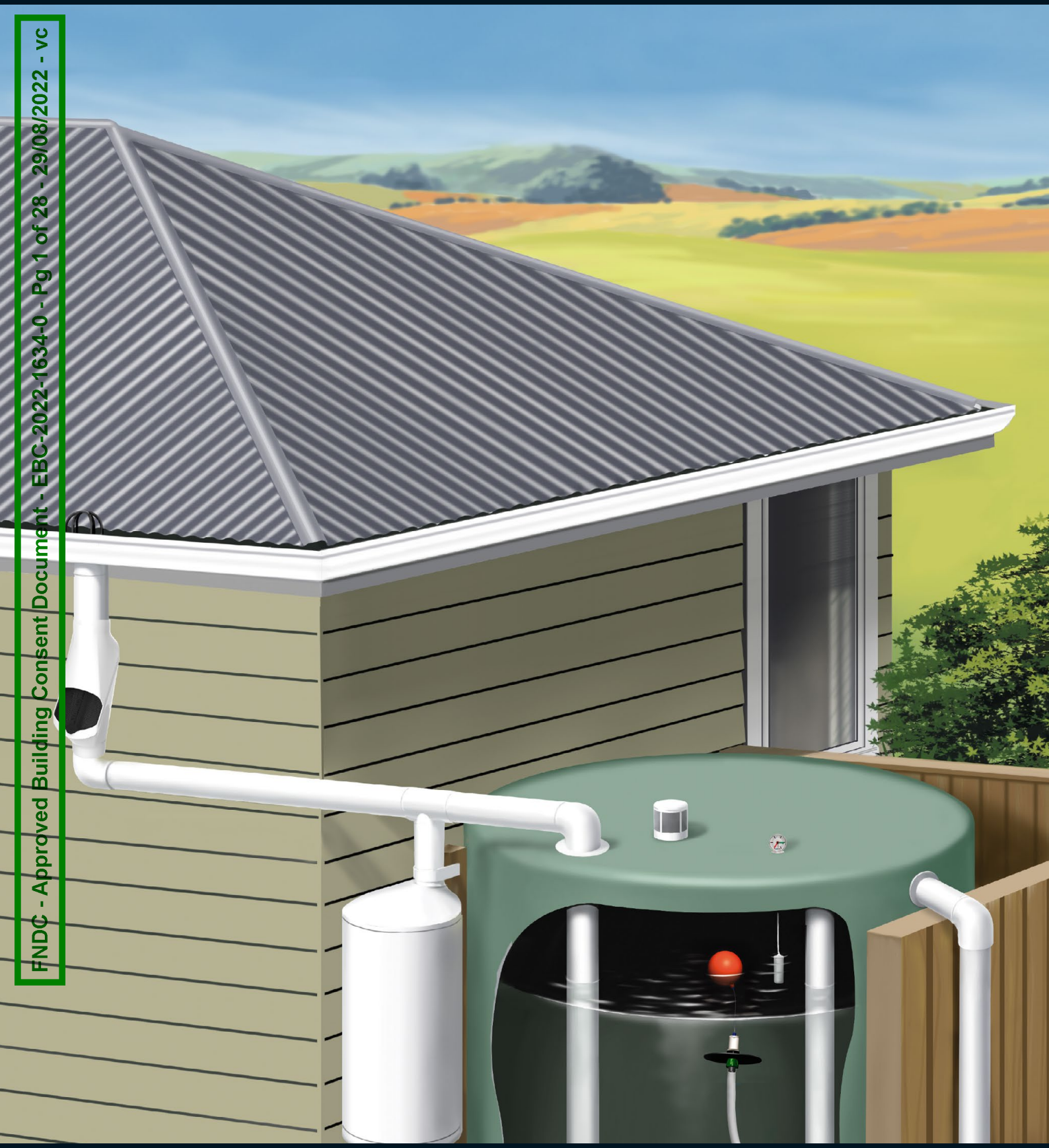
Rain Harvesting Systems

Safer solutions for rainwater collection



Rainwater Solutions

MARLEY by aliaxis

Rain Harvesting Systems

Safe solutions for the collection,

1 Marley Spouting & Downpipe Systems

The harvesting of safe, quality potable rainwater starts with the spouting and downpipes. Marley products comply with AS/NZS 4020: 2005 so are certified safe for the collection of drinking water. Available in a variety of profiles and colours, Marley spouting and downpipe systems carry a 15 year guarantee. Made of uPVC they will not rust, so give off no metal contaminants to end up in your water storage tank.

2 Outlet Strainer

The Marley Outlet Strainer stops large debris such as sticks and tennis balls entering the downpipe system from the spouting.

3 Leaf Diverter

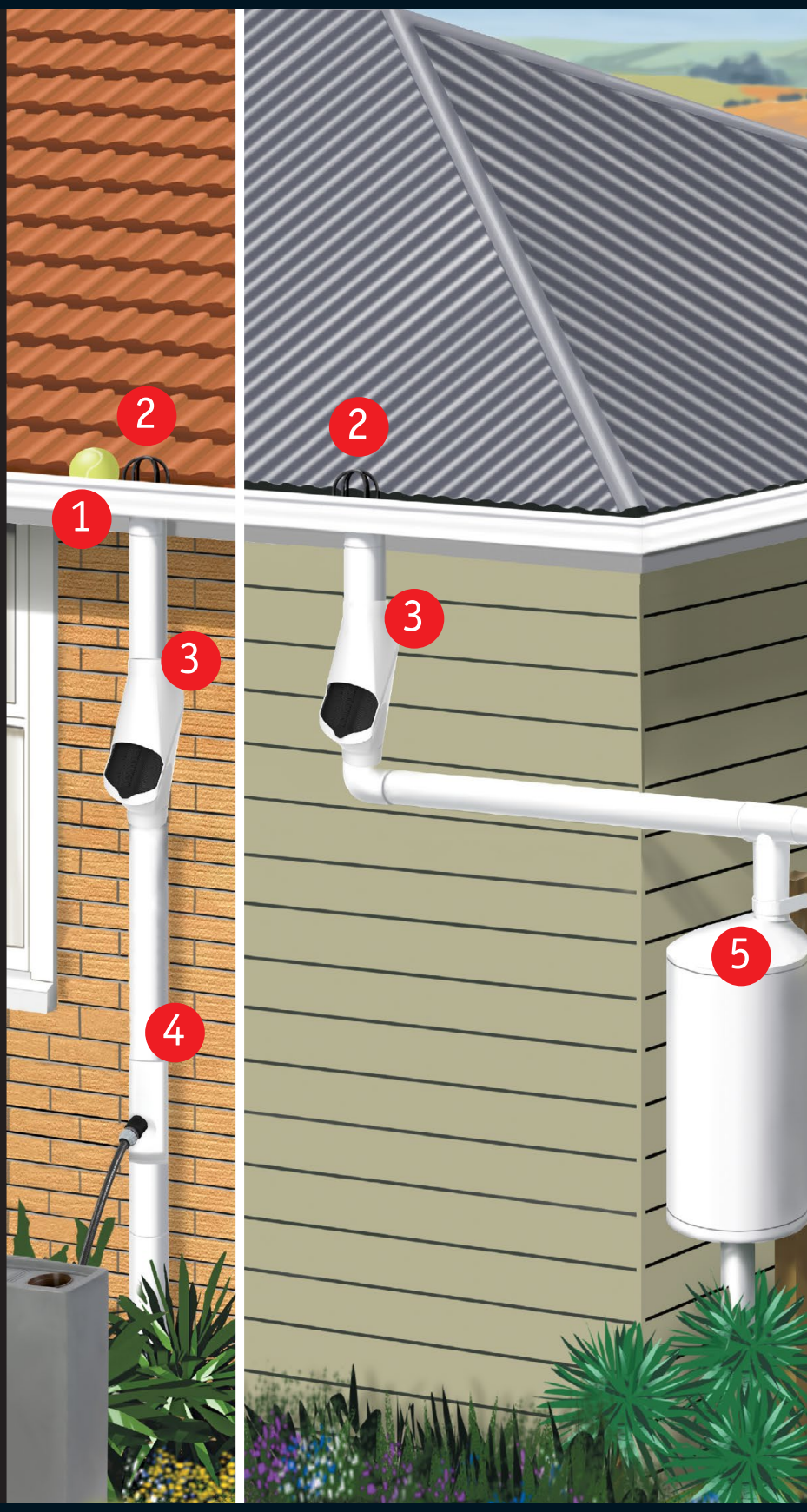
The Marley Curve™ significantly curbs the amount of solid matter that can flow into a tank. This reduces sediment build up which affects water quality and increases the strain on in-line filters and pumps. Curve has a unique screen design that minimises water wastage by drawing water through while keeping leaves and other debris out. Other options also available.

4 Downpipe Diverters

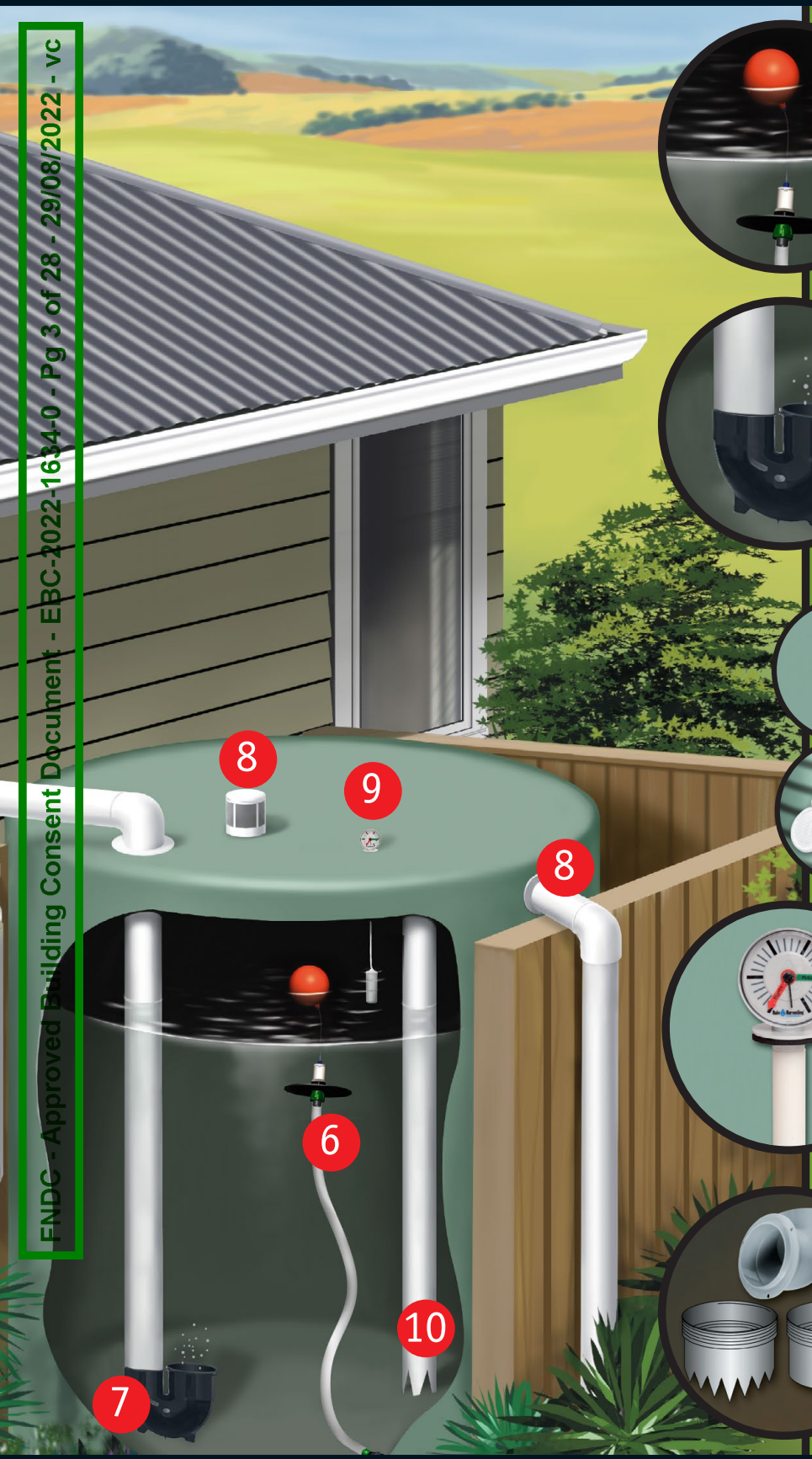
The Marley Twist® captures free rainwater for a multitude of uses. It features an easy on-off "twist" control and direct connects to a tank via a standard hose fitting. It features its own leaf filter and is ideal for diverting rainwater to an additional small tank as and when required.
The Marley Downpipe Diverter is ideal for stopping debris entering the tank while spouting is being cleaned.

