

**This manual is to be left  
with the pump station or  
the homeowner**



## **Delta Dual V3 (DMS-164)**

For Ground Water Applications

### **Installation Instructions**

Ground Water Pump Station



# Delta Dual V3

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# Delta Dual V3

## 1.0 Dual V3 Overview

The Delta Dual V3 is a packaged pump station designed to collect ground water via perimeter channel or modular drainage and/or clear opening to the top of the chamber - please visit our website for water collection details. Typically, the Dual V3 would be used to collect ground water from a basement up to 150m<sup>2</sup> and/or surface water from a light well up to 12m<sup>2</sup> to a maximum head of 3.5m

The pump station has been specifically designed for below ground applications. The chamber is manufactured from HDPE and when installed correctly, it is able to withstand hydrostatic forces encountered in high water tables.

The pump station is delivered as a complete package including, the chamber, internal pipework and two powerful V3 pumps. It is designed to be installed by contractors with competent building, plumbing and electrical skills. The pumps operate by fixed arm floats, the duty pump is set at a standard height (210mm to base of float) and the backup pump is set at a high level (380mm to base of float). The high level alarm (where fitted) will operate if the duty pump fails leaving the backup pump to discharge water.

A high level alarm (DMS-298) is offered as a recommended extra to alert the property occupant when the water level in the chamber becomes too high. A battery backup (DMS-280) is recommended to power the pumps during power outage. Please see section 2.1 for more details about optional extras designed for the Dual V3 pump station.

## 2.0 Parts Included



Chamber  
902 x 655mm deep



1.25" Internal Pipework



2 x V3 Pumps



1.25" Discharge Male Iron  
& low pressure Male Iron  
for temp. site installation.  
2" Cable Duct Male Iron

## 2.1 Optional Extras



AlertMaxx2 High Level  
Alarm (DMS-298)



PowerMaxx Battery  
Backup (DMS-280)



1.25" Discharge Pipework  
and various fittings

### 3.0 Discharge Pipework & Fittings

A selection of discharge pipework and fittings are available for the Dual V3 pump station.

Should you require to place an order for any of these items, please complete the form below, scan and email to [purchasing@deltamembranes.com](mailto:purchasing@deltamembranes.com) to allow us to process your order.

Part Description	Part No.	Qty Req.
1.25" Pipe - 3m Length (Class E)	DMS-0144	
1.25" 90° Elbow - Plain/Plain	DMS-0145	
1.25" 45° Elbow - Plain/Plain	DMS-0146	
1.25" Socket - Plain/Plain	DMS-0147	
1.25" Socket - BSP Mail Thread/BSP Male Thread	DMS-0331	
1.25" Male Iron - Plain/BSP Male Thread	DMS-0143	
1.25" Male Iron - Plain/BSP Male Thread (Non-pressure)	DMS-0332	
110mm to 1.25" Adaptor	DMS-340	
Saddle Clamp - 110mm to 1.25" (BSP Female Thread) including 1.25" Male Iron	DMS-0141	
Saddle Clamp - 160mm to 1.25" (BSP Female Thread) including 1.25" Male Iron	DMS-0142	
1.25" Pipe Clip	DMS-0149	
500ml PVC Solvent Cement	DMS-0158	

