

DISCLAIMER This product specification is not a complete guide to product usage. Product specifications may change without notice. For more information visit rainharvesting.com.au. Keep this manual handy for future reference. © Rain Harvesting Pty Ltd.

RAIN HARVESTING
by Blue Mountain Co

+61 (0)7 3248 9600

rainharvesting.com.au

RAIN HARVESTING
by Blue Mountain Co

First Flush Delta In-Ground



Installation and Specification Guide

PRODUCT DETAILS

Divert the dirtiest water and transfer your Rain Harvesting system from "wet" to "dry" with this large volume in-ground first flush diverter. Utilising 100mm / 4" pipes for the chamber makes installation simple and the Advanced Release Valve reduces outlet maintenance.

WDIG10 100mm / 4" First Flush Delta In-Ground

FEATURES AND BENEFITS

- Isolates the first flush of contaminant-laden water from your roof, by keeping organic and inorganic fine particles out of the rainwater you harvest.
- High Volume Chamber uses multiple 100mm (4") pipes for simple installation and high volume diversion.
- Advanced Release Valve allows you to program how frequently the first flush chamber empties.

Delta In-Ground

WHAT'S IN THE BOX?	TOOLS/MATERIALS YOU MAY REQUIRE
<ul style="list-style-type: none">Delta chamber end caps x 2Cage/Seat & BallChamber support spacer100mm (4") socket reducerTransparent Rapid Release Exit FunnelAdvanced Release ValvePrimary Filter Screen	<ul style="list-style-type: none">Tape measureMarker penSawFilePriming fluidSolvent weld glueScrews/AnchorsScrew driverDrill100mm (4") pipe

INSTALLATION

- It is a requirement to install a rain head upstream of any down pipe feeding the Delta In-Ground First Flush. Large debris must not enter the First Flush chambers to prevent blockages and damage to the Advanced Release Valve.
- Select an installation point for your Delta In-Ground First Flush. Your diverter must be installed on a slope (minimum 5% or 1 in 20) to ensure it drains after each rainfall event. Your first flush T-junction should be at the lowest point in your Rain Harvesting sub-surface pipework or at a location to allow for easy installation and draining of the Advanced Release Valve. The T-junction can also be installed to replace the 90° bend at the base of the vertical pipe feeding your rainwater tank. If the Rain Harvesting sub-surface pipework is not part of a “wet” system, the T-junction will need to be installed with the branch below the main line and a 90° bend to direct first flush of water to the Delta. The outlet must also be accessible for maintenance and inspection. This may be achieved by running pipe to a location aboveground or installing an access pit (e.g. stormwater pit) (refer to Figure 1 for suggested installation locations).
- Remove Delta First Flush components from packaging and lay out parts ready for assembly.
- Determine chamber length using the calculation chart provided, based on your Rain Harvesting roof collection area and considered pollution level (see Figure 8 - Delta Diversion Chamber Calculator).
- Using a tape measure, mark, cut and deburr 6 equal lengths of 100mm (4") pipe to be used as the Chamber Pipes
NOTE: It is critical that all the Chamber Pipes are exactly equal length. It is also recommended to apply a small chamfer to the outside ends of the six Chamber Pipes to improve ease of insertion into the Chamber Sockets.

