Irrigatia

SOLAR POWERED

WATERS EVERY 3 HRS

MORE SUN = MORE WATER

UNPRESSURISED CLEAN WATER SOURCE

Solar Automatic Watering System

Instructions: Irrigatia Tank Series

Applicable to Batch IRR-5290

EN CZ FR DE NL SE

irrigatia.com/tsv2

Latest version of instructions, further help and guidance can be found here:

Designed in Britain

Contents

Tank series controller with secondary feed pump

Water level sensor

Solar Panel with 5m lead (model shown is the C120)

1 x inline filter + 2 x 13mm adaptors

Submersible pump

1 x 25m roll of 13mm tube

1 x 2.5m 3.5mm tube and inlet filter

1 x 4mm punch

12 x 4mm joiners

2 x 13mm T-piece

4 x 13mm end plug

4 x 13mm elbow

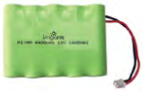
10 x U pins

6 x 13mm clamps

2 x 13mm valves

12 x 4mm valves

Battery pack containing 10 x AA rechargeable batteries C60/C120: Battery Pack 2200mAh



Battery pack containing 20 x AA rechargeable batteries C180: Battery Pack 4400mAh

Introduction

The Tank Series irrigation system is based around a main central pumping heart, which you have just purchased, being used to supply water to your plants, by the addition of various accessories such as drippers and hose-based products.

The Tank controller has 6 levels of adjustment:

- 0 – Off
- 1 – 20% charging rate
- 2 – 40% charging rate
- 3 – 60% charging rate (default setting level)
- 4 – 80% charging rate
- 5 – 100% charging rate

The product also includes a water level sensor which will warn you when the water has run out (if required the warning buzzer can be turned off, switch is on the printed circuit board, inside the controller).

The product can also be used to pump liquid feed into the irrigation network if required.

Watering at ground level, the pump supplies water up to 10 litre / minute.

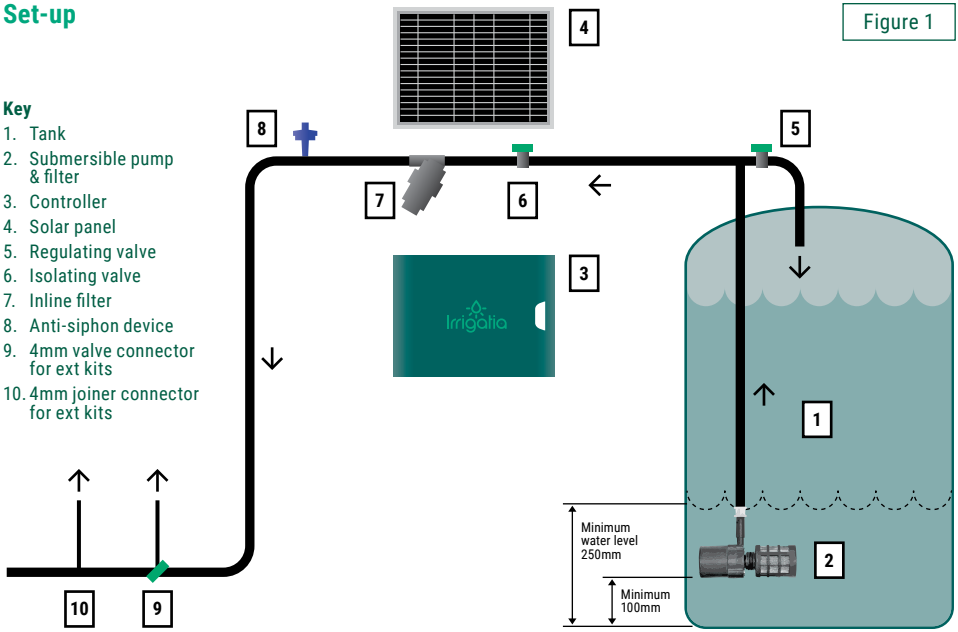
Watering plants at 5m high, the pump supplies water up to 5 litre / minute.

Installing a Tank Series product is undertaken in four phases:

- **Phase 1 – Initial Installation**
- **Phase 2 – Network Installation**
- **Phase 3 – Network Optimisation**
- **Phase 4 – (if required) Supplementary Liquid Feeding**

Set-up

Figure 1



PHASE 1 – Initial Installation

5 main steps:

1. Position and mount the solar panel
2. Position and mount the controller
3. Position and connect the submersible pump
4. Position and connect the water level sensor
5. Pump check

Step 1: Solar Panel – Positioning and mounting

- The solar panel needs to be mounted ideally in a sunny south facing position.
- Please beware of potential shadows during the day, also later in the season, when trees / bushes have their leaves.
- The higher the better, the standard cable length is 5m, although extensions are available if required.