**Name:**

**Company Name:**

**Delivery Address/Site Address:**

**Email:**

**Phone No.:**

**Mobile No.:**

**Sign:**

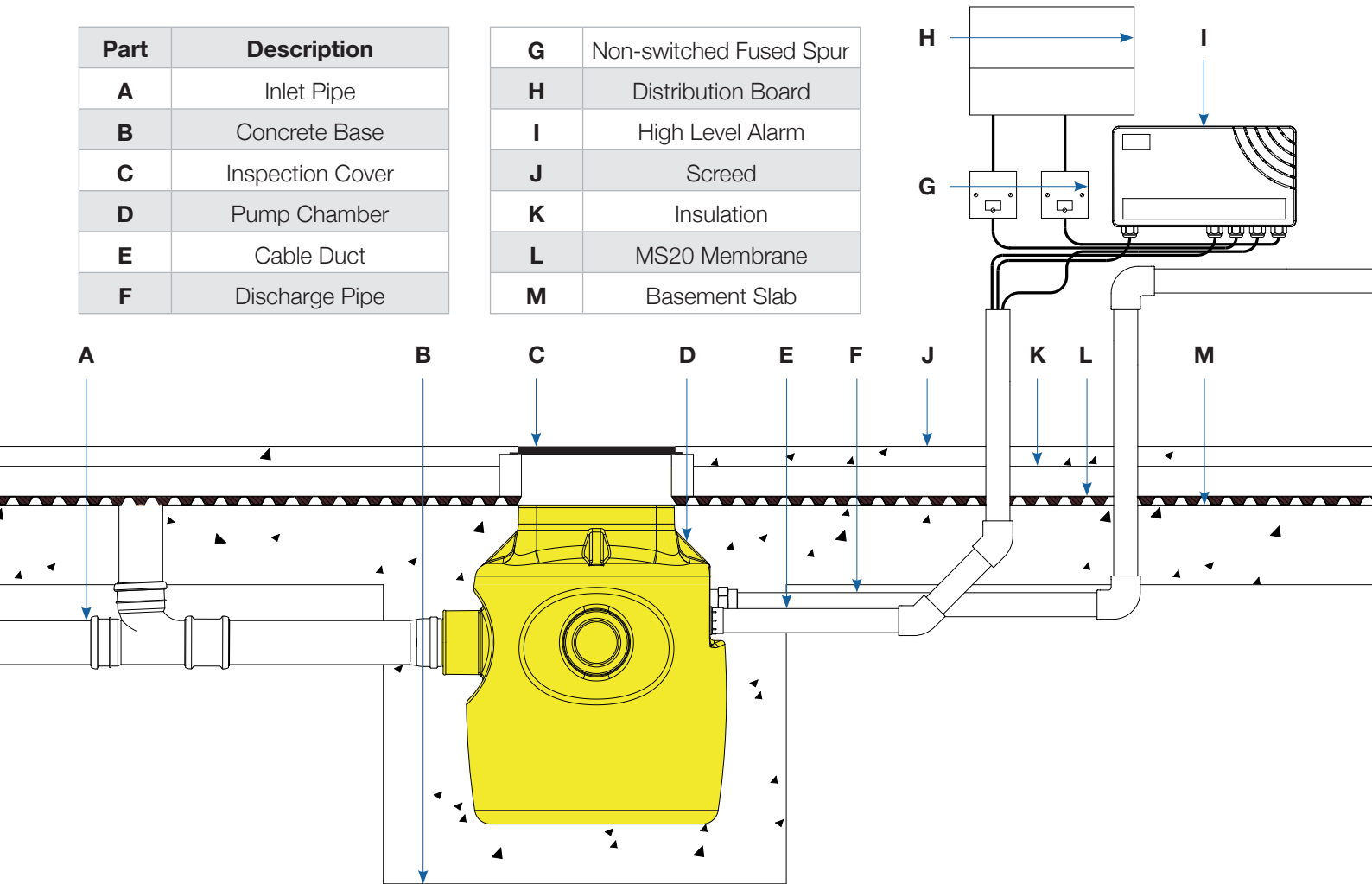
**Date:**

# Delta Dual V3

## 4.0 Chamber Overview

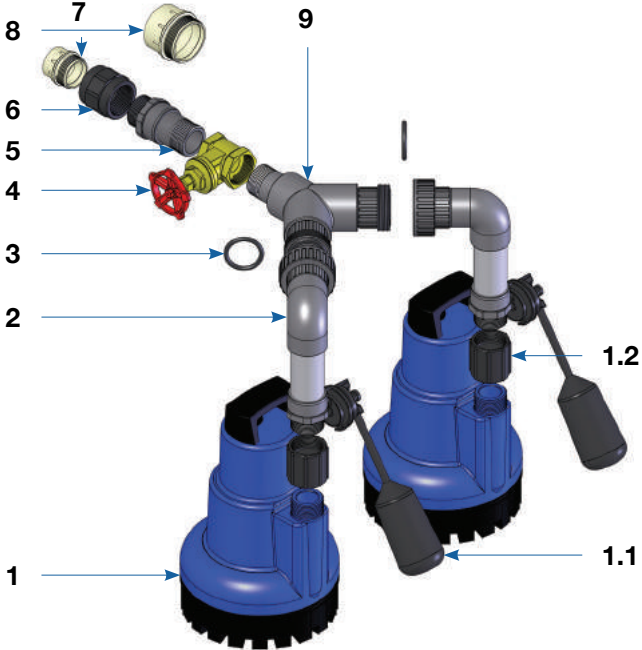
Part	Description
A	Inlet Pipe
B	Concrete Base
C	Inspection Cover
D	Pump Chamber
E	Cable Duct
F	Discharge Pipe

