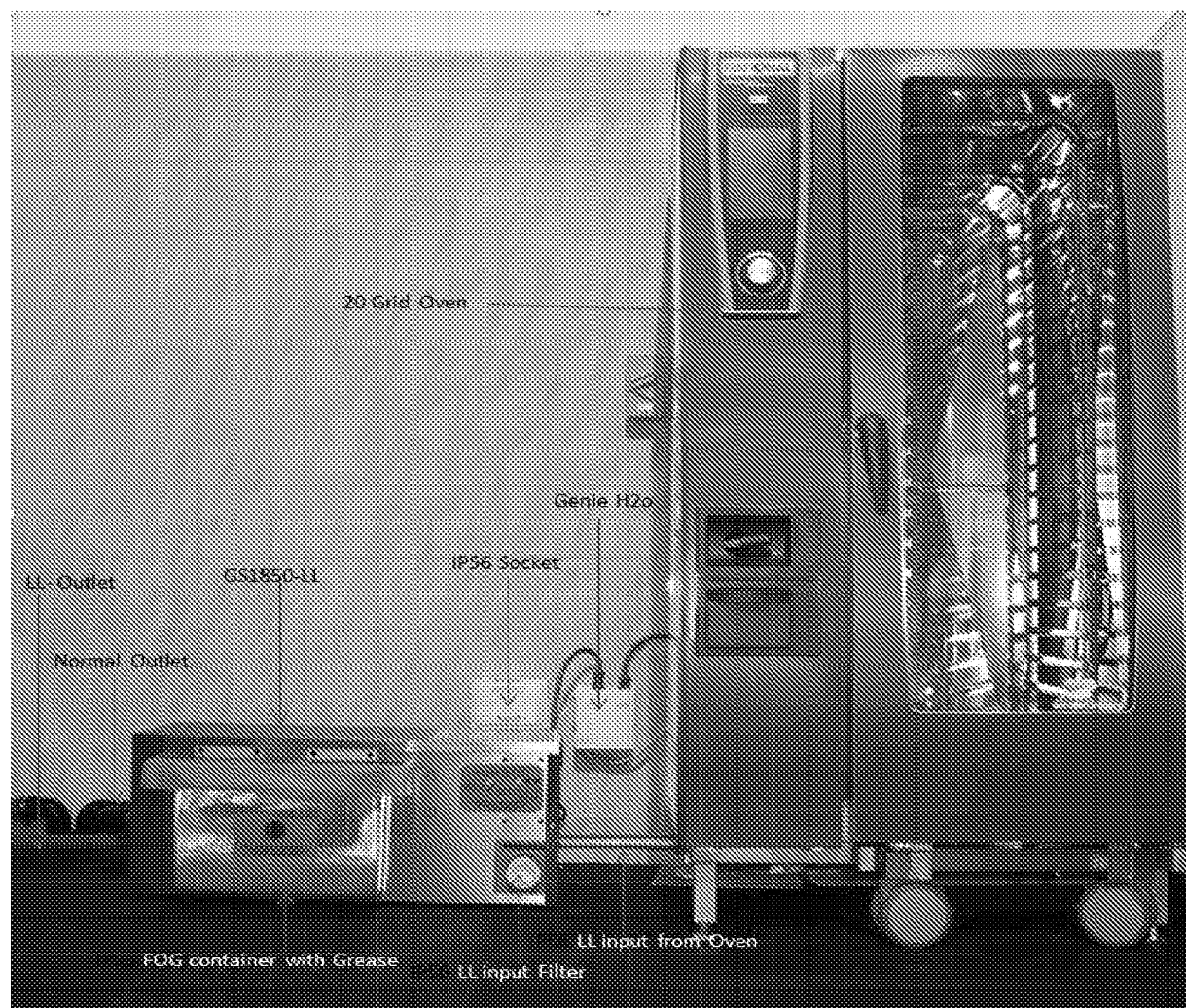
Installation Steps: Specific to Low Level Units

The GreaseShield Low Level units come complete with a "Genie H2o **Heater On Demand (HOD)**" heater which is plumbed into the **COLD** water supply and preheats the intake water to condition the Low level tank within the GS-LL prior to the days cooking.

It also provides a top up periodically to the tank to ensure correct operation of the GS.

The heater on demand system MUST have an inlet pressure of 1 bar (+0.2). A pressure/flow regulator is included in the kit which must be used on the OUTLET (RED) side of the HOD module.

The Heater On Demand Unit (HOD) must be secured to a suitable surface near the GS-LL unit, clear of any other pipes from other kitchen equipment.



GS –LL Installation:

Connect the GS-LL **Normal** level Inlet to a 10 Grid Oven if required. Otherwise leave the Blank on the Normal GS Inlet connection.

Connect the 20 Grid ovens **Low Level Outlet** to the **GS-LL Low Level Inlet**.

Connect the **GS low level Outlet** to the **Drain** ensuring an adequate fall on the pipe.

Connect The GS-LL power cord to an IP56 Socket but do NOT switch on at this point.

Genie H2o Heater on Demand (HOD) Installation:

1. Switch **OFF** the Water Supply.
2. Electrically connect the HOD unit but **DO NOT** switch **ON**
3. Connect the supplied HOD INLET (**BLUE**) to the COLD water supply using a suitable 1/2" x 3/4" flexible pipe approved to local standards.
4. Connect the OUTPUT (**RED**) of the HOD Unit to the Water Solenoid INPUT of the GS
5. (GreaseShield Low Level Unit) using a suitable 1/2" x 3/4" flexible pipe approved to local standards..
6. Switch **ON** the water supply to the HOD and then Switch ON the GS-LL.
7. Allow the water to flow through the HOD for 30 seconds to prime the system
8. Switch on the HOD unit at the main socket.
9. Undo the access cover on the GS and press and hold button "B" for 10 seconds. This will open the water solenoid for 5 minutes and allow water to enter the LL tank. An indicator led on the Genie H2o HOD should illuminate to indicate that the heater is functioning. This in course will then be pumped up to the main tank .Repeat as necessary to fill the Main Tank of the GS.
10. Check the water temperature entering the main tank. It should be warm to the touch.
11. When water flows over the outlet weir of the main tank outlet the unit is charged and ready for use.
12. Replace the end Cover.

Daily Cycle:

07:00 Unit switches **ON** and Conditions the GS with warm water for daily use. This includes the warm water being supplied the Low level tank, which in turn will charge the main tank.

The conditioning phase lasts approximately 10 minutes.

Roller will operate continuously during daily cycle.

Recirculation:

GS1850-LL Only:

Recirculation will operate 10 seconds on, 90 seconds off during roller operation.

GS1000-LL Only:

Recirculation is achieved by the flow from the LL tank to the main tank.

Low Level Pump:

The Low Level (Scavenge Pump) will operate as necessary to pump the incoming effluent from the Low Level tank to the main tank, controlled by the level sensors.

It will also operate every 15 minutes to ensure the low level tank remains at or below low level, limiting grease build up in the low level tank.

The **HOD** will supply the **GS** unit with warm water for 2 minutes every 30 minutes to ensure the unit levels remain correct.

02:30:

The unit switches to standby.

Notes:

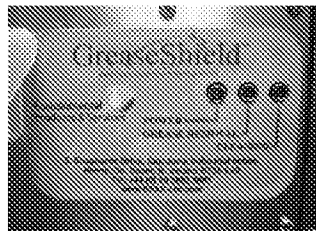
- 1) **Normal Level Sensor:** During normal cooking operation this sensor activates as necessary to keep the LL Tank empty.
- 2) **High Level Sensor:** During Oven "Clean down" cycles, the sensor may activate for a short period. An audible warning is incorporated to signal that this sensor is active.
During "Clean Down" of the ovens this sensor may activate for a period as the wash effluent enters the LL tank, but on completion of the wash cycle the audible warning should cancel. Thus if the "Clean Down" has completed and the audible warning remains on after a few minutes, this could indicate a malfunction of the LL Pump and requires further investigation.
- 3) The Genie H2o Heater ON Demand (HOD) device should NOT be switched on unless it is connected to the water supply.

Front Panel Indicators (left to right)

Power: Indicates that power is applied to the unit.

Grease Removal: Indicates that Grease Removal is Active.

Cleaning - Indicates the Low Level Pump is Active.



Installation GS Low Level Water Connection.

Rational:

THE GREASESHIELD LOW LEVEL UNIT MUST BE SUPPLIED WITH WARM WATER AT A MINIMUM OF 30°C TO CONDITION THE UNIT.

Method1

In normal circumstances the GS1850CRM-4 Unit is conditioned with warm water by the Genie H2o Heater on Demand system supplied as standard with the unit..

This Genie H2o provides a warm water supply to condition the CRM - 4 unit and maintain the highest level of efficiency of the unit in normal service. This includes topping up of the water in the unit periodically to maintain water levels to the correct height, regardless of the quantity fat removed by the unit. See Fig1

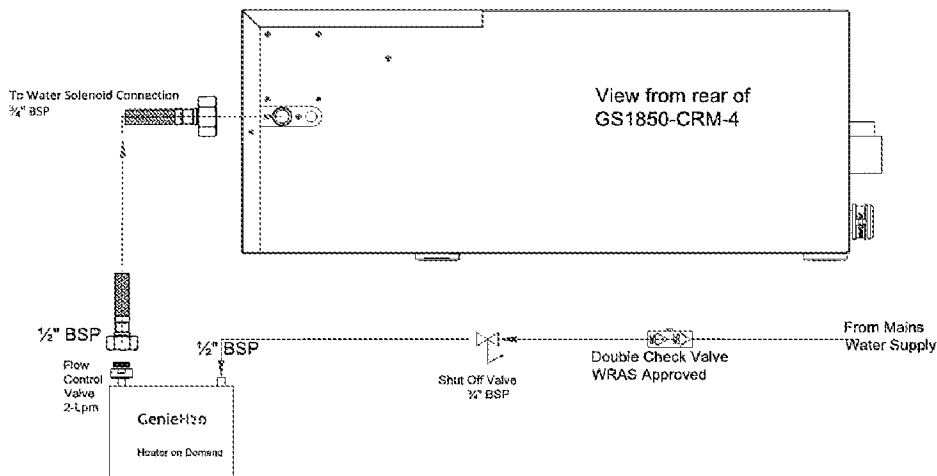


Fig 1

Method 2

In some situations however it may not be possible to use the Genie H2o to condition the GreaseShield Low Level units and therefore an alternative connection method is provided to maintain the integrity of the system. In this case the Genie water heater is not connected but the flow controller must still be used to maintain the same flow (2 LPM) of warm water to the water solenoid of the unit.

A 3/4" BSP water intake hose has been provided complete with flow controller.