Step 2: Controller – Position and mounting

- Needs to be within reach of both the solar panel and the submersible pump, located in the water source.
- Can be located either inside or outside, is weather resistant.

1. Undo the catches to open the control unit.
2. Inside are four fixing holes in the back plate that are used to attach the unit to a vertical surface.
3. Once mounted, connect the solar panel cable using the screw connector outside of the controller.
4. Ensure that the control knob on the printed circuit board (PCB) is set to zero (turn to the left).
5. Install the battery pack, remove the screw that holds the plastic lid in place, insert the battery and connect the wire to the PCB, location Batt (on the left hand side).
6. Replace the plastic lid and screw back into place, taking care not to trap the wire.
7. DO NOT turn on yet.

Step 3: Submersible Pump – Positioning and mounting

1. Connect the 13mm tubing to the submersible pump using the barbed connector coming out of the pump.
2. Run the power cable from the pump along the 13mm tube length.
3. Use cable ties to secure the power cable in place. This will help keep the pump in the preferred orientation, with the barbed connector vertical.
4. The submersible pump needs to be suspended 100mm above the bottom of the water source, to prevent sediment from inhibiting the pump action.
5. Connect the other end of the pump power cable, to the black screw connector hanging from the controller unit.

Step 4: Water Level Sensor – Position and mounting

1. The water level sensor has two probes.
2. The higher sensor must be installed 150mm above the submersible pump, which ensures it is also 250mm above the bottom of the water source.
3. Using tie straps secure the cables to the 13mm tube to maintain the position.
4. Connect the water level sensor cable to the green screw connector coming out of the controller.

Step 5: Pump Check

1. Referring to Figure 1, cut the 13mm tube, to a length long enough to exit the water source, Point 5.
2. Ensure there is adequate water in the water source.
3. Turn on the controller.
4. Watch to see if there is water flowing from the tube.
5. If yes, the system is operational, turn back off.
6. If no, re check connections and battery installation.

PHASE 2 – Network Installation

- This deals with the installation of the water irrigation system to the plants / areas needing watering
- To undertake this, a main backbone needs to be constructed first, this being based around 13mm tube
- The delivery of water to the plants / areas needing watering, is undertaken by optional 3.5mm tube-based drippers, or hose aligned accessories. These can be purchased from trade suppliers or our own web shop

Installation of Main Backbone

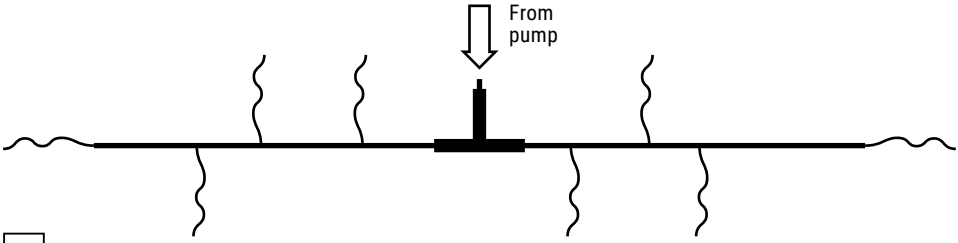
- Advice on tube lengths cannot be provided, as each user's system / network will be bespoke.
- The overall system design though, follows the layout in Figure 1.

1. Add 13mm T connector on the end of the pump discharge tube
2. Regulating Valve (Point 5) – install a valve running back to the water source, leave in open position
3. Isolating Valve (Point 6) – install a valve and leave shut for now
4. Inline Filter (Point 7) – install filter, picture opposite
5. Anti-Siphon Device (Point 8) – install the device, picture opposite, into the 13mm tube, using the punch provided.
6. NOTE – The Anti-Siphon Device needs to be at least 200mm above the highest level of the water source.
7. The main is now continued into the users requirement / use area. See guidance below.