G	Non-switched Fused Spur
H	Distribution Board
I	High Level Alarm
J	Screed
K	Insulation
L	MS20 Membrane
M	Basement Slab



## 5.0 Spare Parts

Part	Description	Part No.
1	V3 Pump c/w 1.1 & 1.2	DMS-116
1.1	Float Switch Assembly	DMS-344
1.2	Rubber Non-return Valve	DMS-328
2	Discharge Arm inc. 'O' Ring	DMS-146
3	'O' Ring	DMS-132
4	1.25" Brass Gate Valve	DMS-329
5	Connector Piece	DMS-330
6	1.25" BSP/BSP Socket	DMS-0331
7	1.25" Non-pressure Male Iron	DMS-0332
8	2" Non-pressure Male Iron	DMS-335
9	Y-piece c/w 2 'O' rings	DMS-321



## 6.0 Technical Information

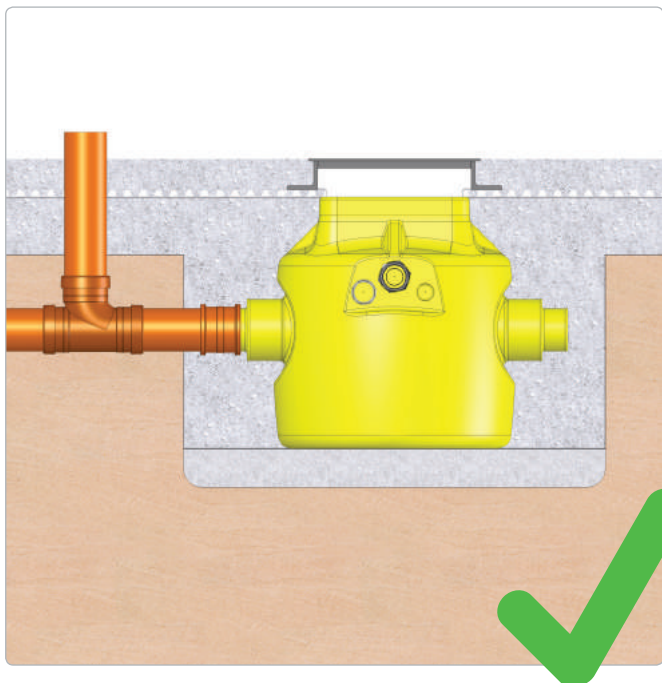
Pump Specification			
Pump Type			V3
Typical Duty (l/s)	Head (m)	3	2.25
		3.5	2.10
		4	1.85
		4.5	1.65
		5	1.35
		6	0.70
Power		P <sub>1</sub> (kW)	0.43
		P <sub>2</sub> (kW)	0.18
Current (a)			1.90
Power Phase			Single
Non-switched Fuse Spur Rating (a)			13
RCBO Rating (a)			16
Cable Length (m)			10
Max. Temperature (°C)			50
Weight (kg)			5.64

Chamber Specification		
Chamber Material	High Density Polyethnylene - ICO1314 grade	
Size (mm)	Chamber Diameter	660
	Overall Diameter	902 (across spigots)
	Depth	655
Volume (L)	Below Inlet	87
	Total	217
Inspection Cover	Not supplied	
Clear opening to chamber (mm)	310 x 310	
Fixed Inlets	3 x 110 / 160mm	
Cable Duct (mm)	50	
Vent	N/A	
Discharge Connection	1.25" / 32mm BSP Male - External to chamber	
Internal Pipework Manifold	1.25" / 32mm BSP Class E	