Figure 1
Suggested Installation Locations

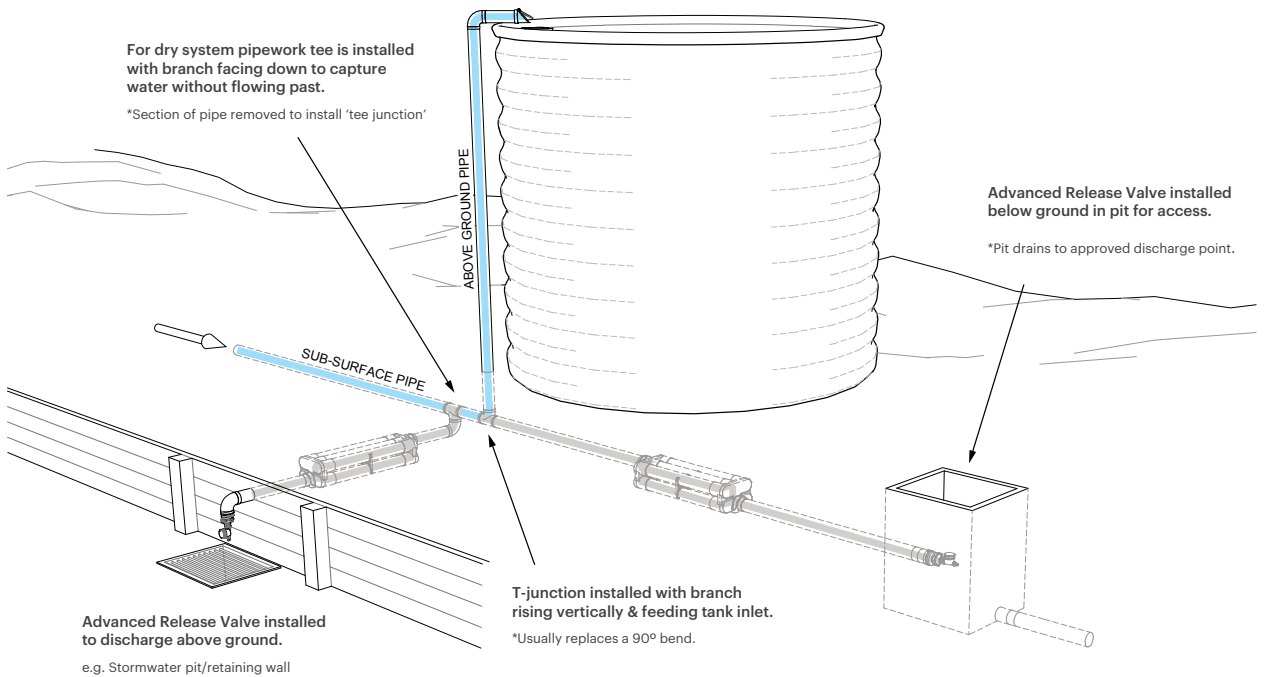
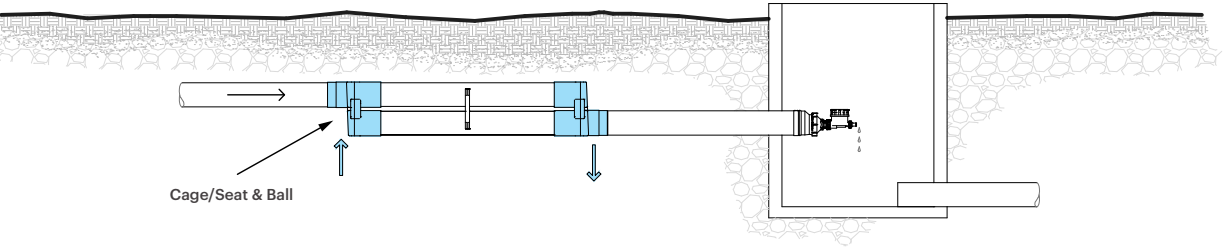
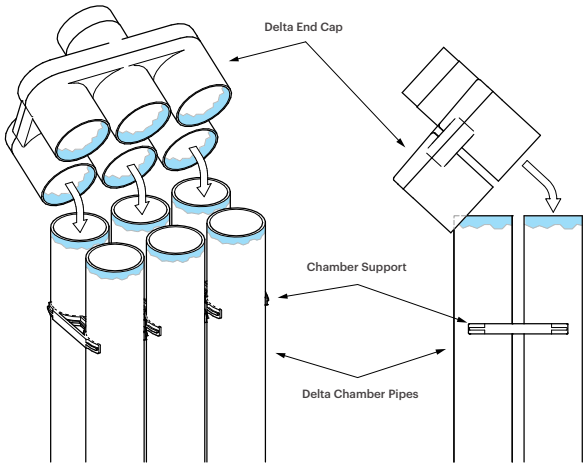


