



# RainBackup<sup>®</sup> in a Box

INSTALLATION MANUAL  
RWH-BUB03 & RWH - BUB03 - R

Plug-and-play mains water backup  
for Rainwater Harvesting Systems



# WHAT IS THE RAIN BACKUP IN A BOX?

BUB 03



BUB 03 - R



This system ensures water will be available to appliances in times of drought when the rainwater tank is empty. The system uses a level sensor inside the tank to open a solenoid valve within the control unit when water reaches a critical level.

When the water level drops (Fig1.1), the barrel on the level sensor switch will drop and trigger the PCB board to start the flow of mains water.

As the barrel on the level sensor switch raises and reaches its highest point (Fig1.2), the PCB board allows 45 minutes of mains water restricted to 4 litres per minute (180 litres) to enter the tank. U.K. Water Regulations require that rainwater cannot possibly flow back into the mains water supply. The Rain Backup in a Box® is NSF Reg 4 approved.

For this reason all mains backup devices must have an air gap where the mains water flows into the rainwater tank. The air gap in this system is an anti-splash tundish and overflow incorporated into one; the transparent blue moulded part. The level sensor is provided with 20 metres of cable and uses a push connection under the right hand panel.

The Rain Backup in a Box® should be fitted inside the building where the occupiers can (when rainwater has run out) hear any mains water running from the solenoid valve. Wall mounting is with screws through holes in the back of the control unit.

The Rain Backup in a Box® is reliant on a constant power supply, as such we recommend at least one WC is kept on mains water to prevent any disruption in the event of a power failure.

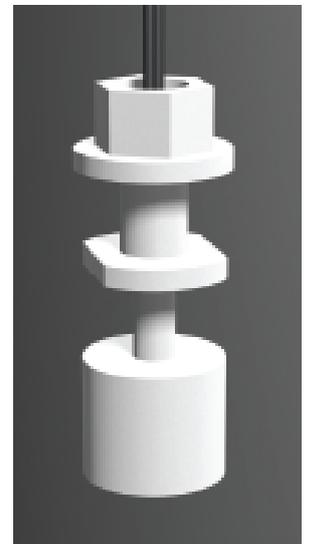


Fig 1.1



Fig 1.2

# WHAT'S IN THE BOX



- A Multi-route anti splash tundish
- B 1" air gap
- C Solenoid valve
- D Mains in 15mm pushfit/copper
- E Mains to tank 32mm pipe
- F Overflow 32mm waste pipe
- G Floatswitch/level sensor connection
- H Power adapter 230v AC

BUB 03



BUB 03 - R



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## TYPES OF SENSOR HOUSING

RWH-BUB 03: The level sensor is housed in the D Clip which is then slotted onto the D profile of the Vantage Filter inside the tank. The location of this housing can be adjusted on the D profile.

If you want to have additional capacity in the tank before the backup unit kicks in raise the housing unit so it is higher in the tank.