# Delta Dual V3

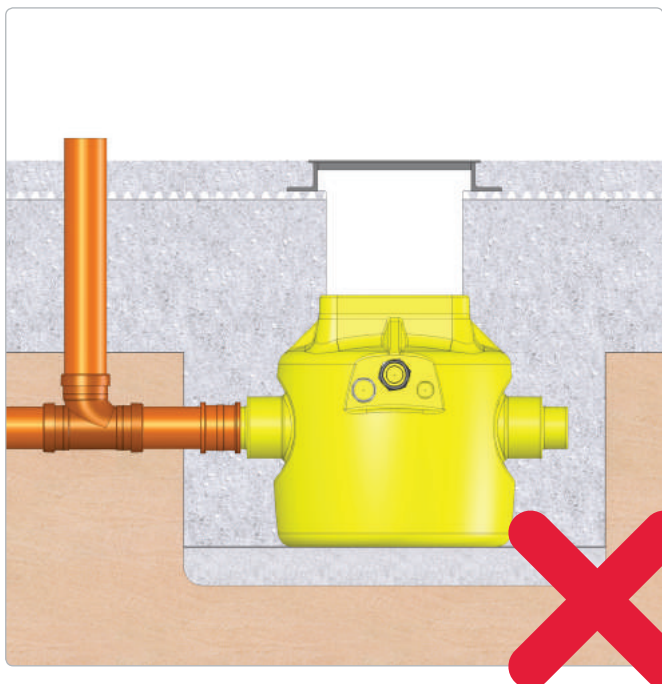
## 7.0 Pump Chamber Depth Limits

If the inlet does not allow the pump chamber to be within depth limits, please contact Packaged Pump Systems on 01279 757400 to discuss chamber options.



< 500mm

The pump chamber must be installed no more than 500mm below floor finishes.



> 500mm

A pump chamber installed more than 500mm below floor finishes cannot be serviced safely in accordance with CDM regulations.

## 8.0 Installation Guidelines

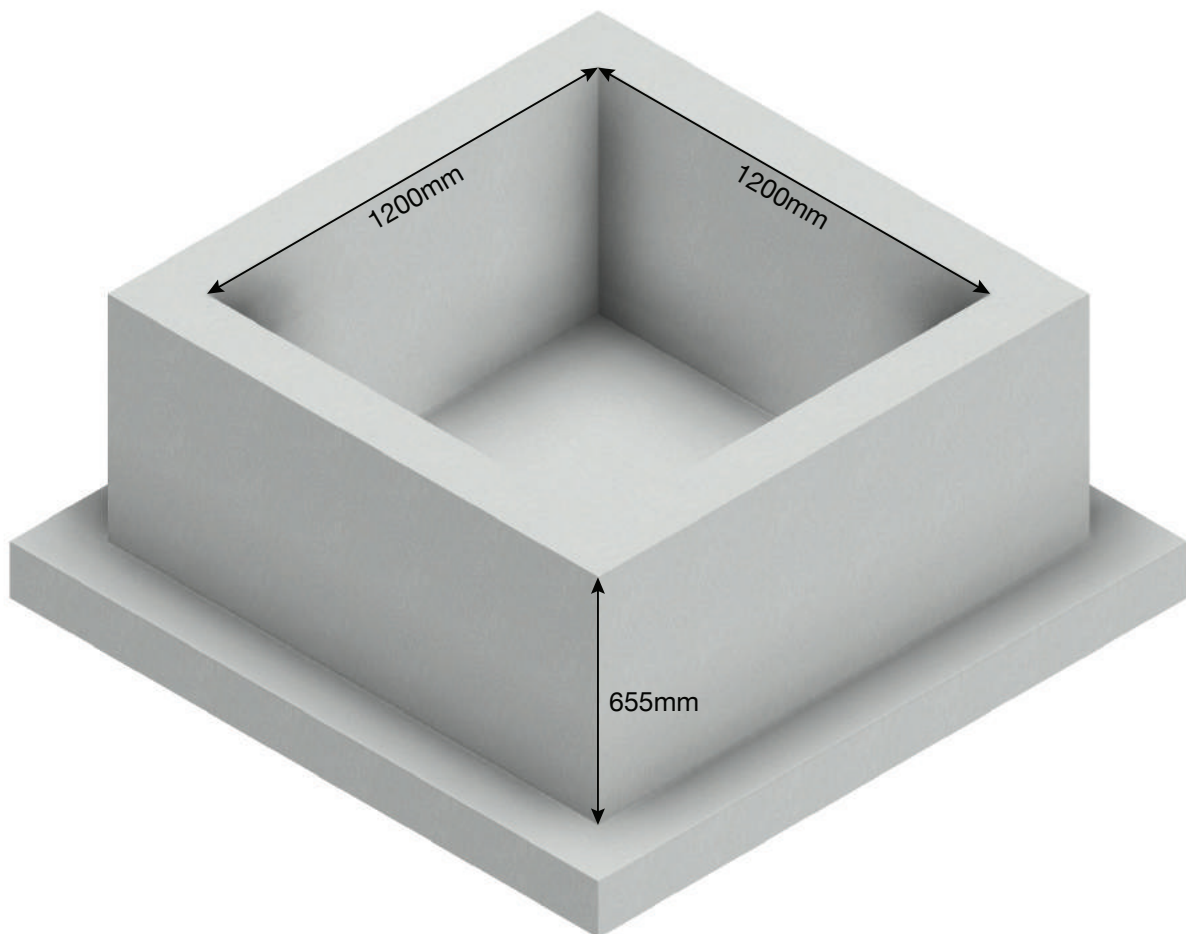
The following instructions are for guidance only and it is the contractor's responsibility to ensure that the installation is in accordance with the prevailing ground conditions and good building practice, to eliminate any potential damage to the pump station either during or after installation.

