Grease Guardian®

Frontline Engineering

Automatic Grease Removal Unit

INSTALLATION, OPERATIONS AND MAINTENANCE MANUAL

Models

- D1/230VAC
- D2/230VAC
- D3/230VAC
- D4/230VAC
- D5/230VAC

- D1/110VAC
- D2/110VAC
- D3/110VAC
- D4/110VAC

EDITION: JAN 2019, CONTROLLER PROGRAM: DX2

MANUFACTURED BY FM ENVIRONMENTAL

www.greaseguardian.com

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

CONTENTS

Product Overview 2
How it Works 3
Dimensions & Specifications 4
Plumbing and Mechanical Installation 6
Electrical Installation 9
Starting Up /Safe Operation 10
Controller Settings 12
Daily Maintenance 18
Quarterly Pump out 19
Troubleshooting 20
Parts Explosions 25

APPENDICES

1. D1 to D4 wiring diagram (230VAC) 27
2. D1 to D4 wiring diagram (110VAC) 28
3. D5 wiring diagram (230VAC) 29

Warranty Terms 30

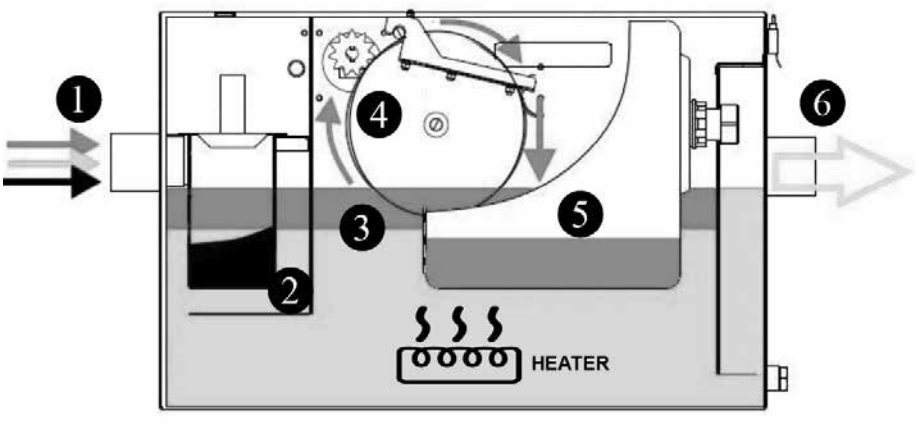
THE GREASE GUARDIAN D SERIES OVERVIEW

The FM Environmental Grease Guardian D series automatic grease removal unit (GRU) is a totally engineered system for separating free floating grease and oils from drain water flows. The separated grease and oils are trapped within the stainless steel tank and are automatically recovered by the system. Only the “cleaned” water is allowed to pass through the system into the drain lines. Each unit also separates solid food waste into a removable basket. The Grease Guardian can be used in a wide variety of applications from restaurants and food processing operations to many types of industrial operations.

Use of the Grease Guardian assures that costly sewer surcharges and fines are minimised or eliminated through efficient separation and removal of the grease and oil. In addition, rapidly escalating pumping and disposal costs, which are associated with conventional grease traps or interceptors are also reduced or eliminated. The recovered grease and oils are virtually water free so they can be collected by a local rendering company or recycler

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

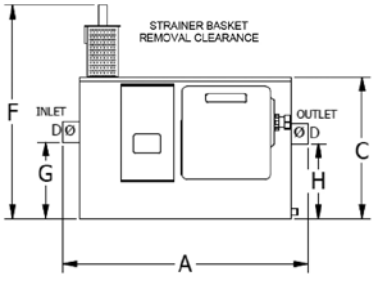
HOW IT WORKS (rear view cutaway left/right version)



1. Grease, solids and wastewater from the kitchen enters the Grease Guardian.
2. Solid food waste is caught in a lift out strainer.
3. A skimming cycle is set. The grease passes into the middle chamber through slots in the baffle wall where it remains trapped. With the assistance of a heater the grease rises to the surface forming a separated layer.
4. The liquefied grease adheres to the rotating skimming wheel(s).
5. The grease passes down a scraper blade and channel into an externally mounted collection container where it can be removed and disposed hygienically.
6. The treated water exits under a baffle wall and through the outlet to drain.

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

PRODUCT DIMENSIONS & SPECIFICATION 240VAC

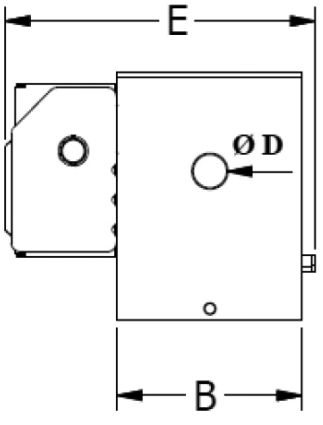


Front view left/right version

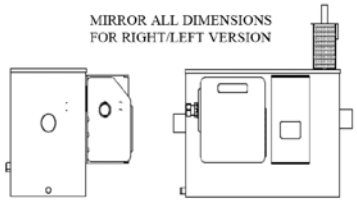
G & H are heights to pipe base

Model *(mm)*

	A	B	C	DØ	E	F	G	H
D1	643	309	326	60	515	500	150	150
D2	723	309	415	60	515	627	224	219
D3	812	309	453	90	515	743	311	263
D4	925	309	453	115	515	713	302	225
D5	1396	309	597	115	712	930	404	334



Outlet view left/right version



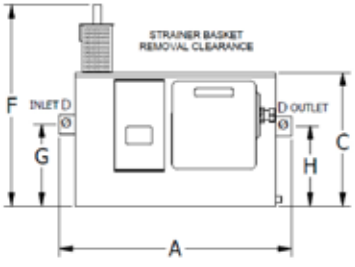
Model

	D1	D2	D3	D4	D5
Hydraulic Flow *l/second*	0.75	1.25	1.75	2.25	3.5
Skim Rate *l/hr*	2	2	2	2	12
Strainer Basket vol, *kg*	3	4	6.4	8.7	14
Grease Collector vol, litres	7	7	7	7	20

Motor (all units)	25 Watt, 240V, 50 Hz
Heater D1, D2	600 Watt, 240VAC, Thermal cut-out inc.
Heater D3 - D5	1000 Watt, 240V, Thermal cut-out inc.
Controller (all units)	Logic Controller: Backlit display Inputs 240VAC Outputs 240VAC Battery back up

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

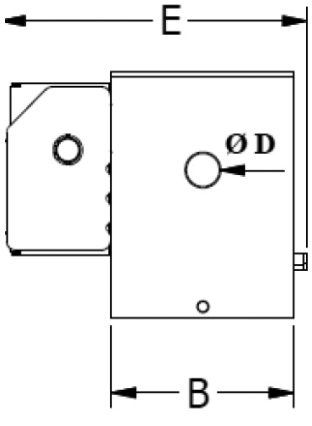
PRODUCT DIMENSIONS & SPECIFICATION 110VAC



Front view left/right version

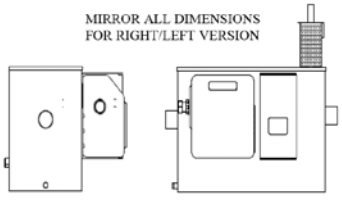
G & H are heights to centers

Model	*(inches)*							
	A	**B**	**C**	**DØ**	**E**	**F**	**G**	**H**
D1	25¼	12¼	13	2	20¼	19¾	7	7
D2	28½	12¼	15½	2	20¼	24¾	10	9¾
D3	32	12¼	18	3	20¼	29¼	14	12¼
D4	36½	12¼	18	4	20¼	713	14¼	11¼



