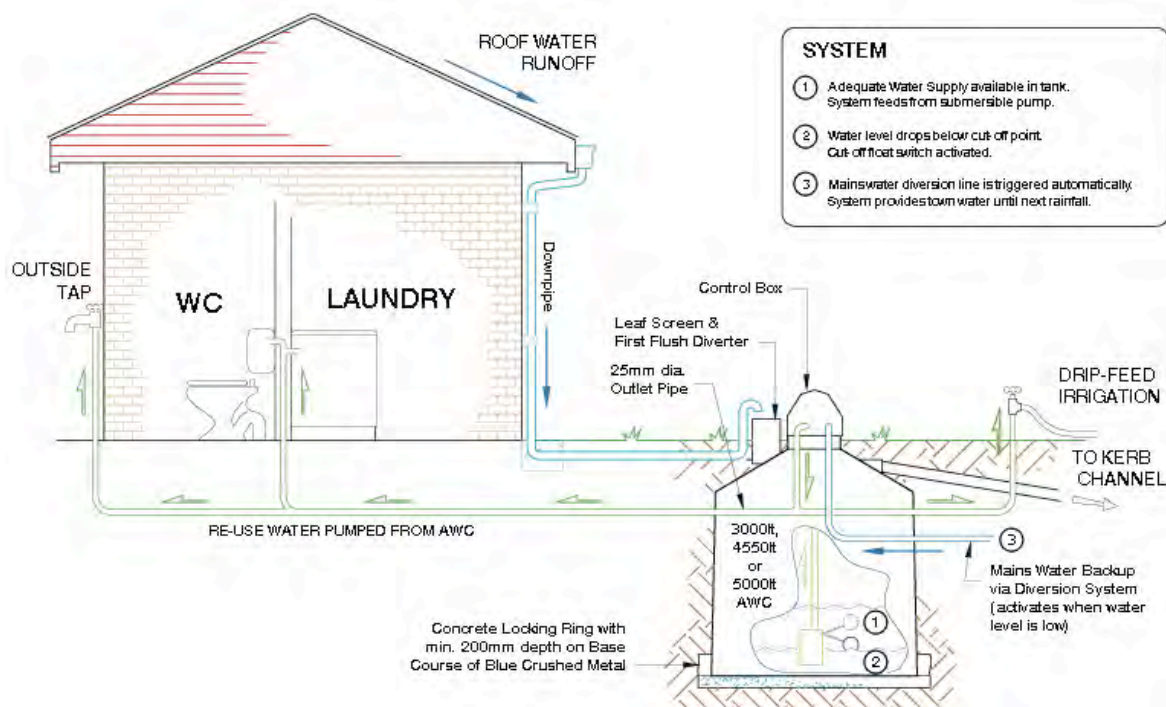


Installation - Diversion Master

Underground Rainwater Harvesting System with Mains Water Diversion and Control Box



IMPORTANT

- Plumbers, drainers and electricians must refer to the Action Tanks Installation Instructions, Onga Pump and Water-switch Owner Manuals.
- Please leave the Installation Instructions in a safe dry place inside the control box for reference by others.
- All instructions, homeowner manuals and warranty information must be passed onto the owner OR builder.
- Check that these instructions correlate to the tank model to be installed. Correct installation of this Action Tank by a qualified tradesman, licensed in the state and local authority in which the system is to be installed, is mandatory for warranty and the quality of water stored.
- The installation must be undertaken with due consideration given to the attached Action Tanks -O&S Risk Assessment Form and the Excavation Code of Practice.
- Product Warranty information & Commissioning Form must be returned to Action Tank Industries to activate the Warranty. Failure to do so will void the warranty

CONSIDERATIONS

- Where ground water or high water table exists (i.e. tidal areas): de-water your excavation and follow steps 2 to 6 whilst maintaining de-watering. NOTE: these requirements apply to both Master and Servant Action Tanks.
- Consideration should be given to the volume of water and area of roof space that is being directed into the tank system (maximum suggested water volume of 8L/sec or 170m² of roof space to be directed into each 100mm First Flush Diverter, refer AS3500).
- Action Rainwater Harvesting Systems in most cases will require no other backflow prevention devices but you are advised to seek confirmation from the relevant local authority or council.

REQUIREMENTS (Items not supplied)

Items listed below are a guide only, all other materials required to complete the Action Tank installation are standard products and fittings, which will be subject to your site conditions and installation requirements.