Please read these instructions carefully prior to installing the chamber. If there is anything that is unclear, the PPS Technical Department is available on 01279 757400.

## 9.0 Pump Station Location

This station requires routine maintenance, therefore it is important that careful consideration is taken to position the chamber in a location that allows permanent access to the chamber.

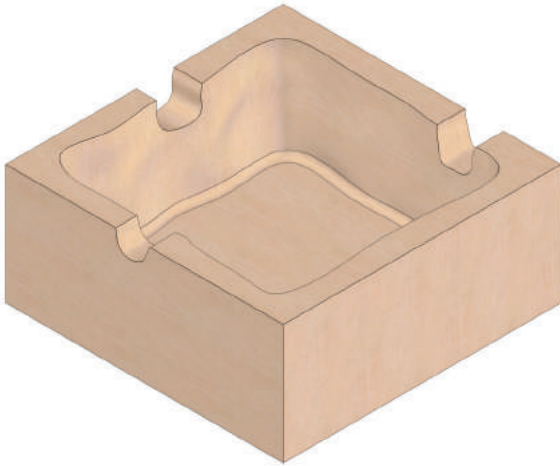
## 10.0 RC Box Dimensions



Approx. scale 1:20

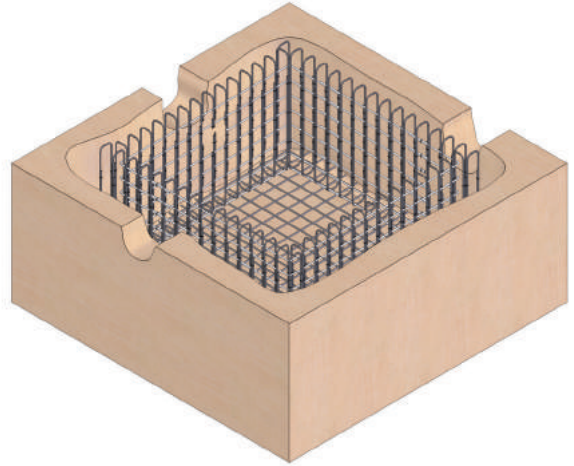
### Construction of reinforced concrete box

1



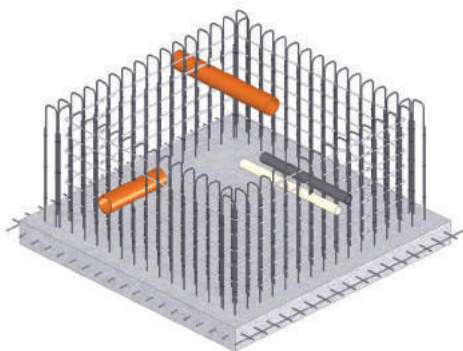
Excavate hole for chamber. Refer to section 10.0 for RC box internal dimensions.

