

Aqua2use® GWTS 2000

"The Answer for Greywater Reuse"

www.aqua2use.com

Installation and Operation Manual



Congratulations, you are now the proud owner of an Aqua2use® GWTS 2000!

Matala®
"Make water alive"

Congratulations on your purchase of the Aqua2use greywater Treatment System (hereafter referred to as Aqua2use GWTS)! Thanks for demonstrating your confidence in us and our product. As we would like you to achieve long-term satisfaction from your system, we would like to ask you to take the time to read the following instructions carefully.

Your Aqua2use GWTS is designed to process greywater effluent from showers, baths, laundry machines and hand-wash basins only. Depending on local regulations, less polluted effluent water from domestic kitchenettes may also be added to the former mentioned effluents, on condition that it is pre-treated through a grease trap.

The water produced by your Aqua2use GWTS can be used indoors, for toilet flushing, washing machines and general cleaning purposes. Furthermore, it can be used for watering the garden and outdoor cleaning purposes.

When operated and maintained correctly, the system supplies constantly high water quality in accordance with:

- The requirements of the Australian NSW Health Department's Domestic Greywater Treatment Systems Accreditation Guidelines: 2005.
- The Australian Class A criteria as defined in Queensland Water Recycling Guidelines: December 2005.
- The hygienic/microbiological requirements of the EU directive on the quality of bath water of 8 December 1975 and table 3 of the fbr information sheet H201 of January 2005.



- All other sources of blackwater and wastewater must be avoided and must not be treated by your Aqua2use GWTS: mechanically un-pretreated highly contaminated kitchen waste water, effluent from dishwashers, sewage water and water containing dyestuffs (paint residue, textile and hair dyes) are not suitable for operation.
- Only non-aggressive sewage water without faecal matter (i.e. without concentrated acids and alkalis) is suitable.
- Any use beyond this does not constitute designated use. The manufacturer and vendor are not liable for damage resulting from such misuse!



Safety instructions

Operators and installers of the Aqua2use GWTS 2000 must read these safety instructions in detail and keep these instructions in a safe place for later usage.

This product was developed in accordance with the latest technical standards, produced with great care and subjected to continuous quality control. The operating/installation instructions contain important information for safe, correct and efficient operation of the system. They must be observed to ensure reliability of the system and to prevent danger. If additional information or instructions are required, or, in the event of damage, please contact your contractual partner/specialist dealer.

The present safety instructions are based on general practice and are strictly meant as advice. Please consult and respect safety regulations and rules as provided by the local authority where the system will be installed. In case of any contradiction or discrepancy between the present safety instructions and prevalent local regulations, please take note that the local regulations must prevail.

Failure to observe safety instructions and local safety rules may render danger to persons, equipments and the environment. Any and all claims for compensation will consequently be rendered null and void.

Installation, supervision and inspection of installation as well as commissioning of the Aqua2use GWTS 2000 must be carried out by authorised and qualified specialists who have carefully studied this Installation and Operation Manual .

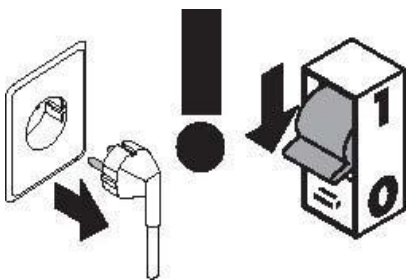
All actions and decisions taken by these specialists must be taken with consideration of prevention of pollution or contamination of drinking water supplies, as well as prevention of stormwater pollution.

Further, work must be carried out in compliance with relevant applicable technical norms for plumbing, electrical installations, potable water supply and protection, sewage and stormwater.

Whenever contact with wastewater is expected while working with the Aqua2use GWTS, please wear protective gloves and clothing.

For all installation work and correction of technical work as well as maintenance of the system, it is strongly advised to disconnect the system from the power supply. The power supply must be cut off in a way that it cannot be switched on inadvertently.

When switching the power back on for start-up and process control monitoring, make sure that the system's electrical circuits are well grounded.



The electrical equipment must comply with local regulations for general electrical equipment. All sockets must be provided with earthing terminals, and the main electrical power supply must be provided with a 30 mA residual electrical current circuit breaker.