- 5 - 7 mm Crushed Blue Metal or Recycled Concrete approx. 8 tonne per tank. (Step 1 & 2)
- 200mm concrete locking ring approximately 1/2 m³ per tank (Step 1 & 2)
- Pressure reduction valve if mains water is greater than 500kPa (Step 4)

LIFTING OF TANKS: Each system weighs approx. 300 kg. You must ensure your lifting gear is in good condition and capable of lifting more than 300 Kg. The excavator used to install the tanks must have a capacity greater than 300 kg, at its full extension. Ensure slings or chains do not press on pump box and that the load is spread.

2.3. Place the Action Tank on a level 100 mm base of 5 - 7mm Crushed Blue Metal **OR** Recycled Concrete.

2.4. Position tank in the hole to suit desired site connections using *lifting lugs* on the tank.

2.5. Multiple Tanks – IMPORTANT: If installing additional servant tanks, position all tanks with outlets facing the same side wall of the excavation. Remove 50mm bungs at their bases and make the interconnection between the tanks with 50mm high-density poly pipe (at the base of the tanks). Tighten all connections (**Refer to figure 2**), making sure to support this pipe work with bricks or the like, and surround with aggregate.

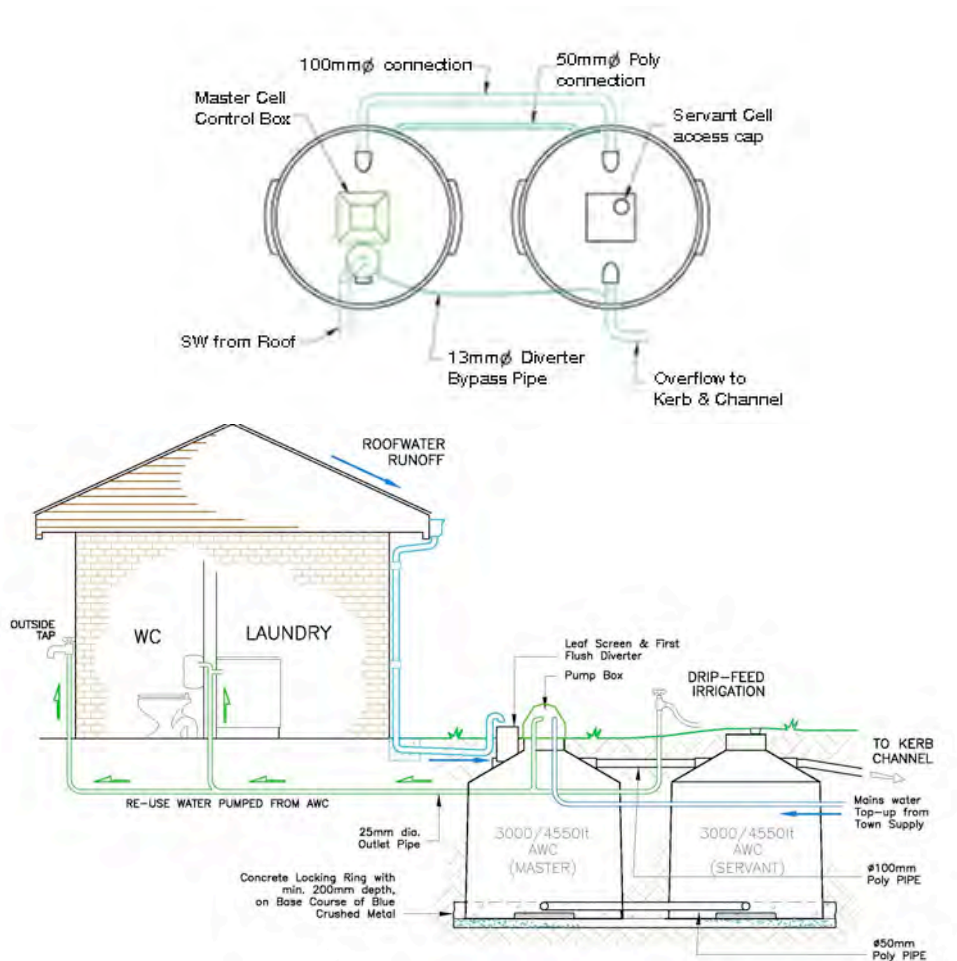
NOTE: When connecting multiple tanks, for base connection you should use high-density black poly fitting and pipes. Failure to do so may result in cracking of PVC pipes due to ground movement and void warranty

2.6. Fill the tank with a minimum of 50% water. These requirements apply to both Master and Servant Tank. Check to make sure all fittings are tight and there are no leaks.