5 First Flush Diverter

Long term build-up of foreign matter on the roof is often washed into the tank in the first heavy rain. The First Flush Diverter is critical for reducing pollution of tank water by diverting this first flush of contaminated water away from the tank. Available in 90mm or 300mm kits.



storage and distribution of rain water.



6 Floating Outtake Kit

This is connected to the tank outlet to the house and ensures you are drawing the cleanest water in the tank. The Floating Outtake floats inside the tank, suspended just below the water surface where the cleanest water lies.

7 Calmed Inlet

Provides a calmed inlet for rainwater entering the storage tank. The calmed inlet avoids distributing sediment in the bottom of the tank.

8 Vent Cowls, Flap Valves & Overflow

Vent Cowls reduce the possibility of pressurising inside the tank allowing a flow of fresh air into the tank, so the water can breathe. Fitting insect proof flap valves and tank overflows to a storage tank ensures the tank is vented allowing air to circulate while protecting it from insects.

9 Tank Gauges

Used to measure water levels in the tank.

10 Tank Vacuum Kit

By fitting a Tank Vacuum Kit, when the tank fills up the overflow will be sucked from the bottom of the tank (from the "Anaerobic Zone" - dirty zone).

Marley Rain Harvesting Products; safer solutions for the collection, storage and distribution of rain water.

HOW SAFE IS THE WATER YOU ARE COLLECTING?

When collecting rainwater as a partial or total source for a water supply it is essential the design of the system meets the need for potable (safe drinking) water.

Water collected from a roof and stored and distributed from a water tank, can contain a nasty range of pollutants that can contaminate your water, for example bacteria from bird droppings, insects, rotting debris, airborne dusts (containing heavy metals).

The Marley Rain Harvesting System comprises of a number of unique and cost effective components that are designed to work with the Marley uPVC range of spouting and downpipes to help make tank water as clean as possible. However, it is advisable to have your tank water analysed to check its potability.

7 STEPS TO RAIN HARVESTING POTABLE WATER;

1. Ensure the roof surface is suitable for collecting potable water
2. Ensure Marley spouting is installed according to Building Code, allowing for adequate fall and installing suitable expansion outlets or gutter outlets to make certain water does not pond in the gutter
3. Install leaf and debris diverters to direct leaf litter and larger debris items out of the flow of the water
4. Fit an appropriate sized first flush diverter, to divert the first most contaminated rain water from entering the tank
5. Attach tank overflows and vent flaps to tanks to ensure the tank is vented properly allowing air to circulate
6. Attach insect screens to rainheads and tanks to prevent insects and vermin entering the tank
7. To assist in cleaning the tank, install a tank vacuum kit to suck water from the bottom of the tank (anaerobic zone – dirty 'zone') when the tank is full to overflowing.

RAIN HARVESTING SYSTEM COMPONENTS

Debris and Rainwater Diverters*

CURVE™ Leaf Diverter
Available in six colours
Code: CURVE, CURVE.GYF, CURVE.IRO, CURVE.BLK, CURVE.COP, CURVE.TTN

TWIST® Rainwater Diverter^
Available in six colours
Code: TWIST, TWIST.GYF, TWIST.IRO, TWIST.BLK, TWIST.COP, TWIST.TTN

Downpipe Diverter
Code: RWDD

Outlet Strainer
Code: RWST

*Also see back page

Master Plumbers Representing Excellence ^Marley Twist® won Product of the Year 2018 at the New Zealand Plumbing Awards.

First Flush Diverters

300mm First Flush Diverter Kit
(Kit only add 300 diam pipe to suit volume required)
Code: RH8121-1

90mm First Flush Diverter Kit
Code: RH8119-5

Tank Improvement Products

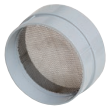
90mm diameter Insect Proof, Vented Flap Valve PVC/ Stainless Steel
Code: RH8119-3

Plain Tank Overflow Outlet 90mm X 90 degree bend M&F
Code: RH8124-2

KEEP?

Floating Outtake Collar
Code: RHFO.C

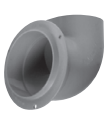
Tank Gauge
(Mechanical or Wireless)
Code: RHMG, RHRA



90mm 304 Stainless Steel M&F Insect Proof Screen
(Fits RH8123, RH8124-1, RH 8124-2)
Code: RH8116

50mm diameter Vent Cowl PVC & S/Steel Insect Proof Screen
Code: RH8119-9

Floating Outtake
Length of hose is 2 metres and 25mm diameter to fit a 25mm hose tail.
Code: RHFO



Flanged Tank Overflow Outlet 90mm X 90 degree bend M&F
Code: RH8124-1

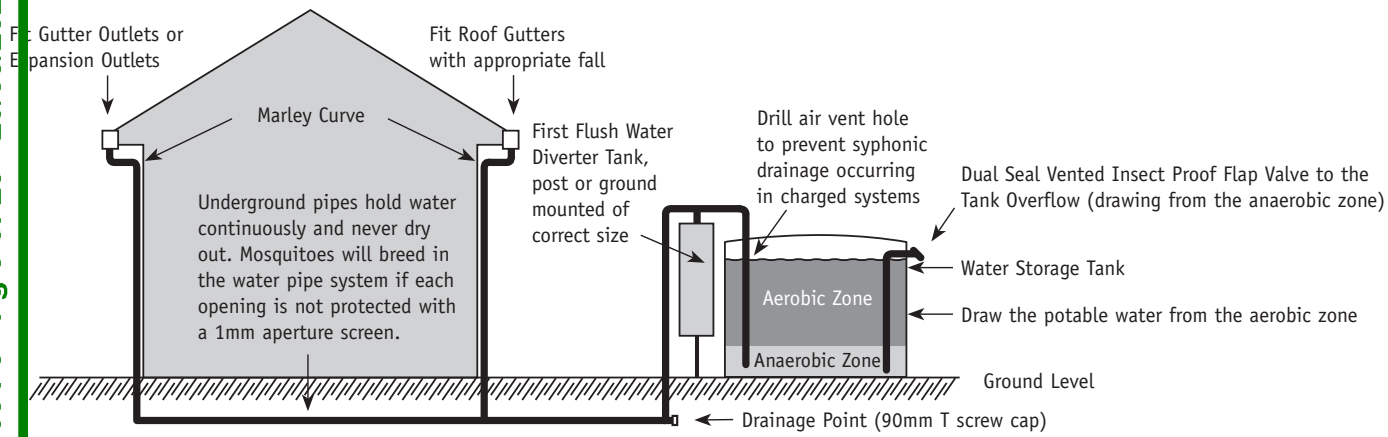
90mm Tank Vacuum Kit - Poly/F-Glass/Flat wall Tank
Code: RHFWTV90
Concrete Tanks
Code: RHCONTV90

Calmed Inlet
Code: RHCI

Choosing the most suitable components for a rain harvesting system will be based upon whether the tank is set up as a wet or dry system.

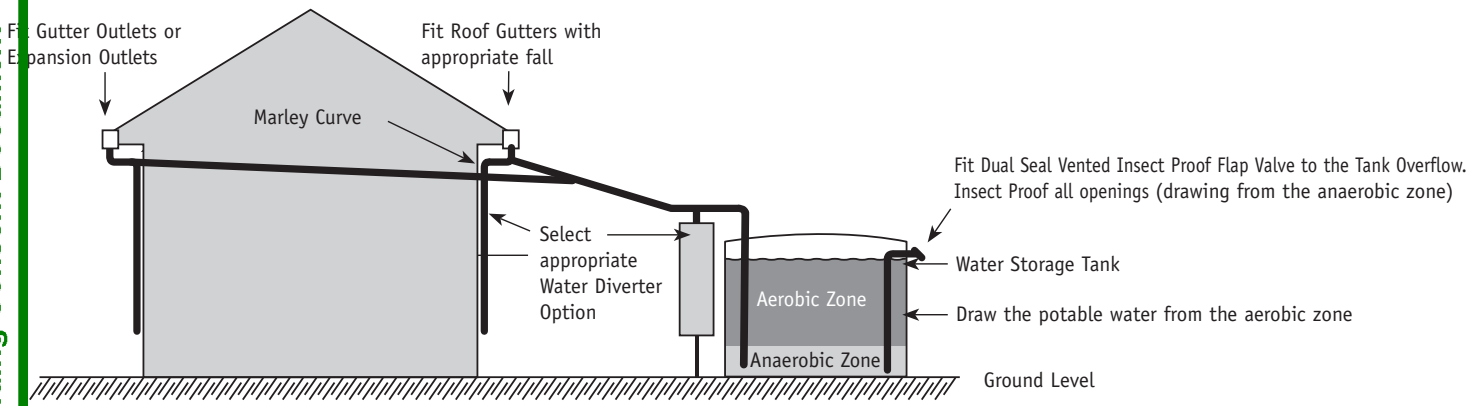
A TYPICAL "WET" SYSTEM (syphonic system)

A "Wet" System is a system where the pipes are fitted in such a way that when the rain stops the pipes to the tank do not drain out. They hold water. With this type of system, the pipes must be fitted with screens at each end to ensure that insects cannot enter and breed in the system. A "wet" system needs to be fitted with a First Flush Water Diverter at the tank, with a capacity equal to that of the pipes plus whatever amount is to be diverted from the roof. To lessen the amount of water to be diverted at the tank, a Downpipe First Flush Water Diverter can be fitted on the building to take the required first flush from the roof.



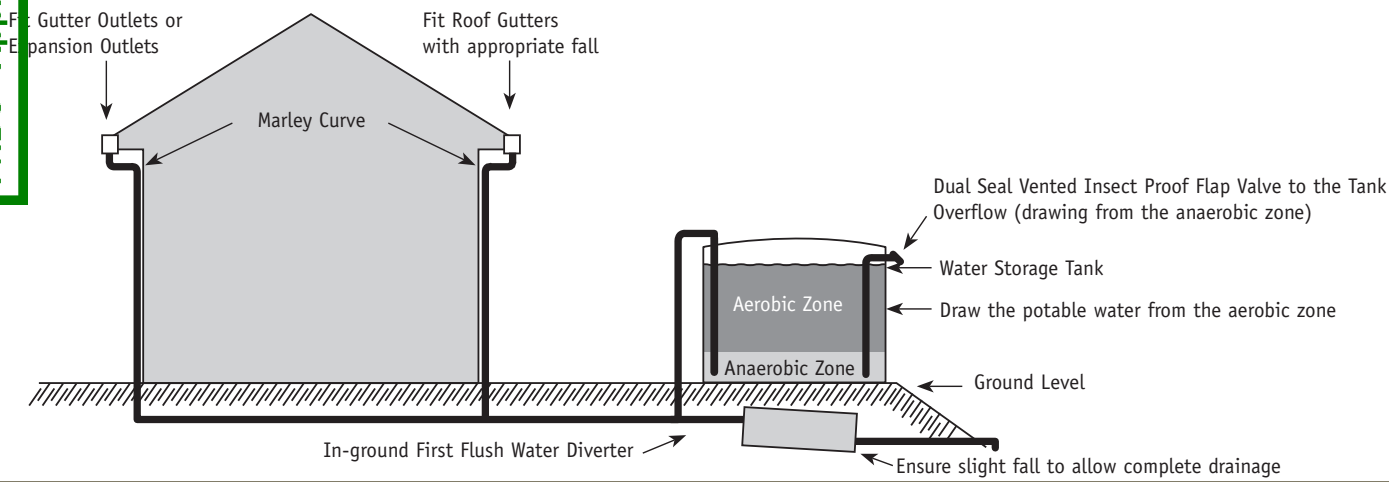
A TYPICAL "DRY" SYSTEM

A "Dry" System is a system where the pipes drain out and dry out after rain. A system where pipes do not hold water after the rain stops. Large buildings normally make it near impossible to have "dry" systems. For slightly sloping sites an In-Ground First Flush Water Diverter will turn a "wet" system into a "dry" system.