WORKING PRINCIPLE

Aqua2use® Greywater Treatment System GWTS 2000

THE ANSWER FOR GREYWATER REUSE



This is how Aqua2use® greywater treatment system works :

- 1 Pre-Filtration**
Progressive Depth Filtration, a step system, first filters out bigger and then smaller particles, catching 60% to 90% of the suspended solids. Grit, hair lint, sand, soap scum, and silt are taken out.
- 2 Buffer Chamber / Active Sludge Treatment / Skimming**
Buffering : The greywater flow to the treatment system is irregular. The flow usually experiences a peak in the morning and evening. The irregular flow is collected and buffered in this tank in order to secure a more regular flow to the next sections of the treatment system. Simultaneously, the buffer chamber operates as an active sludge process tank with an integrated skimmer, foam ejection, and purging of sediment and sludge.
- 3 Air Water Pump**
Air transports the water without grinding the particles.
- 4 Second Sedimentation Process**
This tank gathers the organic sediments that were produced during the active sludge process.
- 5 Two-Fold Biological Treatment**
The water undergoes two stages of Matala® progressive 3-D biofiltration. The secondary biofiltration process is resilient against shock loads. There are additionally fixed biofilter skimmers. The rotating air spitter periodically clears the Matala® biofilter media of attached flock. This cleaning feature is built-in and can be auto-programmed.
- 6 UV Disinfection**
After the two-stage biological treatment, the water flows through a stainless steel chamber UV-C system for disinfection.
- 7 Drainage**
Each chamber has its own sludge collection and purging. The concentrated sludge and sediment is disposed of through the drainage chamber connected to the sewage or septic tank.
- 8 Control Panel**
The electronic control panel contains programmable functions and operational settings, including self-cleaning, sequencing, energy saving and functional alarms.

INSTALLATION REQUIREMENTS

- Avoid any cross connection between the mains water supply piping for drinking water and the Aqua2use GWTS treated water!
- The system overflow and drainage must be fitted with a P-trap or S-Trap (stench/air trap/siphon) and must be provided with a non-return-valve to avoid any return of main sewage water to the system.
- The Aqua2use GWTS must be vented separately.
- The water supply lines for treated and clarified water produced by the system are to be permanently marked in color up to the points of usage.
- Cold water supply lines (mains water top-up lines) are to have heat insulation.
- The place of installation must be frost-proof, dry, protected from the weather and well ventilated.
- The system must be placed on an even surface with a max slope of 2%. If necessary, this surface must be aligned.
- The load-bearing capacity of the substructure of the installation surface must be at least 1250 kg/m².
- If installed indoors, the necessary room height must be at least 240 cm.
- There must be a floor drain in the installation room.
- Installing a water meter allows control of the volume of treated or clarified water produced. The saving can thus be calculated.
- The draw-off points are to be marked “Not drinking water”.