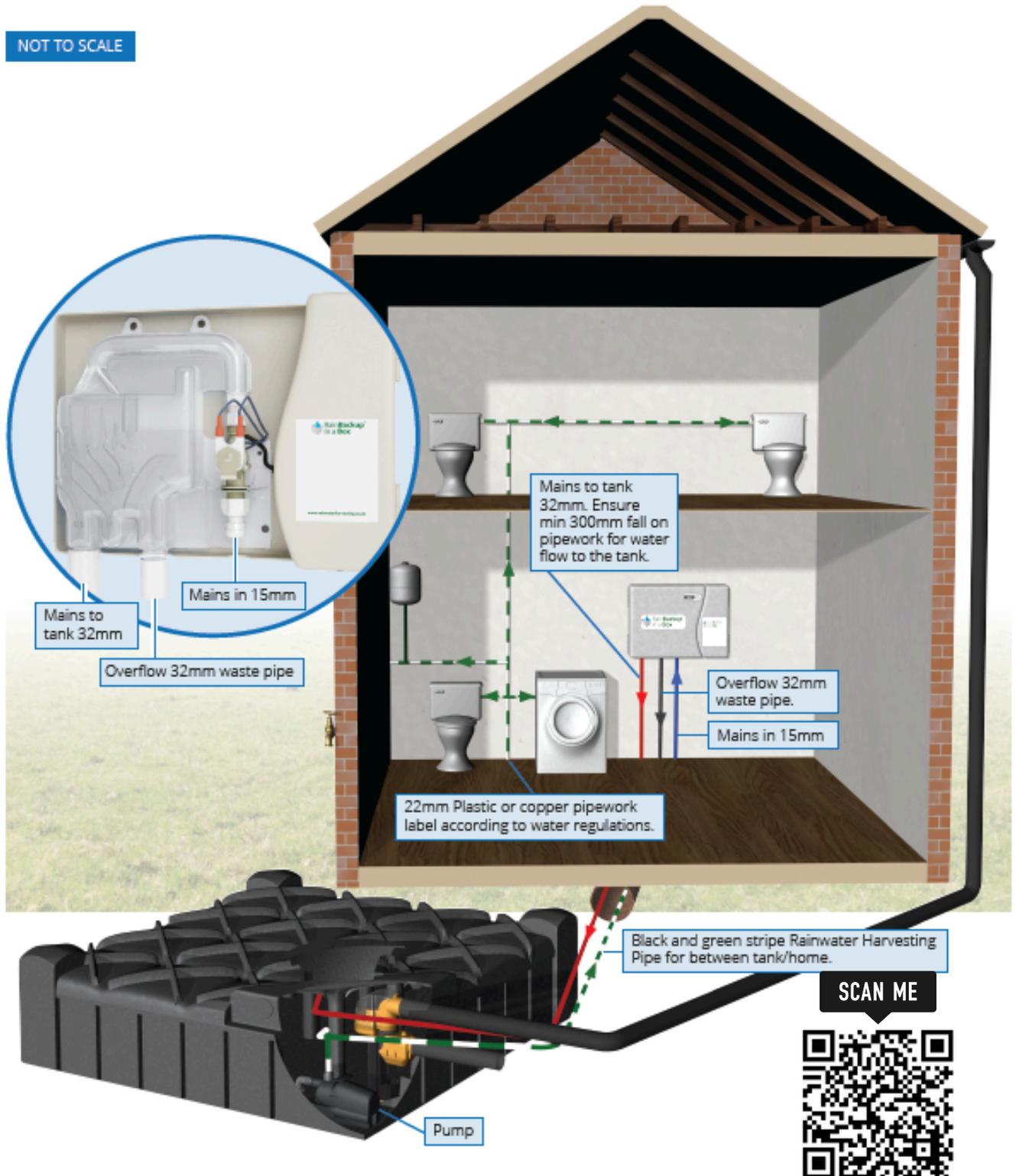
RWH-BUB 03-R: The level sensor is housed in a 110mm clip which you would then position around the 110mm pipe inside the tank. For use with all other filters.

Further installation guidance can be found online at: [www.rainwaterharvesting.co.uk](http://www.rainwaterharvesting.co.uk)

Please follow the instructions provided carefully. Not doing so could cause damage to the unit and invalidate the warranty. If you have questions or require assistance please contact one of our technical team.