2.7. Pour a 200mm min. thick ring of concrete around the 'feet' (base) of the tank (approx. ½ m3 per tank).

NOTE: **DO NOT** enter the excavation unless the excavation has been benched or battered to reduce the depth of the excavation to less than 1.5m.

Figure 2: Tank Interconnection



3. BACKFILLING

Materials needed:

- **5 - 7 mm Crushed Blue Metal or Recycled Concrete approx. 8 tonne per tank.** The use of specified backfill is important to prevent floatation and minimise soil settlement and the risk of connection failure resulting in water contamination or loss.

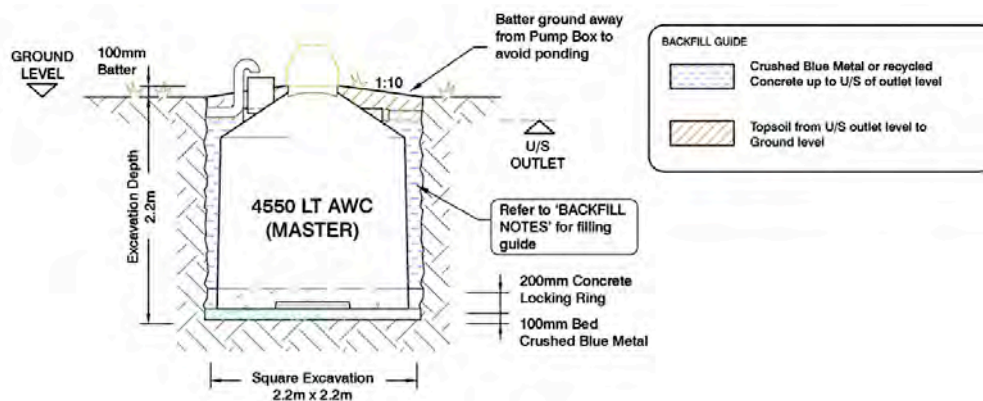
SAND AND SOIL ARE NOT RECOMMENDED BACKFILL MATERIALS

- 3.1. Backfill evenly around the Action Tank with 5 to 7 mm Crushed Blue Metal or Recycled Concrete, up to the under side of overflow outlet.

WARNING: DO NOT DUMP FILL MATERIAL on one side of the tank at any one time or use mechanical compaction or wheel rolling (to do so will void warranty and may reduce the action tanks capacity).

***The Action Water tank has been tested and certified by a geo-technical Engineer, not to lift out of the ground when installed in accordance with these installation requirements, even when the cell is empty and the external ground water level is 200mm from the top of the Action Tanks.*

Figure 3: Back filling



4. CONNECTIONS (CONTROL BOX / PUMP INSTALLATION)

REQUIREMENTS / RECOMMENDATIONS

Incoming Mains Water Pressure: If the incoming mains pressure to your property is greater than 500kPa, Onga require a pressure reduction valve of appropriate capacity upstream of Onga 'WaterSwitch'. A recommended pressure is between 450-500kPa.

LOOSE ITEMS IN CONTROL BOX (QLD, NSW & VIC) These are required for tank system commissioning

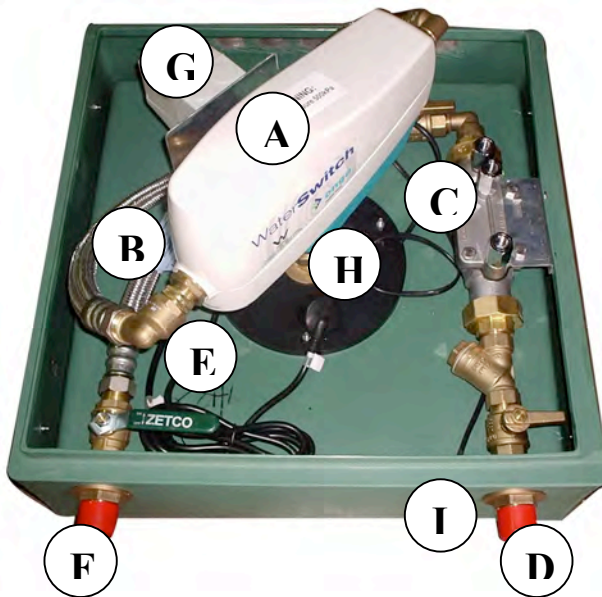
- | | |
|----------------------------------|--------------------------------------|
| 1 x Nut & Tail | 1 x Yellow high pressure hose |
| 1 X Tail Poly fitting (for pump) | 1 x black 13mm poly hose (not shown) |
| 2 x Hose Clamps | 1 x float switch + 3 zip ties |
| 1 x Nylon Rope (Pump Support) | 2 x Dog Clips |
| 1 x 100mm non-return valve | 1 x Reducer 1 1/4- 1" |
- Installation Instructions / Owner Manuals

