

# Installation and Maintenance Instructions for the House and Garden GRAF Eco-Plus House and Garden System.

Eco-Plus in House and Garden System. 15/4

Art.-No.: 350021

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The instructions as outlined within this document must be adhered to at all times to maintain the twelve month warranty of the Eco-Plus Controller. Should it be established that the installation has deviated from the outlined instructions in any way, this warranty may be revoked. You will also find within the packaging separate installation instructions for the individual items that you have purchased as part of this GRAF Rain Harvesting System.

Should you find that some instructions are missing, please contact us as soon as possible so that you can be issued with an additional set.

The underground tank or tanks must be inspected for any possible damage before they are installed or laid into the construction pit.



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## 1. GENERAL

### 1.1 Safety

All current standard safety regulations for the prevention of accidents must be observed at all times when any work is being carried out on the rain harvesting system. This work includes any assembly, maintenance, inspections and repair that may be required on the system. In particular, a second person must always be present as a safety precaution when inspecting or installing the underground tanks.

Only competent and trained personnel must carry out the installation of this Eco- Plus House and Garden System and its individual system components.

The rainwater harvesting system operates automatically. In order to prevent the rainwater harvesting system from automatically "starting up" while work is being carried out, it must be electrically isolated from the mains supply by suitably qualified electricians. All electrical cables fittings and connections must be installed to the current regulations and standards.

GRAF offers an extensive range of accessories that are designed to interconnect with each other and can be used to expand existing systems. The use of accessory equipment supplied by others may result in damage to the GRAF Rainwater System and as a consequence the warranty on the whole system may be revoked.

As it's possible for water to leak from this system, we recommend that a drain be installed in the floor in the vicinity of the Eco-Plus Controller.

It is imperative that the Eco-Plus wall bracket be adequately fixed so that the system remains securely mounted on the wall.

### 1.2 Duty to label

### The rainwater is not suitable for human consumption or physical hygiene.

All lines and tapping points containing rainwater must bear written or image labels with the words "Not drinking water" (DIN 1988 part 2, sect. 3.3.2.). This is required to avoid cross connecting the rainwater supply to the mains serviced drinking water. These labels must be maintained for as long as the rainwater system is in service. Even with the correct labelling, errors can still occur (e.g. by children) and all service water taps connected with rain harvested water must be installed with childproof locks.

## 2. APPLICATIONS

A float level switch inside the rainwater underground tank controls the GRAF automatic changeover system to the mains water. The mains water is connected to a break tank that forms part of the Eco-Plus controller assembly. A float valve situated inside the break tank maintains the level of water within the break tank. This automatic system guarantees a continuation of supply with mains water should the underground rainwater tank ever become empty.

Rainwater can be used to water the garden, to flush the toilet, for the laundry and for general cleaning.

The GRAF In- House Eco-Plus system is intended for installation in frost protected areas and rooms that have built in drains to deal with any potential water leaks so as to prevent these rooms from flooding. Please find further details on the system layout, assembly and operation in the following document.

## **3. SPECIFICATIONS**

### 3.1 Dimensions and weight:

### Weight: ca. 30 kg



### 3.2 Control

Maximum working pressure: Minimum cut-in pressure:

Maximum cut-in pressure:

Control takes place via a float valve installed in the break tank.

<b>3.3</b> Float valve		
Working temperature:	30°C max.	
Working pressure:	0.3 – 10 bar	
Maximum flow:	1.7 m³/h	
Connections:	<sup>3</sup> ⁄4" AG	
3.4 3-way reversing valve		
Voltage / frequency:	230 V / 50 Hz	
Performance:	6 W (during valve movement)	
Maximum flow:	16 m³/h	
Opening time:	ca. 10 seconds	
Closing time:	ca. 5 seconds	
Maximum pressure:	10 bar	
Permitted differential pressure:	0.7 bar	
3.5 Pressure and flow control	ol ''Controlmatic"	
Voltage / frequency:	230 V / 50 Hz	
Protection category:	IP 44	
Maximum flow volume:	10m³/h	
Minimum flow volume:	0.1 m³/h	



10 bar

1.5 bar

2.6 bar

## **3. SPECIFICATIONS**

The pump may be restarted after a dry run by pressing the "RESET" button.