Connect to the 3/4" BSP hose fitting marked (solenoid valve) to the rear of the GreaseShield™ and then to the other 3/4" BSP fitting on the hot water supply. Switch on hot water supply. Note: the solenoid valve will not allow water into the GreaseShield™ until the unit is electrically connected. Check for any leaks & fix. See Fig 2

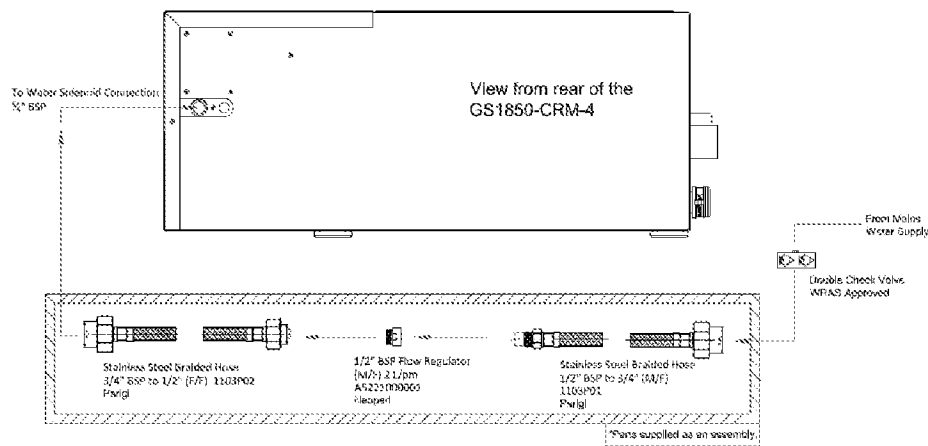


Fig 2

Electrical Connection: Connect the GreaseShield™ electrical socket into the IP56 or equivalent Socket .

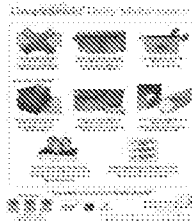
The GreaseShield should be left connected and switched on and independent of the oven it is connected to. The PLC within the GS has its own clock which typically is set from 0700AM – 0230AM the following day, 7 days a week. The working time can be altered from the front display of the GreaseShield PLC to reflect the Oven operating times allowing a period after the oven shuts down for the day, to collect any residual grease.

Commissioning of Installation: Ensure GreaseShield™ is removing FOG's and can handle the max operational flow from connected appliances. Ensure the GreaseShield™ has been installed correctly.

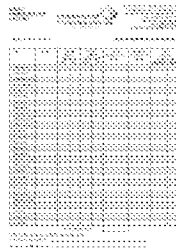
Section 14: GreaseShield Daily Operations (Low Level Models)

General: If there are any dirt/debris/liquids on or around the GreaseShield™ please remove and clean on a daily basis. To obtain the maximum removal efficiency from a GreaseShield™ facility need to establish and adhere to a regular schedule of cleaning and maintenance. Ensure that maintenance staff or external contractors follow the operating and maintenance (cleaning) instructions provided. Frequency of maintenance depends not only on the amount of FOG and Solids generated but on the facility's implementation of Best Management Practices to reduce the FOG and Solids discharged into the sanitary sewer system. Signs should be posted in the kitchen, especially over the sinks & major FOG & solids contamination ingress points, informing staff what can and what cannot be poured down the drains.

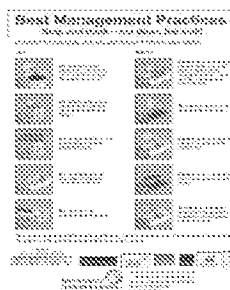
GreaseShield™ Daily Maintenance: Posters are available from EPAS to show the demonstrating the required GreaseShield™ Daily Maintenance to assist staff. Alternatively the GreaseShield Daily Maintenance Poster can be downloaded from: www.EPAS-LTD.com. Please also refer to EPAS YouTube channel to view the video on GreaseShield™ Daily Maintenance requirements: <http://www.youtube.com/EPASLtd>.



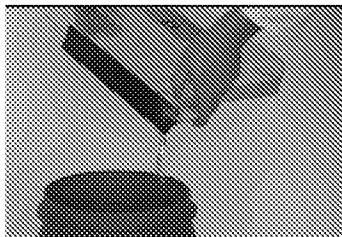
GreaseShield™ Daily Maintenance Record: Duplicate Log Books are available from EPAS to record the amount of FOGs and Solids removed and Daily Maintenance tasks are being completed by staff. Alternatively the GreaseShield™ Daily Maintenance Record can be downloaded from: www.EPAS-LTD.com.



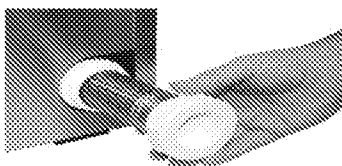
Best Management Practices: Posters are available from EPAS to demonstrate the required Best Management Practices to assist staff in implementing an effective Grease Management Programme. Alternatively the Best Management Practices Poster can be downloaded from: www.EPAS-LTD.com.



FOG Container: Empty & Clean FOG Container at least once daily. Operational experience may require the FOG Container to be emptied and cleaned more than once per day depending on quantities of FOG being removed. Remove FOG Container & empty contents into a FOG Storage Container. Record the amount of FOGs removed into a Daily Maintenance Log. Clean the FOG Container with water not exceeding 60 °C, sanitise & check for wear and tear. Ensure wiper blade is clean & check for wear and tear. Re attach FOG Container correctly to GreaseShield™.



Inline Low Level Filter: Empty & Clean the Low Level Filter daily. Operational experience may require the Low Level Filter to be emptied and cleaned more than once per day depending on quantities of Solids being produced by the ovens.



**EMPTY and CLEAN Inlet Filtration
Cylinder DAILY**
 Solid waste can go for composting.
 Wash in hot soapy water.

Staff Training: To contribute to the goal of managing waste responsibly and minimizing the frequency of required cleaning and maintenance, the facility shall provide training to its employees in:

- the proper function, operation and maintenance of GreaseShield™;
- the benefits of Best Management Practices within different locations within FSEs
- the proper storage, handling, and disposal of wastes;

Disposal of intercepted substances: FOGs & other intercepted substances removed from the GreaseShield™ shall be disposed of:

- in accordance with applicable regulations and bylaws;
- by a licensed waste hauler; and
- At a licensed waste disposal facility.

Note: FOGs and Solids removed shall not be discharged into sanitary sewers, storm sewers, drainage ditches, or surface water.

Section 15: Servicing Schedule (Low Level Models)

Annual Service Requirements: EPAS recommends that the GreaseShield™ is serviced by a trained and competent service engineer at least once annually. The purchaser should also check and comply with local codes and bylaws on mandatory maintenance requirements. If the FSE does not adhere to Best Management Practices this may require additional service visits per year, but this would be based on operational experience.



Selection of Trained Servicing Engineer: Where the service provider selected by the FSEs to service the GreaseShield™ is not the manufacturer of the equipment, the FSE should ensure that the service provider has been authorised by the manufacturer or deemed competent to do so.

Service Pump: A service Pump is fitted to some models to aid service personnel to empty and clean the GreaseShield tank into a storage drum. First remove plug from the grey hose and locate hose into a Storage Drum. To operate press the Service button located at the rear of the GreaseShield which will operate after three seconds for a run time of thirty seconds. At no time is this pump to be used empty contents into the drain system. After you have finished with the Grey hose replace plug and locate back to original position.

Levels of Protection: The Company recommends that before working with / on / or inside the GreaseShield™ it should be isolated from the power supply by disconnecting its electrical plug from the IP56 socket electrical supply.

Section 16: Trouble Shooting Guide(Low Level)

Problem	Cause	Solution
No FOG being removed	No Power	Ensure IP56 electrical socket is receiving power and is not tripped. If tripped get a qualified electrician to examine cause of trip.
		Ensure GreaseShield is plugged in to an IP56 Socket receiving power.
		Please check and ensure 5amp fuse in Motor Mounting Plate, 5amp fuse in plug (only applicable to UK) has not blown. Qualified electrician or engineer to check and replace blown fuses.
	FOG Container not located correctly on GreaseShield	Please locate FOG Container correctly on the front of the GreaseShield ensuring the Wiper blade makes contact with the FOG Roller. If the wiper blade is worn please order replacement.
	PLC Timer Operating Time	GreaseShield Standard operating time is 07:30 hrs to 02:00 hrs 7 days a week with the FOG Roller operating 5 mins on/off. Please observe for 10mins to see if FOG Removal system operates.
	Mechanical or Electrical Part Failure	It is recommended you contact EPAS or Supplier to organise a service engineer. Please refer to exploded parts diagrams to diagnose mechanical problems. Please refer to wiring diagram to diagnose electrical problems.
Problem	Cause	Solution
Odour	No Power	Ensure IP56 electrical socket is receiving power and is not tripped. If tripped get a qualified electrician to examine cause of trip.
		Ensure GreaseShield is plugged in to an IP56 Socket receiving power.
		Please check and ensure 5amp fuse in Motor Mounting Plate, 5amp fuse in plug (only applicable to UK) has not blown. Qualified electrician or engineer to check and replace blown fuses.
	Best Management Practices not being adhered to by staff	Training of staff and implementation of best management practices in the kitchen.
	GreaseShield Daily Maintenance not being adhered to by staff	Training of staff and implementation of GreaseShield Daily Maintenance in the kitchen.
	Incorrect Installation	Please ensure Flexiplumb Running Trap 2"/50mm is fitted on the outlet pipe to prevent foul smells from sewer. Please also survey the kitchen to ensure there is no other drains/pipes that are uncapped/untrapped allowing foul smells from sewers, if so blank off or fitting water traps to prevent foul smells entering the kitchen.
	Mechanical or Electrical Part Failure	It is recommended you contact EPAS or Supplier to organise a service engineer. Please refer to exploded parts diagrams to diagnose mechanical problems. Please refer to wiring diagram to diagnose electrical problems.

Problem	Cause	Solution
Excessive Water observed in the FOG Collection Container	PLC	GreaseShield Standard operating time is 07:30 hrs to 02:00 hrs 7 days a week. It is recommended you contact EPAS or Supplier to organise a service engineer to reduce and tailor to your specific requirements to suit your premises.
	FOG Removal Drum	A film may build up on the FOG roller resulting in an excessive amount of water being lifted into the FOG Container. An FOG Removal Drum Service Kit can be used to clean and service the drum.
Problem	Cause	Solution
Water Overflows/ Leaks	No Power	Ensure IP56 electrical socket is receiving power and is not tripped. If tripped get a qualified electrician to examine cause of trip.
		Ensure GreaseShield is plugged in to an IP56 Socket receiving power.
		Please check and ensure 5amp fuse in Motor Mounting Plate, 5amp fuse in plug (only applicable to UK) has not blown. Qualified electrician or engineer to check and replace blown fuses.
	Incorrect Installation	Please refer to Section 5 Installation to ensure GreaseShield has been installed correctly, if not it will be required to be installed correctly.
	Solids Removal	Training of staff and implementation of GreaseShield Daily Maintenance in the kitchen.
		Training of staff and implementation of best management practices in the kitchen.
	Flow Rate Exceeded	Please ensure the GreaseShield unit has been sized and selected correctly to handle the incoming flows.
	Reduced/blocked/collapsed drains	Drain Cleaning/Jetting/repair company required to clean or repair drains.
	Mechanical or Electrical Part Failure	It is recommended you contact EPAS or Supplier to organise a service engineer. Please refer to exploded parts diagrams to diagnose mechanical problems. Please refer to wiring diagram to diagnose electrical problems.