Figure 2
Delta In-Ground Inlet/Outlet Position



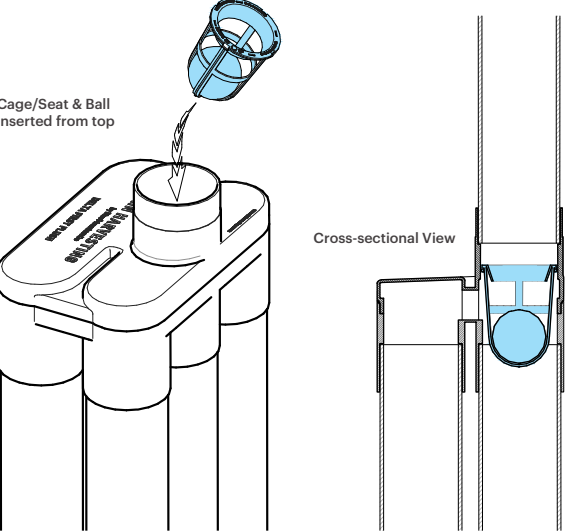
- Using priming fluid, clean all internal sockets of both Delta End Caps and each external ends of the six Chamber Pipes.
- Working with one Delta End Cap, apply solvent weld glue internally to a Chamber Socket and then externally to one of the Chamber Pipes. Bring the two together ensuring the pipe is inserted fully into the socket and hold until firm. Repeat this step for all remaining pipes until all six Chamber Pipes are glued into one Delta End Cap.
NOTE: All sockets of the Delta End Cap are stepped internally. The inner socket is for use with 100mm UPVC pipe and the outer socket for 4" Sch. 40 pipe. Only apply solvent weld glue to the socket relating to the pipe in use.
- Slide the Chamber Support Spacer over the open end of the Chamber Pipes and position approx. 200mm (8") from the unglued end.
- Before completing the next step consider the installation position of your Delta and how the inlet and outlets should be oriented (Figure 2 - Delta In-Ground Inlet/Outlet Position). The invert of the Delta inlet should be in the high position & the invert of the Delta outlet should be in the low position.
- Working quickly, apply solvent weld glue to each of the six internal Chamber Sockets of the remaining Delta End Cap and then externally to the six Chamber Pipes. Quickly bring the Delta End Cap together with the six pipes by first aligning three pipes and sockets on one

Figure 3
Delta Diagram



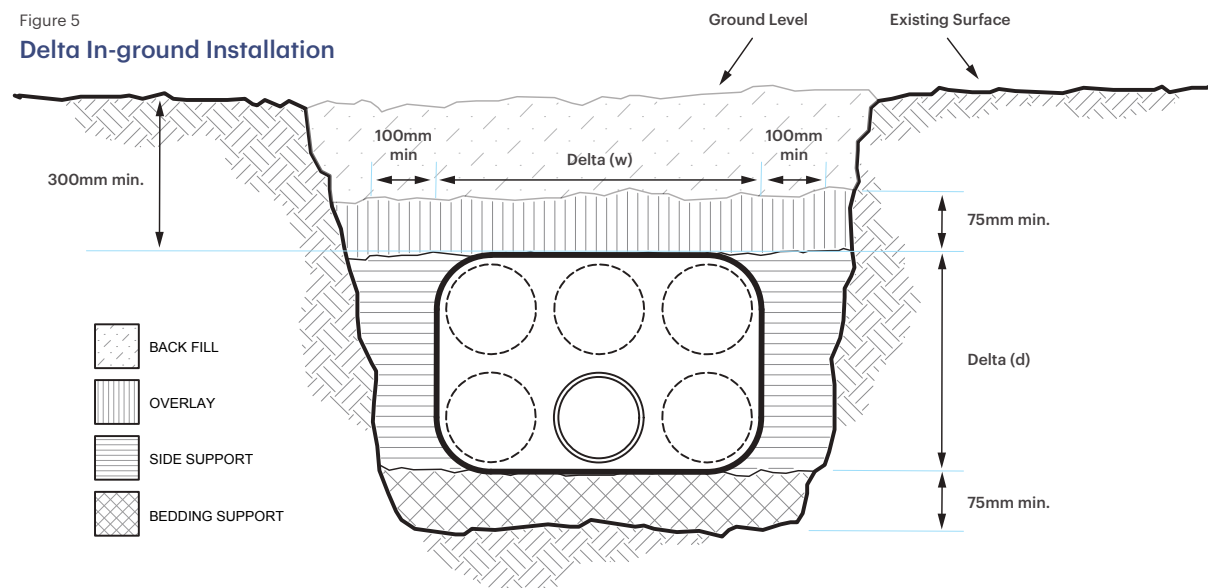
- side and then rolling onto the remaining three pipes. Using some force, push the Delta End Cap down onto the Chamber Pipes ensuring the pipes enter the socket fully and hold in position until secure (Figure 3 - Delta Diagram).
NOTE: refer to solvent weld glue manufacturers specifications and curing times.
- Move the Chamber Support Spacer down the Chamber Pipes to approximately the half way position ensuring the pipes will be supported evenly.
- Insert Cage/Seat & Ball into the inlet (upstream) Delta End Cap, ensuring it is oriented correctly (Figure 4).