A TYPICAL "WET" SYSTEM CONVERTED TO A "DRY" SYSTEM

For slightly sloping sites an In-Ground First Flush Water Diverter will turn a "wet" system into a "dry" system.



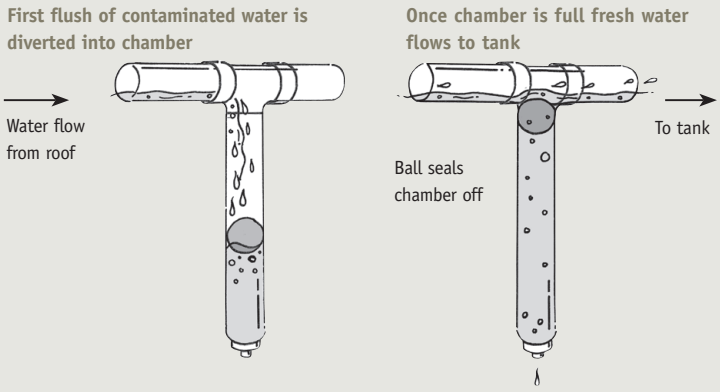
Regular maintenance is extremely important. Clean rainhead and filter screens. Check to ensure that all insect proofing is in place and is effective. Check that the roof is free from overhanging branches and that there are no snags in the roof gutter.

FIRST FLUSH DIVERTERS

Water diversion is a key component to water quality. The main function of the first flush diverter is to prevent the first flow of water from the roof from entering the water storage tank.

When it begins to rain, the first flow of contaminated water is diverted into the diverter chamber. Once the chamber is full, the fresh water automatically flows into the storage tank.

The type of first flush diverter to be fitted should be chosen by assessing the quantity of water to be diverted.



300MM FIRST FLUSH DIVERTER

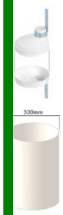
Can be installed to a new or existing downpipe system, designed to fit 90 or 100mm pipe and can be wall-mounted or fitted underground.

Add the appropriate length of 300mm diameter pipe to suit the quantity of water you wish to divert (see table below).

Calculation Method: 300mm First Flush Diverter KIT only
m^2 Roof Area x Pollution Factor +
(Length of wet pipe(m) x pipe cross-section factor) = litres to be diverted

CATEGORY	DESCRIPTION	POLLUTION FACTOR	PIPE SIZE	PIPE CROSS SECTION FACTOR
Minimal Pollution	Open field	0.5	65mm Round Downpipe	3.30
Average Pollution	Some trees & shrubs in neighbourhood but not directly adjacent to collection area	1	80mm Round Downpipe	4.40
			90mm Stormwater pipe	5.75
Substantial Pollution	Trees and foliage on and around property. Leaves, debris, bird droppings, various insect matter	2	100mm Stormwater pipe	8.60

300MM FIRST FLUSH DIVERTER



PRODUCT CODE	DESCRIPTION	VOLUME IN LITRES	MAX SERVICABLE ROOF AREA (Minimal pollution in dry system)
FFD.300.1.5	300mm x 1.5 metre (white)	112 Litres	224m^2
FFD.300.2	300mm x 2 metre (white)	147 Litres	294m^2

Step 1 - Determine the length of the Diverter Chamber (see table above). Make sure the Screw Cap is at least 150mm from the ground to allow for cleaning.

Step 2 - Bevel both ends of the 300mm pipe with an angle grinder so that the pipe fits easily onto the end caps.

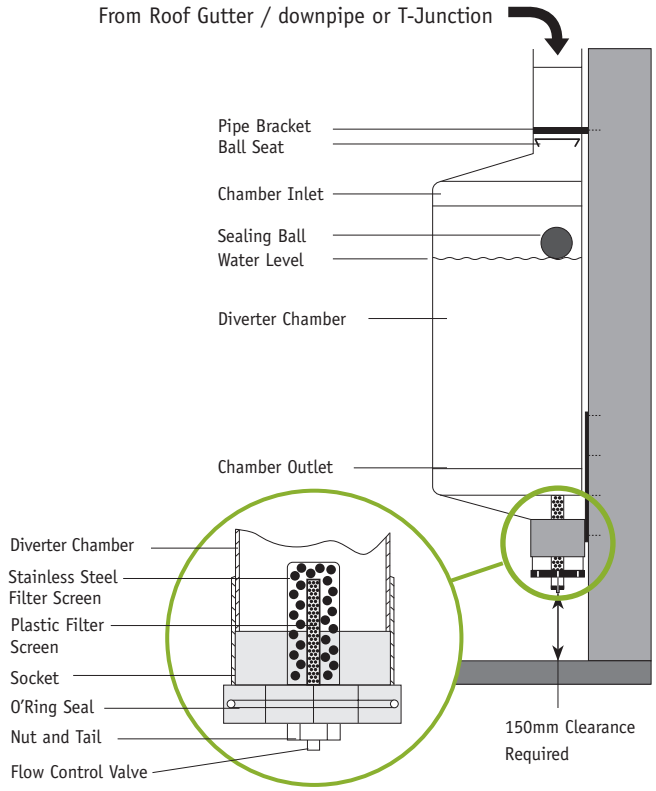
For Post/Wall mounting glue (Marley Gold) the caps on each of the chamber making sure the cap outlets are both at 12 o'clock.

For an underground unit (horizontal) glue one cap at 12 o'clock and the other at 6 o'clock.

Step 3 - Attach the wall/post bracket in position.
Place the diverter chamber into the bracket and secure the chamber to the wall at the top with a 100mm pipe bracket.

Step 4 - Connecting to the Chamber Inlet
If connecting to 90mm pipe; insert the ball seat with the small end (seat) down into the top of the chamber inlet and insert the infeed pipe directly hard down on the diverter seat. Use a t-junction to divert the pipe into the chamber inlet.

If connecting to a 100mm pipe: Insert the ball seat with the small end (seat) down into the top of the chamber inlet and insert and glue the 20mm (long) 90mm spacer (provided) and push the



spacer hard down on top of the seat to hold it in place. Attach the 100mm infeed pipe. Use a t-junction to divert the pipe into the chamber inlet.

Step 5 - Connecting to the Chamber Outlet

Glue the 100mm long 90mm diameter pipe provided into the plain end of the 90mm threaded coupling and glue into the chamber outlet.

Insert the Stainless Steel filter into the socket with the open end of the filter facing downwards, insert the 20mm (long) 90mm pipe (spacer) into the socket to hold the filter in place.

Fit the Screw cap to the socket making sure that the "O" Ring is in place in the cap. Insert the plastic screen into the cap, select the appropriate Flow Control Valve (rubber seal with holes) with the smallest hole giving slowest flow. Place Flow Control Valve in the Nut and Tail and screw the Nut and Tail into the cap.

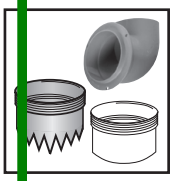
To install the unit underground, ensure that before Chamber Inlets and Outlets are glued to the Chamber, the Chamber Inlet is at 12 O'clock and the Chamber Outlet at 6 O'clock to ensure water can drain out effectively.

Hint: Make sure diverter water flows away from house or tank. Use diverted water for gardens.

Maintenance

To ensure continuing function, unscrew the screw cap on a regular basis to allow debris to fall out. Hose or wash the filter screen if needed and check and clean the flow control valve.

90MM FIRST FLUSH DIVERTER

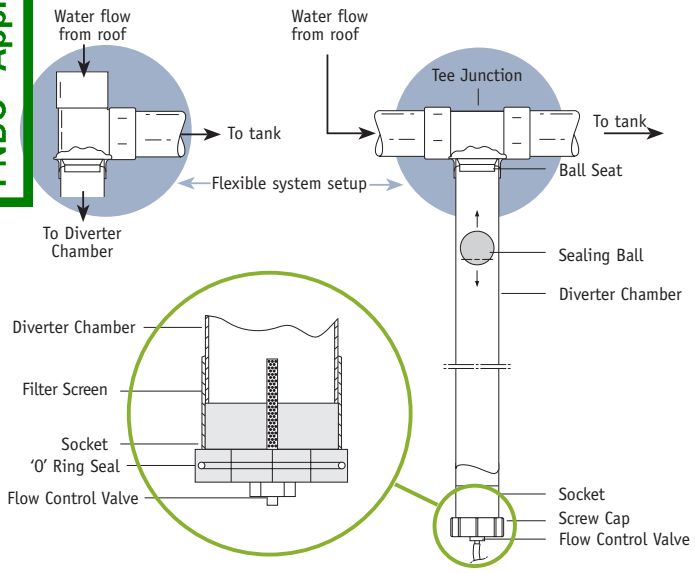


A simple First Flush Diverter requiring minimal maintenance.

Can be installed to a new or existing downpipe system and is designed to be installed in-line with each downpipe connecting to the tank.

LENGTH OF CHAMBER	VOLUME IN LITRES	MAX SERVICABLE ROOF AREA (Minimal pollution in dry system)
1 Metre	5.7 Litres	11.4m^2
2 Metres	11.4 Litres	22.8m^2
3 Metres	17.1 Litres	34.2m^2

NB. The 90mm First Flush diverter requires a section of Marley Stormline 90mm pipe sold separately in 1m, 3m and 6m lengths.



Installation Instructions

Step 1 - Determine the length of the Diverter Chamber (cut 90mm pipe as long as possible) making sure the Screw Cap is at least 150mm from the ground to allow for removal and cleaning.

Step 2 - Place the Ball Seat into the Tee Junction and then fit the Diverter Chamber up against the Ball Seat and hold until the glue sets. Then fit the socket to the bottom end of the Diverter Chamber.

Step 3 - Fix the assembled chamber to the wall in the desired position using the steel Pipe Brackets.

Step 4 - For wall mounting, connect a M & F Elbow to the Diverter Chamber and connect the downpipe. Bracket if necessary. Fit an elbow to the Tee Junction inlet and connect to the bottom of the selected Leaf Diverter.

Step 5 - Place the Sealing Ball into the Diverter Chamber and attach the Screw Cap.

Step 6 - Select the appropriate Flow Control Valve and insert into the Nut and Tail. Insert plastic Filter Screen into Screw Cap and attach the Nut and Tail.

Maintenance

To ensure continuing function, unscrew the screw cap on a regular basis to allow debris to fall out. Hose or wash the filter screen if needed and check and clean the flow control valve.

TANK VACUUM KIT

Fine sediment, which can contain harmful bacteria and heavy metals, eventually builds up in the bottom of the tank and some can find its way out the outtake pipe and into the home and can be ingested. This can be removed by using a tank vacuum kit.

How the Tank Vacuum System Works

Water flows into the tank through your existing pipework. The 90mm diameter Tank Vacuum Kit becomes charged with water and a suction action starts as the excess water exits the tank. This exiting water sucks the sediment/waste from the bottom of the tank (from the "Anaerobic Zone" - dirty zone) up the syphon pipe and out the tank. Position the tank vacuum kit directly over the outtake. Cut the vacuum pipe so that the serrated pick up rests on the bottom of the tank. The anti syphon feature prevents all the water in the tank from syphoning.

Leaf and Debris Diverters

MARLEY CURVE™

Suitable for new or existing downpipes, the Marley Curve has been designed in New Zealand to meet all rainfall conditions. Curve fits anywhere on the downpipe and does not need to be fixed to cladding or spouting. Containing no metal parts, Curve will not rust. It also features a quick release upper body for easy removal of its innovative screen for cleaning.