Outlet view left/right version

Model				
	D1	**D2**	**D3**	**D4**
Hydraulic Flow, *USG/min*	12	20	25	35
Skimming Rate, *USG/hr*	0.5	0.5	1	1
Strainer Basket vol, *lbs*	0.8	1	2	2.5
Grease Collector vol, *USG*	1.85	1.85	1.85	1.85



Motor (all units)	25 Watt, 110VAC, 60 Hz 4.5 µF capacitor
Heater (all units)	600 Watt, 110VAC, Thermal cut-out inc.
Controller (all units)	Logic Controller: Backlit display Inputs 110VAC Outputs 110VAC Battery back up

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

PLUMBING AND MECHANICAL INSTALLATION

Lifting/Handling:

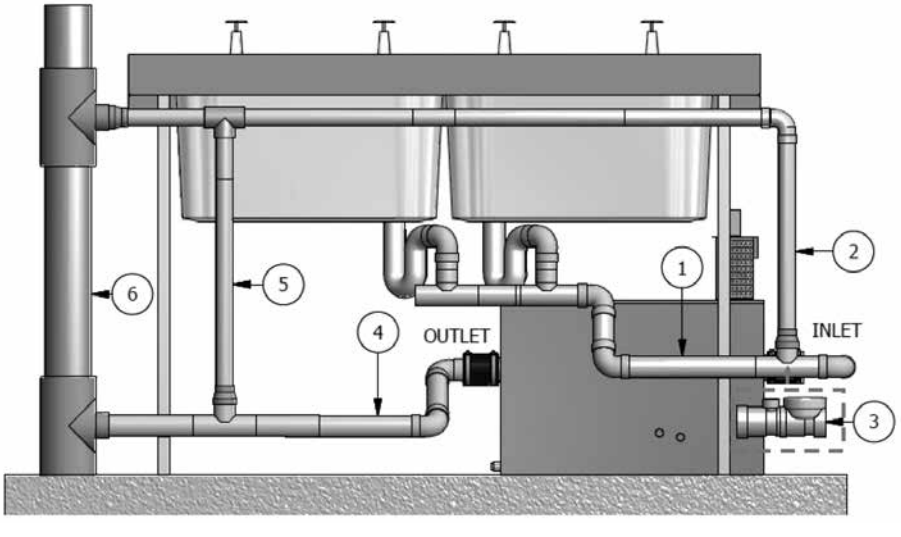
This product is classed as a heavy item that should not be handled alone. There is a requirement for 2 people to manually lift all models described in this manual. Steel tipped toe capped shoes and handling gloves should also be worn.



Install these product models only at ambient room temperature, either under or adjacent to the fixtures being served. Do not repurpose the system or add to the number of fixtures specified for connection at time of sale.

Undersink Example

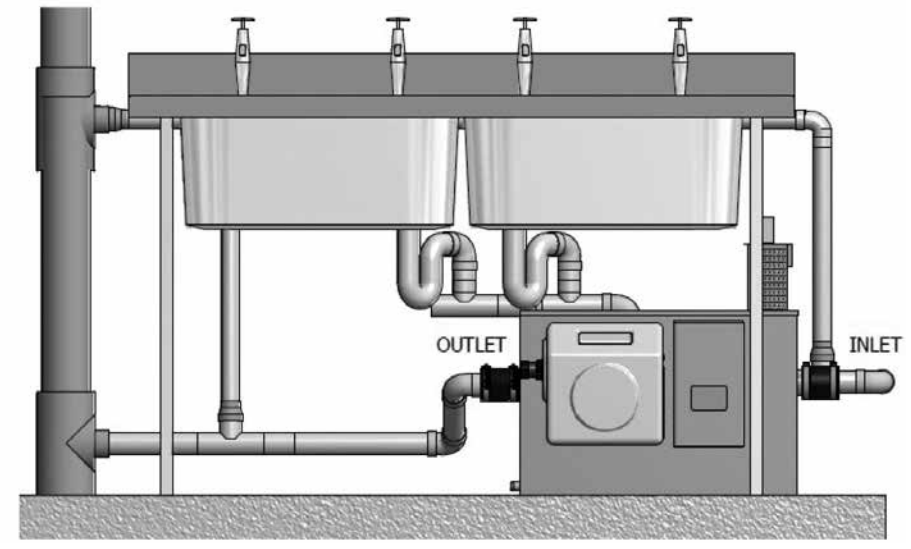
D2 LEFT TO RIGHT - REAR VIEW



Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

Undersink Example

D2 RIGHT TO LEFT - FRONT VIEW



1. Inlet pipe-work. Install 2 inch (50mm) diametre wide pipes. Ensure a slight fall is provided in all pipe-work entering unit. The Grease Guardian includes quick connect rubber couplings. Note that the fixtures pipe can enter the Grease Guardian inlet from left or right, dependent upon flow direction specified at time of sale which also factors in the shortest outlet path to the final waste point. (The system in the above diagram is classed as left right flow when viewed from the front)

2. Ventilation Tee and branch pipe. (Recommended) to prevent odours escaping from the Grease Guardian into kitchen area. Ventilation should be terminated at the building's stack vent. If ventilation is not provided at inlet, the pump/clean out frequency of the system may have to be increased to reduce potential waste odours.

3. USA. Flow Control with Air Intake. For those installations requiring Plumbing Drainage Institute of America compliance, a certified flow control (with air intake) must replace the inlet ventilation Tee. The relevant control required from www.canplas.com is listed:

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

- D1, part reference: Canplas 3922115A
- D2, part reference: Canplas 3922120A
- D3, part reference: Canplas 3933125A
- D4, part reference: Canplas 3933135A

(The air intake riser of the flow control is to be connected to the inlet side ventilation pipe as described in point (2))

4 Wastewater Outlet pipework. WARNING To avoid reduced flow or backflows issues, the site outlet pipework must be connected as detailed below for all Grease Guardian systems:

- pipe diameter must be minimally of 2 inch diametre (50mm) for models D1 to D3 and 101mm (4 inch) for D4 and D5
- pipe must be installed at a gravity fall of 1:10 minimally, but preferably 1:40
- pipe must contain no more than 2 x 90 degree pipe bends between Grease Guardian outlet and final waste point in floor

5 Outlet vent pipe. Required to:

a. prevent sewer back odours entering Grease Guardian
b. to prevent any siphonage of the system under peak flows. The pipework should be terminated at final stack vent.

6 Final vent stack to atmosphere. Failure to connect ventilation points of Grease Guardian to the final stack can result in odour issues internally.

Important: Water supply for spray bar in D5 models

Wash water supply required: ½ inch BSP, 0.75l/sec (0.2 USG/sec) @ 3-6 bar. Temp 40-60°C (104-140°F). Plumbing of water supplies are to be carried out only by qualified personnel and all local plumbing codes adhered to where the Grease Guardian is being installed. To ensure proper solenoid valve performance and guarantee full warranty cover, the water supply preceding the solenoid valve must be fitted with a/a suitably sized water hammer arrestor and b/an in-line "WYE" type brass strainer.

Important: Additional backflow prevention regulations for water supplies to D5

The use of mains water spray bars may be subject to regulations on backflow prevention measures. Please check your local code before installing any spray bar systems, as codes will vary from country to country. FM Environmental Ltd does not take responsibility for providing backflow prevention devices or measures, unless explicitly contracted to do so for the application concerned at time of the Grease Guardian product sale.

