Operating instructions
Solar irrigation system “Water Drops”

GB

These instructions relate ONLY to this product and contain important information for using the product for the first time. Please keep these instructions for later reference and should always accompany the product in the event of transference to a new user.

Customer support:
If you have problems or questions regarding this product, simply contact us!

By phone: +49 9605-92206-0
By e-mail for ordering spare parts: **ersatzteil@esotec.de**
By e-mail for questions about the product: **technik@esotec.de**
Product: Manufacturer Item No.: 101100

1. Introduction

Dear Costumer, thank you for purchasing the solar pump kit.
With this solar pump kit you purchased a product manufactured according to the current state of technology.

CE **This product fulfils all requirements of the valid European and national regulations. The conformity was proved. The relevant declarations and documentation are deposited with the manufacturer.**

To maintain this state and guarantee a safe operation, you as the user will have to follow this operating manual!

2. Safety Instructions

- **In case of damages caused by not following this operating manual, the warranty rights will expire! We exclude liability for any consequential damages!**
- **We exclude liability for property or personal damages caused by inappropriate handling or not following the safety instructions.**
- **In these cases any guarantee rights will expire.**

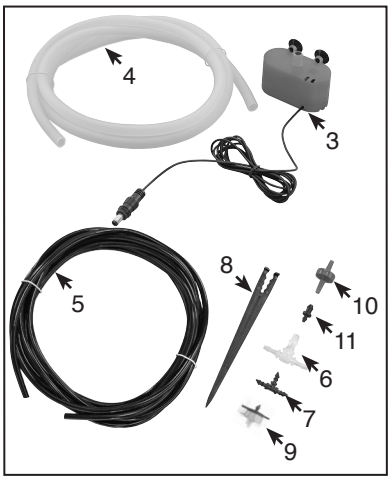
Due to safety and admission reasons (CE) it is not allowed to arbitrarily reconstruct and/or change the solar pump kit.
Therefore, please keep to the operating manual.
The accident prevention rules of the association of the industrial trade cooperative association for electric plants and working material are to be considered in industrial environments.

3. Function and intended use

The solar irrigation system is intended for outdoor use. With this system it is possible to irrigate the plants in the garden, in the greenhouse, in the hotbed, on the balcony or on the raised bed with a maximum of 15 water drippers. The irrigation is performed once a day at the break of dawn and once at nightfall. The operating time of the pump may be set between 0.5 minutes and 12 minutes. The dripping volume is fixed to 2 l/h.
Thus, you have the ideal solution for an automatic and network-independent irrigation of your potted plants or vegetable bed. The integrated diaphragm pump sucks water from a depth of up to 2 meters e.g. from a rainwater barrel. The crystalline solar module charges the integrated battery pack during the day and sunshine.
The means complete independence from the mains current!

4. Scope of delivery

1. 1 x control unit
2. 1 x solar module including connecting cable and holder
3. 1 x filter with float switch
4. 2 m suction hose transparent
5. 5 m pressure hose black
6. 1 x T-piece transparent
7. 15 x T-piece small black
8. 15 x hose holder
9. 15 x water dripper 2 l/h
10. valve
11. seal plug

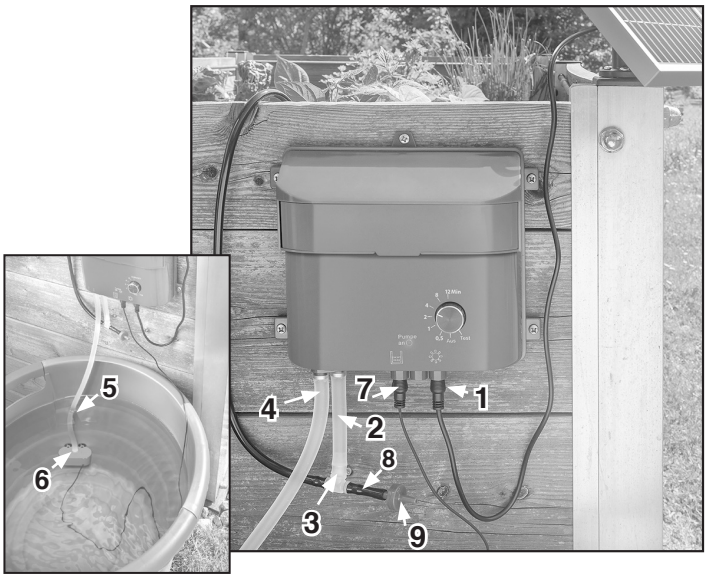


5. Assembly and putting into operation

1. Please carefully take all parts out of the package. Make sure that you have really taken all parts out of the package before disposing the package materials in an environmentally compatible way.