Please consult Hibernia if there are problems with the water "hammering" due to the action of quick acting valves or other fittings.

### 3.6 Pump

### Drive:

Single phase A.C. IP 44, insulation class F motor 220-240 V / 50 Hz with integrated overload protection,

### 3.6.1 Additional drinking water feed console 15/4

Power consumption:	660 W
Maximum delivery head:	35 m
Maximum pressure:	3.5 bar
Maximum delivery volume:	3600 l/h (also see diagram 2)
Maximum suction head:	3 m
Maximum suction length:	15 m
Also see diagram 1 regarding suct	ion head as function of the suction len

## Also see diagram 1 regarding suction head as function of the suction length of pipe.

### 3.6.2 Additional drinking water feed console 25/4

Power consumption:	800 W
Maximum delivery head:	43 m
Maximum pressure:	4.3 bar
Maximum delivery volume:	4200 l/h (also see diagram)
Maximum suction head:	3 m
Maximum suction length:	15 m

Also see diagram below regarding suction head as function of the suction length of pipe.

# Diagram 1



Suction Height as a Function of Suction Length







### 4. INSTALLATION AND ASSEMBLY

Remove all the components for the Eco-Plus House and Garden System from the packaging. Immediately check all the components for any possible damage. Any damage has to be reported prior to assembly and installation.

### 4.1 Wall-mounted assembly

The Eco-Plus House and Garden Controller is designed to be suspended from a wall or any other suitable structure. It must be installed in an area that is free from frost and that has a means of controlling the emergency overflow. When selecting a location, a clear area of approximately 500 mm must be left all around the unit to facilitate any maintenance works. The chosen wall or other structure has to be suitable to carry the controller weight when the break tank is full of water (40 kg approx.)



Support Bracket

Use the Eco-Plus controller support bracket as a template when marking the mounting holes at your chosen location on the wall where it is to be fixed. Drill the holes with a 12 drill to a depth of approximately 60 mm. Insert the enclosed plugs and locate the supporting bracket before inserting the screws. It is important that the support bracket be mounted horizontally. The controller is then hung onto the supporting bracket and the lower fixing point is marked on the wall. Remove the controller again and drill the marked location with a 10 drill and insert the relevant plug.

Glue the 4 self-adhesive rubber buffers onto the outer corners on the back of the controller before hanging it permanently onto the support bracket.





### 4.2 Connection of the emergency overflow

The emergency overflow consists of a standard DN 70 pipe. In a room that is fitted with a floor drain, it is sufficient to let the water from the emergency overflow onto the floor as it will then drain away from the room. If there is no floor drain fitted in the room, then the emergency overflow pipe should be connected to a similar sized pipe that is routed to an outside drain. In this case the emergency overflow pipe should remain open-ended so that there is never any danger of it becoming blocked.



### **Drinking water connection**

The 3/4" reinforced hose is installed between the float valve in the break tank and the mains water supply. It is imperative that the float valve is not twisted in any way when tightening the inlet pipe as this will cause problems with the water levels inside the break tank. We recommend the inclusion of an additional stop valve on the inlet pipe as this will facilitate easy access to the tank and float valve during future maintenance. The mains water pipe must be rinsed out well prior to the installation. A fine filter prior to the float valve would also assist the long term function of the float valve and the 3-way reversing valve.





## 4. INSTALLATION AND ASSEMBLY

### 4.3 Connection of the suction pipe

The 1" suction pipe is lead through the services duct from the Diamant Tank up to the Eco-Plus controller. The 1" suction pipe is then connected above the red 3-way reversing valve. We recommend the inclusion of an additional stop valve on the inlet suction pipe as this will facilitate easy access to the tank and 3-way reversing valve during future maintenance.



