RAIN HARVESTING
by Blue Mountain Co

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First Flush
Delta Commercial

Manifold with single or multiple flush points

Installation and Specification Guide

PRODUCT DETAILS

The Delta Commercial is available to suit 150mm and 225mm downpipes, allowing you to enjoy the easy install benefits of using 100mm pipes for the first flush chamber.

WDCL15 150mm
WDCL22 225mm

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.
- Transparent, Rapid Release Exit Funnel allows for easy visual inspection and draws sediment into the exit flow for reduced buildup and blockages.
- Advanced Release Valve allows you to program how frequently the first flush chamber empties.

Manifold with single or multiple flush points

WHAT'S IN THE BOX?

- Delta chamber end caps x 2
- Cage/Seat & Ball
- Chamber support spacer
- 100mm-90mm (4"-3") socket reducer
- Transparent Rapid Release Exit Funnel
- Advanced Release Valve
- Post/Wall Brackets x 2
- Primary Filter Screen
- 150mm (6") SW Tee Junction (WDIG35)
- 150x100mm (6"x4") SW tapered reducer (WDIG35)
- 225mm (10") SW Tee Junction (WDIG36)
- 225mmx100mm (10"x4") SW tapered reducer (WDIG36)

TOOLS/MATERIALS YOU MAY REQUIRE

- Tape measure
- Marker pen
- Saw
- File
- Priming fluid
- Solvent weld glue
- Screws/Anchors
- Screw driver
- Drill
- 100mm (4") pipe & fittings
- 150mm (6") pipe & fittings
- 225mm (10") pipe & fittings

INSTALLATION

1. It is a requirement to install a rain head upstream of any downpipe feeding the Delta Commecial First Flush. Large debris must not enter the First Flush chambers to prevent blockages and damage to the Advanced Release Valve.

2. Select an installation point for your Delta Commercial First Flush unit/units. Your diverter chamber must be installed vertically when using the supplied Wall Brackets. Consider the location of the 150mm/225mm Tee Junction/s in your Rain Harvesting line and the space required for your assembled Delta Chamber/s. The Tee Junctions can be installed in the horizontal or vertical orientation to suit your installation.

   NOTE: Some vertical tee installations may require extra 150mm/225mm fittings depending on project requirements (see Figure 1 for suggested installation locations).

   The outlet and Advanced Release Valve must also be accessible for maintenance and inspection.

3. Remove Delta components from packaging and lay out parts ready for assembly.

4. Using one of your Post/Wall brackets, screw the lower bracket to the wall at your chosen installation point. The outlet of your Advanced Release Valve must sit at least 150mm (6") from the ground when fully assembled, so when combining multiple flush points in a manifold setup, secure your lower bracket approx. 900mm (35") above the ground. Ensure your first Post/Wall bracket is positioned to allow room for your other Delta chambers.

5. Determine chamber length using the calculation chart provided, based on your Rain Harvesting roof collection area and considered pollution level (see Figure 7 - Delta Diversion Chamber Calculator).

6. 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 6 Chamber Pipes to improve ease of insertion into the Chamber Sockets.

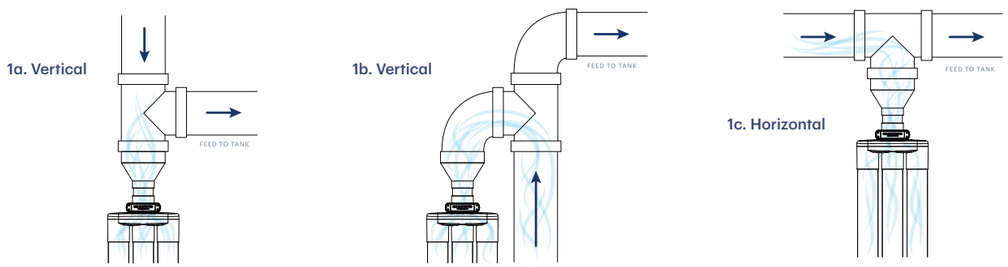
7. Using priming fluid, clean all internal sockets of both Delta End Caps and each external end of the six Chamber Pipes.

8. 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: Refer to solvent weld glue manufacturers specifications and curing times. 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" SCH40 pipe. Only apply solvent weld glue to the socket relating to the pipe in use.

Figure 1

Suggested Installation Orientations

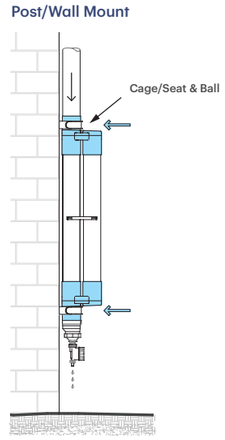


9. Slide the Chamber Support Spacer over the open end of the Chamber Pipes and position approx. 200mm (8") from the unglued end.