2. Choose an appropriate location for the control unit. In doing so, please pay attention to the fact that its position has to be higher than the maximum water level of the water reservoir. Protect the control unit against the direct influence of the weather, e.g. against too strong rain or direct spraying with the water hose.

3. Now choose a sunny, shadow-free place for the solar module. The solar module may be inserted into the ground with the ground spike or screwed-on with the enclosed holder.



4. Lay the cable for the solar module carefully and without tripping hazards. Connect the plug of the cable on the solar module with the associated socket on the control unit (1). The integrated battery is charged in case of adequately intensive solar radiation onto the solar module.

5. Remove the 2 protective caps from both nozzles for inflowing and outflowing water.

6. Cut off approx. 20 centimeters from the (transparent) suction hose and attach this short piece onto the nozzle for outflowing water. (2).

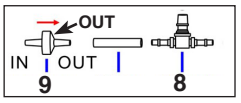
7. In this short piece of hose, please insert the T-reducer with its larger side (3).

8. On the nozzle for inflowing water, please attach the remaining (transparent) suction hose auf (4). This hose has to be laid up to the reservoir tank for water, e.g. a rainwater barrel (5).

9. Plug the suction filter with float switch onto the suction hose (6) and unroll the connecting cable. Fasten it to the side of the water barrel approx. 5 cm above the ground using the suction cups. This prevents the filter from sucking dirt from the bottom of the tank and clogging prematurely.

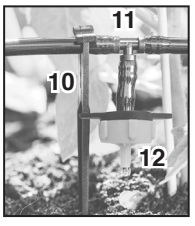
10. Now take the plug from the float switch in the filter and insert it into the socket on the control unit (7). The float switch is integrated in the housing of the filter. If the water level in the water barrel sinks, the pump is switched off and water must be refilled.

11. Cut off approx. 10 centimeters from the (black) irrigation hose and insert this short piece onto the free end of the T-reducer (8) which points upwards. In this short piece, please insert the (blue) ventilation valve (9). This valve prevents the uncontrolled running on of the water.



Note: Here, please make sure that the valve is inserted with the right side up!

12. With the remaining piece of the irrigation hose, the 15 hose holders (10), the 15 black T-pieces (11) and the 15 water drippers (12) you are now able to install the desired distribution grid for the irrigation. The dripping volume is fixed to 2 l/h.



13. With the multistage selector switch (13) on the housing you may set the time of operation of the pump. The pump pumps at the break of dawn and at nightfall depending on the set value. It may be selected in 6 stages in a range of 30 seconds (0.5 min) up to a maximum of 12 minutes. In the position „Test“ it is possible to test the pump or pump the air out of the hoses when the pump is put into operation for the first time.

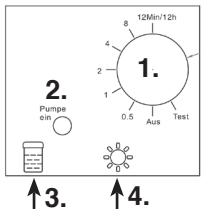
14. As soon as everything is assembled, please put the selector switch to the position „Test“. The pump will then start to work if the battery is charged sufficiently. The pump sucks in the water autonomously. In doing so, make sure that the filter of suction hose is below the water surface.

15. Now move the controller on the control unit to the desired pumping time.

The solar irrigation system is now ready for use!

Not required parts may be stored in the drawer in the control unit and taken out if needed.

6. The control unit



1. Rotary switch position	**Function**
“Test”	Test function and for the initial putting into operation!
“AUS”	Switched off, but the battery is charged via the solar module.
“0.5 – 12 min/12 h”	The pump pumps at the break of dawn and at nightfall depending on the set time.

2. LED display „Pump on“	**Meaning**
Green:	The pump is working.
Green flashing:	The battery is charging and the pump is off.
Red flashing:	Not enough water in the rain barrel.
Dark:	The built-in battery is discharged or defective.