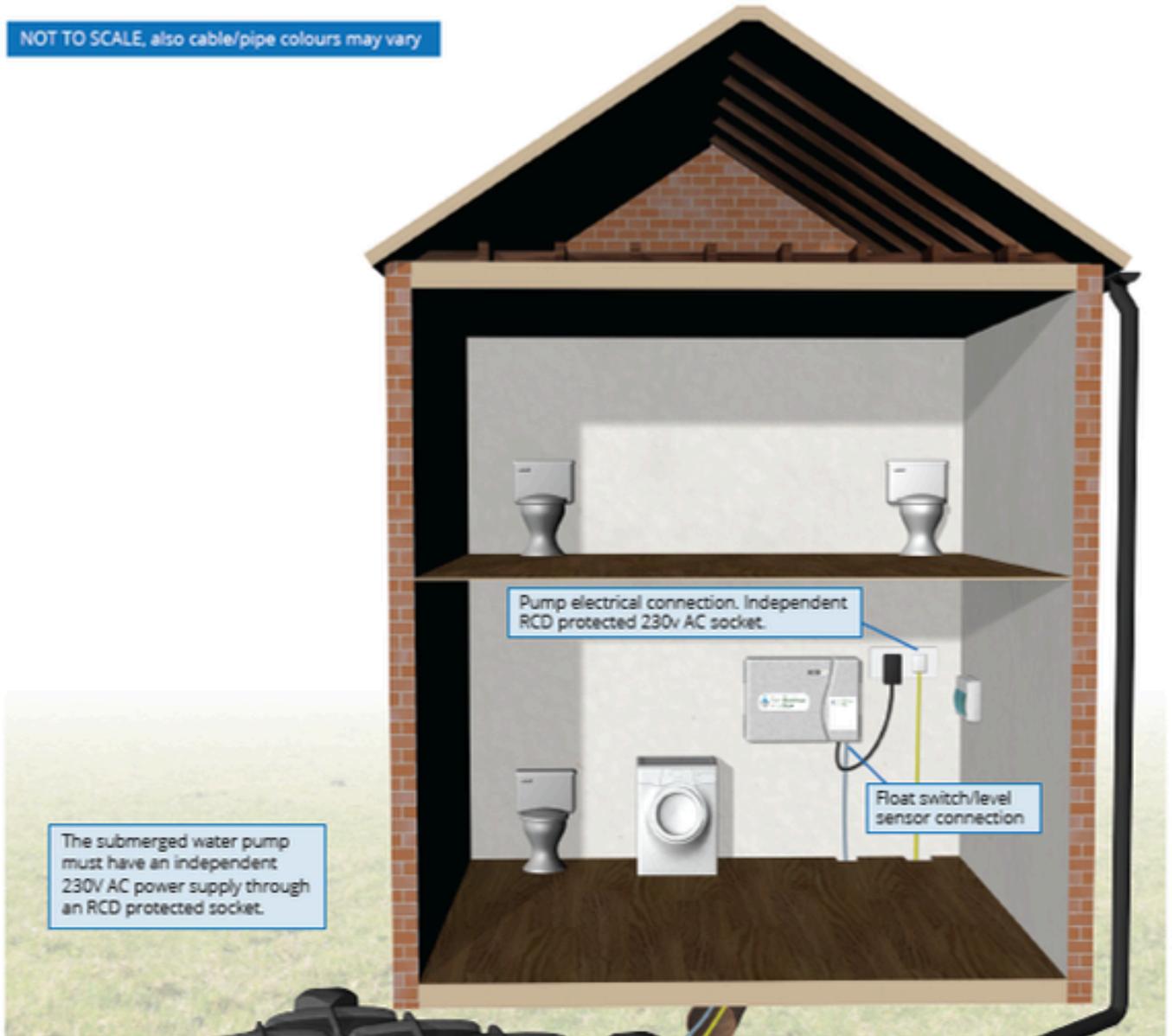
# PLUMBING SCHEMATIC

NOT TO SCALE



# WIRING SCHEMATIC

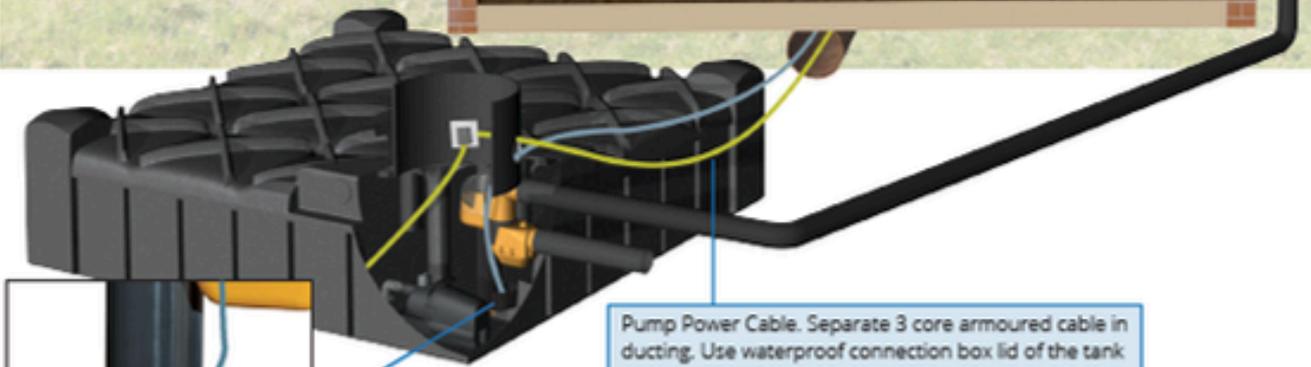
NOT TO SCALE, also cable/pipe colours may vary



The submerged water pump must have an independent 230V AC power supply through an RCD protected socket.

Pump electrical connection. Independent RCD protected 230v AC socket.

Float switch/level sensor connection



Pump Power Cable. Separate 3 core armoured cable in ducting. Use waterproof connection box lid of the tank to power pump.  
**DO NOT RUN PUMP CABLE BACK TO HOUSE**



Key	
	float switch cable
	power cable for pump
	12v power supply for the Backup in a Box

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# INSTALLATION INSTRUCTIONS



## KEY TO THE CONTROL PANEL & PIPE DIAMETERS:

- A 12v Power connection
- B Level sensor connection