Appendices

Appendix 1: EC Declaration of Conformity

Declaration no.: CE130722

We the undersigned:

Name of manufacturer: Environmental Products & Services Ltd
 Address: Unit 5 Shepherds Drive
 Carnbane Industrial Estate
 Newry
 County Down
 BT34 6JQ
 Country: Northern Ireland, United Kingdom

Declare under our sole responsibility that the following product:

Product description: Pro-active grease interceptor for installation within Food Serving Establishment's Kitchens, Basements or located externally in weather proof housing. The GreaseShield is used for the removal of Fats, Oils and Greases from the effluent of Grease producing appliances like Ovens, Rotisseries, Wok cooking stations, Wash Up/Pre Rinse Sinks and Dishwashers.

Model name and nos.:

GS1000	-PF(PreFilter),-F(FilterShield)
GS1000 AST	-PF(PreFilter),-F(FilterShield)
GS1000-LL	-PF(PreFilter),-F(FilterShield)
GS1850	-PF(PreFilter),-F(FilterShield)
GS1850 AST	-PF(PreFilter),-F(FilterShield)
GS1850 AST-WOK	-PF(PreFilter),-F(FilterShield)
GS1850 -ECO	-PF(PreFilter),-F(FilterShield)
GS1850-ECO-S	-PF(PreFilter),-F(FilterShield)
GS1850 AST-ECO	-PF(PreFilter),-F(FilterShield)
GS1850-LL	-PF(PreFilter),-F(FilterShield)
GS1850 AST-CRM-4	-PF(PreFilter),-F(FilterShield)
GS1850 AST-CRM-4-F	-PF(PreFilter),-F(FilterShield)
GS1850 AST-CRM-8	-PF(PreFilter),-F(FilterShield)
GS1850 AST-CRM-8-F	-PF(PreFilter),-F(FilterShield)
GSUSA-115	-PF(PreFilter),-F(FilterShield)
GSUSA-125	-PF(PreFilter),-F(FilterShield)
GSUSA-140	-PF(PreFilter),-F(FilterShield)
GSUSA-160	-PF(PreFilter),-F(FilterShield)
GSUSA-229	-PF(PreFilter),-F(FilterShield)
GSUSA-330	-PF(PreFilter),-F(FilterShield)
GSUSA-440	-PF(PreFilter),-F(FilterShield)

Note 1) All Base Models can be Suffixed With -PF or -F which denotes the Add On of a PreFilter or FilterShield to the Inlet
(eg:GS1850 AST-ECO-PF denotes an GS1850 AST ECO + PreFilter)
(eg:GS1850 AST-ECO-F denotes an GS1850 AST ECO + FilterShield)

Note 2)"AST "in Model No denotes a model with Automatic Solids Transfer system included

Note 3)All GSUSA Models are "ECO" Models with larger tank dimensions

Brand name: GreaseShield™

Is in conformity with the following relevant EU legislation:

- Machinery Directive 2006/42/EC
- EMC directive 2004/108/EC

Based on the following harmonized standards:

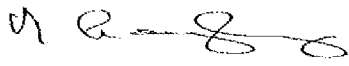
- EN 60335-1:2012 Household and similar electrical appliances - Safety
- EN 61000-6-2:2005 EMC Generic Immunity standard for industrial environments.
- EN 61000-6-4:2007 EMC Generic Emission standard for domestic environments.

And therefore complies with the essential requirements of those directives.

Additional information:

CE Mark affixed: 12th December 2013
Technical file number: CE130722
Location of technical file: Company head office Newry
Limitations of use: As specified in user instructions

Name and position of person binding the manufacturer:

Signature: 

Name: N. Loughrey
Function: Engineering Manager
Location: Newry
Date of Issue: 30th July 2013

Appendix 2: GreaseShield™ Sizing and Selection:

The sizing calculation should be to determine the maximum or peak flow rate to be discharged through the GreaseShield™ and by reference to PDI G-101, ASME A112_14_3_2000, WSA PS – 805 or CSA B481 Standards.

The peak flow rate is determined by calculating the maximum amount of wastewater that can be discharged per minute or second through the GreaseShield™. Peak flow rate shall be used as the basis for determining the minimum size of GreaseShield™ that is required. Peak flow rate shall be determined by:

- Actual drainage load from fixtures using the total discharge volume, which is based on the size, number of fixtures and expected drain down time into the GreaseShield™.
- Determining the Max flow possible through the diameter of Inlet Piping into the GreaseShield™.
- Appliance Manufacturer's literature shall be consulted for the peak discharge rate.

A one minute Drain Rate should be used as standard (Worse Case Scenario). This is only to be changed from one minute to two minutes if a FilterShield/Defender or other flow control measures/devices is fitted to extend the drain down rate.

Choosing a GreaseShield™ with a flow rating larger than the expected peak flow rate will improve removal efficiency. A GreaseShield™ that is rated for less than the expected peak flow rate should not be selected.

Project Details Are required to be completed:

Project Details

Project Name:	County:
Contact Name:	Country:
Address Line 1:	Post/Zip Code:
Address Line 2:	Telephone:
City:	Mobile:
Floor No:	E mail:
Drawing No:	Enforcement Authority:
Room No:	MEP/FCSI Consultant:
Room Description:	Catering Supplier:
Additional Comments:	

Item Details (Can be multiple items) of Contamination Point Discharging into GreaseShield to be completed:

Item Description:	Potwash Sink				
Item No:	1				
	Dimensions				
Description:	Length (mm)	Height (mm)	Width (mm)	Volume (L)	
Bowl No: 1	640	300	400	77	
Bowl No: 2	640	300	400	77	
				0	
	Total Volume (L) of Item:			154	
Adjust for Actual Drainage Load (%):	75.00%	This allows for displacement by pots and pans in sinks etc. For Dishwashers and Ovens change to 100 %			
Volume of Actual Drainage Load (L):	115				
Drainage Period (Minutes):	1.00	A one minute Drain Rate should be used as standard (Worse Case Scenario). This is only to be changed from one minute to two minutes if a FilterShield/Defender or other flow control measures/devices is fitted to extend the drain down rate.			
Flow Rate (L/M)	115.2				
Flow Rate (L/S)	1.9				

Expected Max Flow Rate = Total Max Flow Rate of Each Item:

Expected Max Flow into GreaseShield	
Flow Rate (L/M)	115.2
Flow Rate (L/S)	1.9
Flow Rate (US GPM)	30

GreaseShield Selection

GreaseShield Selection:

PDI Size Symbol	US GPM	L/M	L/S	
4	4	15	0.25	
7	7	26	0.44	PDI Size Symbol 15 or less select a GreaseShield 1000 Models
10	10	38	0.63	
15	15	57	0.95	
20	20	76	1.26	PDI Size Symbol 20 to 35 select a GreaseShield 1850 Models
25	25	95	1.58	
35	35	132	2.21	

GreaseShield Model Required: Model selection to take into account space available for Installation and Daily Operations and solids removal required.

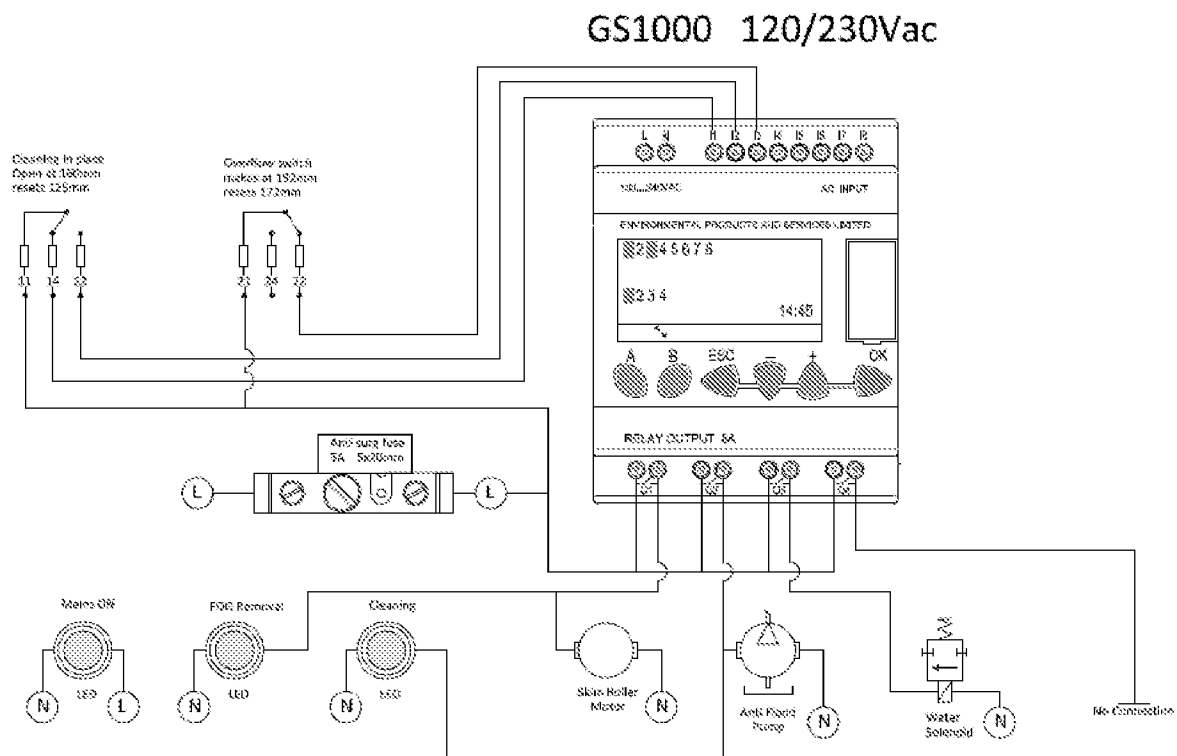
GreaseShield 1850 PreFilter

The GreaseShield is still required to be installed and maintained as per manufacturer's instructions.