10. Before completing the next step consider the installation position of your Delta and how the inlet and outlet should be oriented (Figure 2 - Delta Post/Wall – Inlet/Outlet Positions).

Figure 2

Delta Post/Wall – Inlet/Outlet Positions



11. 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 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).

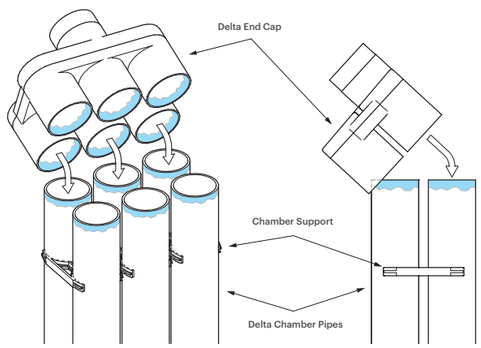
    NOTE: Refer to solvent weld glue manufacturers specifications and curing times.

12. Move the Chamber Support Spacer down the Chamber Pipes to approximately the half way position ensuring the pipes will be supported evenly.

13. Insert Cage/Seat & Ball into the inlet (upstream) Delta End Cap, ensuring it is oriented correctly then snap into position (Figure 4).

Figure 3

Delta Diagram



14. Place your assembled Delta in the Post/Wall Bracket and support the chamber as you fit your upper bracket around the inlet on the upper Delta End Cap and screw it to the wall or post.

    CAUTION: Failure to support the unit in the upright position while attaching the upper bracket could crack the bottom Chamber End Cap.

15. Measure your existing 150mm/225mm tank feed pipe and cut to create space for the appropriately sized Tee Junction. Ensure all cut edges are clean and smooth then use priming fluid to clean all external pipe ends and internal sockets of the Tee Junction.

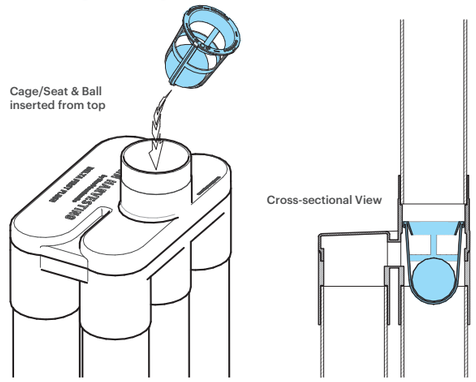
16. Install the Tee Junction and Tapered Reducer onto the existing pipe and extend the branch line below the Tapered Reducer with 100mm (4") pipe to the inlet of the upper Delta End Cap using solvent weld glue.

    NOTE: Ensure the Tapered Reducer is orientated correctly to suit your installation e.g. so that the back of the 100mm socket/pipe is flush against the wall to align with the inlet of the Delta End Cap.

17. Repeat steps above for any additional chambers in the manifold system.

Figure 4

Inserting the Cage/Seat and Ball



18. If you have chosen to utilise multiple flush points with your Delta Manifold installation skip to Step 20. If you have chosen a single flush point with your Delta Manifold installation, use a 90° bend for one of the chamber outlets and additional 90° junctions for each additional chamber, connect the outlets of the Delta End Caps together using 100mm UPVC pipe and solvent weld glue ensuring to allow minimum fall of 1 in 100 (1%) to the open end.

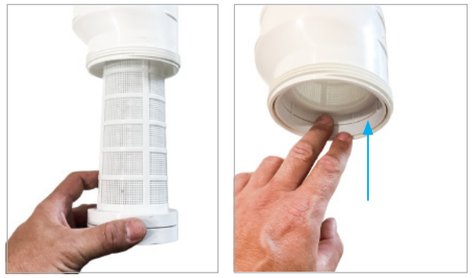
19. Using solvent weld glue and a 120mm piece of 100mm UPVC pipe, attach the 100mm-90mm (4"-3") Socket Reducer to the open end. Insert the Primary Filter Screen into the Socket Reducer and screw the Transparent Rapid Release Exit Funnel onto the threaded end of the Socket Reducer (see Figure 5).

20. For multiple flush points complete the following steps for each Delta chamber. Use a minimum of 170mm of 100mm pipe (3.7" of 4") and solvent weld glue, attach the 100mm-90mm (4"-3") Socket Reducer to the outlet (downstream) of each Delta End Cap. Screw the Transparent Rapid Release Exit Funnel onto the threaded end of the Socket Reducer. Follow the detailed instuctions on Figure 5 (next page) on how to install the Advanced Release Valve.

Figure 5

Installing and setting up the Advanced Release Valve

5a. Insert the Primary Filter into the end of the First Flush chamber. It should fit snuggly into the socket on the end of the pipe.



5b. 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.

5c. 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.

5d. Remove the union from the valve and attach to the reducing adaptor with 20mm (3/4") washer in place.

5e. Attach the valve at the union and orientate dial for easy access.

5f. Remove the waterproof cover from the Advanced Release Valve.