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

ELECTRICAL INSTALLATION

IMPORTANT: Grease Guardian Electrical Installation

1. Any engineer installing this product or its electrical supply circuit, must have the requisite qualification to do so according to the country of installation regulatory requirements, and must work to the appropriate Electrical codes of practice for that country. (ie, for the UK, the latest edition of BS7671. For the Republic of Ireland, the latest edition of the ETCI regulations and be Safe Electric approved. For all other countries the latest Electrical Regulations for that country)

2. This product must have its own dedicated circuit. This product must not be wired into a circuit supplying any other appliances. This circuit must have an overcurrent protection device in series with either a/ 30mA RCD (Residual-Current Device) or b/ a 30mA RCBO (Residual-Current Circuit Breaker with Over Current Protection) or c/ for USA installations: 30mA ground fault circuit breaker interrupter (GFCI)) . **All devices here listed a, b or c, must be fitted with a TEST button and must be tested 4 times yearly to ensure the device trips out under test conditions.**

3. The circuit Fuse/MCB or RCBO is to be suitably rated/sized for the load current drawn by the specific model being fitted in accordance with the model specification sheet.

4. A waterproof socket outlet must be provided next to the installation position by the installer, suitable for the 3 pin cord-plug, or 2 pin Euro plug with earthing socket as pre-fitted by FM Environmental. The socket must have a minimum Ingress Protection rating of IPX5, to protect against possible water jets, spillages and moisture which occur in and around this product's normal location.

5. This product contains an immersed heater and must not be switched on at the socket until the main tank is filled with water to a level whereby the water level settles just above the underside of the internal skimming wheel. Consult your market representative if in doubt.

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

Starting Up

Unless otherwise agreed, start up should normally be carried out by your market representative as part of formal Product Support Visit.

1. Check system waste water flow. With the main tank cover removed, fill and release all sinks or other drainage appliance connected from full, into the Grease Guardian system. During release of sinks observe that there are no level rises of more than 1 inch (25mm) inside the tank. Consult representative if in doubt. Also check for any pipe leaks during this process.

2. Set the Grease Guardian controller for site conditions in accordance with timer setting instructions detailed in this manual.

3. Instruct kitchen personnel on maintenance requirements as detailed in this manual.

4. Log the installation date for tracking warranty terms.

IMPORTANT: Safety points to observe in use (user)

- Operation of the unit must be performed by trained personnel only

- Unit requires daily housekeeping AND assisted servicing including pump out and heater inspection every 3 months. Neglect of this maintenance can lead to malfunction of system and compromise site safety

- Unit requires ventilation. Ensure to follow all installation instructions previously described for ventilation, especially in confined locations. Otherwise tank pump outs must increase from once every 3 months to a minimum of every 1-3 months

- Use dedicated rubber gloves for grease trap maintenance tasks to minimise cross contamination

- Do not touch the skimming wheel or drive cog directly if accessing inside the tank to clean etc. Do not touch any submerged elements inside the tank

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

- Other than accessing the front panel timer key buttons, never attempt to access inside the control panel behind the timer plate, unless electrically qualified

- If the mains supply cord is damaged it must be replaced to avoid a hazard, by the manufacturer or authorised distributor or service agent

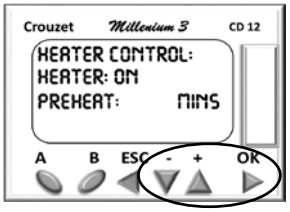
Best practices to maximise performance (user)

- Remove any blockages from drains before installing the Grease Guardian
- Unit will lose efficiency if not maintained daily as described
- Avoid connecting a dishwasher machine to the Grease Guardian in order to ensure tested efficiencies. The dishwasher should be bypassed to drain. (Then in practice, scrape dish/plate waste into bins before pre-rinsing these in the sinks served by the Grease Guardian. After thorough pre-rinsing, the dish/plates can be machined washed)
- Never connect a macerator or similar food waste device upstream from the Grease Guardian
- Do not use highly acidic or highly alkaline detergents in ovens connected to Grease Guardian.
- Do not flush or clean the Grease Guardian tank with bleach or any aggressive cleaners while the unit is in place. (The unit must be disconnected from the sinks before cleaning with these detergents. All wetted components should be removed before doing so to avoid chemical corrosion. Rinse out the unit with clean water before refitting components and re-installation.)
- The unit is designed to trap and remove free floating grease oils and fats only. The unit will not remove emulsions such as salad cream, mayonnaise, relish, sauces, soup waste, or any finer wastes or emulsions that pass into the main skimming chamber
- The internal solids strainer provides limited protection from solid food waste build up. To help ensure the highest efficiency, solid food waste can be further reduced by installing additional strainers upstream of Grease Guardian.

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

GREASE GUARDIAN CONTROLLER

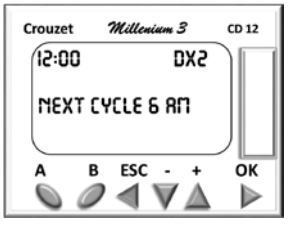
Cycle Programming



Intro. Note on adjusting Hr/Min/Sec values on PLC:

For PLC timer values that display a blinking ▮▮▮▮ icon, these can be adjusted by using the following button sequence:

1. Press "-" or "+" to move the bar from one value to the next.
2. Press "OK" to lock onto value to be changed.
3. Press "-" or "+" to adjust value up or down.
4. Press "OK" again to store the change and return to the blinking bar.



Power UP, TEST, and Screen 1 (Home)

On powering up, the unit will automatically run a TEST sequence of heater, motor and spray bar outputs. After the TEST completes the HOME Screen will appear with these default fields:

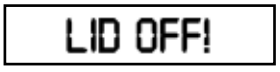
a. Time of Day on the top left.
b. the program name on the top right. In this case: "DX2".
c. Next Cycle due, in the middle of the screen.

The TEST can be re-initiated at any time by pressing - & + together.

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

Home (Screen 1)

Additional Messages during general Use:



The Main Tank lid requires replacement to resume normal system operation



The "In cycle" message displays during a main cycle.



One of the 3 pre-selected skimming modes will display when the unit is in a cycle.



Flashes when heater is active during a cycle



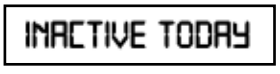
Flashes when motor is active during a cycle



“Cycle Finished” displays after cycle completes. At the same time the maintenance reminder also flashes to remind the user to check the wiper blade, strainer basket and oil container. These messages cancel when the main lid is removed to do the maintenance. Also self-cancels and resets after 10 minutes if lid is not removed.



Advanced notification will display for any weekday which is set to OFF.



Displays during the inactive weekday, if a weekday is set to OFF as described in the weekday display below.

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

PUMP OUT 00014 DYS

This message will display in the Home screen when the main tank pump out service due reaches 14 days or less. If the unit is pumped out before the time out, the countdown can be cleared and re-set to start again by pressing the "-" button when inside screen 7 (see time control pages). If a pump out is not completed by zero days the countdown will clear and auto-reset.

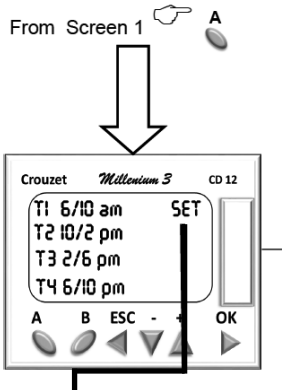
SKIMMING FORCED

Hold ▲ in Home Screen 10 seconds

Manual Forcing of Skimmer

If activated, the skimmer will be forced on constant to clear any surplus grease in the main tank. The tank lid must be in place for the skimmer to operate. Pressing "+" again in the Home Screen for 10 seconds will deactivate the same function. The feature also self-deactivates after 30 minutes of skimming to avoid over-skimming.