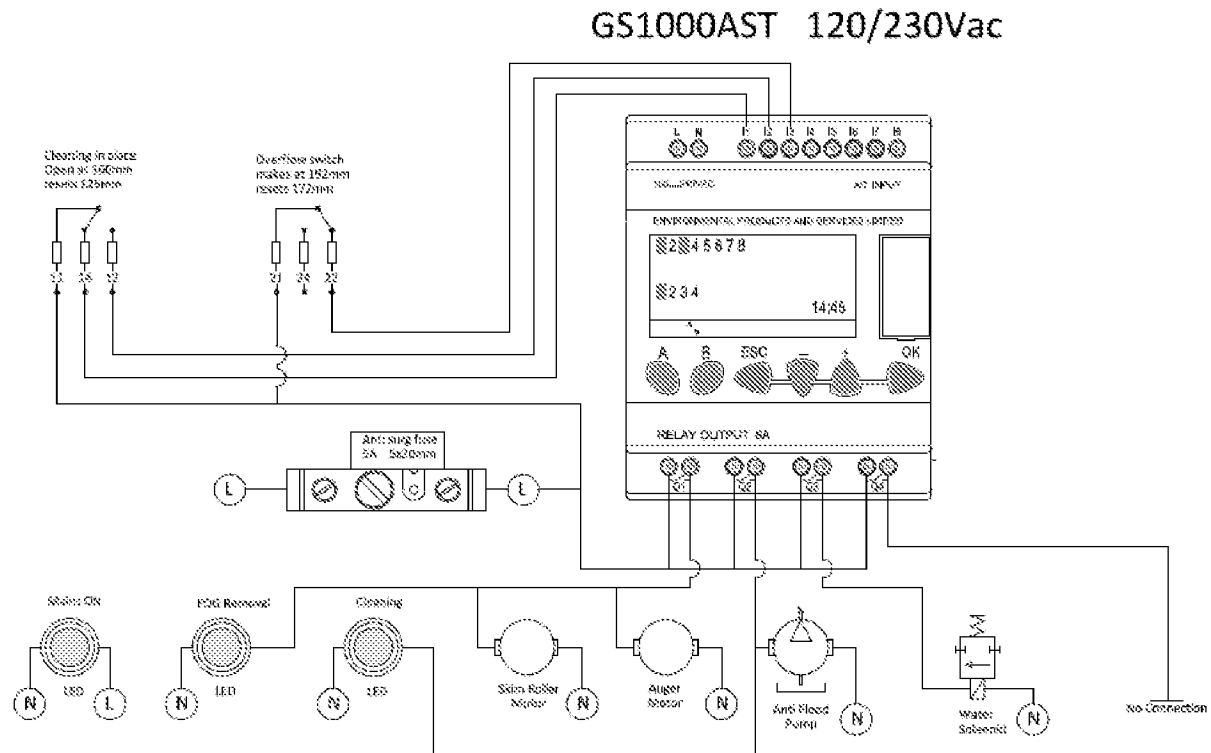
Should you require additional information on sizing or selecting the appropriate GreaseShield™ model, please do not hesitate to contact Environmental Products & Services Ltd.

Appendix 3: GreaseShield Functional Diagrams

GS1000 /PreFilter/Defender with Antiflood

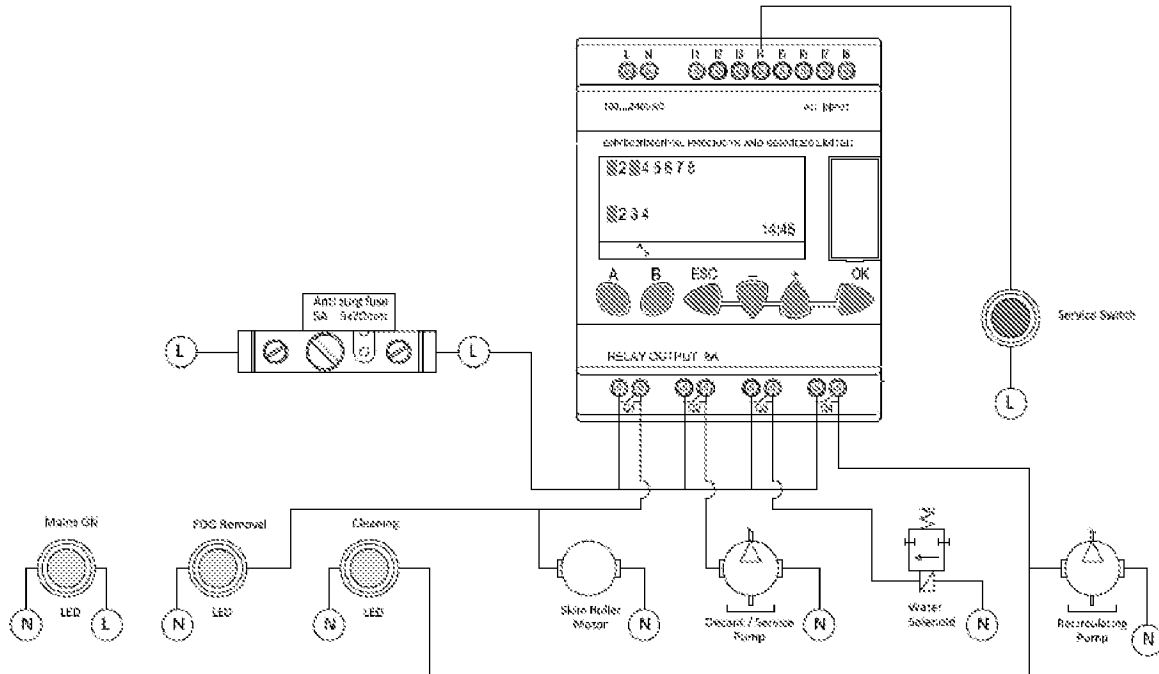


GS1000AST /PreFilter/Defender with Antiflood



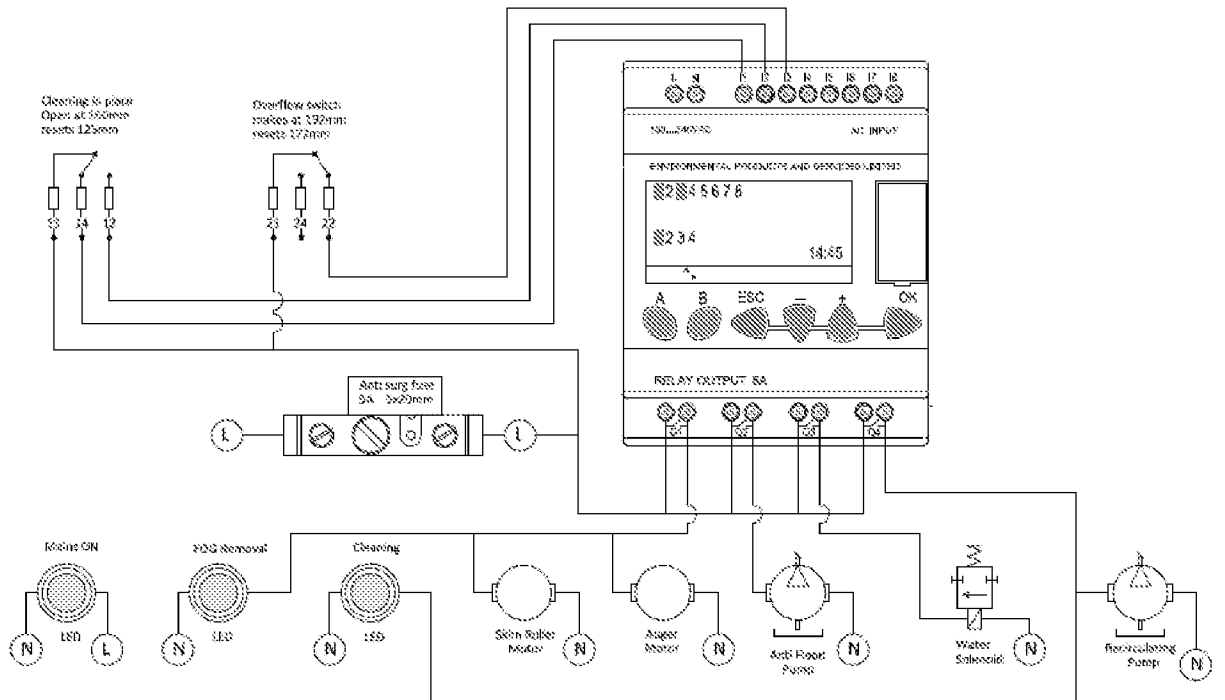
GS1850 /PreFilter/Defender

GS1850 120/230Vac



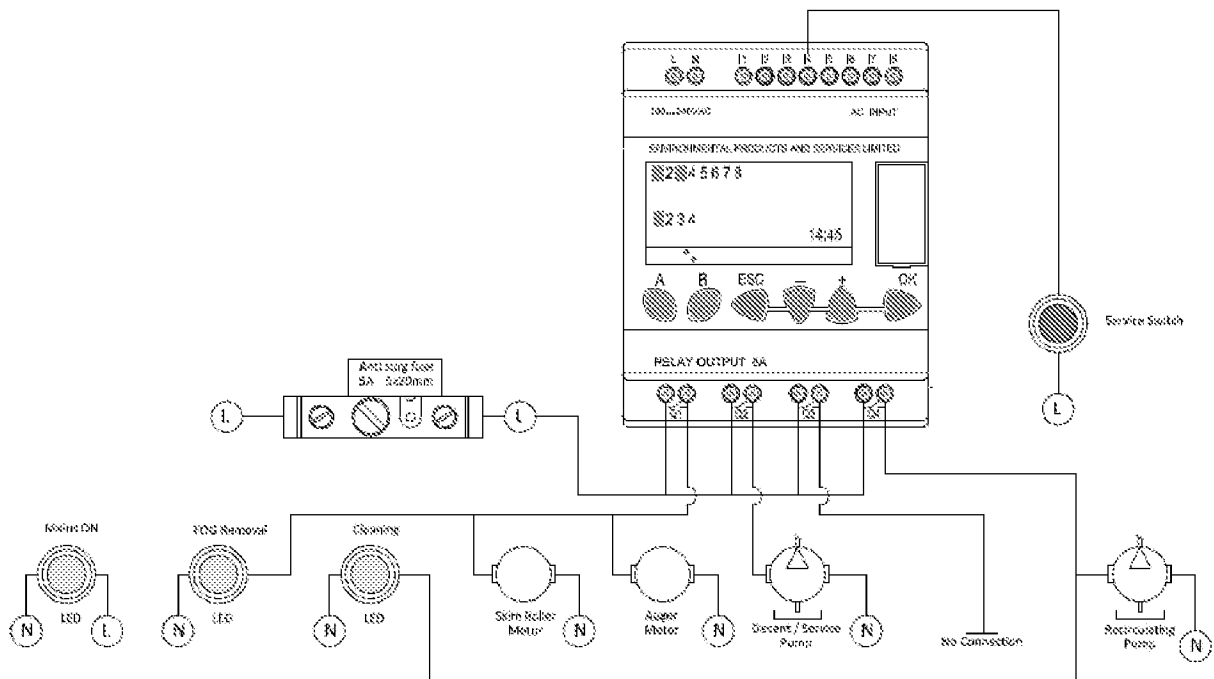
GS1850 AST/AST PreFilter/AST Defender with Antiflood

