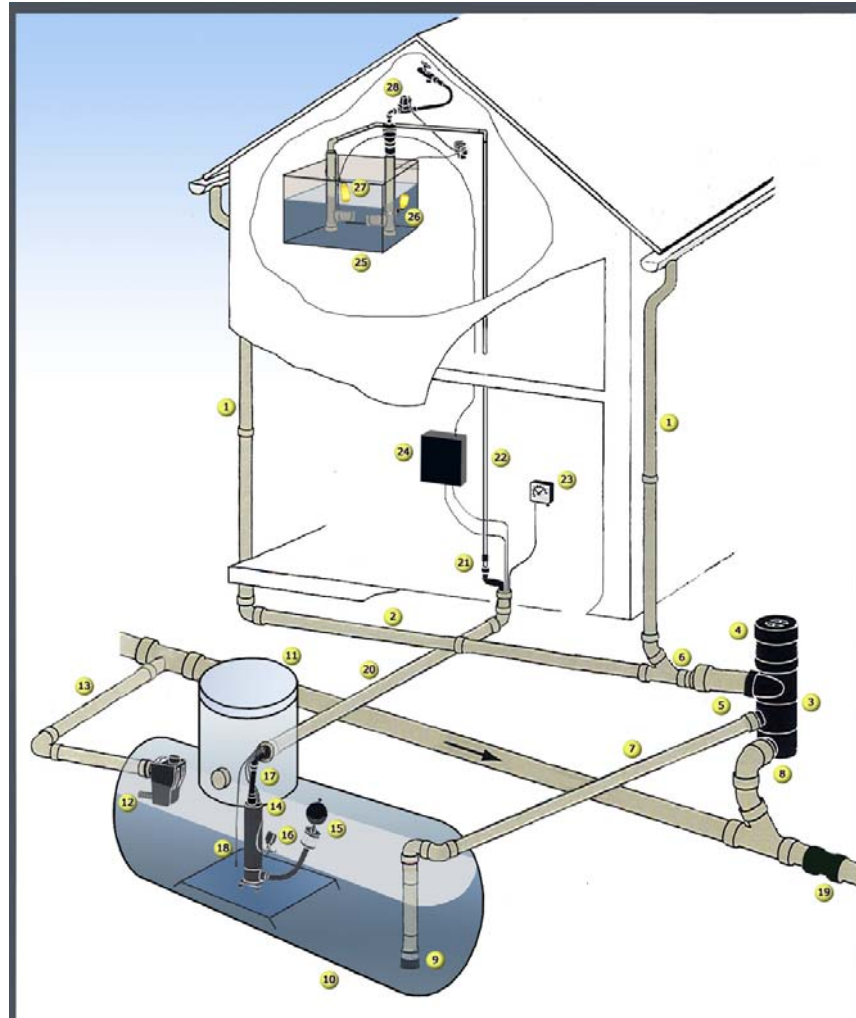


RAINWATER TECHNICAL SHEET

Construction Resources Rainwater Harvesting System Header cistern and standard vortex filter layout



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| 1. Rainwater down pipe | 2. Surface water drain (110mm) |
| 3. Standard Vortex underground filter | 4. Vortex extension piece and lid |
| 5. 500mm length of 160mm pipe to slow down flow of rainwater | 6. 160-110mm reducer |
| 7. Filtered rainwater (110mm) | 8. Connection to drain for first flush and excess rainwater (160mm) |
| 9. Smoothing inlet | 10. Rainwater storage tank |
| 11. Lockable access to tank | 12. Overflow trap (anti-rodent or anti rodent and anti surcharge) |
| 13. Overflow connection to drain (110mm) | 14. Multigo pressure pump |
| 15. Floating filter | 16. Dry run protection float switch |
| 17. Reinforced pressure hose (1") | 18. Rainwater level sensor |
| 19. Anti surcharge valve | 20. 110mm ducting for electrical and hose connections between tank and plant room |
| 21. Non return valve | 22. Supply to header cistern. (Do not use copper pipe) |
| 23. Rainwater level display gauge | 24. Pump control panel |
| 25. Rainwater header cistern (supplied complete) | 26. Float switch to control mains back up |
| 27. Float switch to control pumped supply from rainwater storage tank | 28. Automatic mains back up assembly comprising solenoid valve and type AA air gap |

How the system works

All rainfall from the roof is channelled via the Vortex underground filter (3). The filtered rainwater goes to the rainwater tank. The smoothing inlet (9) prevents the fine sediment at the base of the tank being stirred up. The first flush of rainwater, leaves, and some of the rainwater during torrential downpours pass directly through the filter to the main drainage run.

The integrity of the stored rainwater is maintained by a trapped overflow (12). If the overflow is connected to the main drains then chose an anti rodent trap. If the drains are prone to surcharging specify an anti rodent and anti surcharge trap. In this case the main drain run must also be protected by an anti surcharge valve (19) so that no foul water can enter the rainwater tank via the Vortex.

The rainwater storage tank is sized for every individual system. The tank is Class 2 grp. Part H2 of the Building Regulations 2000 states the tank must have a lockable lid. The tank has 2 x 110mm connection, 1 for connection to the services ducting and one for venting (if required by Building Control).

The Multigo high pressure pump (14) is installed inside the rainwater storage tank. The pump supplies 3 bar at the outlets. All fittings to be suitable for high pressure supply. The connection between the pump and the pump controller (housed in the building) is in 1" reinforced pressure hose. This is run in 110 mm ducting. Also run in the ducting is the electrical supply to the pump and the float switch, and the hydrostatic level sensor (18) that monitors the amount of stored rainwater. The pressure hose should be a minimum of 500 mm below ground level to protect against freezing. A float switch, attached to the pump (16), protects it from dry running.

Rainwater is pumped to the header cistern (25). If there is not enough rainwater to satisfy the demand the mains back up fills the header cistern thus always ensuring a supply of water for the WCs (and other appliances). Both rainwater and mains water supply into the header cistern is controlled by the float switches which have been pre connected.. The automatic mains back up connects to the header cistern via a specially designed tundish arrangement so that a type AA air gap is always maintained between the rainwater and the mains supply.

Factors to consider when designing the drainage layout

- Position of rainwater storage tank
- Surcharge protection of main drainage run
- Surface water from roof only into rainwater storage tank. Any paved areas must run direct to drain
- Vortex must connect to main drainage run
- Overflow from rainwater storage tank must connect to main drainage run
- Filtered water from Vortex connects to rainwater storage tank
- Invert level drop across the Vortex
- 110 mm ducting for the electrical connections and pressure hose

Construction Resources can offer a design service. Please call for more details.

This sheet was issued in April 2005 and may be superseded by later editions.