Figure 4
Inserting the Cage/Seat and Ball



- Excavate the installation location for the T-junction, assembled Delta Chamber and adjoining pipe work. Trenches should be wide enough to include a minimum of 75mm bedding and overlay support and a minimum of 100mm side support. In non-trafficable areas allow for a minimum of 300mm cover (measured from the top of the Delta/pipe to the ground surface). See Figure 5 for installation. For further information we recommend using AS3500.2:2018 as a guide.

Figure 5
Delta In-ground Installation



14. Using a T-junction as a template, measure the pipes at your chosen installation point and cut to create space for the T-junction. Using priming fluid and solvent weld glue, install the T-junction and fittings as required and extend pipe work ready to install your Delta.
15. Place your Delta in position and using priming fluid and solvent weld glue connect your Delta to the extended pipe work ensuring you push the pipe hard up against the Cage/Seat & Ball. Backfill your Delta using bedding sand capable of passing through a 2mm sieve, as per State and Local Government guidelines and information provided in the previous step.

16. The Transparent Rapid Release Exit Funnel needs to be installed in an accessible location (above ground where the ground slopes away or in a stormwater pit for access). Using a min. 170mm of 100mm pipe (3.5" of 4" pipe) and solvent weld glue, attach the 100mm-90mm (4"-3") Socket Reducer (100mm/4" End Coupling) to the outlet (downstream) Delta End Cap. Screw the Transparent Rapid Release Exit Funnel onto the threaded end of the Socket Reducer.
17. Install the Primary Filter Screen, Transparent Rapid Release Exit Funnel, and Advanced Release Valve by following the instructions in Figure 6.

Figure 6
Installing and setting up the Advanced Release Valve

- 6a. Insert the Primary Filter into the end of the First Flush chamber. It should fit snugly into the socket on the end of the pipe.



- 6b. Install the Transparent Rapid Release Exit Funnel, ensuring the o-ring is seated correctly. It should be screwed up firmly to compress the o-ring.



- 6c. Attach the Advanced Release Valve by first installing the 25mm x 20mm (1" x 3/4") reducing adaptor and washer to the 25mm (1") thread of the screw cap.



- 6d. Remove the union from the valve and attach to the reducing adaptor with 20mm (3/4") washer in place.



- 6e. Attach the valve at the union and orientate dial for easy access.



- 6f. Remove the waterproof cover from the Advanced Release Valve.



6g. Ensure the reset interval and drain time control knobs are in the "RESET" and "CLOSED" positions.
Carefully slide out the battery box and install two new 1.5-volt AAA batteries.



6h. Test the unit by turning the drain time knob to the "OPEN" position. You should hear the sound of the motor within 5 seconds. Turn the drain time knob back to the "CLOSED" position ready for setting.