Setting a Cycle



Cycle Options daily (Screen 2)

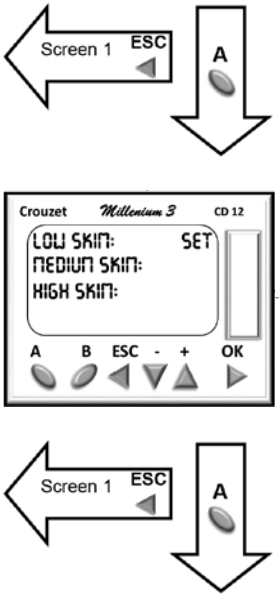
In Screen 2, one day is divided into 4 static cycle start/finish time options. T1,T2,T3,T4. In this menu set a T option by pressing and holding "B" for 1 second. The word "SET" will display against a time option. Repeated pressing of "B" will advance through eleven ON/OFF options as shown below.



	1	2	3	4	5	6	7	8	9	10	11
T1	SET	-	-	-	SET	-	SET	-	SET	SET	-
T2	-	SET	-	-	SET	-	-	SET	SET	SET	-
T3	-	-	SET	-	-	SET	SET	-	SET	SET	-
T4	-	-	-	SET	-	SET	-	SET	-	SET	-

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

The example in the table above shows that option 1 from 11 has been set. This option is also the default setting. In this instance the unit is programmed for one cycle daily, commencing at 6am. Note that if option 11 is chosen there are no cycles set

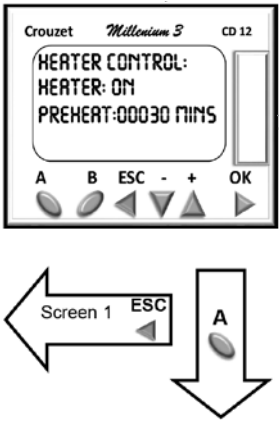


Choose a Skim Mode (Screen 3)
Screen 3 optimises the cycle duration

Low Skim DEFAULT	10 mins skimming/cycle
Medium Skim	20 mins skimming/cycle
High Skim	30 mins skimming/cycle

Select a mode by pressing B

- LOW SKIM: skims for 10 mins only. (1 skim)
- MEDIUM SKIM : skims 10 minutes then pauses for 5 mins before a further 10 minute skim repeat. (total 2 skims)
- HIGH MODE: skims 10 minutes then pauses for 5 mins, skims 10 minutes, pauses 5 then skims 10. (total 3 skims)



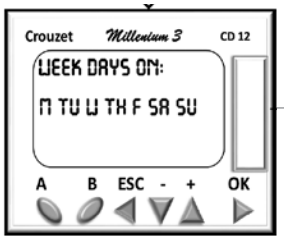
Heater Setting (Screen 4)

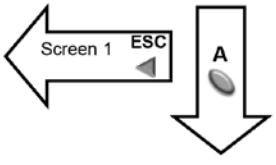
The default setting inside screen 4 is:
Heater set to ON, with a preheat of 30 mins.

The Heater can be switched off completely by toggling "B" B

When the heater is set to ON the full range for preheat is 5-60 minutes which is adjustable using the - + OK (see intro page on adjusting timer values)

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

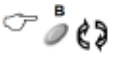


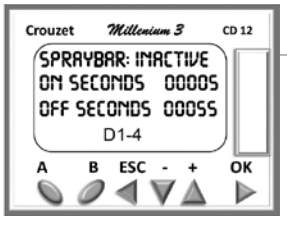


Weekday Settings (Screen 5)

In screen 5 there are 12 programable states for setting the daily cycles to ON /OFF for specific week days.

	M	T	W	T	F	S	S
1	M	T	W	T	F	S	S
2	M	T	W	T	F	-	-
3	M	-	W	-	F	-	-
4	M	T	W	T	F	S	-
5	-	-	-	-	-	S	S
6	M	-	-	-	-	-	-
7	-	T	-	-	-	-	-
8	-	-	W	-	-	-	-
9	-	-	-	T	-	-	-
10	-	-	-	-	F	-	-
11	-	-	-	-	-	S	-
12	-	-	-	-	-	-	S

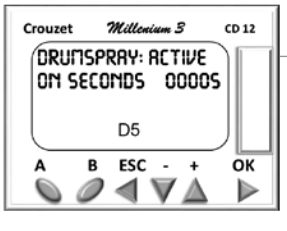
Simply advance through 12 options by pressing: 



Spray bar Menus (Screen 6)

Spray Bar (GG X and D5 version only)

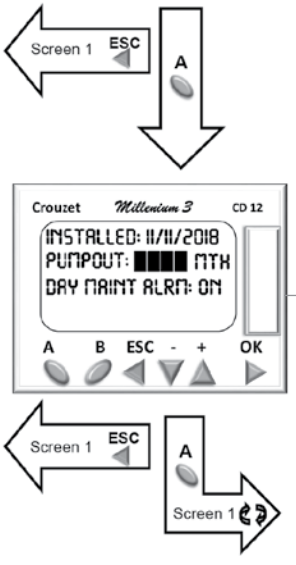
Spray-bars are not fitted in D1 to D4 models and this menu is not normally used. If this menu is ACTIVE, for best practice it should be set to INACTIVE for all D 1-4 models by toggling the "B" button



Drum spray menu (D5 programs only)

In D5 systems a spray bar is included for cleaning the skimming drums and wipers at the end of a main cycle. The default spray time is 5 seconds, adjustable between 5-30 seconds, via the  sequence.

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

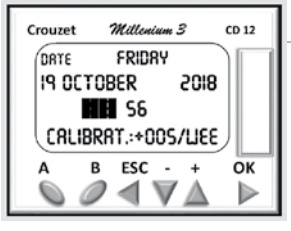


Installation Date/Pump Interval Reminder/ Maintenance (Screen 7)

Firstly this screen displays the installed date for the unit, which is automatically logged when a mains power signal on site is present for more than 48 hrs.

Also in this screen the pump out interval reminder can be changed via the - + OK sequence (See Intro note on adjusting values) **Default is 3 months.**

Also in this screen the user's daily maintenance reminder can be switched off for applications where it is not required. This is done by toggling button "B"



Additional Screen: Setting Time of Day

To change the time of day, or date, access the clock menu by following sequence:

1. First press OK ▶ AND esc ◀ when in Home Screen
2. Then - + OK ▶ to select "MISCELLANEOUS"
3. Then - + OK ▶ to select "CLOCK"
4. Then - + OK ▶ to select "DATE/HR SETUP" to reach the display as shown here in the picture (left)
5. Then - + OK ▶ to change the hr, minute as required.
6. esc ◀ Press X 4 times to return Home (Screen 1)

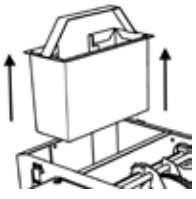
GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

USER MAINTENANCE

Daily Maintenance, 1-2 times daily

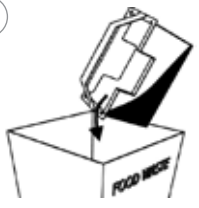
Attention: Do not use sinks when accessing unit to do maintenance

1



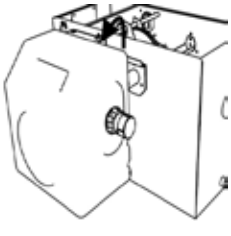
Unfasten and remove the main tank lid. Lift the strainer basket upwards and allow surplus water to drain back into tank

2



Dispose the contents into a food waste bin. Before replacing strainer rinse the basket mesh under a hot Tap.