Dimensions: 330mm high; 126mm wide; 133mm deep. Fits Marley RP80® 80mm downpipe system. Adaptors available for other sizes.

Available in:

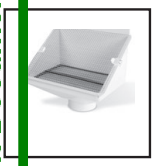
STRATUS® DESIGN SERIES

White | Grey Friars® | Ironsand® | Black | Copper (Metallic) | Titanium (Metallic)

LEAF BEATER

Mount mid or top of downpipe. PVC body with Clean Shield™ stainless steel screen. Features VH Pivot™ outlet that swivels to suit vertical or horizontal downpipes. Fits Marley RP80® 80mm round downpipe or Marley 90mm Stormline pipe. Adaptor available to fit Marley RP65® 65mm round downpipe.

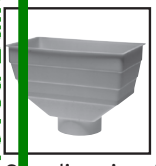
Dimensions: 280mm high, 211mm wide, 183mm deep.



LEAF EATER

Mount mid or top of downpipe. PVC body with 6mm aperture screen for large debris and 1mm aperture mosquito proof stainless steel mesh screen.
Fits Marley RP80® 80mm round downpipe or Marley 90mm Stormline pipe. Adaptor available to fit Marley RP65® 65mm round downpipe.

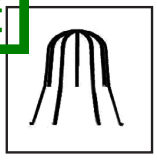
Dimensions: 289mm high, 275mm wide, 188mm deep.



LEAF CATCHER

Spouting or wall mounted. PVC body with dual 6mm aperture screen for large debris and 1mm aperture mosquito proof stainless steel mesh screen. Fits Marley Magnum® 100mm round downpipe or Marley 90mm Stormline pipe. Adaptors available to fit Marley RP80® 80mm round downpipe.

Dimensions - 210mm high, 290mm wide, 190mm deep.



OUTLET STRAINER

The Marley Outlet Strainer is made from UV resistant black polypropylene and is able to be used with 65mm, 80mm or 100mm outlets. Cost effective, simple to install and ideal for preventing large debris such as sticks and tennis balls from entering your downpipe system.

Rainwater Diverters

New Zealand Plumbing Awards PRODUCT OF THE YEAR 2018 Master Plumbers

MARLEY TWIST®

The Marley Twist lets you capture extra rainwater as you need it via a convenient on-off 'twist' control. It quick connects to a secondary tank via a standard hose fitting. This additional water supply can be used for watering the garden, topping up pools, general cleaning or emergency supply.

Dimensions: 230mm high, 97mm wide including hose spigot. Fits Marley RP80® 80mm downpipe system. Adaptors available for other sizes.

To Use: Direct connect to a collection tank. Simply "twist" the upper body to the 'on' position when a fill is required, then twist to 'off' when finished.

Available in: STRATUS® DESIGN SERIES

White | Grey Friars® | Ironsand® | Black | Copper (Metallic) | Titanium (Metallic)

DOWNPIPE DIVERTER

The Marley Downpipe Diverter is ideal when cleaning roofing and spouting. It removes the majority of debris flushed down the downpipe without the need to disconnect the downpipe. Note: Do not use the Downpipe Diverter in a 'wet' system.

Dimensions - 335mm high. Fits Marley RP80® 80mm downpipe system.

To Use: Lower the diverter arm and ensure it is clipped in a downwards sloping position.

For further installation information please refer to the technical section of the applicable product page at www.marley.co.nz

SUSTAINABLE MANUFACTURING

Marley is committed to creating environmentally sustainable processes and products and was the first plastics manufacturer in New Zealand to achieve ISO14001 registration. We are also Best Environmental Practice certified for our entire range of manufactured uPVC systems. This means we get our raw materials from sustainable and responsible sources, continuously work on our manufacturing processes to reduce our environmental footprint and accept our products back at the end of their useful life for recycling.

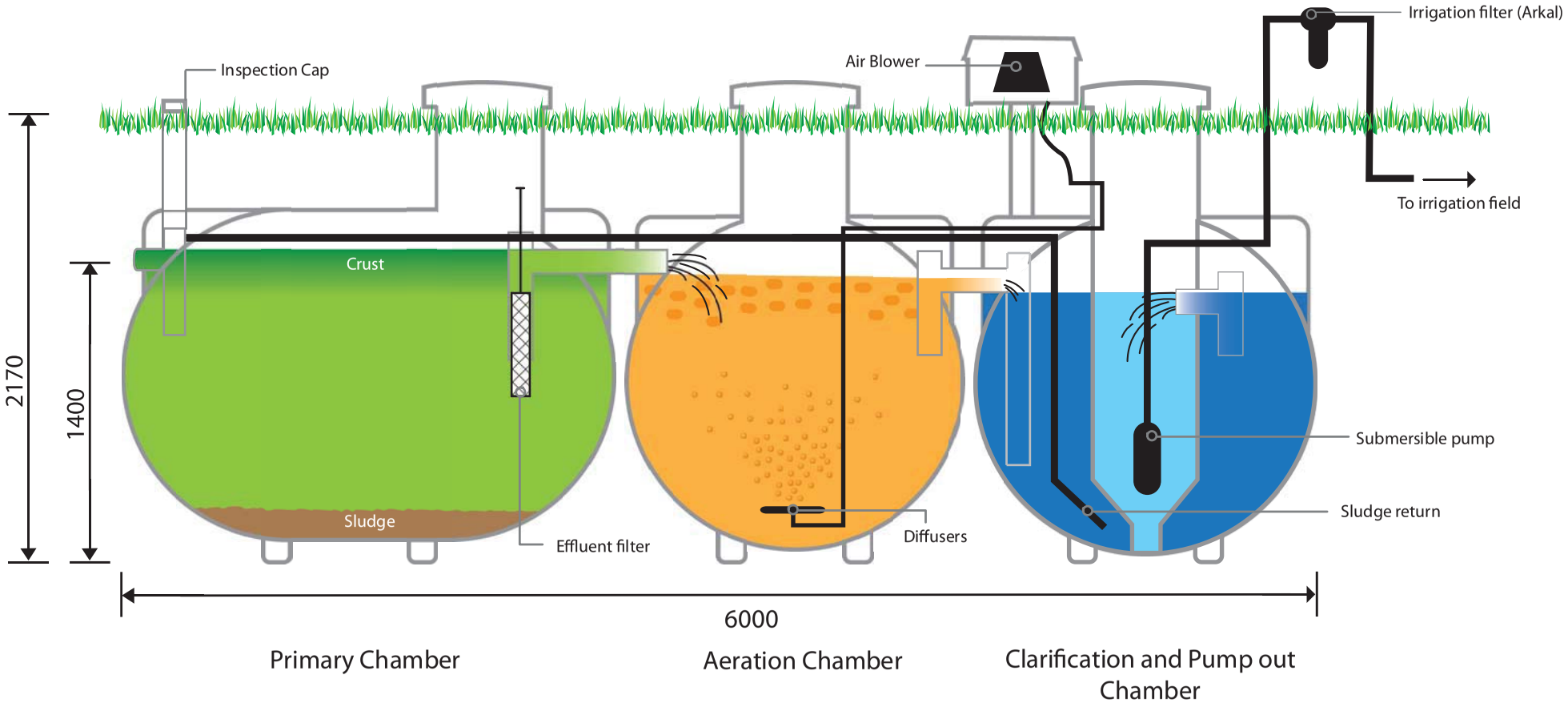
MAR3866 September 2019

Integra

Reliable Wastewater Management

Installation Guide

Integra Wastewater Treatment Systems



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INSTALLATION OF INTEGRA SYSTEMS

The Integra wastewater treatment system (WWTS) has been designed with installers and service agents in mind. The fixtures and fittings used in the construction of the system are all items most plumbers and drain layers will stock in their van such as standard Hansen type fittings and standard ball valves. This means that if there is a failure for one of these items there are no speciality parts to be shipped as you should be able to fix it on the spot. The WWTS is simple in its configuration and operation, however there are several areas that need special attention during installation to ensure the product warranty is supported and the end user maximises the value from their Integra WWTS.

Ground Water
It is important that installation of the Integra WWTS is not carried out where permanent ground water is above the main body of the tank. Where a wastewater treatment system must be installed in an environment like this please consult Integra to assess whether an installation solution is possible such as the ground anchoring system detailed in your technical support manual.

Excavation
The excavation zone required for the installation of the underground tanks shall extend along a line from the base of the tank up at 1 vertical to 1 horizontal or the angle of repose, whichever is flatter, for soils above ground water table. For saturated or submerged soils the excavation shall extend along a line from the base of the tank up at 1 vertical to 1.5 horizontal or the angle of repose, whichever is flatter. In addition, excavations shall not be undertaken within a zone of 1 vertical to 2 horizontal from existing structures. If there is any doubt use appropriate advice from a suitably qualified geotechnical engineer. The base of the tank is defined as a point vertically down from the outer extremity of the tank.

Base Soils
The sub-grade material upon which the base of the tank shall bear upon shall be a minimum soft clay or silty sand of minimum bearing capacity 100kPa. This material should be compacted to 95% of standard dry density +/- 2% from optimum moisture content prior to installation of the underground tank. Any sharp rocks or other material must be removed from the base soil.

Bedding
If the existing base is not suitable, compact bedding material shall be used to obtain a firm level base with a minimum depth of 100mm. Use pea metal, 7-10mm (GAP 7-10) aggregate or bedding material.

Positioning the Tank
Ensure there are enough people to assist in the process (trained) and that all lifting equipment is capable of lifting the tanks utilizing the lifting eyes. Check the orientation of the inlet and outlet. Check the manhole for level and alignment.

Maximum Depth
The maximum burial depth of the tanks is 670mm to invert bracket. (The height of the riser). This is critical to ensure the long service life of the vessels and where the vessels are buried deeper it is at the installer/homeowners risk and will void the product warranty.

Filling the Tanks
The tanks should be half full before back filling is commenced to stabilise the tank. Fill the tank immediately after back filling is completed to normal operational level. Check for any leaks.

Backfilling
The backfill material around the tank shall be free draining, granular material with a saturated density minimum of 18kN/m3, maximum of 21kN/m3, with a minimum coefficient of internal friction of 30 degrees. The backfill shall be compacted to minimum 95% of standard dry density +/- 2% from optimum moisture content in compacted layers (around the full circumference of the tank) of no greater than 200mm. We recommend pea metal less than 20mm (GAP 20). Ensure backfill is compacted into the underside of the tank. Do not backfill with clay soils.

No Go Zone
A zone around the perimeter of the tanks 2 metres from the edge of the tanks must be identified to stop the intrusion of vehicles, stacked materials and congregations.

Anti-Flotation
The tanks are designed to resist flotation in high ground water conditions if covered by at least 500mm of backfill when full to operating levels.

The tanks should only be emptied when ground water conditions are low (usually in summer time) and be refilled immediately after solids are removed.

Septic Tank Standard
The tanks are to be installed in accordance with Appendix B of the

Septic Tank Standard AS/NZS 1546. 1.2008.

Health & Safety
Installation shall be carried out in accordance with the recommended MBIE Code of Practice for Safety.

Surface Runoff
Divert surface runoff away from the tank installation site.

Lid Sealing
The lid is fitted with a large O ring; ensure this is clean to achieve a good seal.

Vessel Placement
Separation distance between the primary vessel and the aeration vessel may be determined by the drain layer on site to suit any lower site contour situation and has no limitations.

It is necessary to install the aeration and clarification vessel within one metre of each other and to have them on the same plane.

Vessel Connections
The Integra WWTS is supplied as three (or more) separate components comprising of septic, aeration and clarification vessels.

The connections between the vessels are as follows:

- 100mm PVC drainage connections to inlet and interconnecting the vessels.
- 25mm connection between the vessels to facilitate the sludge return feature back to the Aeration vessel.
- 15mm hose is supplied to connect between the same vessels to supply air to the diffuser.