3. Connection for the float switch
4. Connection for the solar module

7. Exchange of battery

1. To exchange the battery, please switch the rotary switch to the position “Off”.
2. Unscrew the 5 screws on the back side of the control unit and remove the cover.
3. Disconnect the battery and remove it from the holder.
4. Now insert an identical in construction battery pack with 3.6 V and a minimum of 1200 mAh (esotec spare part No.: 901021 „www.esotec.de“).
5. Close the cover and screw in the 5 screws.
6. Put the rotary switch into the desired position
7. The solar irrigation system is now ready for operation again.

Note: Used batteries have to be disposed of in an environmentally sound way and do not belong into the household waste. Your dealer is required by law to take back our old batteries.

8. Technical data

- Solar module nominal power:	0.7 Wp
- Max. water delivery volume:	36 l/h
- Volume each water dripper:	2 l/h
- Max water dripper:	15 pcs.
- battery pack:	NiMh 3,6 V/ 1200 mAh
- protection class:	III
- protection type:	IP 44

The battery pack has to be exchanged at the latest every 2 years!

For spare parts available for this system, please see under www.esotec.de

Note: Protect the pump against frost!
The system has to be dismantled in the cold winter months and stored in a warm place!

9. Safety Instructions:

DANGER for children! Keep children away from swallowable small parts (ascending pipe and sprinklers) and the packaging material. Danger of suffocation!

WARNING: risk of stumbling! Lay the connecting cable so that it will not become a trip hazard!

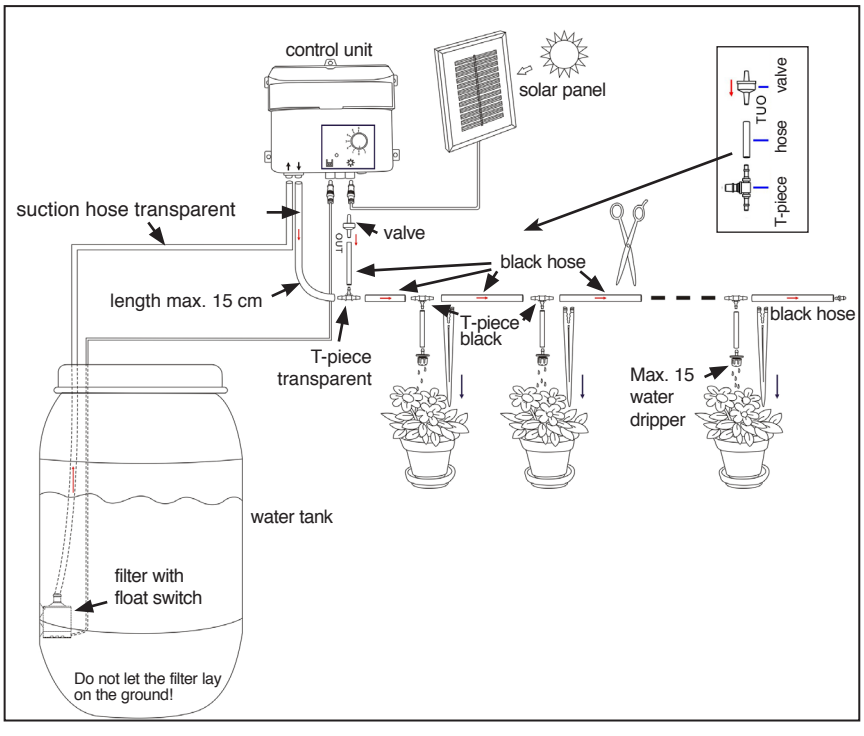
CAUTION Material damage! When setting up the solar module without module bracket, please pay attention to an adequate stability. The solar module may be damaged in case of tipping or in case of an impact of a foreign object.

Disposal instruction for electric appliances:

Dear customer, if you want to get rid of the article, please dispose it according to the current regulations. The municipal authority will provide you with information.

Rechargeable battery notes

- Rechargeable batteries should not be played with by children. Never leave rechargeable batteries lying around; they could be swallowed by children or pets.
- Rechargeable batteries must never be short-circuited, disassembled or thrown into fire. This leads to a danger of explosion!
- Leaking or damaged rechargeable batteries can cause chemical burns when they come into contact with skin. For this reason, please make use of suitable protective gloves.
- Rechargeable batteries should only be replaced by structurally identical rechargeable batteries from the same manufacturer. Normal batteries must not be used since these are not rechargeable.
- Make sure the rechargeable batteries are inserted with the correct polarity.
- For long periods of time of non-use (for example, storage), remove the inserted rechargeable batteries to avoid damages via the leaking rechargeable batteries.