OTHER ITEMS Supplied separately

- 1 x Submersible Pump

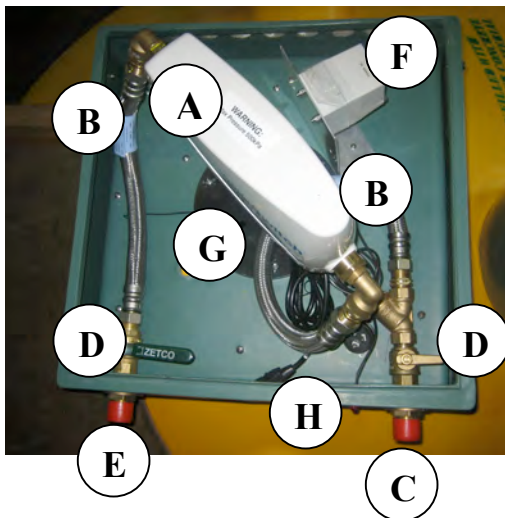


Figure 4a: Control Box WITH testable double check valve (QLD & VIC)



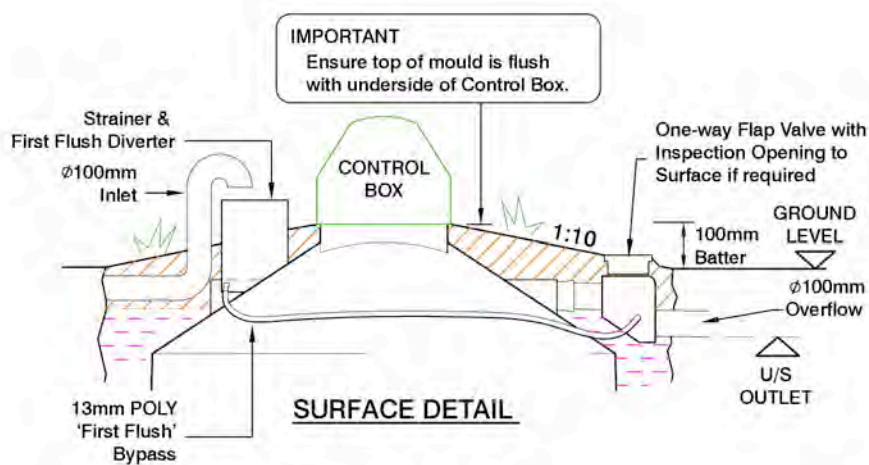
- A: Onga WaterSwitch
 - B: 2 x Plumb Easy Hose (braided silver)
 - C: 3/4-inch testable double check valve
 - D: Mains water inlet
 - E: Shut-off valve
 - F: Outlet to house
 - G: Electrical power point
 - H: Tank Water Inlet
 - I: Indicator Light 'Mains Water In Use'
- NOTE: Status indicator light**
RED = mains water use
OFF = rainwater in use

Figure 4b: Control Box WITHOUT testable double check valve (NSW)



- A: Onga WaterSwitch
 - B: 2 x Plumb Easy Hose (braided silver)
 - C: Mains water inlet
 - D: Shut-off valve
 - E: Outlet to house
 - F: Electrical power point
 - G: Tank Water Inlet
 - H: Indicator Light 'Mains Water In Use'
- NOTE: Status indicator light**
RED = mains water use
OFF = rainwater in use