Blower Cabinet Installation
The air blower is supplied in a separate weather proof cabinet to be installed by the drain layer. The cabinet shall be solvent glue fixed to the system with a 500mm length of 100mm diameter PVC drainage pipe (supplied). 100mm diameter PVC end caps are fitted to the bottom of the blower cabinet and the top of the clarification vessel for locating purposes. The base of the blower box is intended to sit at finished ground level.

Effluent Discharge Field
Where specified by the system designer the WWTS is supplied complete with the materials and components to install the effluent discharge field. The main components supplied include:

- Discharge filter unit
- Stand pipe kit
- Irrigation fitting kit
- The appropriate number of dripper line coils.

Electrical Requirements
The installation of the system will require a 240 Volt, 50Hz, 16 Amp power supply fed from a dedicated RCD.

The controller is intended to be installed adjacent to the dwelling distribution board or sub board. Alternatively the electrician may install the controller as a separate sub board located as required.

Power and Alarm cables need to be routed from the Controller to the wastewater treatment system.

More detailed electrical information is included in the pages to follow.

Owners Manual
A comprehensive information pack is supplied with each system. The Integra Installer Agent is required to ensure that the owners manual is handed to the owner on completion of the installation.

The information provided in the owners manual shall be worked through with the owner to ensure a thorough understanding of the wastewater treatment system operational requirements. 95% of end user issues result from a lack of education on the operating requirements of the system so make the effort to ensure your (and our) customer has a hassle free experience with their Integra WWTS.

Commissioning
Make sure the vessels are filled to normal operational level, check for water tightness and add the activating enzyme supplied with the system. Included in the back of this book is a commissioning check list that is to be completed and returned to Integra to be retained on file for warranty purposes.

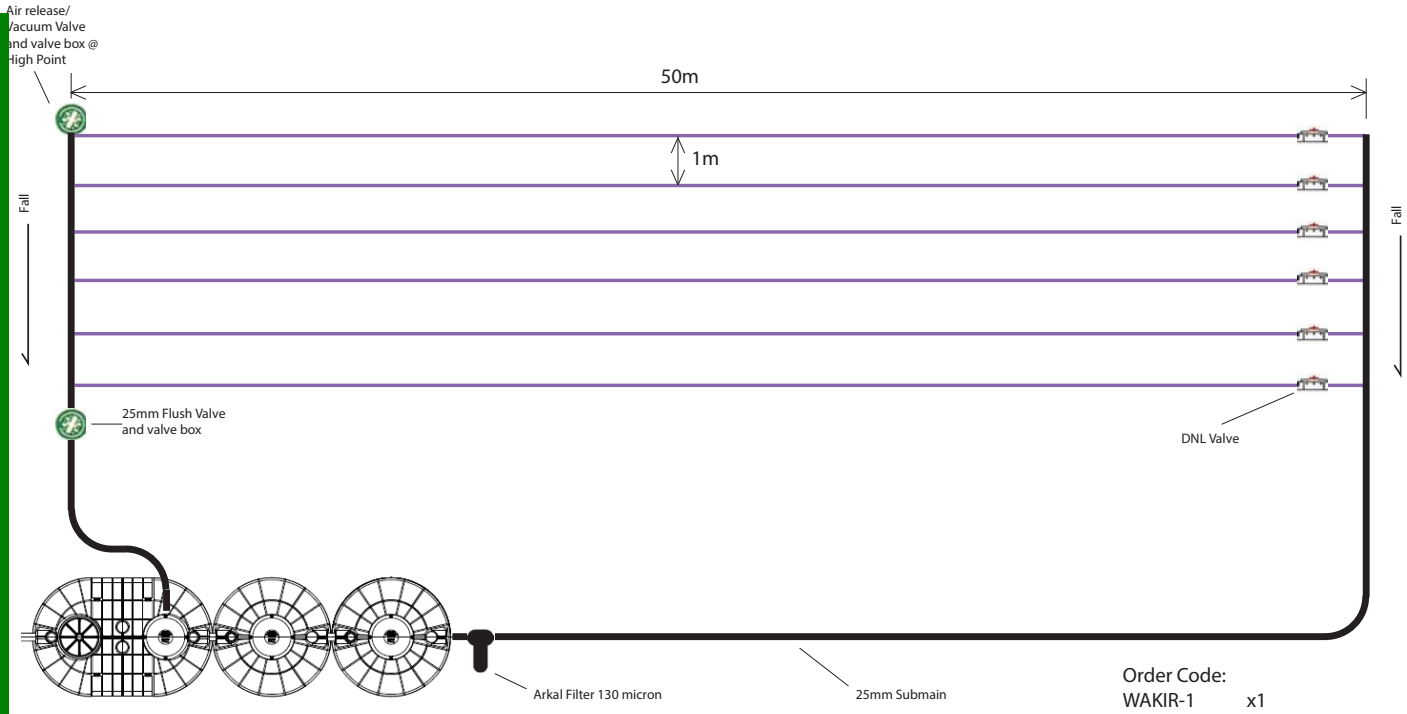
Warranty
Failure to comply with these instructions will invalidate the product warranty. The conditions of the warranty are further detailed further on in this installation guide.

Support
If at any point you are unsure about anything to do with your installation, Integra have experts on hand to assist with any technical issues you may encounter.

Technical Drawings and Diagrams

EFFLUENT DISCHARGE FIELD - 300m (BASIC)

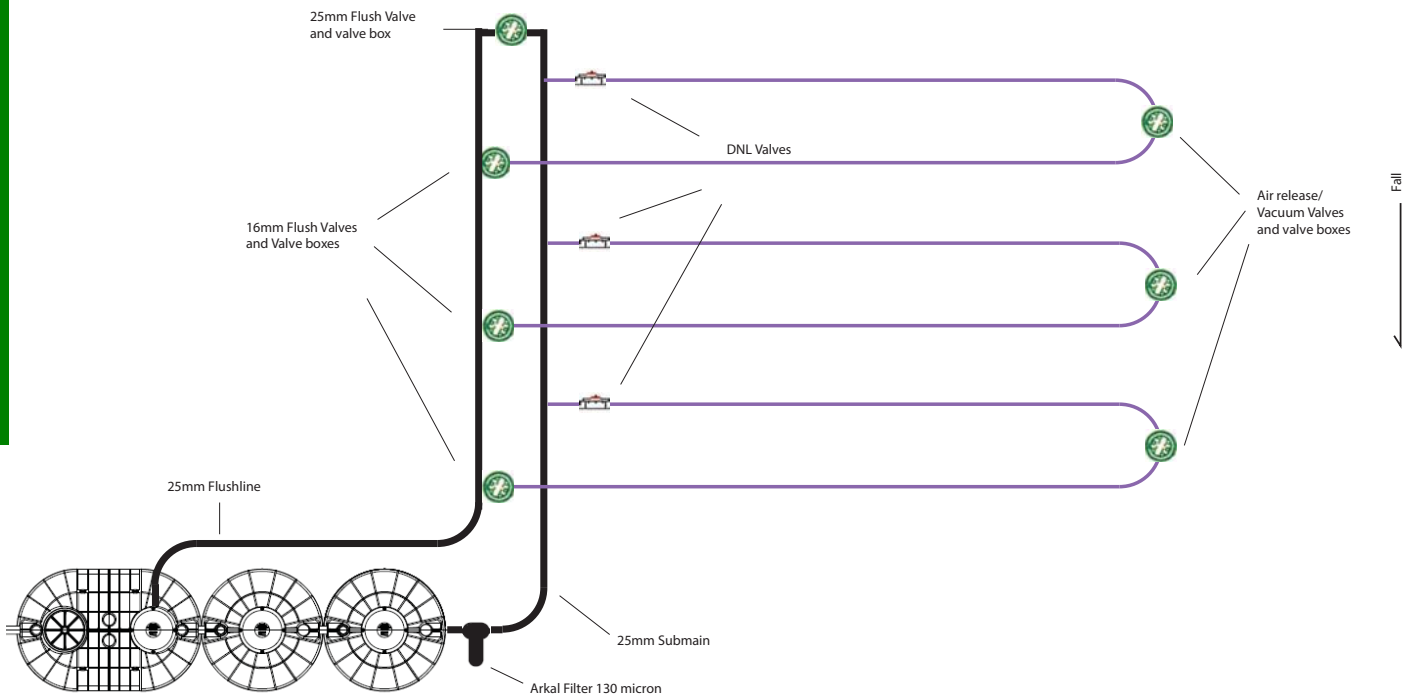
The below schematic shows the basic layout of a 300 metre dripper field. This layout uses less flush box installations but the resulting slower line flushing velocity is less effective. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



Order Code:
WAKIR-1 x1

EFFLUENT DISCHARGE FIELD - 300m (STANDARD)

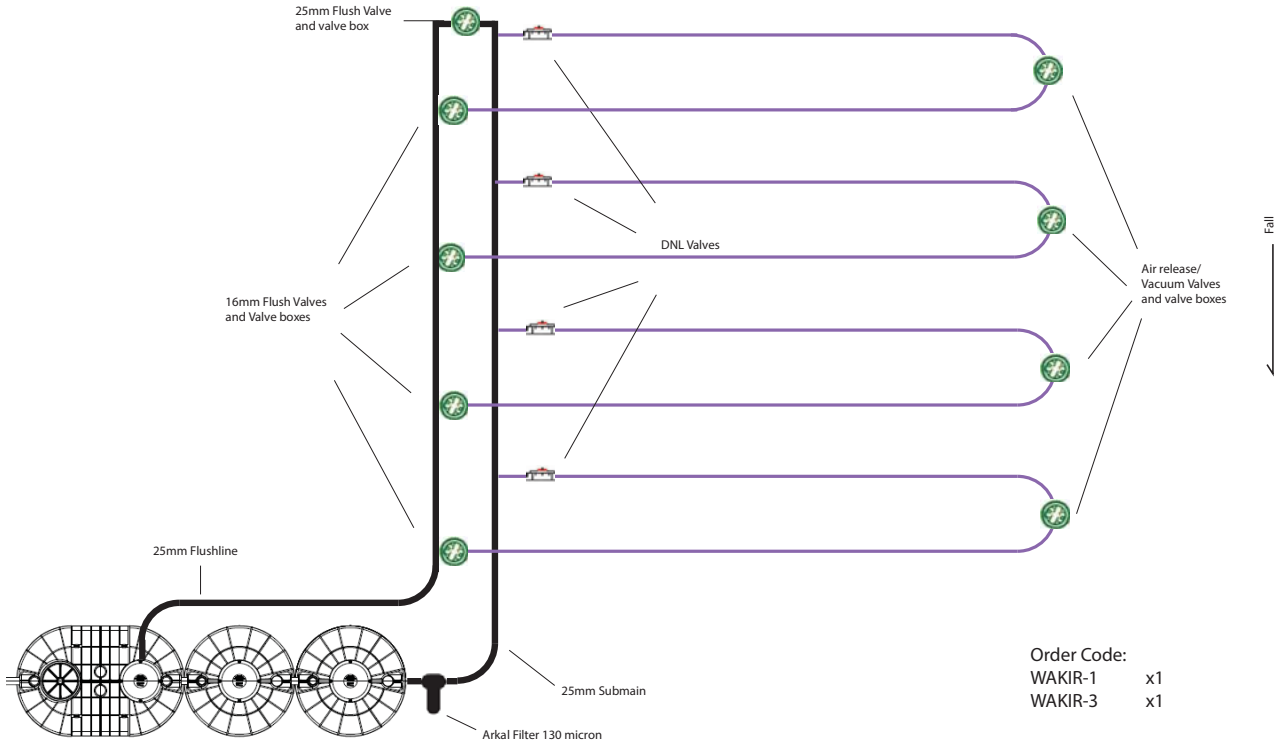
The below schematic shows the standard layout of a 300 metre dripper field. Using more flush box installations the field can be installed in tighter areas than the 'basic' installation shown above. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



Order Code:
WAKIR-2 x1

EFFLUENT DISCHARGE FIELD - 400m (STANDARD)

