RAIN WATER HARVESTING TANK MAINSFILL TOP-UP SYSTEM

DESCRIPTION OF SYSTEM
The system enables a rainwater harvesting tank to be partially filled using mains water, compliant with current water regulations.

EWTFC-BK – ABOVE GROUND TANK SYSTEM
The system for an above ground tank incorporates a basic controller, floating level switch and solenoid valve.

EWTFB-BK – BELOW GROUND TANK SYSTEM
The system for a below ground tank incorporates an enhanced controller, 2no floating level switches, air gap unit and solenoid valve.

Common Features

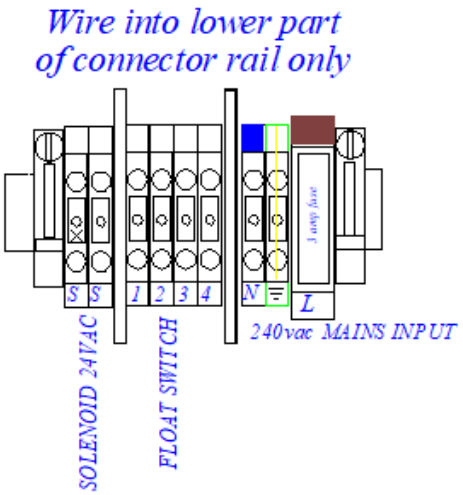
Controller
The controller requires a permanent 240vac mains power supply. The electrical components are housed inside a plastic enclosure. To gain access to the fixing points and connection rail, open the front cover by undoing the two retaining screws.

Mounting
The controller box should be wall mounted using only the provided fixing bracket holes.
Note: The controller is not weatherproof and must be protected from the elements.

Wiring
The box has three 20mm holes pre-drilled into the base for cable/conduit adaptors.

All user connections are made into a terminal rail, use appropriately rated cable and wire as per specific connection detail.

Ensure that any electrical work is carried out by a competent person (see wiring connection drawing).



Solenoid valve input (S)
A suitable 2 core cable should be routed into the controller box via suitable gland and connected to the correct terminals as indicated on the connection detail. The solenoid valve has 2 red wires, connect these separately to the 24vac output cable using the grease filled connectors provided.

Level switch inputs (mains fill 1&2, high level 3&4)
The level switch multi-core cable should be routed into the controller box via suitable gland and the appropriate wires connected to the correct terminals as indicated on the wiring connection drawing. The floating level switch supplied has three connection wires, a common (black), normally open (brown) normally closed (Blue) with switch in the down position.

Use the following:
- **Mains fill** - use the common (black) and normally closed (blue) wires.
- **High level** - use the common (black) and normally open (brown) wires.

Note: before fitting the switch inside the tank it is advisable to check with a continuity meter that this colour coding is correct for the switch supplied.

Auxiliary Fittings

Level Sensors General
To provide tank level sensing a floating level switch is provided. This type of switch enables the water filling the tank to be accurately controlled. The float contains a micro switch and ball bearing which moves to make or break the switch contacts depending upon float orientation. The weight provides a pivot point for the float and is supplied as a two-part unit which should be clamped around the cable and secured with a screw (position 150-200mm from the float). The switch can be wired to operate in an up or down position according to exact application.

Mainsfill sensor
The floating level switch should be positioned so that it operates in the lower third of the tank only. This will enable the irrigation system to run if no rainwater is available but also allow sufficient spare capacity for rainwater to fill the tank when available.

To gauge the right level, first suspend the switch and cable on the outside of the tank wall and decide its best position then mark the cable at the top edge of the tank. If using an open tank secure the cable at the top edge using ratchet straps provided. If an enclosed tank drill a 20mm hole in the top of the tank, fit a long thread cable gland, thread the cable through from the inside out and at the marked point on the cable secure using a ratchet strap. Finally ensure the switch has free movement inside the tank and is at the correct level.

High level sensor
If using a below ground tank an additional float switch is provided. This is used to indicate the water is at high or overflow level. Usually, this level is normal and the controller simply indicates the tank is full, however if the tank is at high level and the mains fill solenoid is still operating an alarm will sound indicating a system fault.

The float switch should be set at a level where the tank is full and the water at overflow point. Do not fit the weight simply ratchet strap the cable to a suitable fixing point usually the pump securing cable. Leave the strapped cable short, approximately 100-150mm from the float.

Mains fill solenoid valve
The solenoid valve has 1" BSPF threads on the inlet and outlet. When fitting ensure the correct orientation is observed.

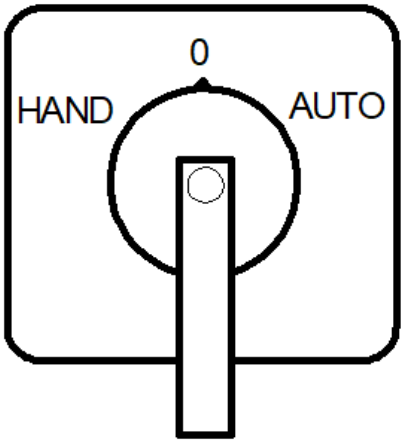
Above ground systems
The solenoid valve should be fitted in line of the mains water supply pipe. Use suitable pipe connectors and seal the threads into the valve using PTFE tape. Use a double elbow arrangement where the pipe enters the tank to direct the incoming water downwards.

Below ground systems
The below ground tank system is supplied with an air gap unit. This must be fitted to maintain water regulations compliance. The air gap unit should be fitted above ground and the solenoid mounted on top either screwed directly into the unit or at right angles using the elbow and nipples supplied. The solenoid valve inlet 1" BSPF should be connected to the mains water supply, ensure the pipework is fitted with a drain point and isolation valve for servicing. Because the system uses gravity to supply the underground tank the supply pipe from the air gap unit to the tank should be as large as possible (**ideally 110mm**) and the fall sufficient to prevent water backing up. The air gap unit is supplied ready to fit directly onto 110mm pipe.

Operation

The controller is operated in 3 modes:

- AUTO
  - Float switch controls mains fill solenoid operation.
  - Float switch controls indication of tank at max level.
  - Audible alarm sounds if solenoid operating with tank at max level.
- OFF
  - Internal components turned off (240vac will still be present inside enclosure).
- Manual
  - Mains fill solenoid turned on until switch Position changed. (AUTO functions remain operational).



Visual Indicators

A series of lights indicate the controller functions as follows:

GREEN – controller is live.
AMBER – mains fill solenoid **ON**.
RED – tank at max level.

Audible Indicators

To prevent water wastage if the controller is in **AUTO** mode and a fault occurs ie: the mains fill solenoid is switched **ON** and the tank is at **MAX** level a buzzer will sound. If this happens check both float switches for correct operation (note the buzzer will sound if in **HAND** mode and the tank is at **MAX** level).

Commissioning

- In **AUTO** mode check operation of all sensors and solenoid valve adjust if necessary.
- In **HAND** mode check operation of solenoid valve.

Winterisation

- During Winter period switch controller to **0**.
- Isolate mains water supply and drain associated pipework.

Irrigation systems should only be installed by a competent person

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