

# Aquality Hybrid Tank and Header Tank Systems

Item No G13501, G13505, G13510, G13515, G13520, G13525, G13530, G13535, G13540



## Typical applications



- For rainwater harvesting systems with central electronic control unit and break tank with demand orientated mainswater top-up function
- For use in rainwater harvesting systems with pressurised non-potable water distribution to applications via external booster set (hybrid tank system) or
- For use in systems with non potable water distribution to applications via gravity (header tank system)
- For use with external, below ground storage tanks for non-potable water use (e.g. toilets, washing machine, irrigation or other)

## Features

- Aquality microprocessor control unit for mainswater top-up, submersible supply pump and level sensors including wall mounting kit with switchable colour LED display, power on, water level indication for storage and break tank, operation mode, supply pump on/off, mainswater top-up on/off, break tank overflow alarm, sewer back draft alarm, supply pump alarm, manual alarm/fuse reset, main switch
- Fully automatic water management for rainwater use with automatic, house internal mains-water top-up via AA or AB type air gap according to BS 8515 and BS EN 1717
- Possibility of manual changeover to mains water operation in case of tank maintenance
- Mainswater supply into GRP break tank via servo-assisted 2/2 solenoid valve G 1" (normally closed), duty cycle 100% continuous rating ( $K_v=8.3m^3/h$ )
- Electronic control for submersible supply pump incl. on/off switch, dry run protection and motor protection (up to 10 A / 2.4 kW)
- Visible and audible alarm signals in case of malfunction of submersible pump or mainswater top-up and volt-free contact for general fault message (connection to BMS)
- 2 no level sensors and LED level indication for external underground rainwater storage tank and house internal mainswater break tank
- Corrosion resistant, pre-insulated GRP break tank and cover with AB type air gap tundish or raised valve chamber, lightweight and extremely strong, complies to Byelaw 30 Regulations for potable wholesome water
- Standard tank connection package: 32mm outlet, 54mm screened overflow & tank connector, 22mm screened early warning & tank connector, 22mm drain

## Functioning principle

The control unit for the Aquality hybrid tank systems or header tank systems is a central intelligence control unit for automatic mainswater top up and submersible supply pump which are activated depending on the actual water levels in mainswater break tank and rainwater storage tank. The control unit monitors the water levels in the internal break tank and external underground rainwater storage tank which are shown in % on the control unit via LED level display.

When the level in the break tank drops below 30 % the submersible supply pump is activated to pump rainwater from the underground storage tank into the break tank until it is completely filled. For dry run protection in case of rainwater shortage the submersible supply pump is deactivated if the water level in the rainwater storage tank drops below 30 cm. Dry run protection is automatically reset and the submersible supply pump activated again if the water level in the rainwater storage tank rises to above 35 cm. When rainwater is not available or in case of manual setting (e.g. mainswater operation mode during maintenance) the solenoid valve is activated and mains water flows into the break tank if the water level in the break tank drops below 20 %. The solenoid valve closes if the water level in the break tank rises to 40%. As an automatic maintenance feature and in order to prevent stagnation in the mains water supply pipe the mainswater valve is opened regularly. The control unit automatically switches back to rainwater operation when rainwater is available again in the rainwater storage tank. The operation mode can be set manually to mainswater mode or automatic mode (rainwater supply with automatic mainswater top-up). In case of malfunctions the control unit releases visual and acoustic warning signals. The volt-free contact can be connected to the BMS for centralised plant monitoring. The control unit can be equipped with the Aquality RSW back water pressure guard (see optional add-ons). In case of back pressure from the drainage system into the rainwater storage tank the control unit automatically switches over to mainswater operation mode and releases visual and acoustic alarm signals.

Pressurized non-potable water distribution from break tank to applications via separate booster pump set in water reclamation systems using the hybrid tank concept. Unpressurized non-potable water distribution from break tank to applications via gravity in water reclamation systems using the header tank concept.