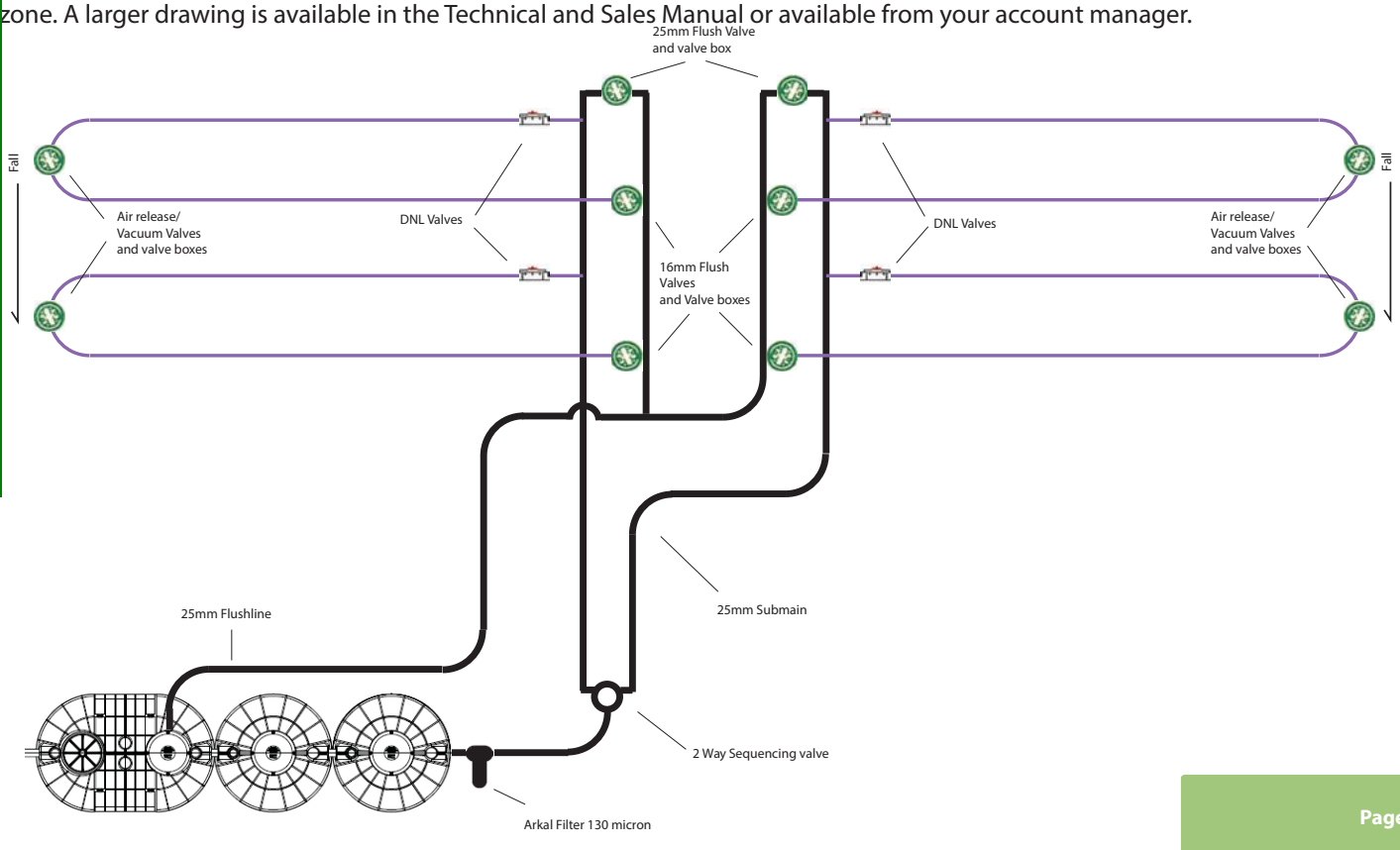
The below schematic shows the standard layout of a 300 metre dripper field includes a 100 metre expansion pack for larger field requirements. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



Order Code:
WAKIR-1 x1
WAKIR-3 x1

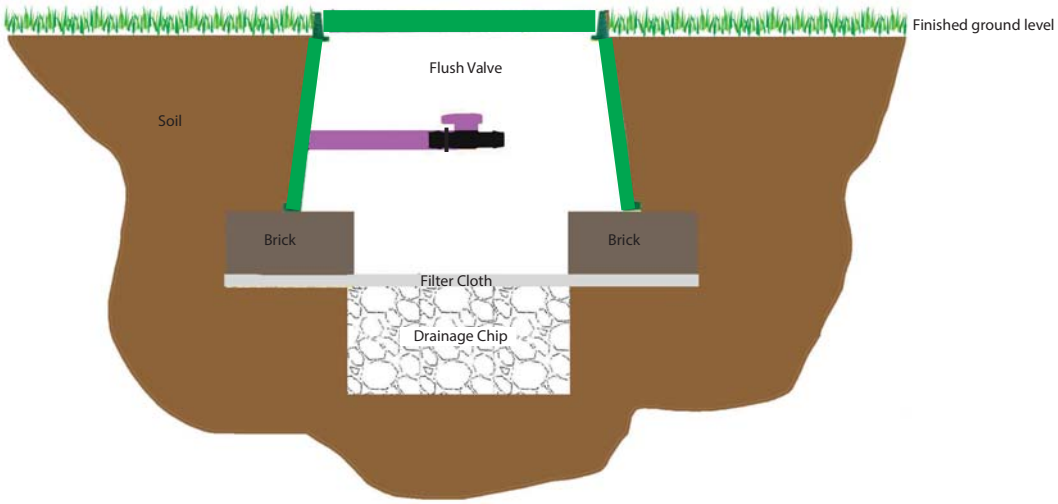
EFFLUENT DISCHARGE FIELD - 400m (SEQUENCING)

The below schematic shows the sequencing field layout of a 400 metre dripper field. Expansion packs can be applied to this field option to provide more flexibility in disposal field design when disposal field should be no larger than 400 metres per zone. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



FLUSH BOX SOAK HOLE

The below schematic shows the suggested configuration of a flush box. It is no longer permissable to have flush lines discharge on the land surface. A larger drawing is available in the Technical and Sales Manual or available from your account manager.

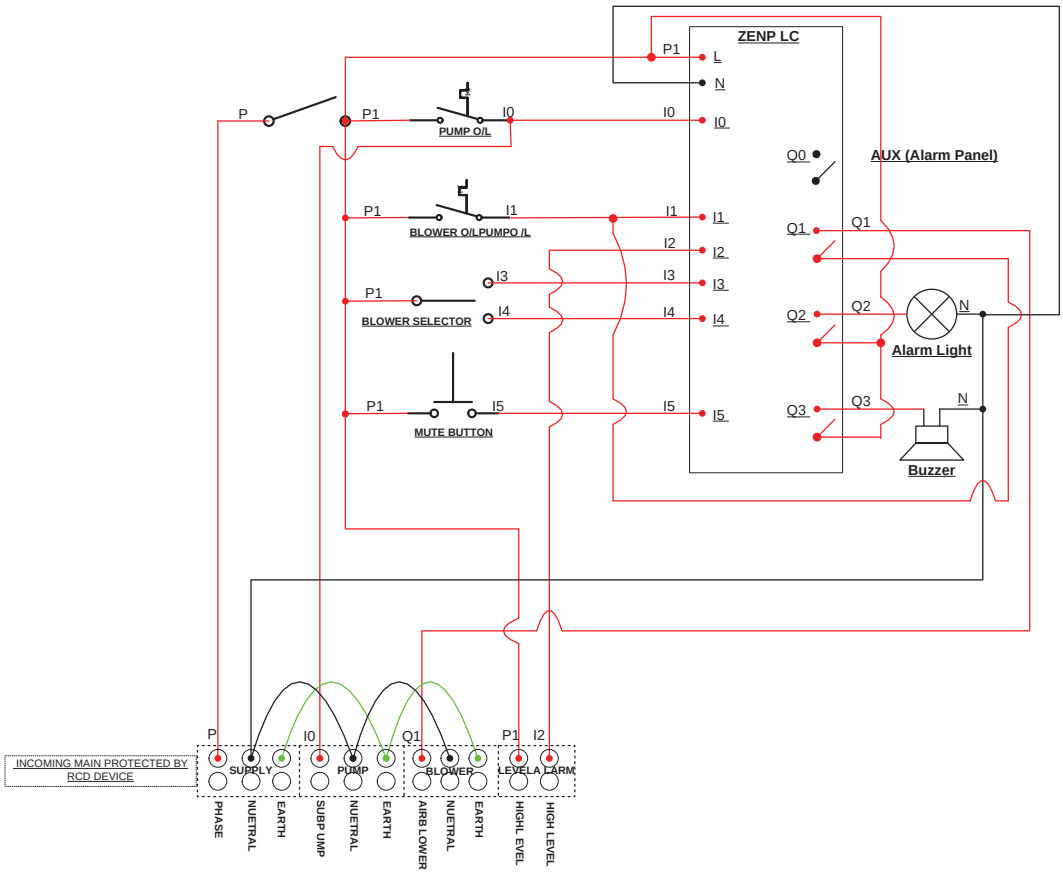


Note:

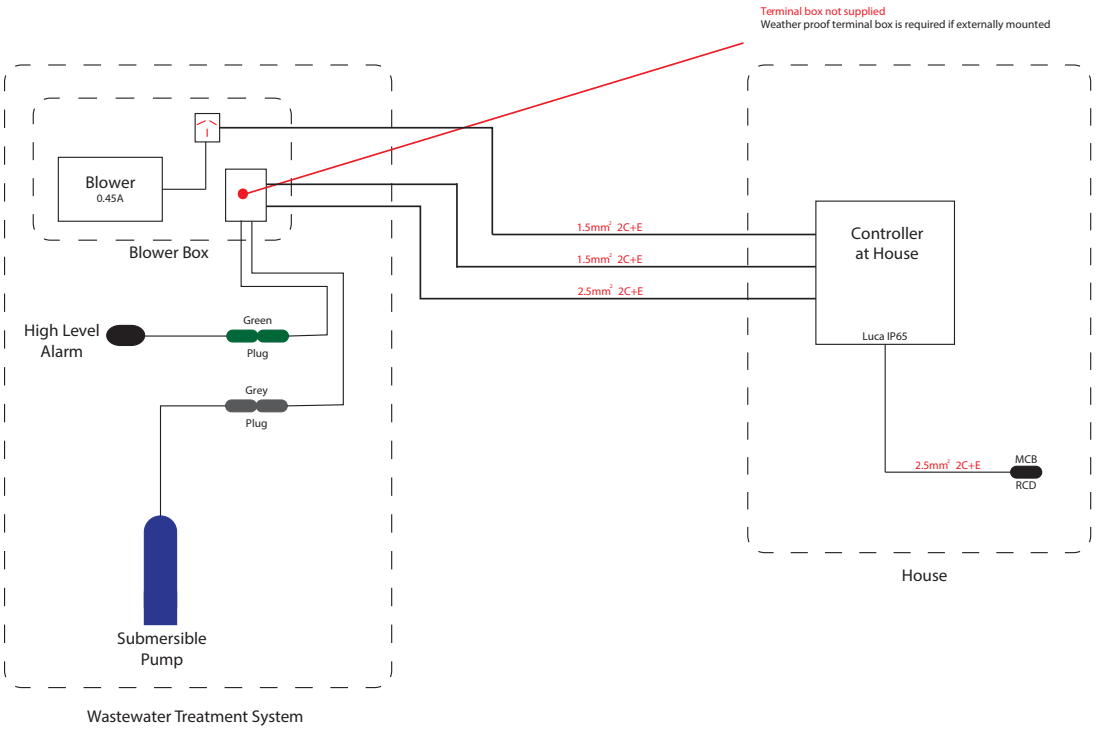
Soak hole must hold 6x the volume of header and drip lines flushing to soak hole