NOTE: If you do not hear the sound of the motor, check that the batteries are installed correctly.



6i. Ensure that the reset interval and drain time knobs are in the "RESET" and "CLOSED" positions.

NOTE: The first time you program the Advance Release Valve it will not begin to operate until after a time delay equal to the setting of the reset interval knob you select. The Advance Release Valve starts to keep time when you set it. It is important that you set the timer at the hour you want it to operate. For example, if you want the Advance Release Valve to operate at 07:00AM, you must physically set it at 07:00AM.

Set your reset interval and drain time according to the tables in Figure 6, then replace the battery box cover. A long reset interval will mean that the first flush diversion chamber empties less frequently, leading to higher rainwater yield. A short reset interval will mean that the first flush diversion chamber empties more frequently, resulting in a lower water yield.

Figure 6
Advance Release Valve Reset and Drain Time Settings

Suggested Reset Setting		Pollution Level
1	day	Very high
2	days	Very high
3	days	High
4	days	Medium
5	days	Medium
1	week	Low
2	weeks	Very Low
4	weeks	Very Low

Recommended drain time setting		Approx. First Flush chamber size			
5	minutes	20	litres	5.3	gallons
10		40		10	
20		80		20	
30		120		30	
45		180		50	
60		240		60	
75		300		80	
100		400		100	
125		500		130	
150		600		160	

Figure 7
Delta Diversion Chamber Calculator

AUSTRALIA		USA	
Chamber Volume in Litres	Total Length in Millimetres	Chamber Volume in Gallons	Total Length in Inches
30	185	8	4
40	374	10	10
50	564	12	16
60	753	14	22
70	942	18	34
80	1132	20	40
90	1321	24	52
100	1511	28	64
110	1700	32	76
120	1889	40	100
130	2079	45	115
140	2268	50	130
150	2458	56	148
180	3026	72	196
200	3405	80	220

NOTE:

2 x Delta End Caps hold approximately 20.24 litres.
(Excluding the pipe sockets of chamber.)

The above figure is total volume of delta end cap excluding the liquid contained within the 6x pipe chambers.

NOTE:

2 x Delta End Caps hold approximately 6.52 gallons.
(Excluding the pipe sockets of chamber.)

The above figure is total volume of delta end cap excluding the liquid contained within the 6x pipe chambers.

POLLUTION FACTOR FOR THE ROOF	
MINIMAL POLLUTION	SUBSTANTIAL POLLUTION
DIVERT 0.5L PER M² Open field, no trees, no bird droppings, clean environment	DIVERT 2L PER M² Leaves and debris, bird droppings, various animal matter, e.g. dead insects, skinks, etc.

The above quantum are the results of preliminary testing. Individual site analysis and field testing is required to more accurately assess the quantum to be diverted in each individual case.

DIVERSION FACTOR FOR A FIRST FLUSH WATER DIVERTER	
MINIMAL POLLUTION	SUBSTANTIAL POLLUTION
M² ROOF AREA X POLLUTION FACTOR = LITRES TO BE DIVERTED	
Example for a minimal polluted roof of 100m² 100 x 0.5 = 50 Litres to be diverted	Example for a heavily polluted roof of 100m² 100 x 2 = 200 Litres to be diverted

MAINTENANCE

It's important to ensure that your first flush diverter outlet remains clear of any debris. If your outlet becomes blocked, the chamber will not empty and the first flush of water will not be diverted when it rains.

To ensure the flow of water out through your Advanced Release Valve, periodically remove from the Transparent Rapid Release Exit Funnel to check for any build-up of matter. Remove primary filter plus ball, and clean if required.

Periodically check that the Advanced Release Valve batteries have charge. This is indicated by the flashing light.

To protect your Advanced Release Valve from freezing or “winterising”, remove the timer prior to the first frost or freeze and store it indoors until spring. Remember to remove the batteries from the battery compartment.

For best results and minimal maintenance, rain heads with 0.955mm aperture mesh such as Leaf Eater Rain Heads must be installed upstream of the Delta First Flush to limit the entry of debris that can reach your diverter.