5g. 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.

5h. 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.

5i. 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	
Chamber Volume in Litres	Total Length in Millimetres
30	185
40	374
50	564
60	753
70	942
80	1132
90	1321
100	1511
110	1700
120	1889
130	2079
140	2268
150	2458
180	3026
200	3405

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.

POLLUTION FACTOR FOR THE ROOF	
MINIMAL POLLUTION	SUBSTANTIAL POLLUTION
DIVERT 0.5L PER M^2 Open field, no trees, no bird droppings, clean environment	**DIVERT 2L PER M^2** 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
M^2 ROOF AREA X POLLUTION FACTOR = LITRES TO BE DIVERTED	
Example for a minimal polluted roof of $100m^2$ $100 \times 0.5 = 50$ Litres to be diverted	**Example for a heavily polluted roof of $100m^2$** $100 \times 2 = 200$ Litres to be diverted

USA	
Chamber Volume in Gallons	Total Length in Inches
8	4
10	10
12	16
14	22
18	34
20	40
24	52
28	64
32	76
40	100
45	115
50	130
56	148
72	196
80	220

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 0.0125 GALLONS PER FT^2 Open field, no trees, no bird droppings, clean environment	**DIVERT 0.05 GALLONS PER FT^2** 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
FT^2 ROOF AREA X POLLUTION FACTOR = GALLONS TO BE DIVERTED	
Example for a minimal polluted roof of $1000ft^2$ $1000ft^2 \times 0.0125 = 12.5$ gallons to be diverted	**Example for a heavily polluted roof of $1000ft^2$** $1000ft^2 \times 0.5 = 50$ gallons 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.

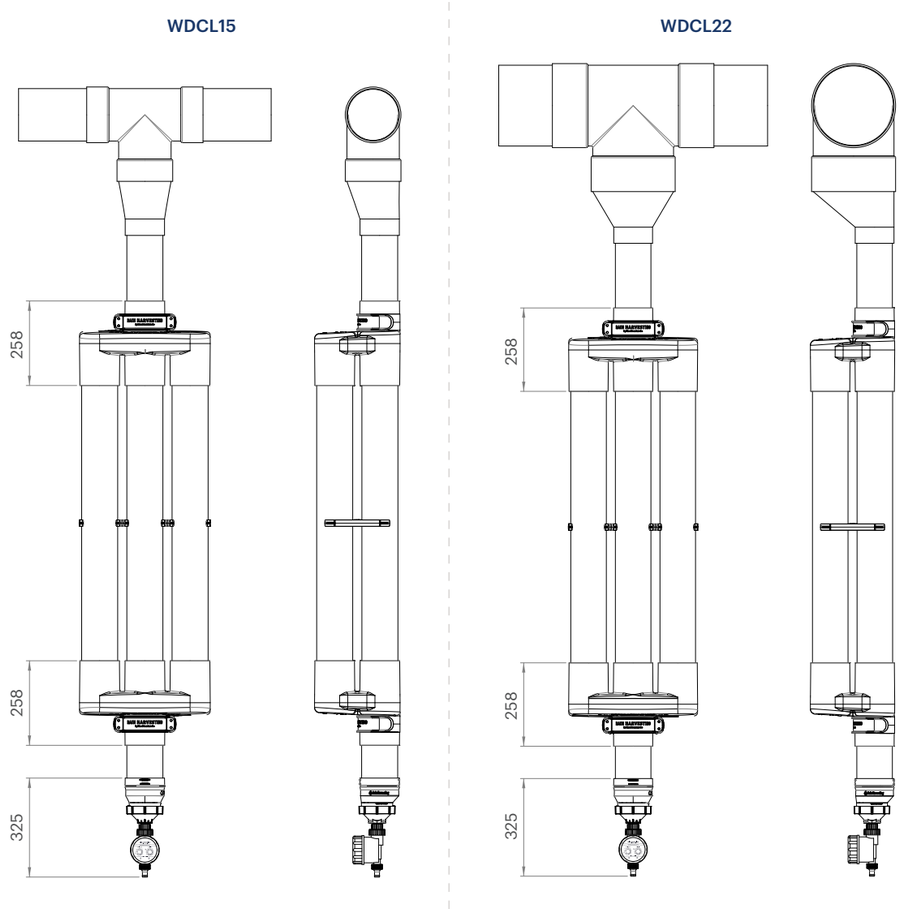
To ensure the flow of water out through your Advanced Release Valve, periodically remove from the Transparent Rapid Release Exit Funnel to check for any build-up of matter. Remove primary filter plus ball, and clean if required.

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.

PRODUCT DIMENSIONS



Pipe Fitment

WDCL15	DN150 F	Fits over 150mm pipe
WDCL22	DN225 F	Fits over 225mm pipe

ALL DIMENSIONS IN MM UNLESS OTHERWISE STATED.

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