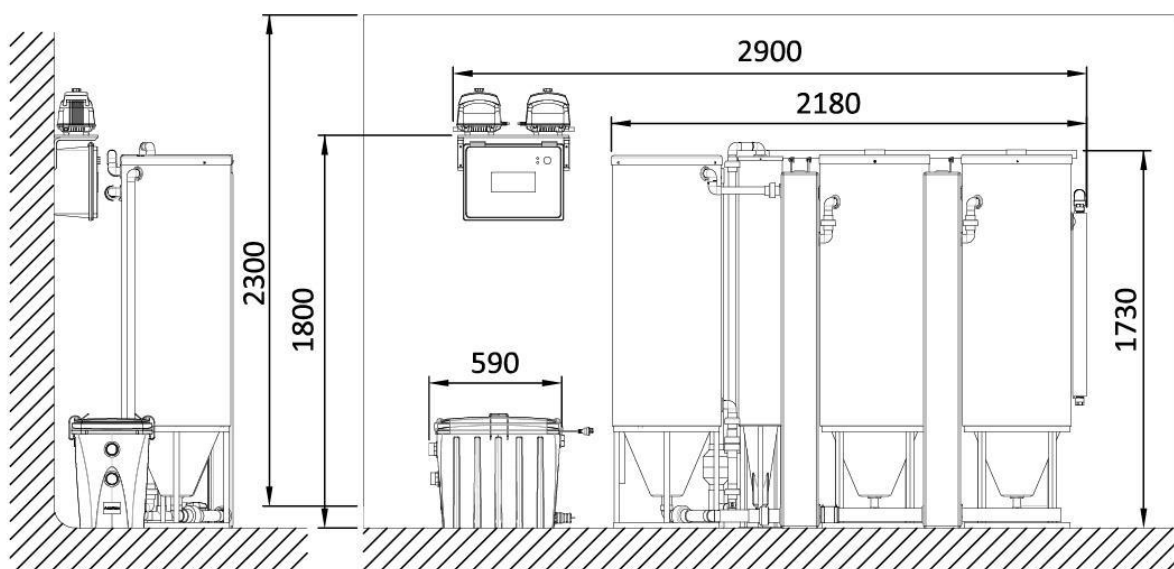
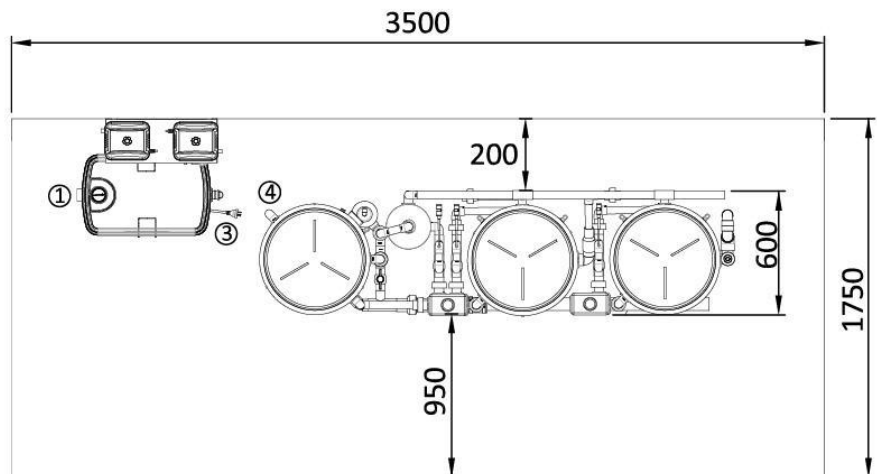
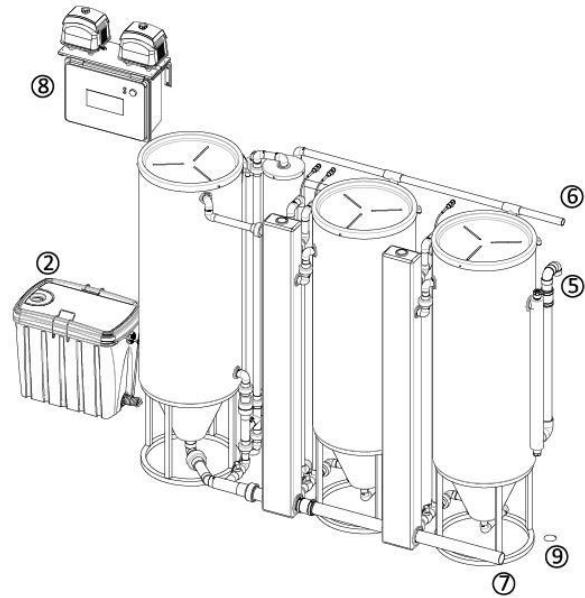
INSTALLATION REQUIREMENTS

- Every Aqua2use GWTS 2000 comes with a factory preset control unit programmed to cope with a daily greywater intake of 60% to 100% of its nameplate capacity. Higher daily volumes will be diverted to the sewage drain via overflow. If the expected greywater supply is foreseen to be below 60% on a regular basis, please contact the manufacturer to obtain instructions for altering the control unit program setting.
- With its automated daily operation, the Aqua2use GWTS doesn't need any human intervention for cleaning, except for its Aqua2use GWDD prefilter. The ball valves at the bottom of the tank are for eventual flushing of the tanks in case unintended system contaminations with chemicals or fluids that are not recognized as greywater and may adversely affect the bio-filtration process.

The Aqua2use re-filter should be maintained on a regular basis. We suggest inspecting the filter mats after intake of about 60,000 liter of greywater.

SPACE REQUIREMENTS AND CONNECTIONS

GWDD Prefilter		
1	Grey water inlet	1.5"
2	Prefilter	Can be installed above or semi-underground
3	Pump cable connection	Pump supplied with 6 ft. cable
GWTS2000		
4	Grey water inlet	1" connection from GWDD
5	Treated water outlet	1.5" pipe
6	Air vent outlet	1" pipe
7	Unit drainage	2" pipe to be provided by customer
8	Control box	Cable connection : 2.5m Power outlet to be provided by customer
9	Floor drainage	for 2" outlet Provided by the customer



UNITS: mm

Figure 1.

INSTALLATION DIAGRAM – Figure 2: Alternative A Indoor and B Outdoor

Aqua2use[®]
"The Answer for Greywater Reuse"