Battery take-back

- Batteries must not be discarded into domestic waste.
- The consumer is legally required to return batteries after use, e.g. to public collecting centers or to battery distributors.
- Contaminant-containing batteries are labeled with the sign “crossed-out trashcan“ and one of the chemical symbols. Used batteries should be disposed environmentally friendly and should not be discarded into domestic waste. Your dealer is legally required to take back old batteries.

NiMh

10. irrigation volumes

The water quantity differs depending on how many water droppers are attached to the system. In addition, the set interval time at the control unit plays a big role.

The amount of water per watering cycle (twice a day) can be seen in the table below. Please note, the real water quantities may differ.

Interval	0,5 min.	1 min.	2 min.	4 min.	6 min.	12 min.
1 Dropper	0,016 l	0,033 l	0,066 l	0,133 l	0,199 l	0,399 l
2 Dropper	0,032 l	0,066 l	0,132 l	0,266 l	0,398 l	0,798 l
3 Dropper	0,048 l	0,099 l	0,198 l	0,399 l	0,597 l	1,197 l
4 Dropper	0,064 l	0,132 l	0,264 l	0,532 l	0,796 l	1,596 l
5 Dropper	0,080 l	0,165 l	0,330 l	0,665 l	0,995 l	1,995 l
6 Dropper	0,096 l	0,198 l	0,396 l	0,798 l	1,194 l	2,394 l
7 Dropper	0,112 l	0,231 l	0,462 l	0,931 l	1,393 l	2,793 l
8 Dropper	0,128 l	0,264 l	0,528 l	1,064 l	1,592 l	3,192 l
9 Dropper	0,144 l	0,297 l	0,594 l	1,197 l	1,791 l	3,591 l
10 Dropper	0,160 l	0,330 l	0,660 l	1,330 l	1,990 l	3,990 l
11 Dropper	0,176 l	0,363 l	0,726 l	1,463 l	2,189 l	4,389 l
12 Dropper	0,192 l	0,396 l	0,792 l	1,596 l	2,388 l	4,788 l
13 Dropper	0,208 l	0,429 l	0,858 l	1,729 l	2,587 l	5,187 l
14 Dropper	0,224 l	0,462 l	0,924 l	1,862 l	2,786 l	5,586 l
15 Dropper	0,240 l	0,495 l	0,990 l	1,995 l	2,985 l	6,000 l

If you want to plan your size of the water barrel, please add at least 10 litres to the barrel size. These serve as tolerance of the drippers and also as a reserve of weather-related influences (evaporation).

11. Care and maintenance

To guarantee trouble-free operation, the system must be cared for and maintained.

Occasionally wipe the solar module with the soft and slightly wet cloth.

The suction filter foam has to be washed out depending on the contamination.

Depending on the hardness of the water, the membrane pump should be washed regularly with clear tap water. This prevents the pump from calcifying.

If your water droppers are directly above the ground or even on the ground, check the water outlet for blockage.

Please dismantle the irrigation system in autumn and drain it completely. Please check that the pump is drained as well. Set the time selector switch to Test and let the pump run out of water. Please overwinter the system in a dry and frost-free room.

Disorders:

- During operation water runs out of the non-return valve!
The check valve was mounted incorrectly. Turn around and insert in the other way.

- The water droppers irrigate without the pump running.
Check the non-return valve for continuity and check the mounting direction.

- LED in the control unit does not light up!
Is the solar module connected? Change the batterypack!

- The system flashes red and there is no watering!
Check your water level in the water barrel. Check the cable of the water level sensor to make sure it is not damaged and that the plug is firmly inserted in the control unit.

- No water comes out of the rear drops during watering!
Remove the dripper from the line and screw it on. Then check that the rubber membrane is correctly seated in the holder.

-The irrigation system does not irrigate in the morning and evening!
Check if the solar module is correctly plugged into the socket. If this is the case, please change the position of the module.

Is your problem not listed here, or you do not know how to solve the problem? Then please scan the QR code below and watch our support video on this irrigation system.