3



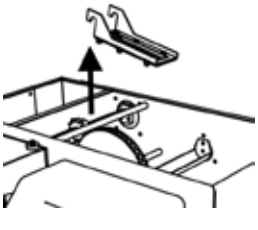
Unclip oil container by lifting it up and outward from the bracket

4



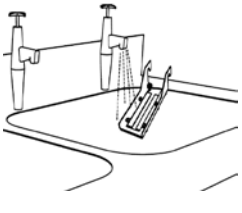
Unscrew oil container cap and pour skimmed oil contents into a dedicated waste oil drum. Replace oil container

5



Lift wiper blade upwards from its axle support

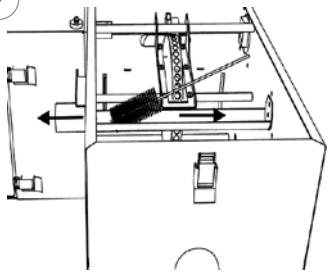
6



Rinse sediment from wiper blade And replace blade inside tank

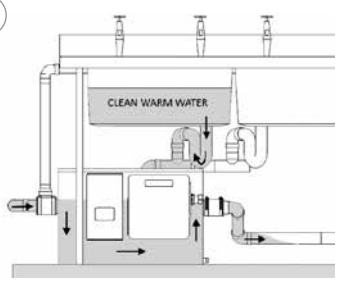
GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

7



Ensure the grease channel inside tank is free from any grease deposits. Use a bottle brush to clean along channel length

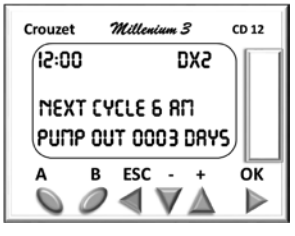
8



At end of day fill a connected sink with warm water and release to flush through Grease Guardian, to remove silt and prevent odours.

Quarterly Pump Out Requirement (every 3 months)

The Home Screen displays the days remaining to the pump out due, from "14" days due. Failure to ensure timely pump out/vacuum may impair performance and cause odor/odour issues.



Pump outs ensure long-term performance and comply with our warranty terms. Pump outs must be carried out by a licenced catering waste collector. After first disconnecting the Grease Guardian mains plug, tasks should include the following:



Essential:

- Tank pump out - all waste and liquid contents
- Wipe clean of any debris from heater element.

Also recommended, via service partner agreement:

- Electrical checks
- Replace rubbers seals/gaskets
- Staff retraining and timer optimisation
- Resetting of service reminder
- User Maintenance

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

TROUBLESHOOTING

PROBLEM: Unit not removing grease

Is the power on?
Check that the power is on and that the time control is set correctly. If the power is being supplied and there is no display check fuses or contact your supplier or service partner.

Is wiper blade and wiper slot clean?
Clean any build-up present on the wiper blade. (see user maintenance). Ensure the wiper blade is replaced correctly and makes proper contact with skimming wheel/drum. Remove the main lid to check this if necessary.

Check the cycle status
First check that "HEATING" or "SKIMMING" is displayed at the start of a cycle. During the "skimming" phase the skimming motor should be audible. Should there be no skimmed grease emerging during the cycle, carry out a further test by entering TEST mode as described earlier in this manual. With the main lid removed and **with hands kept clear of the skimming wheel/drum** use this feature to check that the skimming drum rotates for 10 seconds in Test Mode.

Inadequate Heating?
If the wheel/drum is turning but grease is not being removed it may not be dissolving or separating out. If the grease appears hard or crusted, firstly try increasing the heater's pre-heat time as advised in the controller pages section of this manual. Should this have no effect the Grease Guardian heater may require inspection by service engineer and possible replacement.

Emulsified, congealed, or foam-like surface waste not skimming out?
If the surface grease layer is foam-like in appearance or grease is still not skimming out then it may contain high volumes of dairy waste such

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

as mayonnaise, or starchy waste from rice or pasta. Ensure to reduce volumes of this waste entering the Grease Guardian. Also restrict any use of aggressive detergents and do not dispose any bleaching agents into the unit. If a dishwasher is connected its wash process can prevent grease separating inside adequately the Grease Guardian. Disconnect and bypass dishwasher appliance. Only use neutral hand-washable detergents at the sink. Heavy oven cleaning agents can also adversely affect performance if ovens are connected to Grease Guardian.

Check the main Lid is correctly positioned and check the Lid-switch
To ensure your safety the Grease Guardian will not operate with the tank lid removed.

In operation, the lid must be fastened in place correctly so that the lid disk magnet is at the front side, above the control panel surface—but no more than 5 mm (1/5 inch) above the top of this surface. If this is not the case then the controller display will flash a LID OFF message and the internal components will not operate. Consult with service partner on correct lid magnet positioning if required.
If the LID OFF message continues to display but the lid seems secure then there may be a fault with the lid switch which is concealed and housed inside the control panel. Seek service assistance.

PROBLEM: Small amounts of water inside the plastic grease container

Check Timer Settings
The unit will skim water if there is no remaining grease in the main tank. Excess water skimmed will typically settle below the grease layer in the plastic grease collector. Check the timer settings for excessive ON times. The ON time should be scaled back to reduce water being skimmed into the collector. The HIGH or MEDIUM skim Modes can be toggled back to LOW Skim mode for example as described earlier in this manual

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

PROBLEM: Surge Water in grease collector and/or spillages onto floor

An obstructed pipe after the unit may result in level rises in the main tank which in some cases can flow into the grease collector suddenly and in turn onto the floor, if left unchecked

Ensure the outlet pipe-work from the Grease Guardian is installed as specified earlier in this manual, specifically: that pipes are at a gravity fall and with no more than 2 x 90 degree bends in the above floor pipe work before the floor termination. Ensure in all cases that the pipes from the unit are minimally 2 inch diameter. Lesser diameters will cause flow issues. Ensure that the water flow from the appliance(s) connected to the Grease Guardian does not exceed the Grease Guardian's rated flow in gallons per minute (USA) or litres per second (non USA).

Also ensure that there are no drain line blockages downstream from the unit. Ensure the unit is pumped out at least once quarterly (every 3 months) so that sludge does not obstruct the passageways within the main tank. Ensure the lift out strainer is emptied daily as it may eventually cause overflowing at the inlet side of the unit if left unemptied for too long. Ensure also that it is being replaced correctly.
See additional issues with lack of strainer maintenance as below.

PROBLEM: Sink flow rate is suddenly reduced

Check Strainer Basket
The strainer basket is designed to restrict food waste transferring to the grease separation chamber. Excess build-up in the strainer basket can obstruct the sink flow. Ensure that the strainer basket is emptied 1-2 times daily and the mesh cleaned. This maintenance frequency should be increased if solids disposal to the Grease Guardian is excessive.

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

PROBLEM: Odor/Odour reported

Is adequate vent/ventilation pipework installed as described in this manual?

Inlet pipe ventilation: Ventilation Tee and branch pipe. To prevent odors/odours escaping from the Grease Guardian into kitchen area the ventilation pipe should be terminated at the building's stack vent with the outlet ventilation as below. If ventilating is not possible then alternatively the pump out frequency will need to be increased to control and reduce waste odors/odours.

Outlet pipe ventilation. Required a/ to prevent sewer odours entering Grease Guardian and b/ in the absence of a pre-fitted air admittance valve/ dip-pipe—will also prevent any siphonage of the system under peak flows. The pipework should be terminated at final stack vent.

Has maintenance been carried out?

Ensure the daily strainer maintenance is carried out. Ensure the pump outs occur every 3 months so that any standing sludge is removed. Also seek to prevent any non-skimmable waste from entering the unit as already advised earlier.

Scrape visible plate waste to bin rather than rinsing this waste into the Grease Guardian.

Stagnant Water

For applications where a connected sink or oven has a very low flow ensure to flush the Grease Guardian unit with fresh water regularly to reduce stagnant water.