GS1850AST 120/230Vac



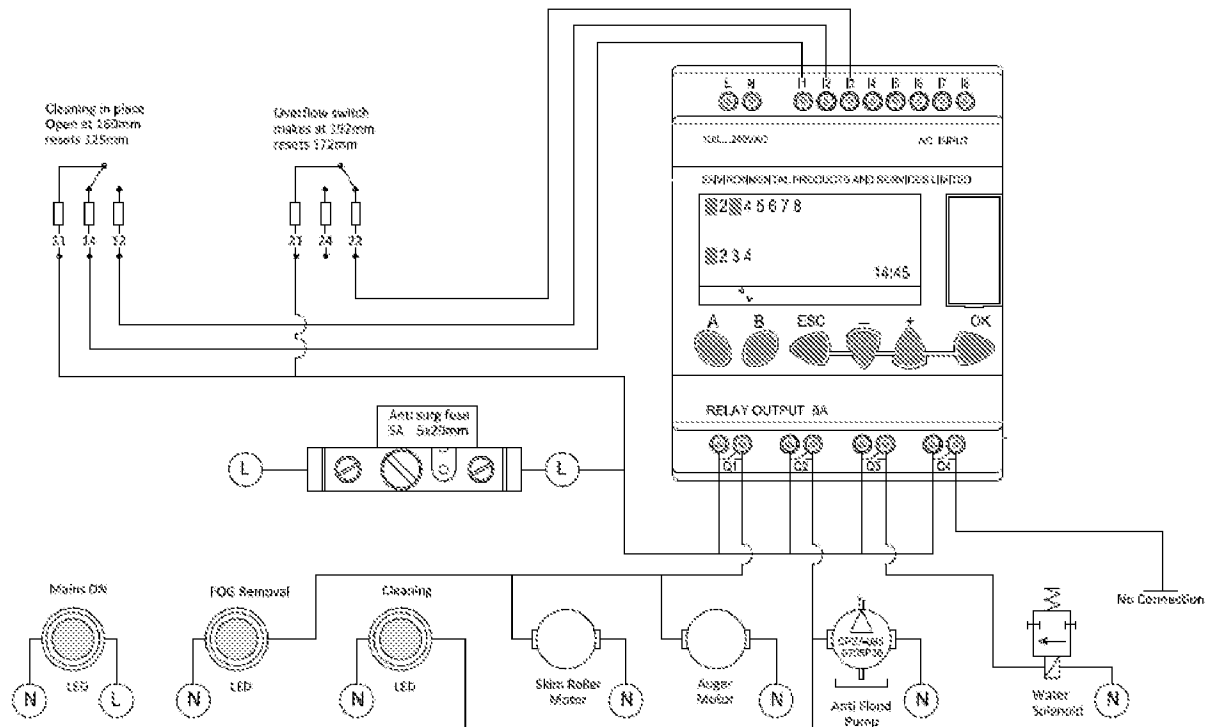
GS1850AST-ECO /PreFilter/Defender

GS1850AST-ECO 120/230Vac

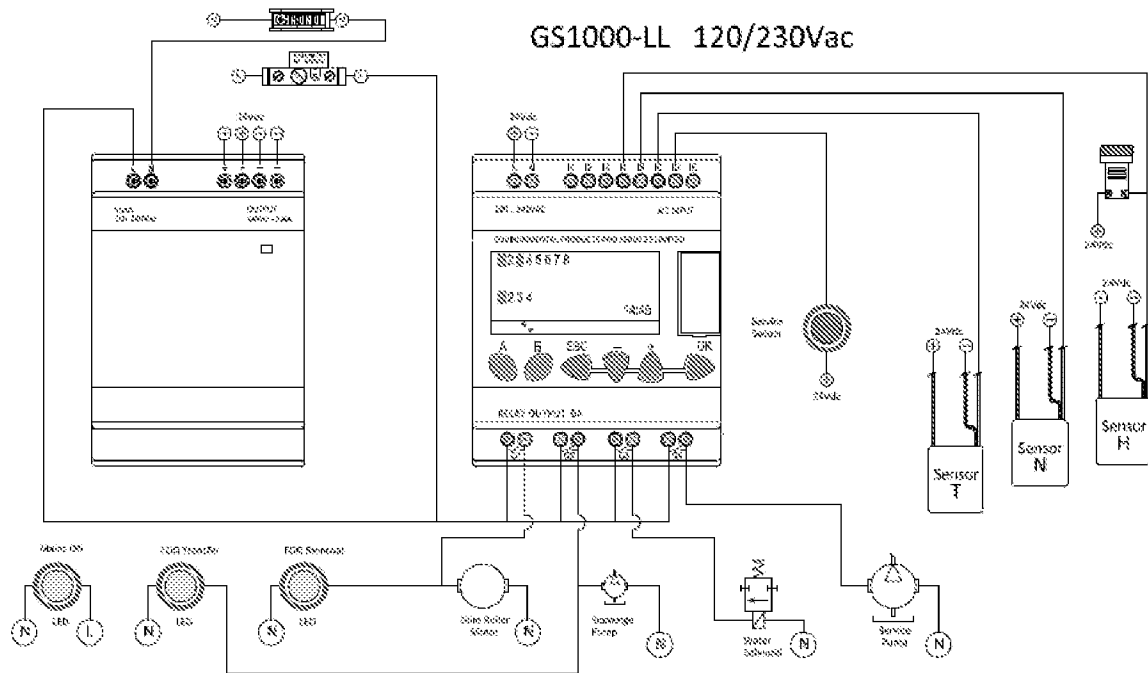


GS1850AST-WOK

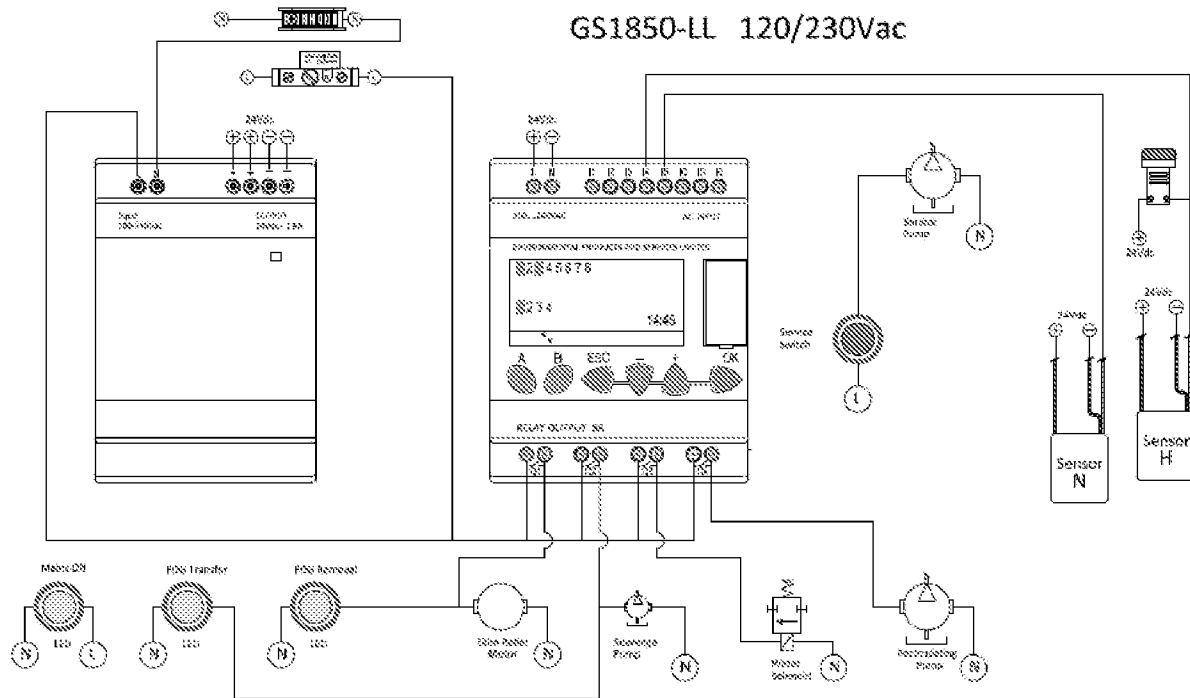
GS1850AST-WOK 120/230Vac



GS1000-LL

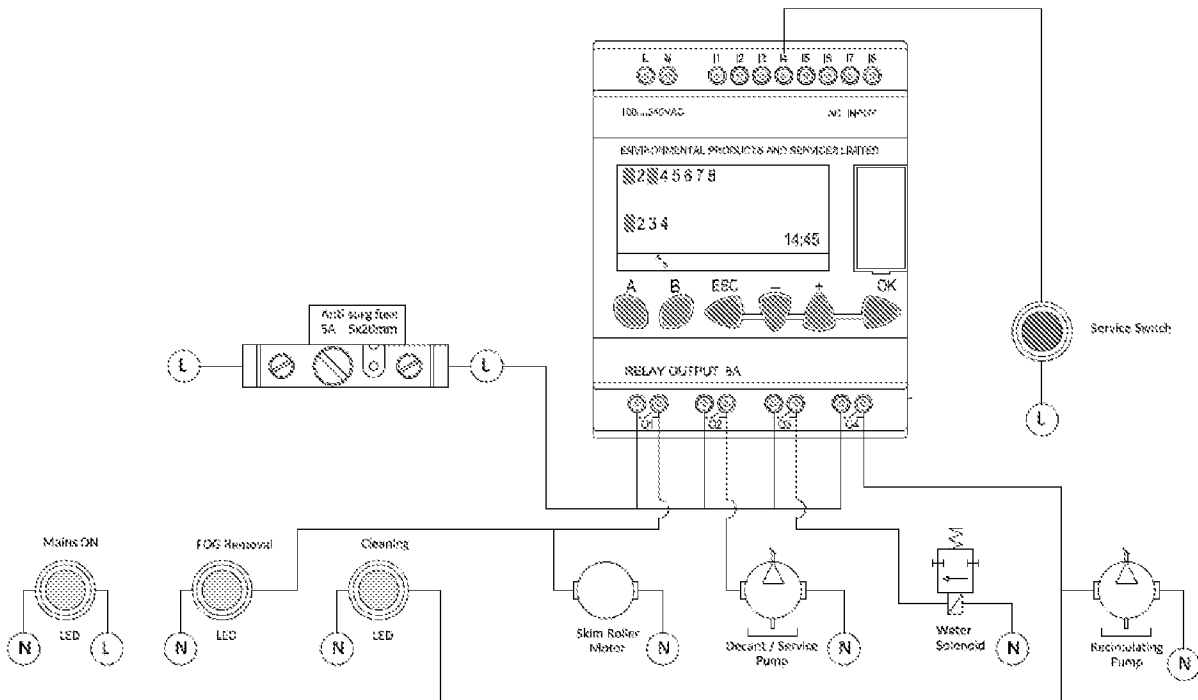


GS1850-LL



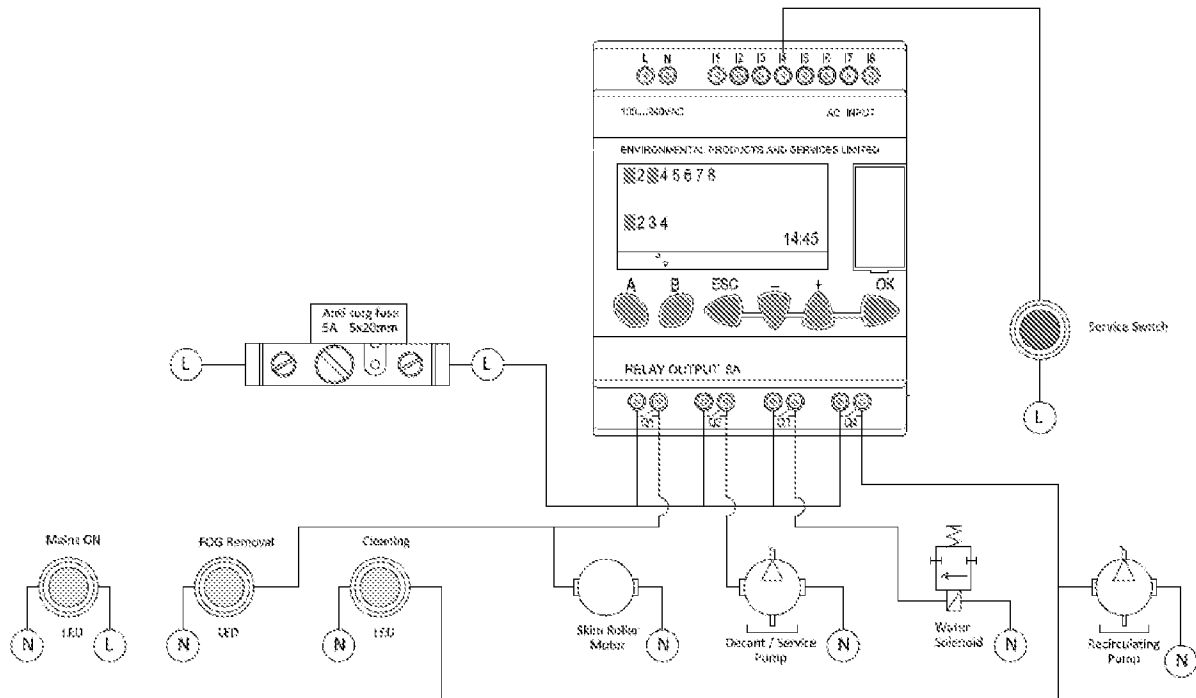