## Optional features

- Connection of back pressure guard in rainwater storage tank overflow

## Recommended accessories

- Y-mains water filter (1 " - G11103, 1 ¼ " - G11104)
- Double booster pump sets for hybrid tank systems (G14110, G14111, G14112, G14113, G14114, G14201, G14202, G14203, G14204) and different size accumulators
- Submersible supply pump packages I to IV, VI and VII for hybrid tank systems (G13330, G13331, G13332, G13333, G13380, G13381)
- Submersible supply pump packages VIII to XV for header tank systems (G13382, G13384, G13386, G13388, G13390, G13392, G13394, G13396)

## Technical data control panel

Dimensions:	Height: 25 cm Width: 20 cm Depth: 15 cm
Weight:	1.7 kg
Material:	ABS (light grey)
Storage tank sensor:	10 m of electric cable (no protective earth), adjustable for 1 – 3 m max. water column
Break tank sensor:	2 m of electric cable, adjustable for 0.5 – 1.5 m max. water column (1 – 3 m version available on request)
Solenoid valve cable:	2 m of electric cable
Power supply:	230 V / 50 Hz / 13 A
Operating current:	12 volts DC
Protective motor switch:	10 A
Solenoid valve outlet:	230 volts DC
Back pressure guard outlet:	9 volts DC
Break tank sensor:	9 volts DC
Storage tank sensor:	9 volts DC
Voltage-free outlet:	load capacity 230 volts AC / 6 A
Mainswater valve:	servo-assisted, normally closed 2/2 solenoid valve G 1", Kv=8.3m <sup>3</sup> /h, PN 0.5 – 10 bar, duty cycle 100% continuous rating, NBR seal (PRV should be considered if the flow pressure exceeds 2 bar to avoid water hammers)
Display:	Switchable colour LED display, power on, water level indication for storage and break tank, operation mode, supply pump on/off, mainswater top-up on/off, break tank overflow alarm, sewer back draft alarm, supply pump alarm, manual alarm/fuse reset

## Technical data GRP Tanks

Aquality one piece break tanks are built and fully tested to all relevant worldwide standards. Our tanks are manufactured from top quality glass fiber / impregnated with polyester resin. All materials are WRAS & WRC approved. Based on the size of the unit under construction, integral treated timber reinforcements are encapsulated within the laminate. Units have a clean, smooth internal finish.

Insulation:	tank & cover
Standard Tank Connection Package:	32mm inlet submersible pump 32mm outlet to applications (HTS) or booster (HST) 22mm mainswater top-up tundish 54mm screened overflow & tank connector 22mm screened early warning & tank connector 22mm drain
Specific gravity :	1.5
Tensile strength:	110 MPa

Tensile modulus:	7.5 GPa
Water absorption:	0.2%
Thermal conductivity:	0.2 W/m <sup>2</sup> /K
Maximum working temperature:	60 °C