**MAKE SURE THE FLOAT SWITCH IS CONNECTED BEFORE THE POWER IS SWITCHED ON**

Connect the unit's 12 volt DC adapter to a 220V AC mains socket. Power should be maintained to the unit at all times.



These instructions assume the exterior tank is fully fitted to the specification of the instructions provided.

Rainwater should be taken from the roof surface, through a filter into an underground storage tank and a pump to take the rainwater through a separate pipe network for toilets, washing machine and outdoor use.

1) Locate the best position for the Rain Backup in a Box® unit.

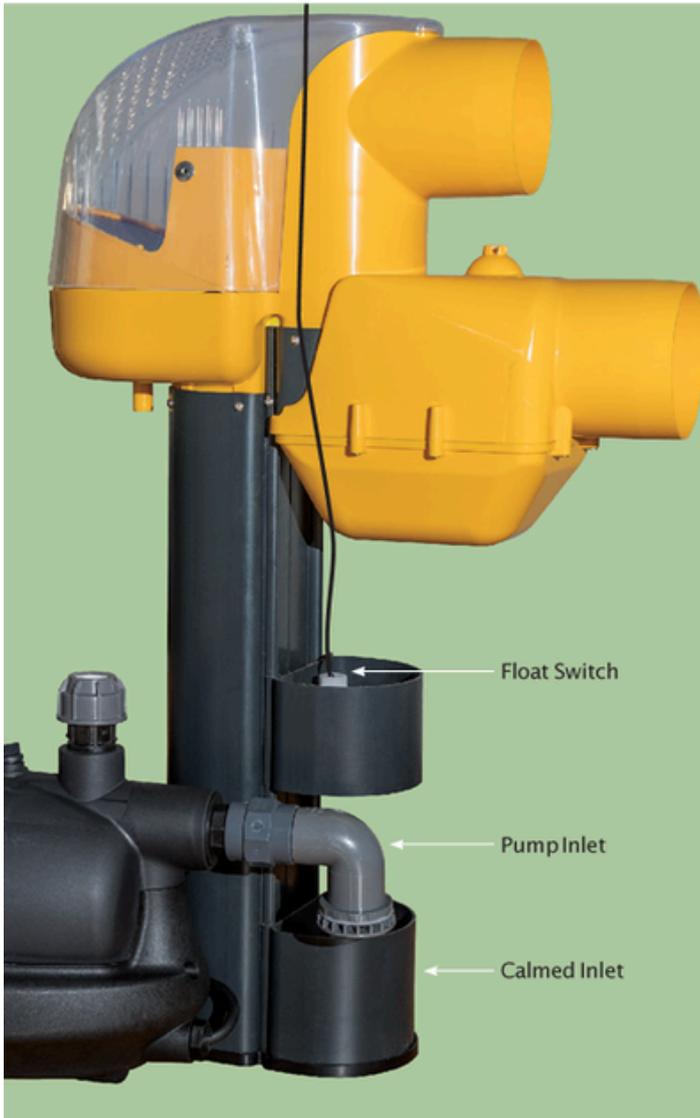
- Inside the building where the occupiers can see and hear it, accessible for occasional checks.
- Within a metre of a 220v AC wall socket for the 12v power connection.
- Accessible to a mains water pipe.
- Above the top of the underground storage tank so that the backup mains water flows by gravity.