GSUSA-125

GSUSA-125 120/230Vac



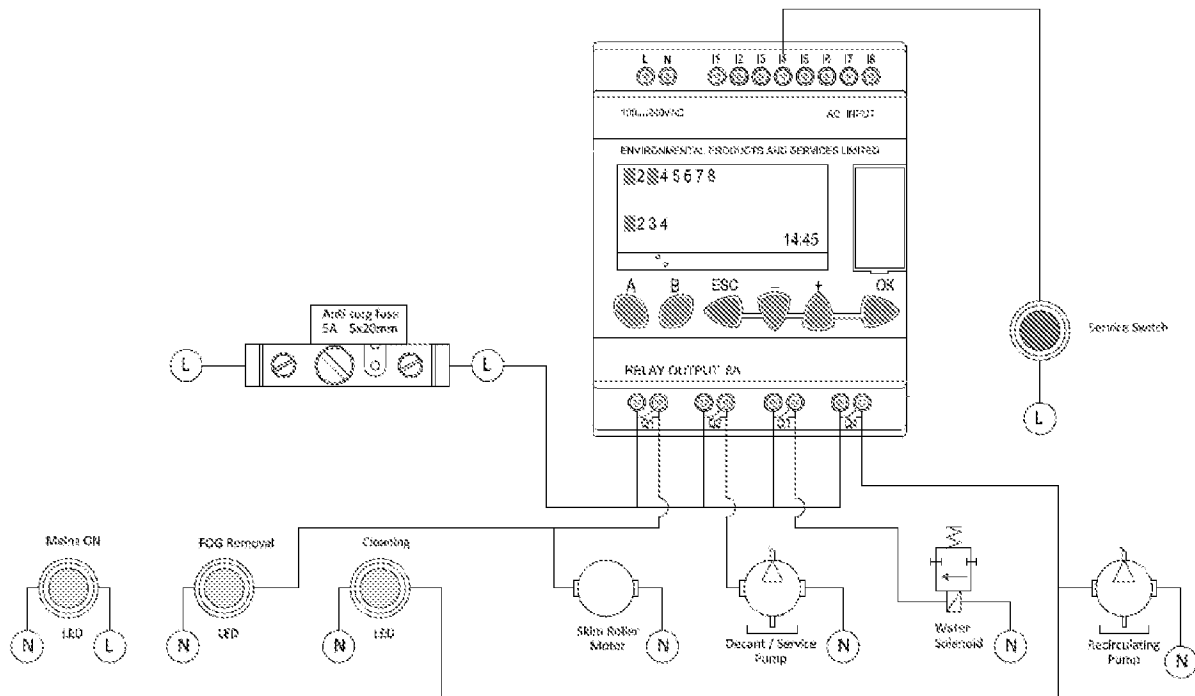
GSUSA-140

GSUSA-140 120/230Vac



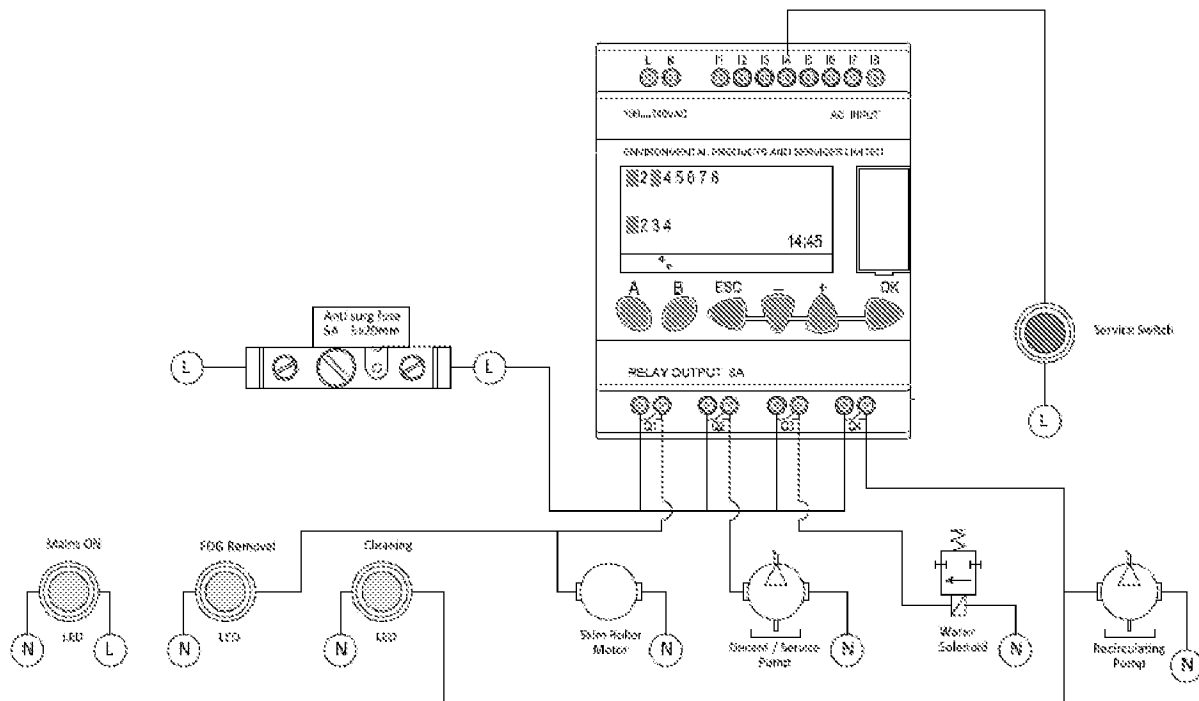
GSUSA-160

GSUSA-160 120/230Vac



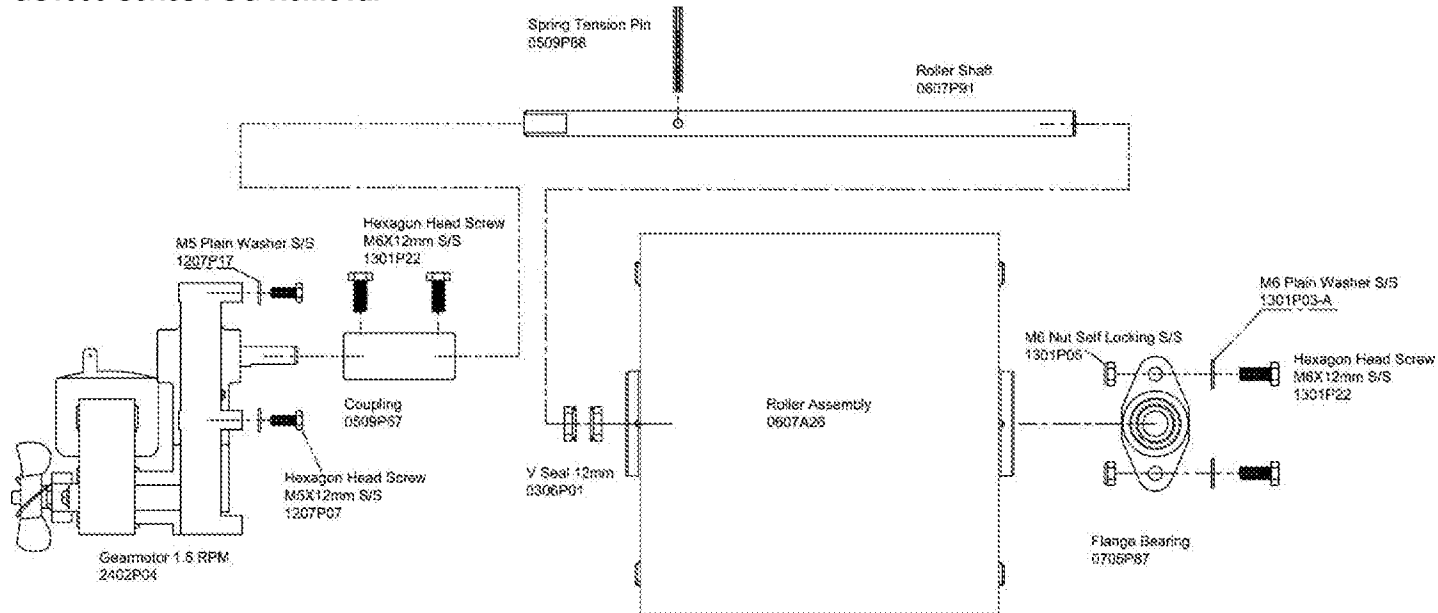
GSUSA-229

GSUSA-229 120/230Vac

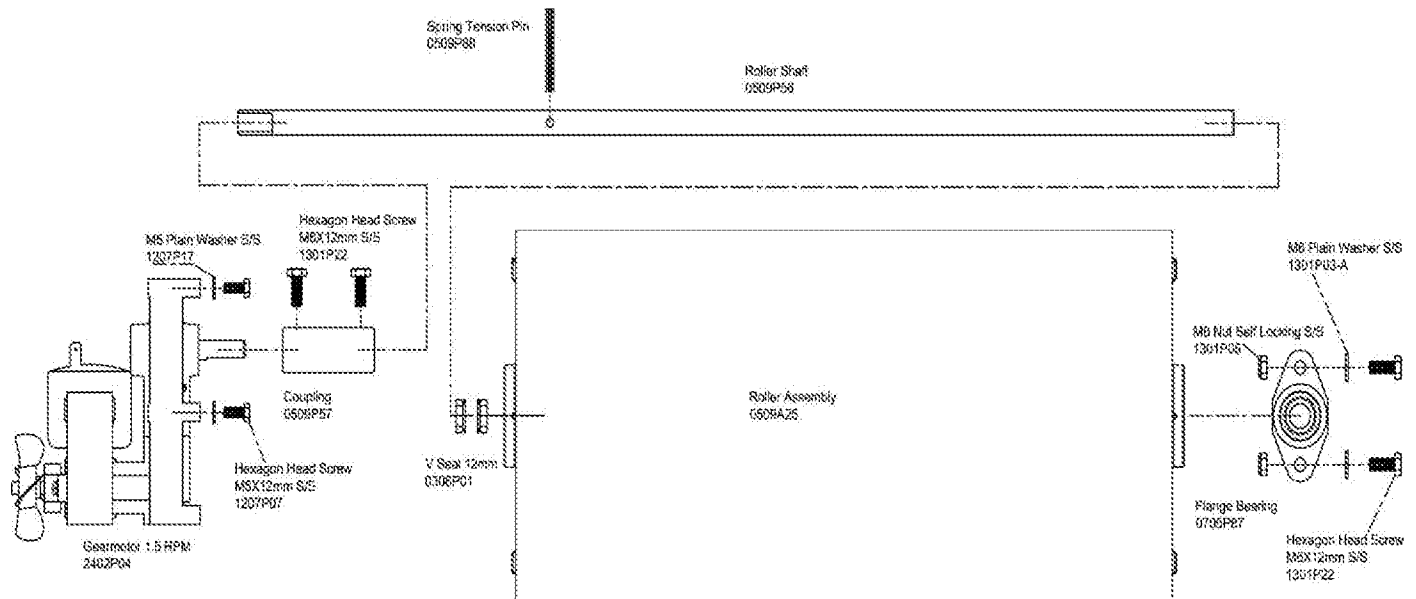


Appendix 4: Exploded Diagrams:

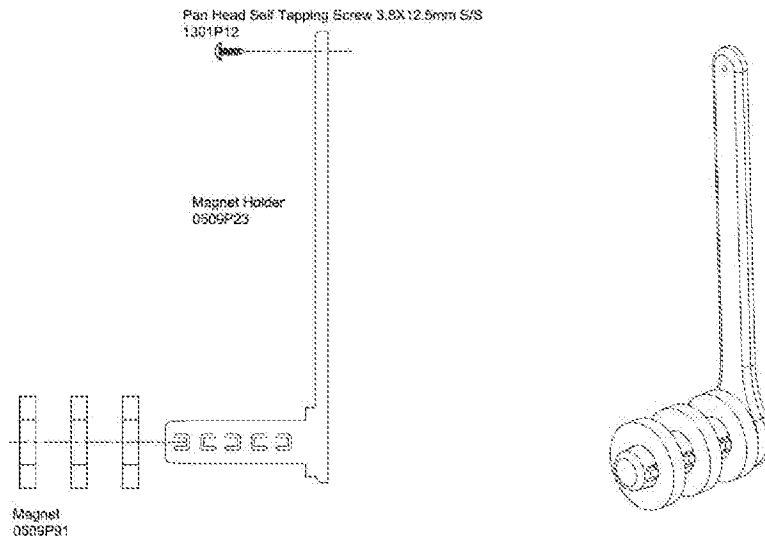
GS1000 Series FOG Removal



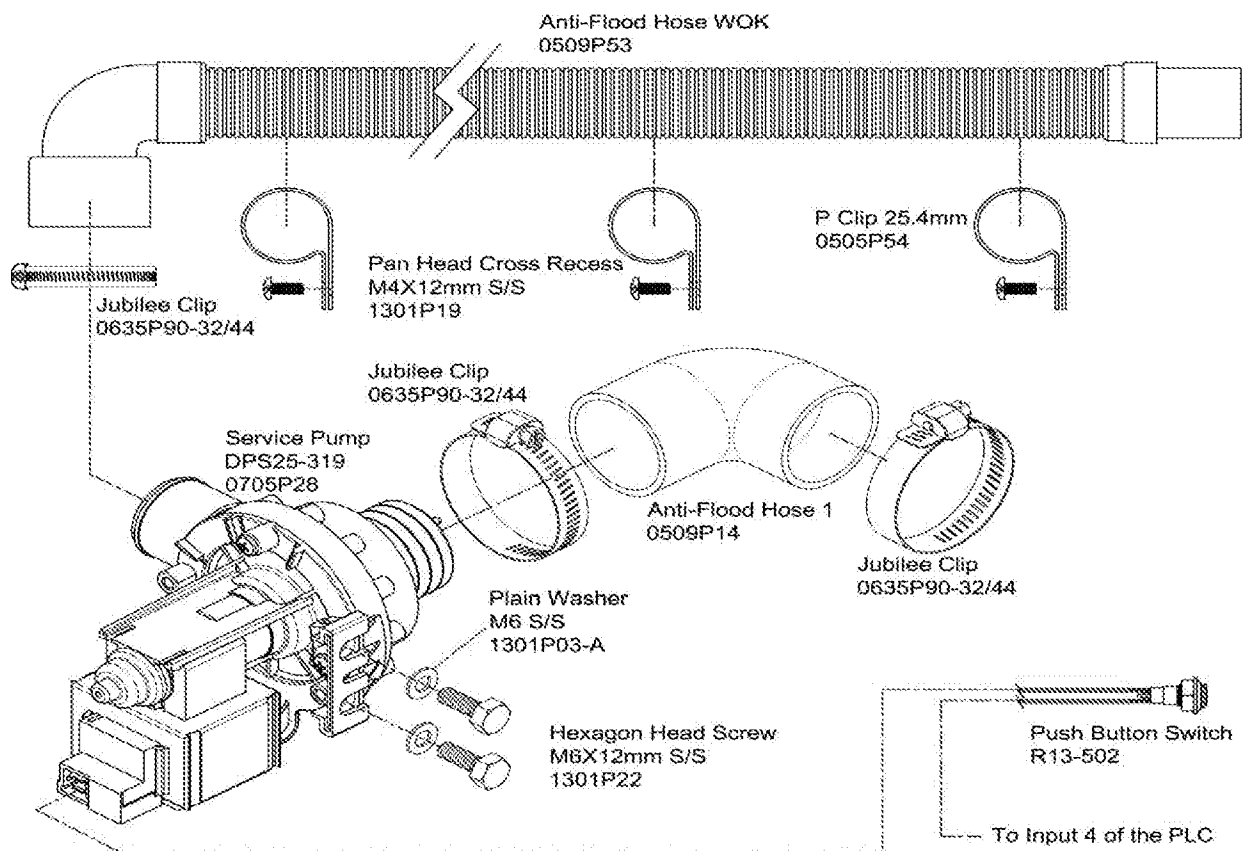
GS1850 Series FOG Removal



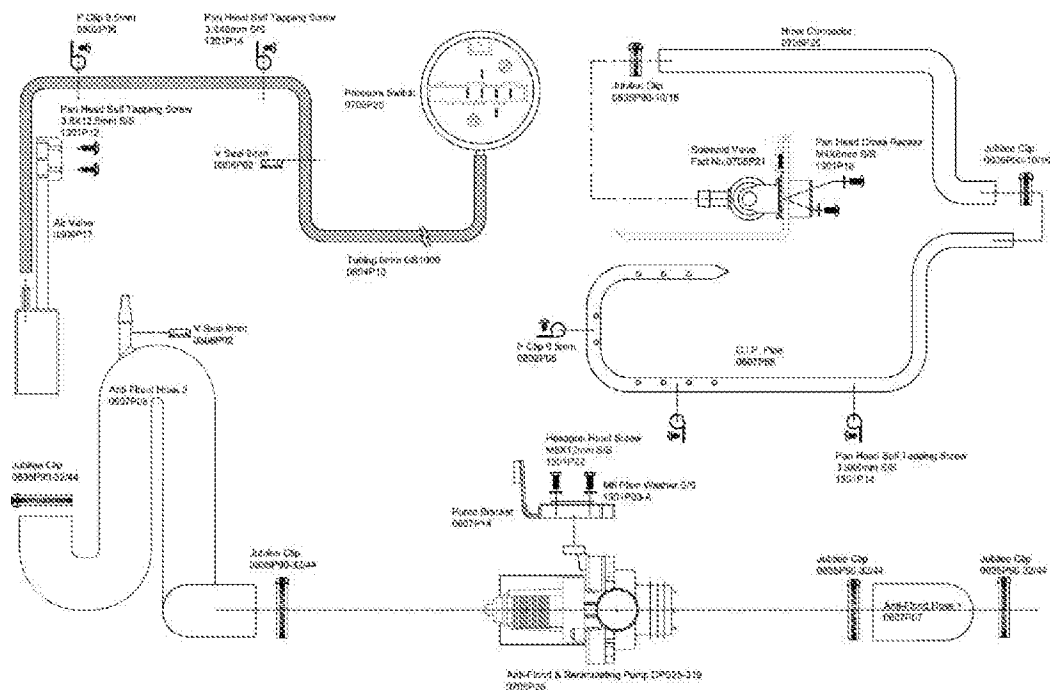
GS1850 Magnetic Treatment



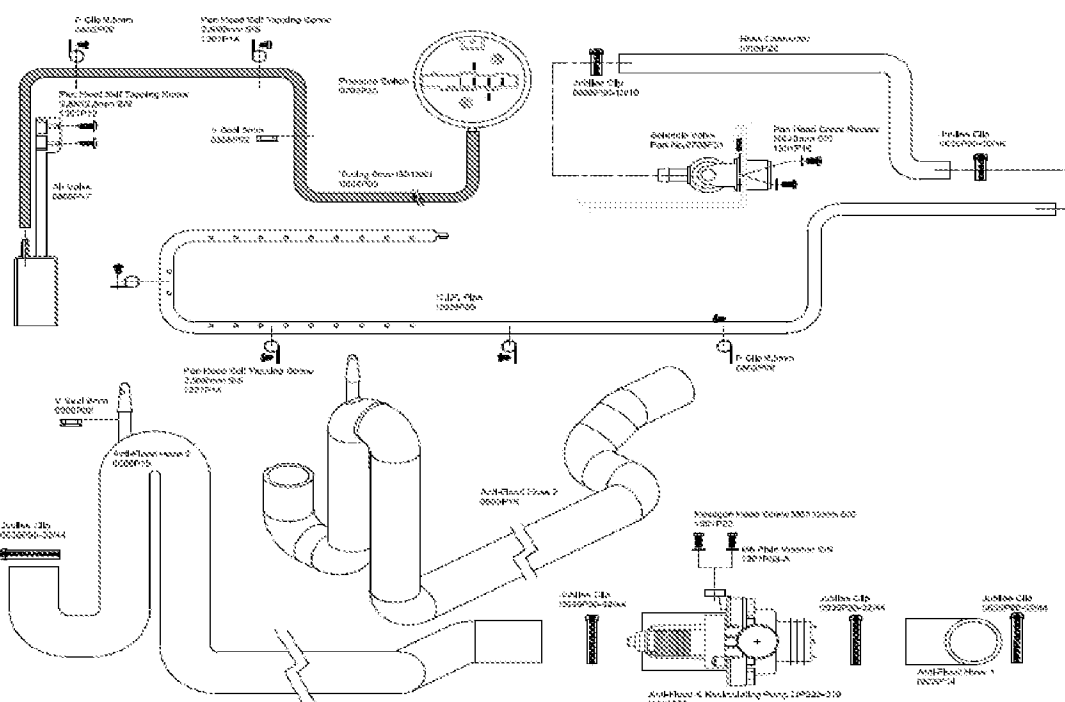
GS1850 Series ECO Service Function



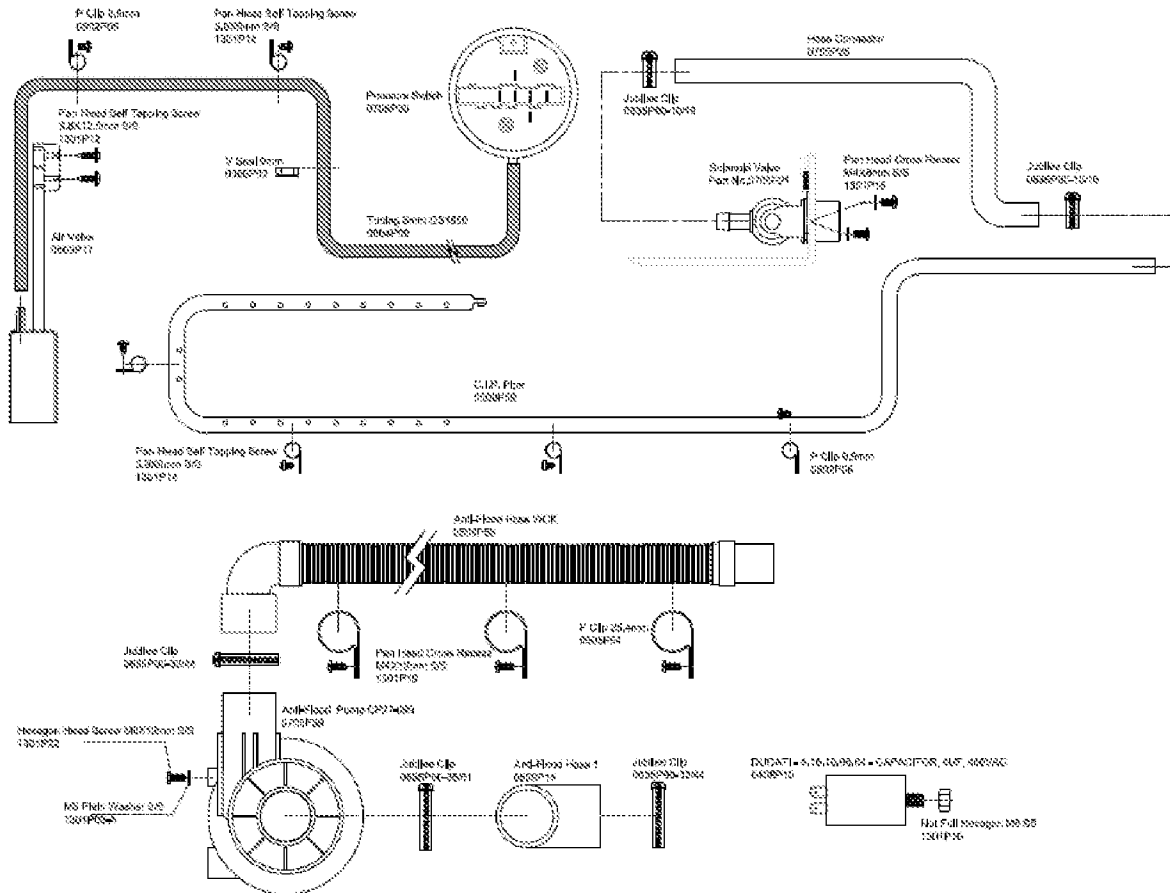
GS1000 Series Anti-Flood Function



GS1850 Series Anti-Flood Function



GS1850 AST Wok Anti-Flood Function



Appendix 5: Product warranty

Applicable Law: These conditions and the contract between the parties shall be construed and applied in accordance with the law of Northern Ireland and the Northern Irish Courts shall have jurisdiction in any dispute relating thereto. If any provision of these conditions of sale shall be determined by a Court of competent jurisdiction to be void or unenforceable the other conditions shall remain unaffected and enforceable.

Assignability: The contract of which these conditions form part is personal to Purchaser and the Purchaser shall not assign the benefit thereof without the Company's prior written consent.

Copyright and Trademarks: No representation, warranty or indemnity is given by the Company, that the goods do not infringe any copyright, trademarks, registered designs or other proprietary rights.

Limitation of Liability: In no event shall Environmental Products & Services Ltd be liable, whether in contract, warranty, tort (including negligence), strict liability indemnity or any other legal theory, for incidental or consequential damages or for any other loss or cost of a similar type. Under no circumstances will the aggregate liability of Environmental Products & Services Ltd for any cause of action related to the products covered hereby exceed the net purchase price received by EPAS for the products. Any action or suit by purchaser against Environmental Products & Services Ltd relating to Environmental Products & Services Ltd products must be brought within 15 months of the date of the invoice(s) save for the specific 5 year warranty relating to the structural integrity of the product. Environmental Products & Services Ltd warrants to the original user that the products manufactured by it delivered with this warranty shall be free from material defects in workmanship and materials for a period of 12 months/ 1year from the date of invoice to the distributor (if sold by an authorised Environmental Products & Services Ltd distributor) or the date of invoice to the purchaser (if sold directly by Environmental Products & Services Ltd), but in no event longer than 15 months from date of shipment from Environmental Products & Services Ltd production facility.

Structural Integrity: Environmental Products & Services Ltd additionally warrants to the original user that the structural integrity of the GreaseShield™ Tank shall be free from material defects in workmanship and materials for a period of 60 months / 5 years.