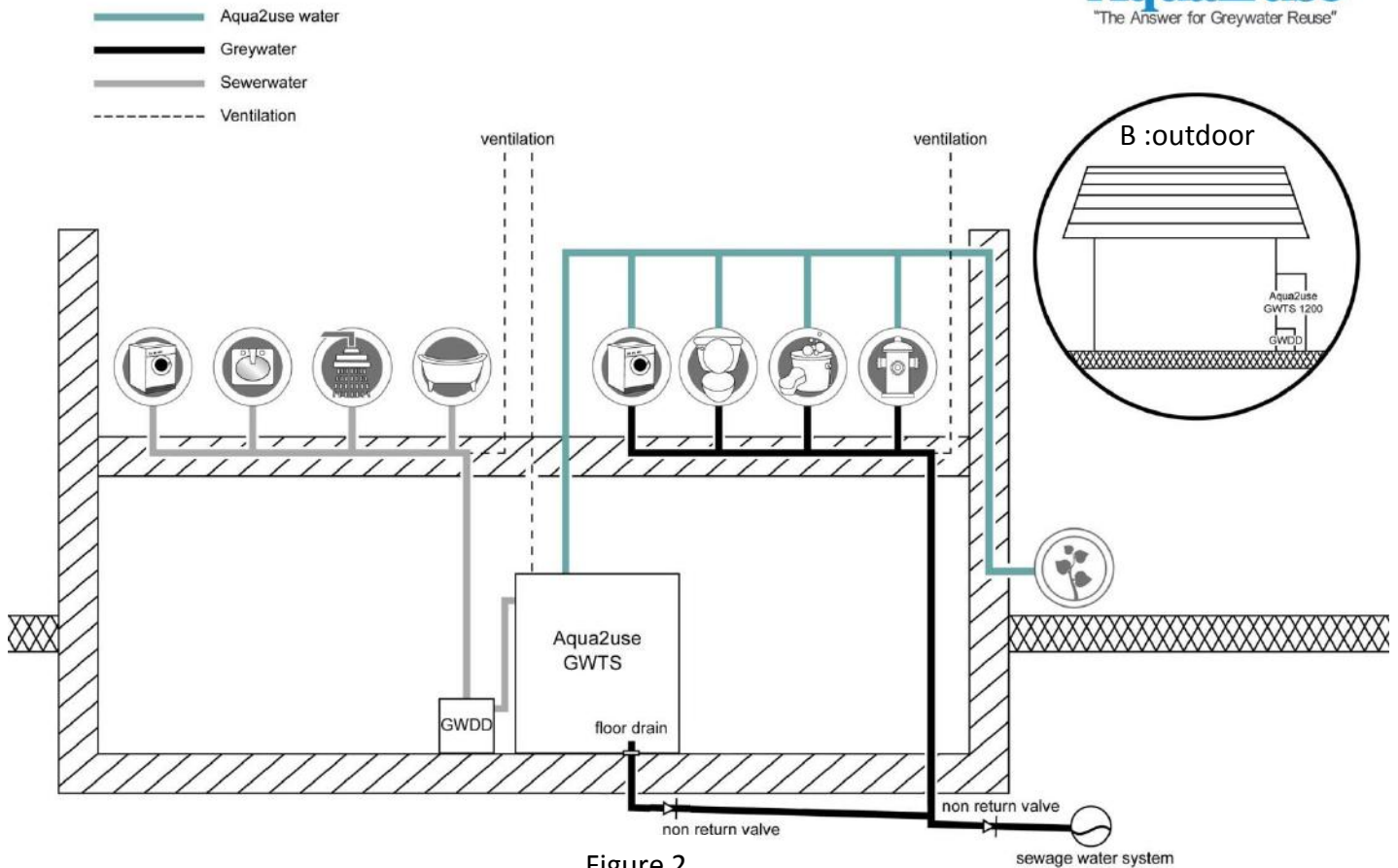


Figure 2



For proper functioning, the GWTS must be installed on a 100% horizontally levelled concrete slab or tiled floor space, preferably close to the greywater sewer pipe outside or inside the building where the greywater is generated. For a typical situation, please find a sketch of a slab with GWTS installed in Figure 1.

CONNECTING YOUR UNIT: (Connections: Greywater, Sewage, Electricity, Venting)

Delivery:

The Aqua2use GWTS 2000 is delivered on a pallet as a complete unit.

For protection during transport and handling, the system is fixed on the pallet and into a protective packaging crate.

We recommend wearing suitable **protective gloves** when connecting the unit.

Installation of the unit:

Step 1:

Unpack the wood box



** When using a fork lift to move GWTS 2000 care needs to be taken to insert the forks properly underneath the wooden pallet to avoid damaging the tanks and keep the system balanced.

Before installing the system, the working space, needs to be ready, and the necessary pipes / fittings to connect the unit are to be prepared. To prevent structure-borne noise from being transmitted, the system is to be installed in such a way that it does not have direct contact with adjacent walls.

When installing the Aqua2use GWTS please pay special attention that the concrete base for the unit is 100% horizontally and vertically aligned. This is very important for proper functioning of the skimmers in the biofilter tanks.

Most of the joints are connected by separable unions.

The disassembling work can be done easily and tool-free.

There are O-rings inside the unions.

Don't lose them while disassembling and reassembling.