2) The unit must be securely mounted flush to the wall and not angled in any way, thus avoiding the possibility of water escaping from the 1" air gap. Then pipe the mains water to the inlet at the bottom right of the unit into the solenoid valve.

3) Pipe the outlet of the tundish using 32mm waste pipe from the bottom left of the unit to the rainwater storage tank. The first 300mm must be a straight fall, with the remaining pipe having sufficient fall for the water to run under gravity to the below ground tank. Any angle close to the unit risks the water backing up and flowing back out of the tundish. In most installations this outlet can be channelled to the closest rainwater downpipe from the roof. This backup water supply does not have to be piped separately to the storage tank.

4) The overflow pipe in the middle of the Rain Backup in a Box should flow to the exterior through a pipe which offers no constriction. It is designed to avoid flooding of the house if the pipe from the tundish to the underground tank is blocked up, and to provide a visual alert to the building occupants. Run the overflow to the exterior of the building to discharge over the ground or gully.

# INSTALLATION INSTRUCTIONS



5) The float switch comes pre-attached to a protective clip (see above "Types of Sensor Housing" to establish which housing you have) that easily fits to the filters downpipe, position the protective clip above the filters calmed inlet making sure it is above the pumps inlet to allow for maximum rainwater usage before the float switch is engaged or to your desired level (see image).

6) Channel the level sensor cable from the underground storage tank back to the control unit. Typically this is through a 4" (110mm) service pipe (not supplied) which also carries the mains electricity supply to the submerged pump (if so fitted), and the return pipe carrying rainwater from the storage tank via the pump back to the appliances in the house.

7) The installation is finished. Mains water will continue to flow into the storage tank until water reaches the level sensor. The system will then provide its first timed cycle.

8) Note that the flow rate from the control unit to the underground tank is restricted to 4 litres per minute, typically slower than the water flow out of the submersible pump. If you are watering the garden and the rainwater tank runs low it is possible that the pump will shut down due to absence of water, even if the backup mains is flowing. Some pumps need a mains electricity reset (turn switch off and then on).

9) Ensure the water flow is tested from the unit to the tank before the service pipe is covered to ensure there are no flow restrictions..

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# TROUBLESHOOTING

Problem	Probable Cause	Remedy
Overflowing water from the control unit	Water not flowing correctly through the outlet to the tank	Ensure there is a 300mm fall from the bottom of the unit to the first bend. Ensure there is sufficient fall to the underground tank.
Water constantly flowing into the tank	Float switch fault	Confirm the float switch has been installed according to instructions. Disconnect the power and float switch from the control unit, then plug in the float switch and then power supply. If the tank is full the water should run for five seconds and then stop.
Nothing happening at all	Connections	Ensure the power supply is operational and the level sensor installed correctly

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Certified Product to NSF REG4 S3



Made in the UK



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in a **Box**

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