17mm Drip line holds approx 12L per 50m
25mm Sub main holds approx 25L per 50m

ELECTRICAL DIAGRAM



REMOTE PANEL ELECTRICAL SCHEMATIC



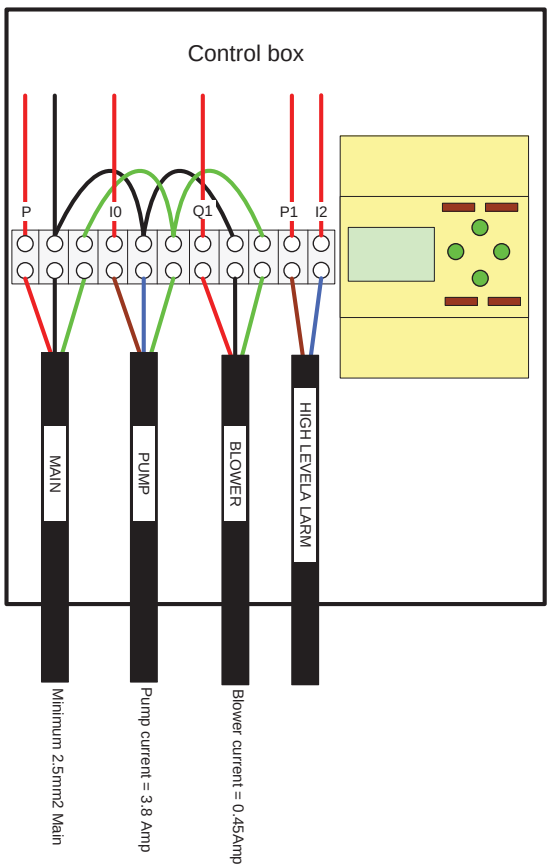
CONTROLLER ELECTRICAL DRAWING

Note:

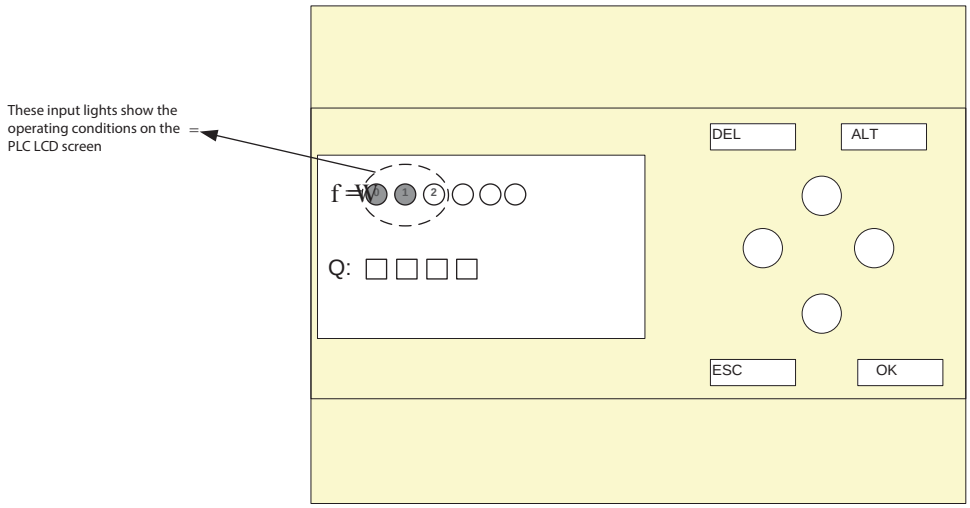
Water proof plugs must be tighten on site to ensure no moisture gets in.

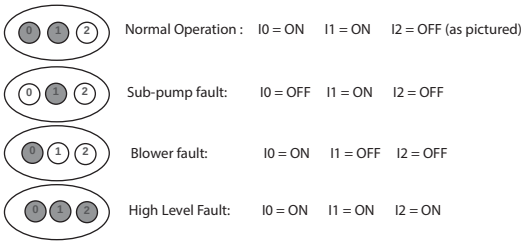
Green Plug = High Level Alarm
Grey Plug = Submersible Pump

Incomming main to be protected by RCD device



SYSTEM DIAGNOSTICS





ELECTRICAL CONTROL PANEL

Note:

Blower Modes:

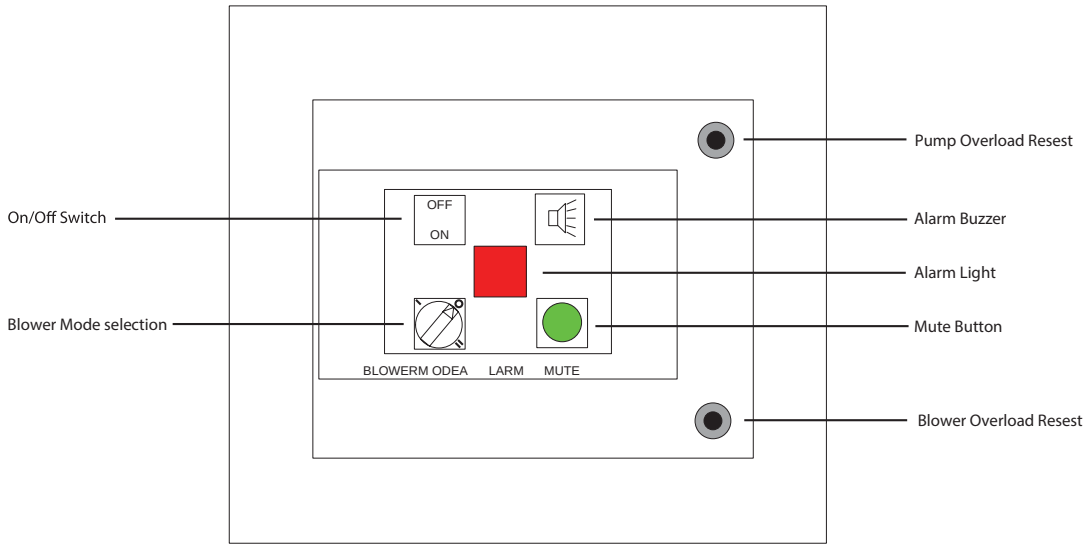
0 = 24 Hour operation (factory)
I = 3 hours on 1 hour off (2 people only)
II = 1 hour on 6 hours off (vacation mode

Mute Button

Silence alarm for 24 hours

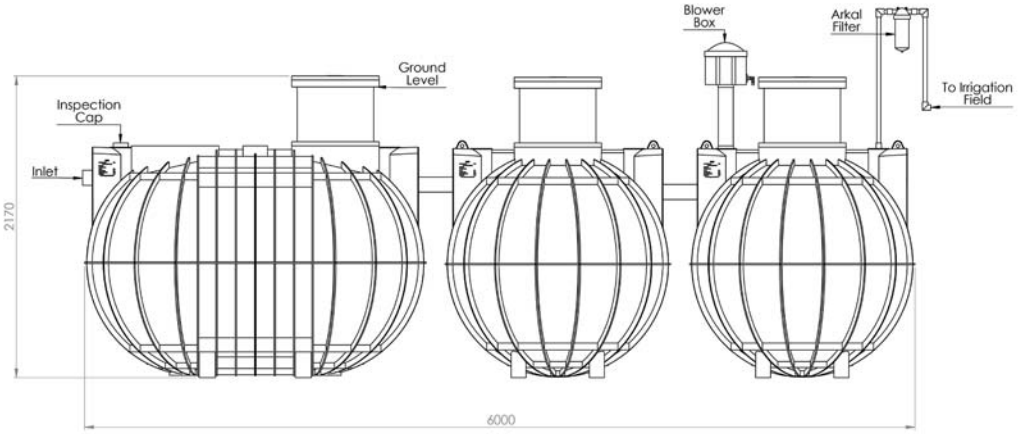
Reset buttons

Resets blower and pump

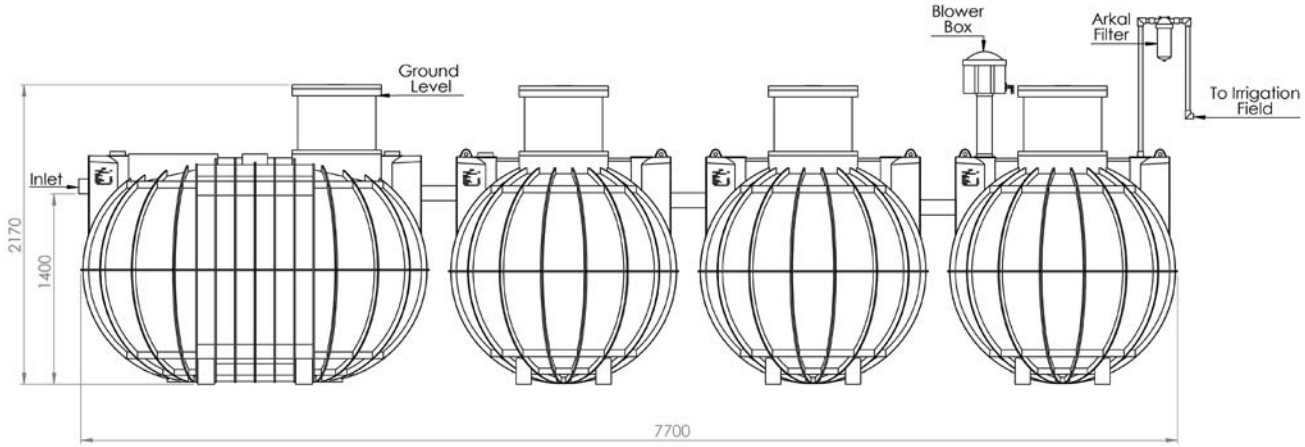


SYSTEM DIMENSIONS

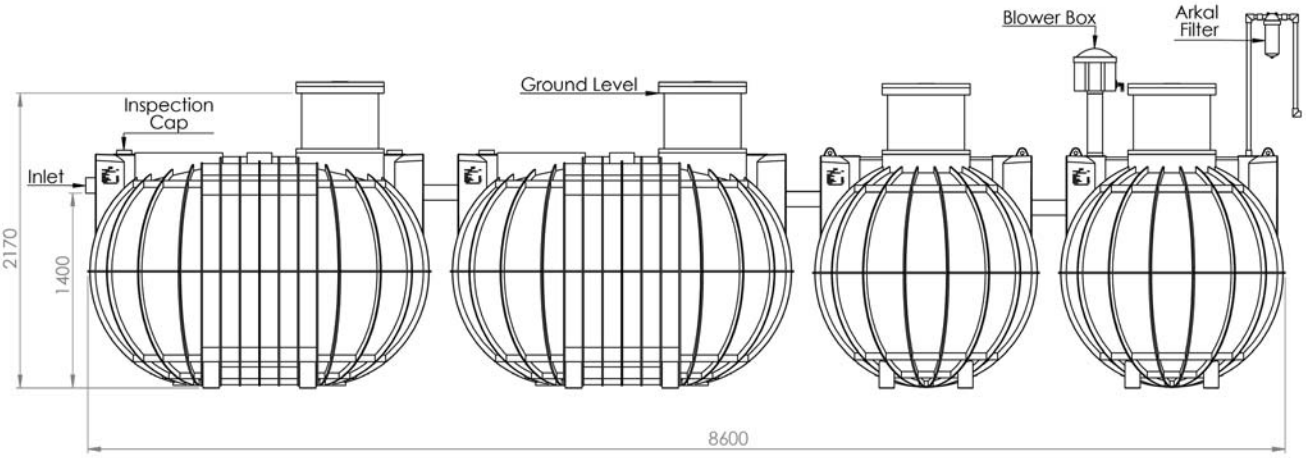
S15 Dimensions



S20 Dimensions



S25 Dimensions



Agent Servicing Requirements

AGENT SERVICING REQUIREMENTS

General Information
Two manuals are supplied with each Integra WWTS at the time of delivery. They are found inside the cabinet located on the top of the system. One manual is for the home owner and the other manual is for the installer, electrician and service technician.

To assist with the successful operation of the WWTS it is important that the owners manual is provided to the end user of the system. Where the dwelling is a rental property it is important to mention to the owner that the manual should be made available to any tenants to ensure all users of the home are familiar with the system and its requirements.

A smelly system usually means the anaerobic and aerobic bacteria have been killed off with harsh laundry or dish washing powders, cleaners, sanitizers and biocides etc. (ie: products put down the waste pipes into the system). This is where the home owner and their understanding of the WWTS operational requirements can play an important and fundamental role in the successful operation of the system.