Guidance for an Irrigation Main Network

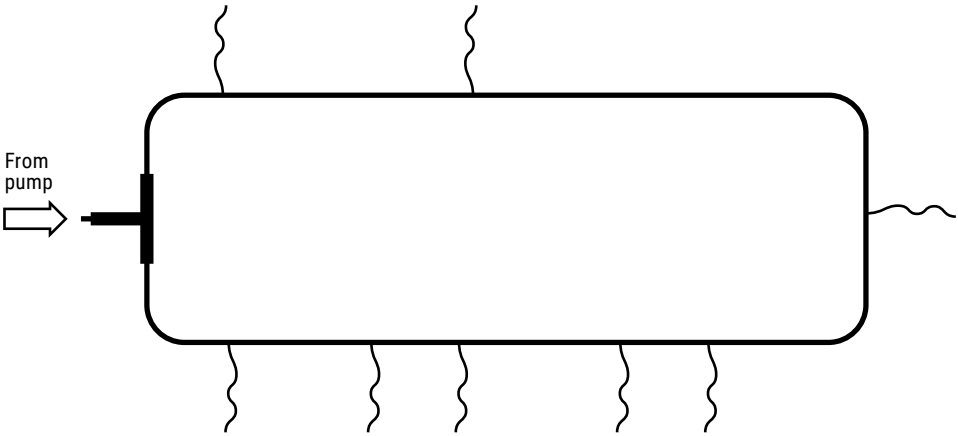
Central T / Balanced – 6 or more accessory kits

- Installation is likely to be balanced, i.e. even watering demand either side of the network T
- 6 or more accessory kits (6 x 20 = 120 drippers) are being added
- Best approach would be to install a U / T shaped network



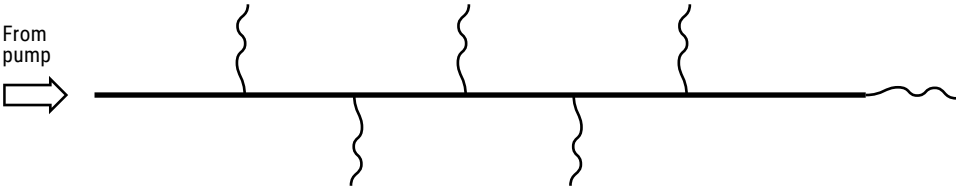
Ring Main / Unbalanced – 6 or more accessory kits

- Installation is potentially unbalanced, i.e. the watering demand varies considerably around the network, then a ring main approach will resolve this
- 6 or more accessory kits (6 x 20 = 120 drippers) are being added
- If in any doubt about your potential installation, then a ring main is the best



Straight Length – 6 or fewer accessory kits

- Installation has 6 or fewer accessory kits (6 x 20 = 120 drippers) being added
- Simple straight length is the best approach



Connection of an accessory kit

- The accessory kits are based on 3.5mm tubing
- The 3.5mm tube is connected to the 13mm network tube, via the use of the punch tool, and the installation of a 4mm joiner component (Figure 1 Point 10)
- A 4mm valve may be used in place of a 4mm joiner, if the irrigation sub-network is needed to be turned off / controlled (Figure 1 Point 9)

PHASE 3 – Network Optimisation

There are two steps to this.

Step 1

- The system usually runs on the energy stored from the previous three hours of solar charging
- From new, the newly installed batteries may contain more energy than is required
- The surplus stored energy needs to be depleted

1. Ensure the valve at Figure 1 Point 6 is in the off position and the tube at Point 5, is feeding back into the water source
2. Turn on the controller
3. The system will now function, and pump water back into the source – energy within the batteries will be gradually depleted, over several hours
4. Once the depletion phase is completed, the pump will stop
5. Go to the controller, and set the unit to Level 5 and leave for 2 hours, in a period of strong sunshine
6. After this, you can proceed to Step 2

Step 2

- Here we will turn the system on and optimise the system flow
- All drippers and hose-based products need to be installed

1. Turn the controller off and then back on, this will re start the system
2. Initially water will be pumped back into the tank, via Figure 1, Point 5
3. Once water is flowing back to the source, open valve Point 6, water will now start flowing into the overall network
4. Valve Point 5, is to be gradually closed, to establish the required drip / flow rates through the connected irrigation accessories, or to achieve the desired end watering result
5. Ideal dripper flow rate is 1-2 drips per second, or adequate watering is achieved in the hose-based products
6. NOTE – some hose-based products may take an initial run-in period to saturate to the desired level
7. Once the required level is achieved, leave valve Point 5 in that position, the system is set
8. Final adjustment is to set the controller back down to Level 3
9. Monitor over the next 48 hours, and turn level up or down as required
    - To decrease the amount of water delivered, you can set the unit to a lower level using the internal dial. This ensures the internal battery is charged less and will run the pump for a smaller duration. If an increase is required you can turn the unit to a higher level to charge the battery more, allowing the pump to run for a longer duration