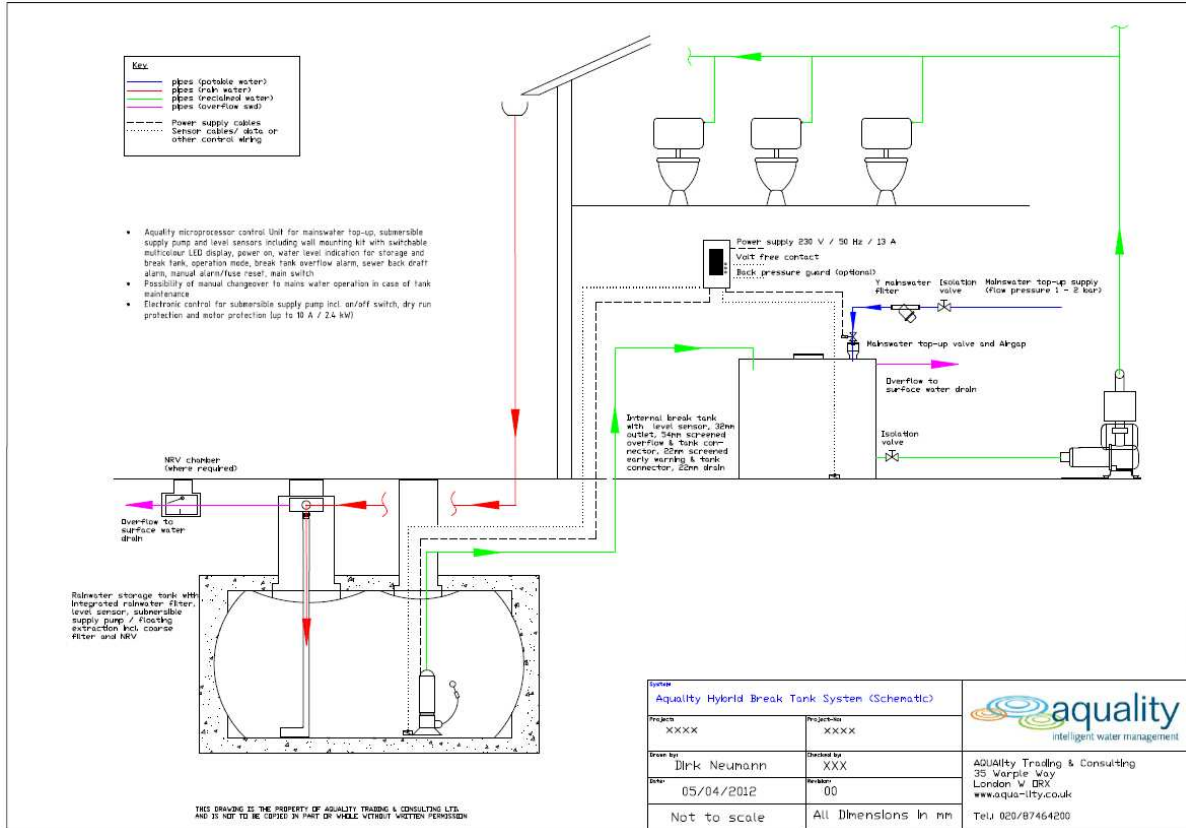
1. Base Supports: Tanks should be situated on a continuous solid base i.e. marine plywood, TG board, concrete and not rely on cross bracing alone.
2. Manways & Inspection: Manways are bolted & vented which are in a standard size of: 600 x 600mm. They can be alternatively supplied hinged as a Deluxe Manway. Inspection hatches 450 x 450mm are supplied standard with tank(s) holding over 1000 litres.
3. Raised Chamber: Standard Chambers are supplied with a reinforced Ball Valve Area(s). These chambers can be pre-insulated. Connection holes may be cut with conventional tools. Holes must be a snug fit.
4. Overflow screens: Each tank is supplied with a screen overflow to (BS 6700) whilst tanks supplied to the requirements of Byelaw 30 are complete with an additional 22mm early warning screen having a 0.65mm micromesh filter.
5. Catchment Trays: Readily available on request these items can also be made in sections dependent on the size of unit being supplied.
6. Divider: Maintenance Dividers can be installed within the tank(s) to enable maintenance work without a complete shutdown period.
7. Covers: Tanks can be supplied with loose fitting covers. In circumstances where Byelaw 30 requirements are specified, the gasketed cover would be fitted with the appropriate screened vent. Access can be arranged as required.
8. Insulation: Tanks are insulated with Rigid Polyurethane Foam encapsulated in the GRP. Thus, protecting and preventing future removal and damage. This is available in varying thickness giving corresponding U values. Alternatively we also can provide a 60mm lagging set.

## Tank dimensions

Size	Product Code	Capacities				Overall dimensions					
		Nominal		Actual		Length		Width		Depth	
		Gallons	Litres	Gallons	Litres	mm	in	mm	in	mm	in
270 l	G13501	60	273	48	218	812	32	660	26	584	23
500 l	G13505	125	568	100	454	1073	43	876	35	787	31
1000 l	G13510	250	1135	200	908	1644	65	1032	41	815	32
1500 l	G13515,	350	1589	280	1271	1619	64	1338	49	912	36
2000 l	G13520,	500	2270	400	1816	1930	76	1321	52	1045	42
2500 l	G13525,	600	2724	480	2179	1930	76	1321	52	1222	48
3000 l	G13530,	800	3632	640	2905	2540	100	1372	54	1222	48
4500 l	G13535,	1000	4540	800	3632	2540	100	1657	65	1222	48
6000 l	G13540	1500	6810	1200	5448	2540	100	1657	65	1830	72

AQUALITY Trading and Consulting Ltd. reserves the right to make technical changes.

### Generic schematic drawing Hybrid Tank System



### Generic schematic drawing Header Tank System