Figure 5: Storm Water Connections



INLET

- 4.1. **Connect roof water from downpipes to 1st flush diverter / leaf screen** (see diagram below). The 100mm inlet stormwater pipes from the downpipes should rise up out of the ground and empty into the top of the 1st flush diverter / leaf screen. This pipe should be deflected in the leaf screen with a non-glued 45-degree bend leaving a 100mm clearance to allow for the easy removal of the 300mm leaf screen for cleaning.
Landscaping should make provision for over-flow from the strainer during periods of peak rainfall.
(Refer to figure 5)
- 4.2. **Install 100mm PVC non-return valve** (provided) next to the tank overflow outlet, down stream from the tank (check direction of flow is correct). **(Refer to Figure 5)**
- 4.3. **Connect (black) 13mm poly pipe (supplied)** from underside of first flush diverter nipple, to nipple on the tank overflow 100mm PVC non-return valve
- 4.4. **Connect Mains water to the mains water inlet** on the control box. You must flush out mains water line before connection. **(See Figure 4a & 4b)**

IMPORTANT: A pressure limiting valve (not supplied) may be required if mains pressure exceeds 500kpa.

- 4.5. **Run 40mm electrical conduit from house to 'Control Box'.**

OUTLET

- 4.6. **Run 100mm storm water / overflow outlet pipe** from PVC non-return valve, at minimum degree grade, to kerb or easement.
- 4.7. **Connect Rainwater from the Control Box 'House' outlet, to the house, using 1" pipe work.** **(Refer to Figure 4a & 4b)**

5. FINAL BACKFILL

- 5.1. **Top up backfill to finished surface level with topsoil free of rock and stones that is suitable for planting.** It is recommended that the Action Tank is installed high enough to create a landscaping mound of a minimum 100 mm or higher so as to prevent any accumulation of water around the top of the tank and the base of the control box.

*****Back fill must NOT be higher than the bottom edge of the green pump box. *****

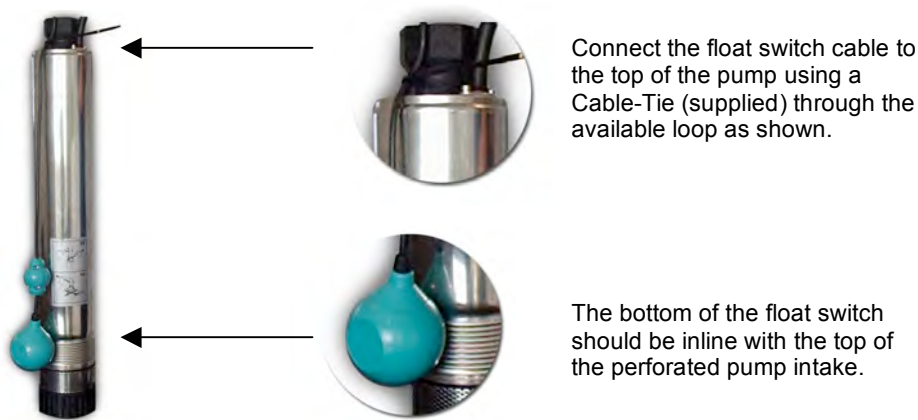
6. CONTROL BOX

IMPORTANT: Prior to installing/connecting the Onga pump and 'WaterSwitch' please read the ONGA Owner Manuals. Should the installer be unfamiliar with the correct installation or operation of this type of equipment you should contact the distributor / manufacturer for the correct advice before proceeding with the installation or operation of these products.

*The use of plumbers tape is recommended on all joints / connections made

- 6.1. **Check contents** in the 'Control Box'
- 6.2. **Check installation instructions.** Make sure they correspond to the tank model you have purchased and are installing.
- 6.3. **Remove the new pump from box**
- 6.4. **Locate Float Switch and Cable-Tie it to the pump** so that the end of the float is positioned no lower than the upper edge of the water inlet strainer. Do not over tighten zip tie. **(Refer to Figure 6)**

Figure 6: Onga Float Switch Connection

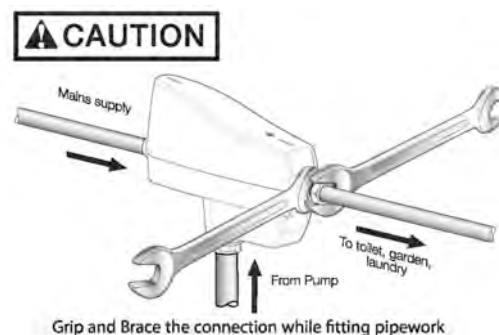


IMPORTANT: It is recommended that you **DO NOT** leave the pump submersed in the tank for longer than two weeks prior to commissioning. Refer to Onga owner's manual for additional information.