### 4.4 Connection of pressure pipe

The outlet pressure pipe (supplied by client) is connected to the pressure and flow controller. Standard polypropylene pressure pipe is adequate (do not use copper pipes) for this connection. We recommend the inclusion of an additional stop valve on the outlet pipe as this will facilitate easy access to the tank and controller during future maintenance.





## 4. INSTALLATION AND ASSEMBLY

### 4.5 Connection of the float switch

The float switch cable is lead through the services duct from the buried Diamant Tank to the Eco-Plus Controller. The special double plug is plugged into a standard 230 V socket. The 3-way valve is then connected to this double plug.

The float switch and cable are attached in the tank so that float head is suspended approximately 100 to 150 mm above the tank floor. The yellow counter weight is positioned approximately 200 mm above the float head.



## **5. INITIAL OPERATION**

The inlet and outlet pipes must be rinsed out with clean water prior to the start up of the system. Any Particles > 0.2 mm can lead to serious damage to the pump and the other components.

Never start the pump dry!

Unscrew the filling stud on the pump case and fill the pump body with water.



The suction pipe must also be filled with water prior to start-up. This can be achieved by undoing the suction pipe at the top of the red 3-way valve. Ensure that the 3 way valve is set to automatic [A]. Fill the entire system by opening the inlet valve on the filling hose until water exits from the opened outlet and free of any air bubbles. This procedure is a reliable means of removing any air from the pipework. The mains plug of the Controller can now be plugged into a socket (230 V / fuse protection 16 A slow fuse) and the system will start up automatically once an outlet has been opened downstream from the pump and controller. If the pump does not start or cuts out after a short period, press the "RESET" on the controller. This procedure may need to be repeated a number of times until all the air in the system is removed. Once all the air is removed and the pump is running smoothly, the outlet point can be closed. This will allow the pressure to build up in the pipework and once its reaches the required level the pump will switch off automatically.



## 6. MAINTENANCE AND CARE

### 6.1 Maintenance

The entire system has to be maintained at regular intervals (every 3 - 4 months). All screwed connections should be checked for tightness and for leaks. The function of the float valve should also be checked during these regular checks. If the system is not used over a long period of time or if there is a danger of frost, the system should be drained of all water.

### 6.2 Care

The Eco-Plus system can be wiped clean with damp cloth. If there is a lot of dirt on the unit, a damp cloth can be used with a mild cleaner. Never clean the unit with solvents or cleaners containing solvents

# 7. FAULTS AND REMEDIES

Fault	Cause	Remedy
Pump does not start	- No power supply	- Plug in mains plug or check power supply
	- Pump impeller blocked	- Use a qualified person to maintain or clean the pump
No pump suction	- Suction foot valve not in the water	- Lower suction foot valve below the water level
	- Pump without water	- Fill system with water
	- Air in suction pipe	- Release air from system, check the system seals.
	- Break Tank on controller blocked	- Clean the tank on the controller.
	- Maximum suction head exceeded or length of suction pipe exceeded	- Check suction height or change pump location or install submersible pump
Pump does not switch off	- Outlet possibly open	- Close outlet
	- Seal pressure pipe or outlet leak	- Seal pressure pipe or outlet
Insufficient delivery volume	- Suction head too high	- Check suction height or change pump location or install submersible pump
	- Break Tank on controller dirty	- Clean Break tank on the controller.
	- Contamination of individual system parts	- Clean all system parts, use qualified person to maintain pump
	- Delivery head too high	- Check delivery head or change pump location or use bigger pump
Thermal switch switches off pump	- Motor is overloaded due to contamination in the pump case	- Use a qualified person to maintain or clean pump
		- Prevent foreign materials from being sucked in

Any electrical repairs that may be required must be completed by a qualified electrician.





Notes:				