Step 2:

Attach the control box and the air pump shelf to the wall with 8 screws and anchors.



Figure 5. Inlet and outlet connections

Step 3:

Now assemble the Aqua2use GWDD in accordance with the instructions attached at the end of this document.

The Aqua2use GWDD pre-filter can now be placed in proximity of the Aqua2use GWTS. It can be placed above ground or underground, protected in a chamber with a trafficable cover.

Now connect the greywater supply pipe to the Aqua2use GWDD 2" inlet (Fig. 6). For easy connection of the greywater pipe to the inlet we advise the use of a flexible coupling (such as Fernco couplings). Connect the Aqua2use GWDD pump outlet to the 1" PVC pipe (Fig. 7) that feeds the first buffer and process tank of the system (See Fig. 5 Buffer tank).

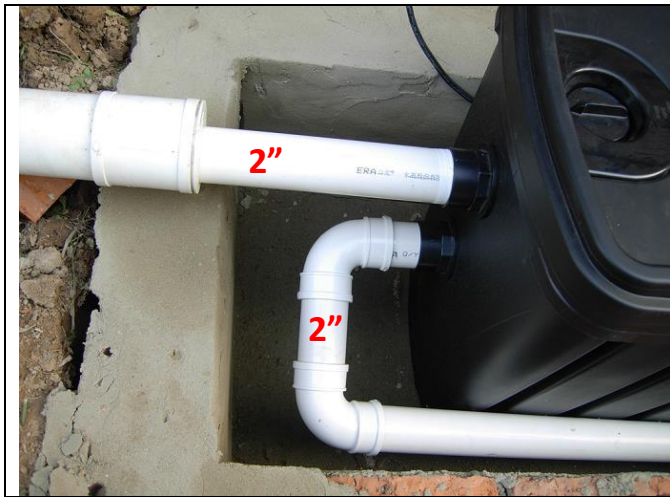


Figure 6



Figure 7

Step 4:

Connect the 1 1/2" outlet for treated and clarified water with the inlet pipe of the treated water storage tank (not supplied with the system, to be provided by the customer). Such storage tanks may be installed above or underground, depending on your project needs. Above ground tanks must be non-transparent to avoid penetration of sunlight, which might cause the water to turn green and render it improper for use due to algae growth inside the tank.

Make sure to leave an air gap between the pipe feeding treated water from the Aqua2use GWTS and the maximum water level in the treated water storage tank to avoid any siphoning of the treated water.

Step 5:

Connect the 1" system ventilation piping to the building's existing plumbing ventilation pipe line or to a new external ventilation pipe.

Step 6:

Connecting air pipes:

All pipes and air ports are labeled with numbers and port description.

Connect the eight pipes to the right ports.



Step 7: Preparation for system startup

Please make sure that the GWTS' drainage is properly assembled and connected to the sewerage piping in accordance with local stipulations. The 3 valves that allow emptying the tanks into the main drainage pipe must be completely closed before the proceeding with the next steps.

We now start to do the basic function test and prepare for system normal operation.

7.1 Remove the covers from the buffer tank and biofilter tanks.



7.2 Disconnect the pipe from the cover of the sedimentation tank, and rotate the pipe towards the buffer tank.

This is a temporary setup for the Air-Water-Pump function test (see 7.4)



7.3 Remove the sedimentation tank cover. Start to fill this tank with greywater, rainwater or tap water until water overflows into the biofilter tanks and finally out of the GWTS system via the UVC outlet.



It is important to have water in UVC chamber when the system (UVC) will be connected to the electric power network.

7.4 Air Water Pump (AWP) function test:

Fill up the first buffer with grey water or tap water till water starts overflow into the central pipe.



When everything is ready, connect the power cord of the GWTS Control Unit to a temporary power supply and then turn on the power (push the circuit breaker lever up). The system will start in a few seconds and will first proceed with a quick startup system purge, after which the AWP begins to pump water back to Z2 tank with our set time intervals.

In between each pumping cycle, please confirm aeration is working in the buffer and biofilter tanks. At each AWP cycle, confirm that the aeration in the biofilter tank is briefly interrupted.

7.5 Put all tank covers back and reconnect the AWP pipe back to the sedimentation tank.

Now the system is ready for work.

Step 8:

Connect the Aqua2use GWTS control and monitoring unit to a permanent power outlet with a circuit breaker (see Fig. 10). Such mains electrical supply to which the system is connected must have fault current protection (residual current circuit breaker). Once connected to the mains power, the LCD screen from the monitoring unit will lighten up.



Figure 8. Control and Monitoring Unit with circuit breaker



Circuit breaker

Step 9:

Start-up and commissioning should be preferably done by a licensed technician.