PROBLEM: No power or no time control display

If the unit trips out or loses power suddenly during use, disconnect the power supply to the system at the plug outlet immediately and seek service assistance.

GEDO

Distribution et conseil : GEDO FRANCE

04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr

565 avenue du Prado - 13008 Marseille - France

Incorrect installation/start up?
Has the unit been installed fully in accordance with the electrical instructions described earlier. Has the start up procedure also been followed?

Inadequate maintenance and servicing not carried out?
Power outages may occur if the correct pump-out or other agreed service regime is not followed, whereby excessive amounts of waste have gathered inside the unit and have affected the performance of the electrical components. Waste that enters the machine from sinks or appliances (other than pot sinks, dish pe-rinse sinks, combi ovens, wok cookers) can adversely affect electrical performance or shorten normal operational lifespan. For example the heater can trip out if it is immersed in waste other than fats, oils or grease. Or if the heater has not been checked and cleaned every 3 months.

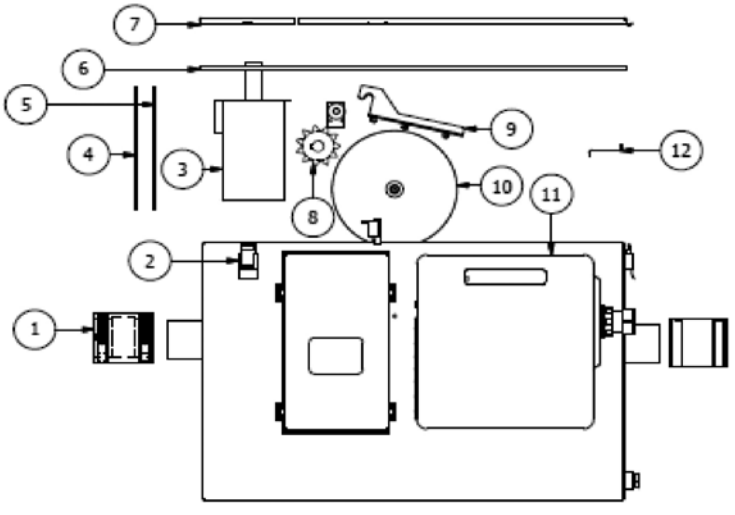
Water ingress?
If any external covers have been damaged or misplaced, or seals or fasteners have been damaged, or pressure washers are used to clean the external surfaces, moisture may enter the control panel and can cause electrical faults. The Grease Guardian is Ingress Protection level IPx4 rated and should not be pressure washed. The unit's external surfaces should normally be cleaned by damp hand cloth when required. Kitchen surface hand cleaners/polishes are permissible.

Correct weather proofed/internal location?
The unit should never be installed in outside locations which are exposed to temperatures or weather conditions inconsistent with normal room temperature. Note that sheltering from rain alone is not adequate, as additionally, condensation inside the control panel can arise if the unit is exposed to lower external temperatures. Sustained condensation can actually prove more destructive to the internal electrical components than occasional water splashes or spillages.

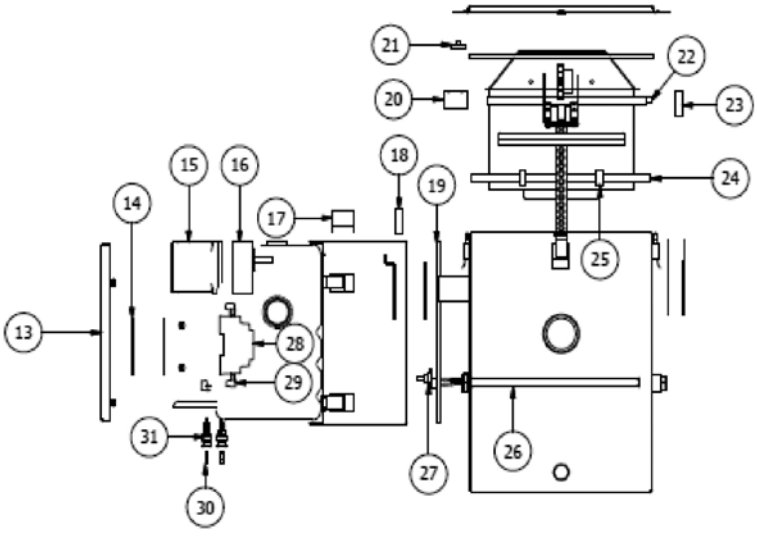
GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

PARTS EXPLOSION KEY PARTS

D1 to 4 front view explosion

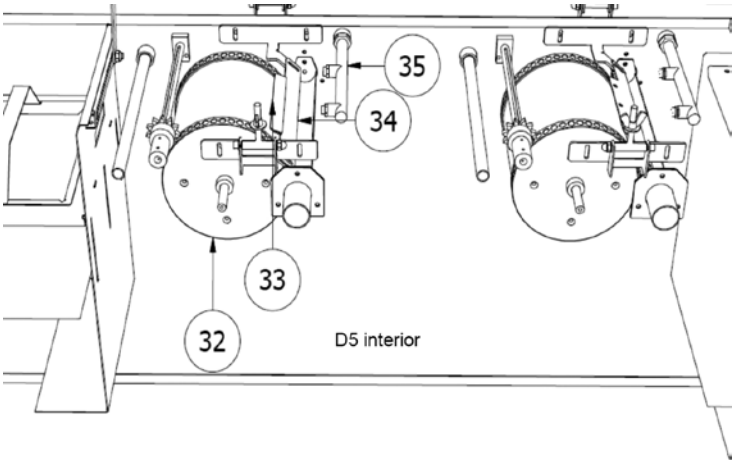


D1 to 4 outlet end view explosion



Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

D5 interior



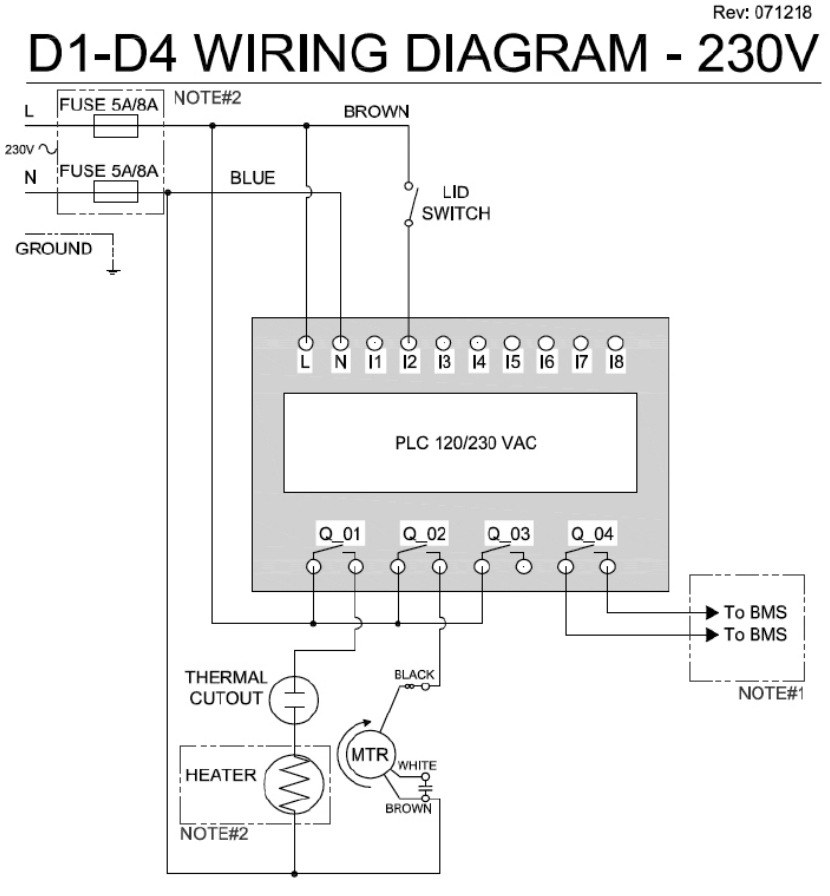
1. Rubber Tank Coupler
2. Tank/Panel Fastener
3. Lift Out Strainer
4. Flow Restrictor Plate
5. Flow Restrictor Gasket
6. Lid Gasket Strip
7. Main Tank Lid
8. Drive Cog
9. Wiper blade Assembly D1-4
10. Skimming Wheel D1-4
11. Oil/Grease Container
12. Outlet Inspection Plate
13. Control Panel Front Cover
14. Perspex viewer
15. Drive Motor D1-5
16. Gearbox D1-5
17. Motor Capacitor
18. Lid Switch
19. Tank to Panel Gasket
20. Motor Coupling
21. Magnet for Lid Switch
22. Drive Cog Axle
23. Bearing Block
24. Skimming Wheel Axle
25. Skimming Wheel Collar x 2
26. Heater (D1-2 600w, D3-5 1000w)
27. Thermal cut out
28. PLC controller
29. PLC Push fit Connector Blocks
30. Live/Neutral Fuses x 2
31. Fuse holders x 2