- 6.5. Unfurl the 'yellow' high-pressure hose, and connect the reducing bush, a poly fitting using the hose ring clamps. **IMPORTANT:** Be careful not to lose the rubber washer located in the poly nut at the top of the hose.
- 6.6. Connect hose to the pump.
- 6.7. Connect the nylon rope to the pump via the stainless steel Dog clip.
- 6.8. Remove the three (3) wing nuts from base plate under the Onga WaterSwitch. (Loosen a braided hose to complete this step – please ensure to grip and brace the connection while fitting pipe work to WaterSwitch. *(See Figure 7) Note: do not undo the pump suspension support nut*
- 6.9. Lift up base plate.
- 6.10. Secure the stainless steel 'Dog Clip' attached to the Nylon Rope to the stainless steel eyelet on the underside of the base plate of the WaterSwitch (this rope will support the pump)
- 6.11. Screw the 'yellow' flexible hose to inline strainer directly below the WaterSwitch on the underside of the base plate base plate
- 6.12. Holding the 'yellow' high-pressure hose, gently lower the pump into the tank through the access, ensuring you don't dislodge or tangle the float switch.
- 6.13. Fit the base plate into position and secure with wing nuts.

CAUTION: Please ensure to grip & brace the connection while fitting pipe work to WaterSwitch. *(See Figure 7)*

Figure 7: Onga WaterSwitch



7. ELECTRICAL

Onga recommend connecting the 'WaterSwitch' to a socket outlet protected by a residual current device. See 'WaterSwitch' Owner Manual for details. The electrician should not work on live wires when connecting system.

- 7.1. **ELECTRICIAN** Hardwire 240volt 10amp single-phase mains power to the internal power outlet located inside the "Control Box". It is recommended there be an isolation **switch located in the buildings switch box.**

IMPORTANT: ELECTRICIAN MUST COMPLETE STEP 9 IF PLUMBER IS NOT RETURNING TO SITE.

IMPORTANT: DO NOT ACTIVATE POWER TO PUMP IF COMMISSIONING HAS NOT BEEN DONE.

8. COMMISSIONING & TESTABLE DOUBLE CHECK VALVE

IMPORTANT: OPEN ALL STOP COCK/VALVES INSIDE THE CONTROL BOX SLOWLY ONE AT A TIME. FAILURE TO DO SO COULD CAUSE 'WATER HAMMER' AND CAN DAMAGE THE WATERSWITCH.

- 8.1. Plug Pump into Onga 'WaterSwitch'
- 8.2. Plug Float Switch into Onga 'WaterSwitch' – looping the cable over the WaterSwitch to prevent it from coming loose
- 8.3. To commission system – power up and **SLOWLY** turn on mains water to the control box; turn external hose tap on, checking that all fittings are tight **and allow sufficient water out of the tap to flush the delivery line.**
- 8.4. Test pump is functioning correctly:
 - (a) Open a tap on the outlet side of the 'WaterSwitch'. The pump will start within 15 seconds and the 'Tank' LED will light up (**Refer to Figure 8**).
 - (b) Turn off the tap and the 'Water Switch' 'Tank' LED will go off. This indicated the pump has stopped.
If the LED light does not turn off after 40 seconds the pump has not turned off - go to 8.5.
DO NOT LEAVE THE PUMP CONTINUALLY RUNNING – CONTACT PRODUCT SUPPORT
- 8.5. At this point check and repair any leaks in the system (Movement may occur during transport).
- 8.6. Test mains water diversion:
 - (a) Temporally unplug the 'Float Switch' cable underneath the Onga 'WaterSwitch' – this will indicate to the 'WaterSwitch' that there is no water in the tank, and to switch to mains water supply operation.
 - (b) Open the tap. Mains water will flow and the 'Mains' LED will light up on the 'Water Switch'. (**Refer to Figure 8**).
 - (c) Close the tap, and replace the level sensor connection.

NOTE: If there are any variations to these outcomes, please see the trouble shooting section on page 16 of the Onga WaterSwitch owner's manual.