The Aqua2use GWTS comes standard with a preset process control unit that provides digital reading and monitoring of the functions. (Figure 9)

Adjustment of the process program might be necessary if the volume of greywater daily supply is <60% of the systems process capacity. Please monitor the daily greywater inflow volume and inform your supplier if the average daily supply is <60%.

During start-up of the system, please check for the following:

- Both air pumps are working properly.
- There are no leaks in the air tubing.
- All solenoid valves are properly functioning.
- The indicator light of the UVC system is on.
- The LCD monitoring unit functions properly.

Before you can put your system into operation, please ensure that the following requirements are fulfilled:

- Confirm that the system is 100% aligned horizontally and vertically.
- Check that there are no leaks for all pipe work.
- Check that the 3-way valve of the Aqua2use GWDD is in the correct position so that greywater can freely flow into this unit.

Connection to the power and start-up of the process program requires the following steps:

- Connect the power connection cable of the Aqua2use Electrical / Electronical Monitoring Unit.
- Connect the power cable of the Aqua2use GWDD pre-filter to a socket outlet below in the above mentioned Monitoring Unit.
- The pre-filter will automatically switch on when water flows to the inlet of the tank and the level in the tank reaches the upper float switch.
- At start-up, the process program will first drain any sediments from the tanks before switching to its normal pumping regime

WARNINGS AND PRECAUTIONS FOR GREYWATER REUSE

- Do not connect your Aqua2use® GWTS 2000 to your kitchen sink, dishwasher or a toilet system.
- When washing items such as soiled nappies, please switch your diversion valve to divert direct to the sewerage system.
- Do not distribute greywater from your Aqua2use® GWTS 2000 unit via sprinklers or allow for airborne dispersion.
- Only irrigate when necessary and switch unit to divert when raining.
- Do not let diverted greywater run off into neighbouring properties.
- Do not leave the unit unattended when carrying out maintenance or when the cover is removed.
- In case of extended periods of nonoperation it is advised service and clean the unit to avoid the possibility of drying out the sludge on the filters.

WARRANTY

- Matala Water Technology Co., Ltd. warrants this unit against defects in materials and workmanship for a period of 24 months from the date of purchase.
- All faulty parts or pump must be returned to the manufacturer for the warranty to be upheld.
- Parts or pumps will be replaced or repaired upon inspection if deemed to be faulty if within the warranty period and the fault was no caused by misuse.
- Incorrect installation or operation of your unit is not covered by warranty.
- Damages incurred to persons or to property caused by incorrect operation or installation of your unit are not covered by this warranty.
- Warranty commences from date of purchase. Please provide proof of purchase with all warranty claims.

MATALA WATER TECHNOLOGY CO., LTD. warrants to the original purchaser of an Aqua2use GWTS1200 that the unit is to be free from defects in workmanship or faulty materials and equipments for a period of 24 months from the date of purchase. The warranty only applies to original end user and is not transferable.

The warranty may cover:

- The structural integrity of the individual tanks that are part of the system.
- The structural integrity of the supporting frame for the tanks, electrical control unit and air pumps.
- The structural integrity as well as the functioning and operation of the Aqua2use GWDD pump and Electronic Pump Control unit.
- The structural integrity as well as the functioning and operation of the UV disinfection system, excluding the UV lamp and quartz sleeve which are not warranted for breakage, due to their glass construction.
- The structural integrity as well as the functioning and operation of the air pumps, except for the integrated air filter that is a consumable component to be replaced or cleaned as required according to local dust and weather conditions.
-

- The structural integrity as well as the functioning and operation of the electrical and electronic control unit that monitors and operates the system in automatic mode according a preset program.

The warranty will not apply:

- (a) To defects or malfunctions resulting from failure to properly install, operate, or maintain the unit in accordance with printed or written instructions provided under the form of a manual and/or written communication at the time of installation and start-up of the Aqua2use GWTS2000. The installation and start-up must be done by licensed installers.
- (b) If system is not plugged into GFCI.
- (c) To failures resulting from abuse, accident, or negligence.
- (d) To normal maintenance services and the parts used in connection with such service.
- (e) To units which are not installed in accordance with applicable local codes, ordinances, and good trade practices.
- (f) If unit is used for purposes other than for what it was designed and manufactured.

In case of warranty claims, please contact your original supplier / local distributor who will verify the right to claim under guarantee. Such right to claim warranty must be proven by the purchaser by presentation of the time stamped purchase receipt. Please note that it is imperative that the following documents and details are produced when claiming warranty:

- (a) Purchase receipt
- (b) Designation of the installed apparatus, adding a description of the history and conditions of operation.
- (c) Description of the noted defect (an accurate description of the defect makes a rapid repair easier for us) with pictures of any visual noticeable defect.