D5 specific parts:

32. Skimming Roller D5 x 2
33. Wiper blade D5 x 2
34. Wiper blade Assembly D5 x 2
35. Drum spray bar x 2

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

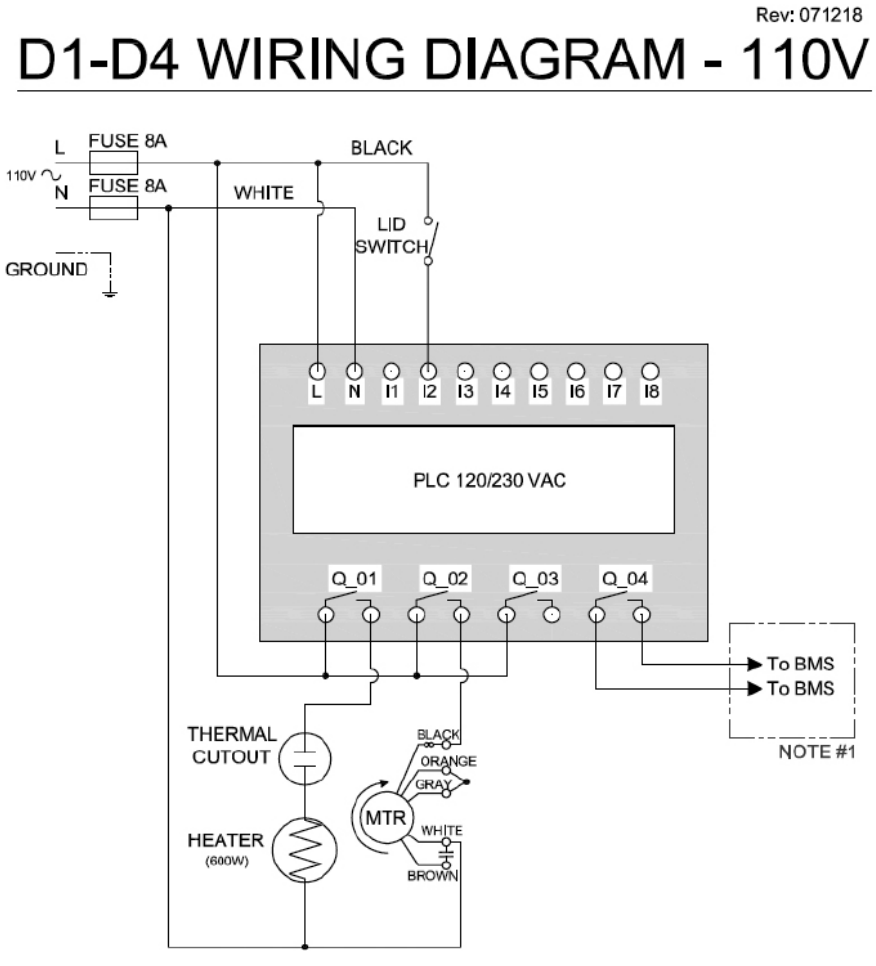
Appendix 1: D1 to D4 wiring diagram (230V)



NOTE #1: OPTIONAL - If connecting Output 4 (normally open contact) to the BMS (Building Management System) ensure that the maximum breaking voltage (5-30VDC, 24-250VAC) and maximum breaking current (8A) are not exceeded

NOTE #2: For D1 and D2 models, fuse sizes are 5A and heater size is 600W. For D3 and D4 models, fuse size is 8A and heater size is 1000W.

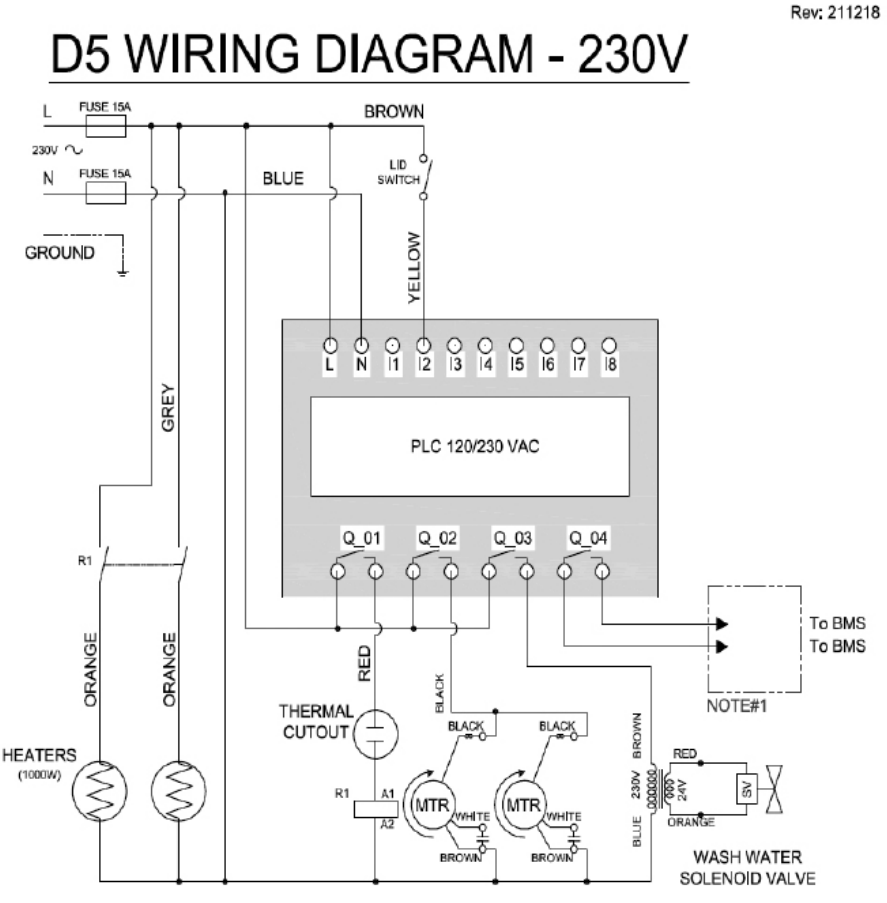
Appendix 2: D1-D4 wiring diagram (110V)



NOTE #1: OPTIONAL - If connecting Output 4 (normally open contact) to the BMS (Building Management System) ensure that the maximum breaking voltage (5-30VDC, 24-250VAC) and maximum breaking current (8A) are not exceeded