It is important that the person servicing, or checking the system is wearing appropriate personal protection equipment. WWTS servicing work is not work that the home owner would normally be expected to undertake due to the nature of the septic waste product. Septic waste is a hazardous substance with serious potential associated health risks. All service staff involved in servicing work should be fully vaccinated to be protected against Tetanus, Typhoid, Hepatitis A and Hepatitis B as a minimum requirement to minimise the associated health risk.

Diagnosing a Smell Issue
A smell issue from the system could suggest that the seals under the lids may not be doing the sealing job they are designed to do. Ensure the square section rubber ring is in good condition and is correctly fitted prior to refitting the lids. Replacement seals can be ordered from Devan Plastics via your account manager.

Smells from the effluent field would suggest that there is not enough mulch (150mm thick layer required) covering the dripper line field, or excessive ground saturation issues from the dripper outlets or damaged, cracked or cut effluent pipe. A list of suitable and recommended plantings with coarse root systems is included in the owners manual.

If smell is an issue, it is generally because the bacteria in the system are being affected by something that is killing them or giving them a hard time due to cleaners (biocides), dish washing powders, laundry powders or toilet bowl / cistern sanitizers being put into the system.

Check these items out with the occupiers. Refer to the relevant section in the owners manual regarding suitable and avoidable products to be used in conjunction with the WWTS. Exerience tells us not to always take the word of the dwelling occupier in relation to what products they use. Ask to see the cupboard under the sink and where their cleaners are stored in the laundry or elsewhere to search for possible caustic agents causing problems. Also take note if there is a secondary dwelling feeding the system or a self contained unit as they will often have their own store of cleaners etc.

If smell is an on going issue there may be good cause to check out the terminal vent location and discharge point. The prevailing wind could be aggravating the smell issue. On warm, calm and humid days smell can often be perceived to be a major issue whereas it is actually no worse than normal, it is just the environment making the smell more apparent.

System Bacteria Dead
Where it is suspected that the bacteria have been decimated or killed in the system, several options can be considered to restart the bacteria.

The bacteria in the system may need to be reactivated with higher strength commercial products such as 'Bio-Zyme' to kick-start the bacteria operation. This may be flushed down the toilet, poured into an active gully trap or poured directly into the septic vessel. Bio-zyme is an active deodorising agent and may also be added directly to the aeration vessel. Pouring directly into the aeration vessel will not however assist the bacterial operation of the septic vessel.

Air Blower
The air blower is located in the cabinet on the system. The blower air filter should be checked and cleaned six monthly to ensure maximum blower durability. A dust free and clean filter will provide maximum blower operational life.

The Septic Tank Section

The condition of the Crust on the top of the surface should be checked and assessed.

The Septic tank has an Eco Filter which needs to be cleaned six monthly. Remove the filter and gently tap on the side of tank to clean, the solids and lumps will fall off. Hosing off the Filter with a water jet is not recommended as this completely removes the beneficial bio-film from the filter.

The inlet junction should be checked for possible visible blockage. A blockage would cause the drain discharge into the system to flow over the top of the crust, - not the ideal situation.

The Septic Tank will need to be emptied every three to five years depending on usage and solid waste input levels.

When the sludge (solids) layer on the bottom of the tank becomes approx. 600mm thick it is necessary to arrange for the tank to be emptied. Immediately after emptying it is imperative that the tank is refilled with water to its original operational level as soon as possible.

The thickness of the Crust and depth of the Sludge on the bottom of the tank can be assessed by the use of a 'Sludge Judge' (a clear pipe with a non-return valve on the bottom) when carefully lowered to the bottom of the tank and removed for viewing. This will visually show the actual cross section through the septic tank with crust thickness and Sludge depth which will provide an accurate assessment of when tank emptying is required. Tank emptying should be arranged when the sludge thickness reaches 600mm in depth. Alternatively a straight piece of fencing wire with a 100mm 'L' shaped foot bent on the bottom can be poked through the Crust, rotated and lifted to the under side of the Crust to give a thickness on the wire, - and similarly the wire can be dropped to sit on top of the sludge and then pushed to the bottom of the tank noting the difference between the two points.

Note: It is not recommended that the tank be pumped out and emptied in winter when high ground water tables are regularly experienced and extended heavy rain falls are common to avoid the tank 'popping' out of the ground.

The Aeration Tank Section

The Aeration pattern from the diffuser needs to be checked and assessed. The surface of the water above the diffuser should appear as though it is simmering strongly, - not boiling and breaking the surface of the water.

Ideally the colour of the water should be a light golden brown and semi transparent. The use of Eco friendly type laundry products using plant extracts will leave the water colour looking dark grey.

The floating Media rings should have a brownish bio-film formed on all the surfaces. The media rings are there to provide additional surface area for the bacteria to cling to. If there is a white film (Sulphides) apparent in the media rings this means you have dead bacteria. This suggests that something will have been put down the drain into the system which has killed the bacteria. Where a white film is evident it is necessary to break up the film by stirring up the media rings so the film can be broken off and drop to the bottom of the tank.

The venturi return pipe removes sludge from the bottom of the clarification chamber and returns the sludge back to the primary chamber. This discharge as it exits from the pipe needs to be checked for the correct flow levels.

The flow requirement is for an inconsistent medium low to low flow from the pipe in tank two. It is important that the flow does not stop all together.

The Clarification Tank Section

The clarification vessel houses the pump chamber, submersible pump with integral float switch and high level alarm float switch.

The high level alarm float switch should be checked for operation with each service. The controller buzzer should sound after a short time delay of 10 seconds once the high level alarm float switch is held up high. The buzzer can be muted by pushing the mute button on the alarm panel.

Submersible Pump

The pump float switch should be checked for pump operation. The pump needs to be removed and the intake screen cleaned.

The Grundfos Submersible Pump is fitted with a non-return valve as standard to prevent the effluent from

siphoning and running back into the pump chamber. This will cause the submersible pump to short cycle and reduce its operational life, with the disadvantage of increased power usage

Arkal Filter

The arkal filter protects the effluent dripper line from suspended particles that may block the dripper line outlets and is located adjacent to tank three. Turn the power supply to the system off prior to checking the arkal filter.

The Arkal Filter discs need to be hosed clean three monthly. The red discs need to be separated with the water jet from a hose to clean the discs. Alternatively the filter discs and holding frame can be placed in a bucket with bleach (or similar) for twenty minutes and agitated several times. Re-install the filter assembly. Remember to turn the power back on.

Dripper Lines

The dripper lines installed in the effluent field need to be flushed six monthly. This lifts any settled out sludge from the bottom of the dripper line pipe work to reduce the risk of the dripper outlets becoming clogged or blocked.

There should be a 17mm plastic ball type flushing valve fitted for this purpose at the end of the dripper lines. The valve is normally located in a plastic valve box with a green lid.

If the incorrect type of plantings with fibrous root systems have been planted in the dripper field area, it may be that the fibrous roots have penetrated the outlets and blocked off the drippers, reducing the efficiency of the dripper line field and reducing the submersible pump flow whilst increasing the pump head. This is detrimental to the pump operation and will likely reduce the pumps working life.

Vacuum Break Valve

This valve is required to be fitted at the highest point in the effluent field. Check to ensure the Vacuum Break Valve is sealing off after a short period of operation and not continually leaking on pump out.

Surrounding Ground Level

The finished ground level surrounding the system (including mulch) should be no higher than the bottom of the of the lid fixing flange. It is important that the surrounding ground should fall away from the system lids to prevent ground water pooling and other potential issues arising.

Note

Any family member on a course of antibiotics will likely kill the anaerobic and aerobic bacteria in the system. For additional information on suitable and non-recommended products, refer to the list of avoidable and suitable products included in the owners manual supplied at the time of installation.

WARRANTY POLICY

Your Devan product has been manufactured to the highest standards utilising advanced technology and production procedures. Devan Plastics Limited ("Devan") warrants their products to be free of defects in workmanship or materials for the period defined in Appendix A, provided the provisions detailed below have been complied with.

A third party manufacturers' warranty applies to all other components used in the manufacture of Devan products. Third party manufacturer's warrant their products are free from defects in material and workmanship at the time of shipment and will make good, by repair or at its option replacement, any defects which occur during the warrantable period as defined in Appendix A provided the provisions below have been complied with.

Necessary provisions
In order for a warranty claim to be accepted by Devan Plastics Limited or a third party manufacturer the following provisions must be met:

1) The equipment was correctly installed and in proper use as was intended by the manufacturer in accordance with the Installation and operating instructions supplied, and generally accepted code of practice or national standard/s.

2) The warranty period (as defined in Appendix A) from the date of invoice to the end user has not lapsed.

3) The claim for goods under warranty arises solely from faulty material or manufacturers' workmanship.

4) The customer or agent of the customer must return goods under warranty (where appropriate), stating the date and place of purchase promptly and within the product liability period.

5) No repairs must be entered into by anybody other than a specified distributor or repairer as agreed and appointed by Devan Plastics Limited.

6) Devan must be given a reasonable opportunity to inspect the tank and, if deemed necessary by Devan to have an independent engineering or other expert analysis of the cause of failure carried out.

Exclusions
Both the Devan warranty and third party manufacturer's warranty do not cover the following exclusions:

1) Except where otherwise stated by law, the manufacturer shall not be under liability for any injury, damage, or loss, including consequential damage or loss resulting from the use of its products, or resulting from defects therein. This may specifically refer to the cost of carriage, installation, electrical or plumbing requirements etc.

2) Damage caused by abnormal operating conditions, war, violence, cataclysm, or any force majeure.

3) Damage caused by the equipment being used for an application for which it is not manufactured or recommended by the original manufacturer or Devan Plastics Limited.

4) Damage caused by sand or abrasive materials, corrosion due to salt water, hazardous liquids, electrolytic action, and liquid temperatures beyond the recommended range, cavitation, and improper power supply voltage or outages.

5) Attempted repair, dismantling or any other tampering with any component of the system without the prior written approval of Devan Plastics Limited will void any warranty.

6) If the Devan product or third party component has not been maintained in accordance with Devan Plastics instructions.

7) Ingress of water or insect infestation to electrical components due to post-manufacture electrical penetrations not being appropriately protected.

8) Incorrect installation or negligent practices of the installer of the product.

This warranty does not exclude any condition or warranty implied by the Consumer Guarantees Act 1993, Fair Trading Act 1986, and the Commerce Act 1986 and is in addition to any rights the purchaser may have at law.

Appendix A - Product warranty periods

Product	Warranty Period
Water tanks (residential)	20 years
Water tanks (commercial)	10 years
Molasses tanks	10 years
Septric tanks	15 years
WWTS vessels	15 years
Grease traps	10 years
Flout tank	10 years
Detention/retention tanks	15 years
Drums	1 year
Refuse bins	1 year
Industrial bins	1 year
Third party components (WWTS)	2 years
Third party components (other)	1 year
Grundfos pumps	2 years

Integra
Reliable Wastewater Management

Aerated Wastewater Treatment System Commissioning Sheet

Date of system commissioning _____

System serial number (located on outside of electrical box) _____

Owners Name: _____

System site address: _____

Local Authority: _____

System Model (circle):

S15	S20	S25
C20	C30	C40

Commissioning Check List

Commissioning check list item	Y	N	NA
Arkal filter installed allowing easy servicing			
System filled with water and backfilled			
Inlet invert is less than 700mm			
Pump operating correctly			
Float switches are free from obstruction			
Blower operational			
Alarm working			
Venturi return operational			
Diffuser operating correctly			
Irrigation operating as per design			
Bark/mulch covering installed (if applicable)			
System location is isolated from vehicular traffic			
Biozyme supplement added			
Homeowner manual provided to user			
Service contract entered into with customer			
Additional comments:			

Agent business name: _____

Installers' name: _____

Installers' signature: _____

INTEGRA WASTEWATER TREATMENT
A Division of Devan Plastics Limited

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Integra
Reliable Wastewater Management