Specific Exclusions: This warranty shall not cover any defect in otherwise covered products resulting directly or indirectly from: Failure to properly install, operate or maintain the product in accordance with Environmental Products & Services Ltd instructions and procedures, including, without limitation, use in excess of rated flow, changing of operating programmes without Environmental Products & Services Ltd permission, improper electrical service, or use that fails to comply with applicable laws, regulations or codes. No distributor, sales person or other person is authorized to make any warranty statements on behalf of Environmental Products & Services Ltd regarding Environmental Products & Services Ltd products other than as set forth in this warranty. This statement of warranty supersedes any quote, brochure, or other statement or document with respect to warranty of Environmental Products & Services Ltd products.

Damage in transit, handling or installation: Modifications, adjustments, repairs, or alterations or alleged service made by unauthorized persons; or Other causes not arising out of defects in workmanship or materials. EPAS shall not be responsible for damage to products resulting from flooding, sewer line back-up, pumping or lift station failure, ambient water flow or other sources of water damage.

Except as expressly set forth above, Environmental Products & Services Ltd makes no representations, warranties or guarantees, either expressed or implied, including, without limitation, as to merchantability or fitness for a particular purpose, whether or not Environmental Products & Services Ltd had knowledge of purchaser's particular requirements or needs, or with respect to other incidentals relating to use of the product.

How to claim: Any claim must be made in writing promptly after discovery of the defect and within the applicable warranty period to the following:



Manufacturer:	Environmental Products & Services Ltd
Address Line 1:	Unit 5 Shepherds Drive
Address Line 2:	Carnbane Industrial Estate
City:	Newry
County:	Down
Post Code:	BT34 6JQ
Country:	Northern Ireland, United Kingdom
Telephone:	+44 (0)28 30833081
Fax:	+44 (0)28 30257556
E mail:	info@EPAS-LTD.com
Website:	www.EPAS-LTD.com

The product must be delivered, prepaid, to Environmental Products & Services Ltd, together with proof of purchase, the serial number from which the item was removed and a return authorisation number issued by Environmental Products & Services Ltd.

Please contact Environmental Products & Services Ltd. for further assistance if required.

If Environmental Products & Services Ltd. determines upon examination that the component is defective and that the warranty conditions are met, their sole obligation under this warranty, and the purchaser's sole and exclusive remedy, is the repair or replacement, at Environmental Products & Services Ltd. option, of the defective component, including parts and labour. The replacement will be furnished F.O.B. point of shipment.

If Environmental Products & Services Ltd. determines that the component is not defective or that the other conditions of this warranty are not met, then any return of such part to the purchaser shall be at purchaser's cost.