Matala Water Technology retains the sole right to verify if a warranty claim and consequently accept or refuse it in function of the provided information. If the warranty claim is accepted, Matala Water Technology retains the sole right whether to replace or repair the faulty materials, defective equipments, parts or components through consultation with and assistance by its local distributor.

The warranty additionally does not cover:

- (a) Damage due to lightening, extreme power surges, flooding, earthquakes, extreme weather conditions, and damage by frost or overheated water of more than 60 degrees Celsius (140 degrees Fahrenheit).
- (b) Damage due to operation within an environment or operation standards for which the Aqua2use GWTS1200 was not designed.
- (c) Any costs incurred for the labor to replace the faulty parts or their repair under warranty.
- (d) Any shipping charges to and from Matala Water Tech., Ltd. for parts to be replaced under warranty,
- (e) Any damage or malfunction which directly or indirectly results from the installation, and start-up of operation by non-licensed plumbers and/or electricians.
- (f) Any damage due to wrong use or willful abuse, including, without limitation, improper packaging and damage incurred during international and local shipping or transport, as such damage shall be covered by an appropriate insurance.

(g) Degrading cosmetic appearance such as rust, scratches, dents or fading of color.

Any implied warranties, which accompany the sale of the goods, are limited to their respective time constraints from the date of purchase. Matala Water Technology Co., Ltd. will only be responsible for the repair or replacement of any of its products or parts thereof that are found to be defective and will not bear the cost of any incidental or consequential damages arising out of the occurrence of such a defect.

Note :

Should your equipment not function correctly, please first check for other potential reasons, e.g. interruption of the power supply or incorrect handling.

MAINTENANCE OF YOUR AQUA2USE GWTS2000

Thanks to the Matala 3 dimensional progressive mechanical and biological Filtration technology and the auto process controller, the Aqua2use GWTS2000 is designed for minimum maintenance.



please check local regulation and rules with regards to the maintenance of greywater treatment system.

Advised minimum maintenance:

Every 12 month:

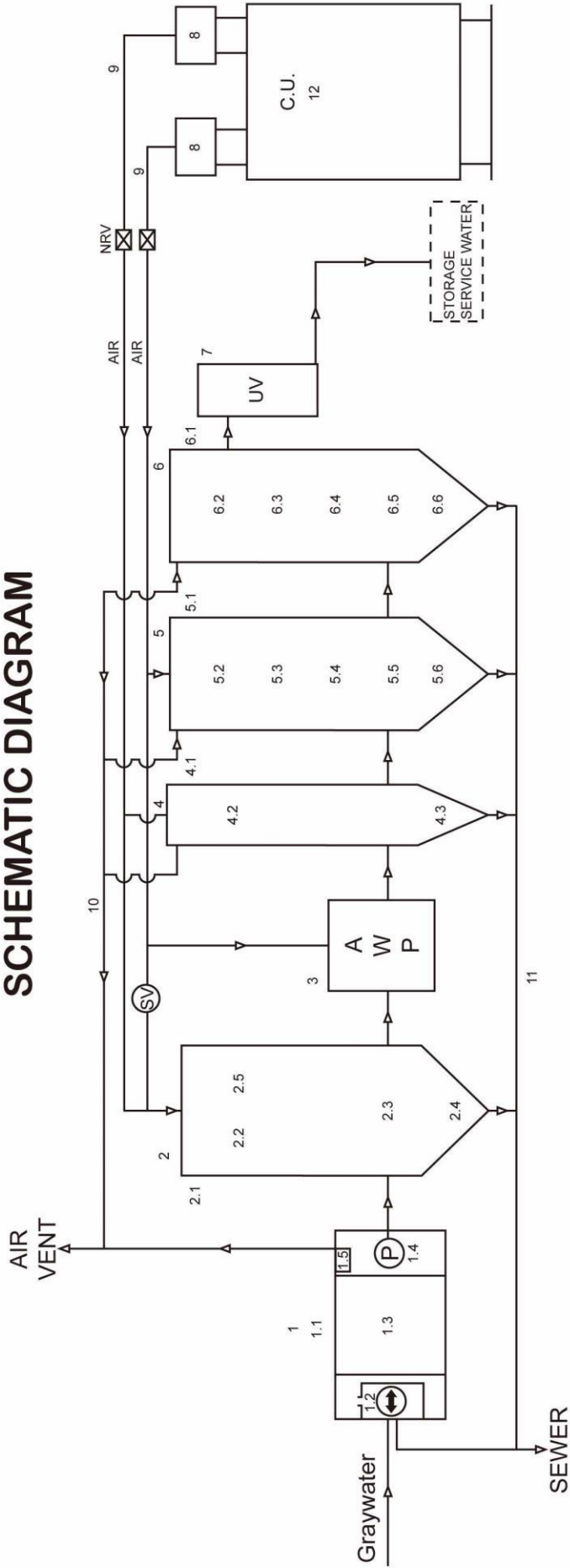
- a) clean the air filter of the 2 blowers. (air filter can be cleaned by water).
- b) replace the UV lamp.