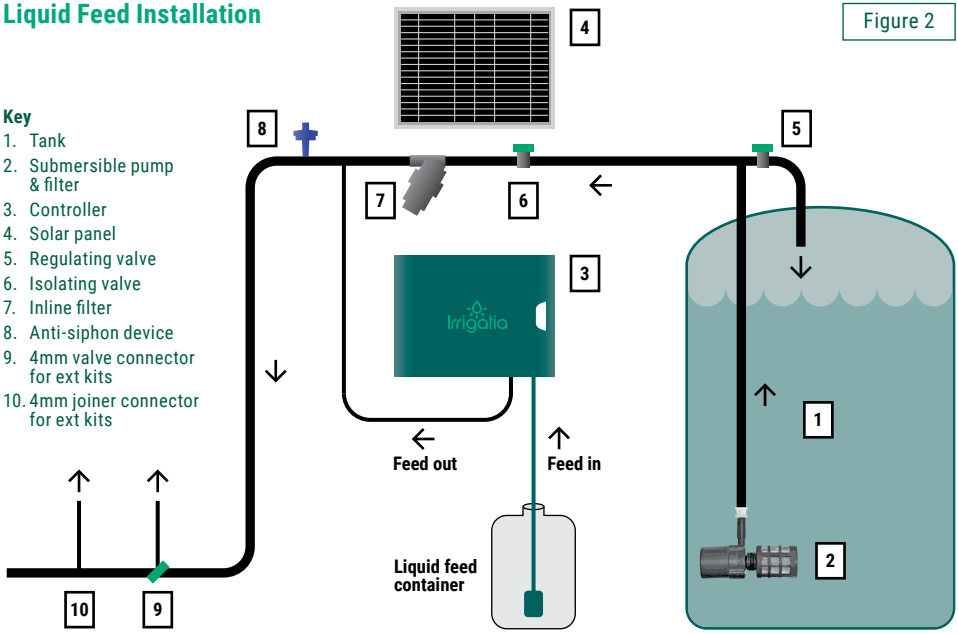
Phase 4 – Supplementary Liquid Feeding

- This is optional for those who wish to feed their plants with a liquid feed
- Within the controller unit, is an additional smaller pump, which can be used to add liquid feed into the main network
- It adds feed to the main network at a rate of approx 1%

NOTE: Only fully soluble and clear liquid feeds can be used. Otherwise, drippers may become blocked over time. Drippers can be cleaned, to resolve blockage

Liquid Feed Installation

Figure 2



1. Connect the electrical connector of the smaller pump to the printed circuit board, location Feed P (to the right of Water P)
2. Place container of liquid feed close to the controller and in a shaded position
3. Using a length of 3.5mm tubing, connect to the inlet of the feed pump, then place other end into the liquid feed source, with the filter connected
4. Using a length of 3.5mm tubing, connect to the outlet of the feed pump, then using the punch tool, insert into the main 13mm tubing, just between Point 7 and Point 8
5. There are no further settings required

Liquid Feed Dilution

- Allowing for dilution and continuous watering, the rate is 25 x the manufacturers recommended rate
- e.g. If the stated manufacturers rate is 5ml / 5g per 10ltr watering can, and you were using a 10ltr liquid feed source container, then you would add 125ml /125g of feed to 10ltr of water
- e.g. If the stated manufacturers rate is 5ml / 5g per 10ltr watering can, and you were using a 25ltr liquid feed source container, then you would add 5ml x 25 x (25/10) = 312.5ml / 312.5g of feed to 25ltr of water

$$\text{Liquid Feed Amount (ml/g)} = \text{Manufacturers Rate (ml/g)} \times 25 \times \frac{\text{Liquid Feed Source Container Size (ltr)}}{\text{Manufacturers Stated Volume (ltr)}}$$

Settings and Problems

Controller Unit Status Indications

- LED on continuously – pump running
- LED charge rate indication – the number of flashes per 5 second cycle, corresponds to switch position number

  1 = 20%

  2 = 40%

  3 = 60%

  4 = 80%

  5 = 100%
- LED flashes 10 x per second and warning bleep sounds – water sensor detects low water. (Unit also stops watering)
- LED flashes 10 x per second, then off 1 second. Soil moisture sensor (not included & not available with all models) detects soil wet enough. (unit stops watering)
- LED flashes once every 10 seconds – night mode, pump will not run and bleeper will not sound

Detailed instructions can be found at: **irrigatia.com/tsv2**

SOL-C60	SOL-C120	SOL-C180
20L 60x	20L 120x	20L 180x
60x	120x	180x
120x	240x	360x
25x	50x	75x
60m	120m	180m

For further information on this or any of the other products in our range, please visit:

irrigatia.com

Irrigatia Limited

Norwoods, Long Drax, Selby, North Yorkshire, YO8 8TA
United Kingdom Telephone: +44 (0) 333 301 0415

Irrigatia B.V.

Neonweg 12 E, 3812 RH, Amersfoort, Netherlands

Irrigatia