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

Appendix 3: D5 wiring diagram (230V)



NOTE #1: OPTIONAL - If connecting Output 4 (normally open contact) to the BMS (Building Management System) ensure that the maximum breaking voltage (5-30VDC, 24-250VAC) and maximum breaking current (8A) are not exceeded

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

Standard Warranty

FM Environmental Ltd warrants, to the original user, via the original dealer, that those products supplied by it and used in the service and in the manner for which they are intended shall be free from defects in materials and workmanship for a period of 1YEAR.

a) The warranty period commences from the invoice date of the Grease Guardian product sale.

b) All warranty claims must be processed through the Dealer from whom the equipment was purchased. The Dealer will co-operate with the purchaser throughout the warranty claims procedure and will arrange any necessary repairs using genuine Grease Guardian parts. The use of non-genuine Grease Guardian parts will void the warranty.

c) If the original Dealer is no longer able to fulfil their obligations please contact FM Environmental Ltd with full details of the claim including unit serial number, by way of the warranty claims form.

d) Any warranty claim can only relate to a specific part that is proven to be at fault and for which a replacement will be supplied but cannot be extended to constitute a claim against the complete appliance.

e) FM Environmental Ltd will supply the Dealer with any warranty parts required subject to the claim being validated after return of the faulty items.

f) All replacement parts have a 60 day replacement warranty. Clean defective parts shall be returned, within the warranty period, with proof of purchase, to FM Environmental Ltd, transportation charges prepaid, for warranty evaluation. At FM Environmental Ltd's option, based on the determination of the warranty evaluation, FM Environmental Ltd may repair or supply a replacement part from its factory. Any and all items which may be returned shall include the serial number of the unit from which the item was removed, and a return goods authorization number issued by FM Environmental Ltd.

g) This warranty is void if the product has been damaged by its customer prior to acceptance or as a result of unreasonable use, neglect, flooding, alteration, improper installation, improper quarterly (4 times yearly) service, maintenance neglect, improper electrical service, installation and/or operation without timer controls, or other causes not arising out of defects in material or workmanship. Equipment must be installed according to manufacturer's guidelines. This warranty is void if equipment is used in excess of rated flow. FM Environmental Ltd products are intended to remove only free floating oils and grease. FM Environmental Ltd products do not remove emulsified fats and oils. FM Environmental Ltd shall not be responsible for damage to equipment which results from vault flooding, sewer line back-up, pumping or lift station failure, ambient water flow or other sources of water damage. This warranty is void if the serial number on the product has been altered or defaced. FM Environmental Ltd will not replace electrical parts which have been installed in damp or weather exposed vaults or external locations. This warranty is void should use, installation and application be contrary to a written agreement between FM Environmental Ltd and the user,

h) FM Environmental Ltd does not make any other representations or warranties, express or implied, including, but not limited to, any implied warranty or merchantability and any implied warranty of fitness or performance for a particular purpose.

i) The sole and exclusive remedy with respect to the above limited warranty or with respect to any other claim relating to defects or any other condition or use of the product supplied by FM Environmental Ltd, however caused, and whether such claim is based upon warranty, contract, negligence, strict liability or any other theory, is LIMITED to the repair or replacement of the part or product, excluding labour or any other cost to remove or install said part or product or, at FM Environmental Ltd option, to repayment of the purchase price. Notice of any such claim must be given in writing to FM Environmental Ltd within 15 months after purchase of the product and within 12 months of installation.

j) In no event shall FM Environmental Ltd be liable for special, direct, indirect, incidental, personal, property or consequential damages, including but not limited to, loss of use or profits or to interruption of business activity. FM Environmental Ltd neither assumes nor authorizes any representative or any other person to assume any liability in connection with the sale of its products. FM Environmental Ltd makes no warranties, express or implied, with respect to parts, accessories, components or other goods not in FM Environmental Ltd's scope of supply. Alteration and/or substitution of FM Environmental Ltd parts, assemblies, accessories including electrical and/or mechanical components voids FM Environmental Ltd warranty.

k) Any damage caused during transportation, either to the packaging or on the Grease Guardian product itself, should be noted with the delivery driver on reception and reported back to the original Dealer, with unit serial number and photographic evidence, within one week of goods received date. In no event shall FM Environmental Ltd be liable for damaged goods either transported by companies other than those appointed by FM Environmental Ltd or for goods opened and repackaged by others, which are then transported by ANY company.

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

l) Marks or scratches on any part of the product that do not directly affect system operation will be judged on a case by case basis in terms of severity. These must only be reported within 1 week of opening the original packaging, and be in the form of a written report clearly stating the issue concerned, enclosed with unit serial number and photographic evidence, to the Dealer.

10 YEAR ANTI - PERFORATION WARRANTY ON GREASE GUARDIAN STAINLESS STEEL TANK

FM Environmental Ltd warrants, to the original user, that the Grease Guardian main tank supplied and used in the service and in the manner for which it is intended shall be free from defects in materials and workmanship for a period of 10 YEARS. This Warranty is void should the product be damaged by the customer prior to acceptance or as a result of unreasonable use neglect, alteration, improper installation, improper service, maintenance neglect, installation or

other causes not arising out of defects in material or workmanship.

The warranty is also void should any of the following conditions exist at any time prior to the defect becoming apparent in or around the main tank:

- Salinity level exceeding 1000 ppm
- Chloride level exceeding 250ppm
- pH lower than 6 or greater than 9
- Chlorine levels (from the use of bleach detergents or similar) exceeding 2ppm are not to be poured directly into the tank.

The warranty is also void in following instances:

- Detergents poured directly into the tank or in high concentrations. The use of bleach (chlorine) and aggressive chemicals when poured in sinks and fixtures discharging into the Grease Guardian is to be limited, and the tank is to be flushed with running tap water for a minimum duration of 5 minutes after these are used in the sinks so to dilute their effect.
- Venting not provided on the inlet and outlet pipe as per the instructions given, thus inhibiting the venting out of any corrosive gases
- Sludge emptying, if not happening on a regular basis will allow for the accumulation of heavy deposits at the bottom of the tank and these will create corrosion problems. The tank should be emptied, cleaned from sludge and refilled with clean water every 3 months
- Water softeners and reverse osmosis system reject effluent, if allowed to enter the tank will increase the salinity levels of the water and induce corrosion. Reject waters of water softeners and reverse osmosis units have to by-pass the unit and discharge in the discharge pipe after the outlet
- Daily normal water discharge into the unit should not be inhibited, where regular discharge of water from sinks/fixtures should happen for a minimum of 5 minutes daily so as to avoid static water conditions which in themselves might induce corrosion.

GEDO
Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France

Grease Guardian®

Frontline Engineering

IRELAND & UK OFFICE
Grease Guardian

Greenbank Industrial Estate
Newry, BT34 2QX, Northern Ireland, UK

Telephone: +44 [0] 28 302 66616
Email: technical@greaseguardian.com

UNITED STATES OFFICE
Grease Guardian

127 Cliffside Drive
Yonkers NY 10710, U.S.A

Telephone: +001 1800 550 3134
Office: +001 914 375 0902
Mobile: +001 914 316 5671
Email: des@greaseguardian.com

MALTA OFFICE
FM Environmental [Malta] Ltd

Water Technology House
A15B Industrial Estate Marsa, Malta

Telephone: +356 2122 6172
Email: fmmalta@fmenvironmental.com

GREASE GUARDIAN

GEDO

Distribution et conseil : GEDO FRANCE
04 85 88 02 75 | separateur@gedo.fr | separateurs.gedo.fr
565 avenue du Prado - 13008 Marseille - France