Every 24 months:

Replace the diaphragms of the 2 blowers.

For maintenance of the prefilter, please refer to the Aqua2use GWDD Installation and Operating Instruction.

SCHEMATIC DIAGRAM










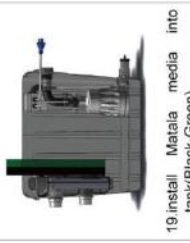

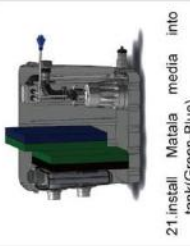
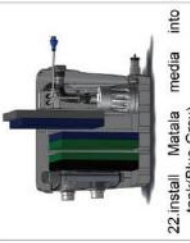






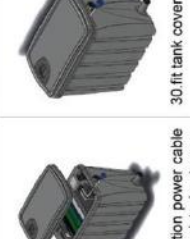


Aqua2use GWTS-1200 / 2000 Equipment List - see schematic diagram

1	Aqua2use GWDD	5.2	Fixed Skimmer
1.1	A2U GWDD Tank	5.3	Matala progressive filter media
1.2	Diverter basket with 3-way valve and overflow	5.4	Aeration base
1.3	Matala progressive filter media	5.5	Rotational Air Spitter
1.4	Submersible pump	5.6	Purge cone + Air Water Lift
1.5	EPC-Electronic pump control + float switches	6	Aqua2use Biochamber 2
2	Buffer and active sludge process tank	6.1	Conical Tank
2.1	Conical Tank	6.2	Fixed Skimmer
2.2	Travelling Skimmer	6.3	Matala progressive filter media
2.3	Aeration base	6.4	Aeration base
2.4	Purge cone + Air Water Lift	6.5	Rotational Air Spitter
2.5	Level controls	6.6	Purge cone + Air Water Lift
3	Air Water Dosing Pump	7	UV Disinfection
4	Sedimentation Tank	8	Hakko 40 Membrane blowers-2 pcs
4.1	Conical Tank	9	Aeration system
4.2	Particle separator	9.1	Aeration ducts + Non-return-valves and multiple fittings
4.3	Purge cone + Air Water Lift	10	Air venting duct + fittings
5	Aqua2use Biochamber 1	11	Drainage and overflow duct + fittings
5.1	Conical Tank	12	Control Unit with PCB, electricals, solenoids, pressure controls, alarms etc...

Prefilter for Aqua2use GWTS

Aqua2use GWDD Assembling Quick Guide

 <p>1. fit the drain</p>	 <p>2. ensure the backing nut is tight</p>	 <p>3. diversion basket assembling</p>
 <p>4. position internal elbow</p>	 <p>5. position diverting valve</p>	 <p>6. fit overflow pipe flush to bottom of basket</p>
 <p>7. make sure both female threads facing outward</p>	 <p>8. assemble outlet bulkhead fitting first(lower one)</p>	 <p>9. ensure diversion basket firmly fixed in the tank</p>
 <p>10. components of pump kit</p>	 <p>11. assemble hose tail to corrugated hose</p>	 <p>12. tighten with hose clamp</p>
 <p>13. tighten threaded socket to hose tail</p>	 <p>14. cut end section from the 4 step hose tail</p>	 <p>15. now fit the cut 4 step house tail to corrugated hose. tighten with hose clamp</p>

 <p>16. make sure both hose clamps are firm(completed pump kit assembly)</p>	 <p>17. gently install pump kit into tank (avoid drop into tank!)</p>	 <p>18. tighten nut to the pump outlet connector</p>
 <p>19. install Matala media into tank(Black-Green)</p>	 <p>20. making sure the Matala media is fully inserted</p>	 <p>21. install Matala media into tank(Green-Blue)</p>
 <p>22. install Matala media into tank(Blue-Grey)</p>	 <p>23. final check all Matala media in position (no gap underneath)</p>	 <p>24. fit Stainless steel tank bracket to tank</p>
 <p>25. make user everything is in position as per-diagram</p>	 <p>26. fit cover insert positioner into the cover insert cap</p>	 <p>27. clip the cover insert to the cover</p>
 <p>28. ensure the cover insert fix in the tank cover</p>	 <p>29. position power cable through tank cut away</p>	 <p>30. fit tank cover to tank</p>
 <p>31. fix the 2 pcs of stainless steel cover clamps to secure the system</p>		

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