Figure 8: Onga WaterSwitch Tank / Mains Water Indicator LED Lights (Located at back of WaterSwitch)



- 8.7. Check that all inline strainers are clear of obstructions. Remove any wrapping and any other debris from first flush diverter. Check that all signage as required by the relevant local authority has been installed. I.e. 'Rainwater Water' signs.
- 8.8. Test and commission 'Testable Double Check Valve'. This needs to be done after mains water has been connected to the system. A copy of the test report must be submitted to the council. (If applicable – not all areas require a testable double check valve).
- 8.9. Ensure control box lid is fastened using clips.

9. OWNERS MANUAL

- 9.1. **IMPORTANT: Complete the 'Owners Manual' enclosed with the warranty sheets located in the control box, making sure that the serial number of the Action Tank has been entered in the manual (this number can be found on the inside of the lid of the control box).**
- 9.2. **PASS THE COMPLETED WARRANTY INFORMATION / HOMEOWNERS MANUAL ONTO THE PROPERTY OWNER OR BUILDER.**

10. TROUBLE SHOOTING

Please see relevant Owners Manuals for Trouble Shooting Steps or call Action Tanks Support on the numbers below.

****It is very important that the attached OH&S Risk Assessment form is referred to prior to the commencement of installation****

Additional information is available on our web site www.actiontanks.com.au
 Action Tanks (Qld) 1800 066 587 (NSW) 02 9453 0300 (Vic) 1300 65 40 40

RISK ASSESSMENT

Installation of Underground Action Rainwater Harvesting System

Project Name: _____

Date: _____

Person Completing Form (Name): _____

(Signature): _____

Please tick all appropriate boxes

Equipment to be used	
Ladders	
Excavator	
Power Tools	
Power Leads	
Wheelbarrow	
Shovels	

Personal Protective Equipment	
Hard Hat	
Safety Boots	
Safety Vest	
Hearing Protection	
Safety Glasses	
Safety Harness	
Safety Vest	
Gloves	
Barrier Cream	

Activities	
Excavation of Earth	
Backfilling Excavation	
Drainage	
Plumbing	
Landscaping	
Cement Work	

Incident Codes	
CLASS 1: (High Risk) Permanently disable or kill	
CLASS 2: (Medium Risk) Temporary disable or serious injury	
CLASS 3: (Low Risk) Cause minor injury	

Potential Hazards	Possible Controls	
Fall into Excavation	Do not allow persons into excavation for single tank installs. When required to enter the excavation for multiple tank installations, ensure that excavation is battered or benched as per code and/or that safety precautions are taken to ensure the excavation does not collapse. Refer below.	
Collapse of Excavation	Ensure that a qualified person supervises the excavation. Make sure that spoil from excavation is placed a safe distance away from edge. Enter excavation only during multiply tank installations. Batterer Bench excavation, if required, in accordance with code. Provide stops/barriers to stop machinery approaching too close to the edge of the excavation. Be aware of zone of influence to other structures.	
Slip, trip & falls	Area clear of building material, good working surface available, ensures you are working from stable ground.	
Cuts	Ensure all sharp edges are protected. Glass or broken materials are removed. Gloves are worn to protect hands; All sharp material is stacked and removed from site.	
Lack of Supervision	As installation of Action Tank can be achieved within a few hours never leave excavation unattended without barricading or roping off with safety tape. Continually monitor the works to ensure that conditions remain safe and that excavation does not become water logged or encroached upon by other building works. If excavation is left overnight, barricades and safety fencing must be erected.	
Injury Caused by Machinery	Ensure that high visibility safety clothing is worn and good communication with a competent machine operator is maintained.	
Machinery flipping over	Ensure the excavator is working on stable ground. Plant inspections are carried out. Operator is trained in safe use of the plant. Look for electrical hazards.	
Contact with Electricity	Watch for overhead power lines. Turn off any power that is capable of being cut or touched during excavation, before starting work, ensure all power tools are protected by RCD. Ensure all power tools and leads are tested and tagged.	
Manual Handling	Ensure good manual handling techniques are used when lifting, pushing, pulling, twisting and stretching. If the load is heavy use two man lifts or mechanical devices.	
Safe use of PPE	Ensure correct PPE is being used for the task at hand. Hearing protection, Safety glasses, safety harness, safety boots, high visibility safety clothing.	
Drowning	If there is a risk that the excavation may collect or retain water, ensure fall protection is in place; qualified person is available to perform EAR or CPR. Floatation devices are worn.	