2



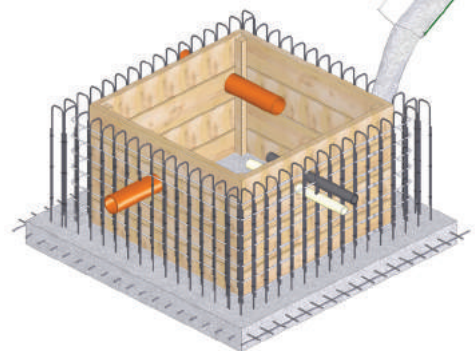
Install re-bar as per structural engineer's drawings.

3



Lay inlet and discharge pipework. Allow pipework to protrude into RC box by a minimum of 100mm.

4



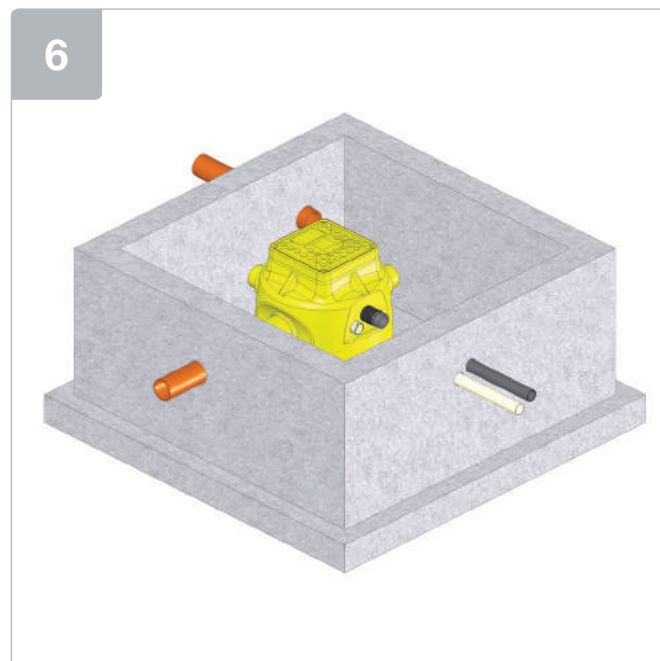
Pour concrete to form RC box as per structural engineer's drawings.

## 11.0 Installation of Chamber - Section B1

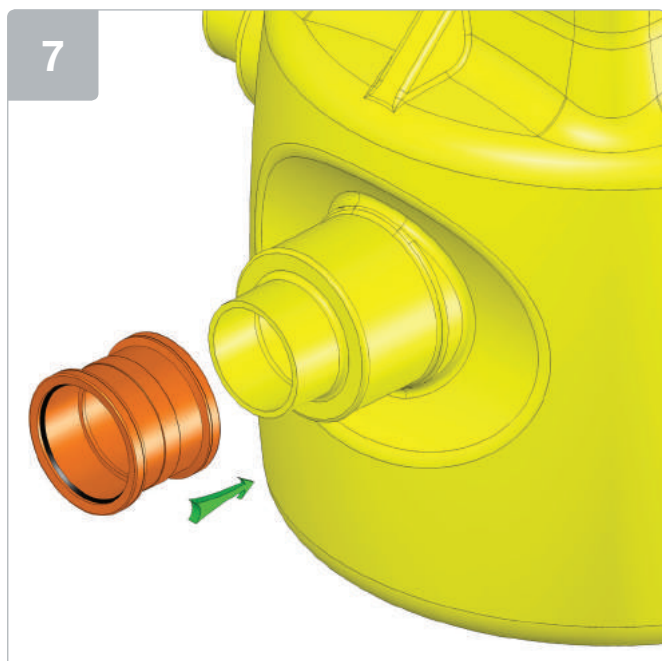
### Connecting 110mm pipework



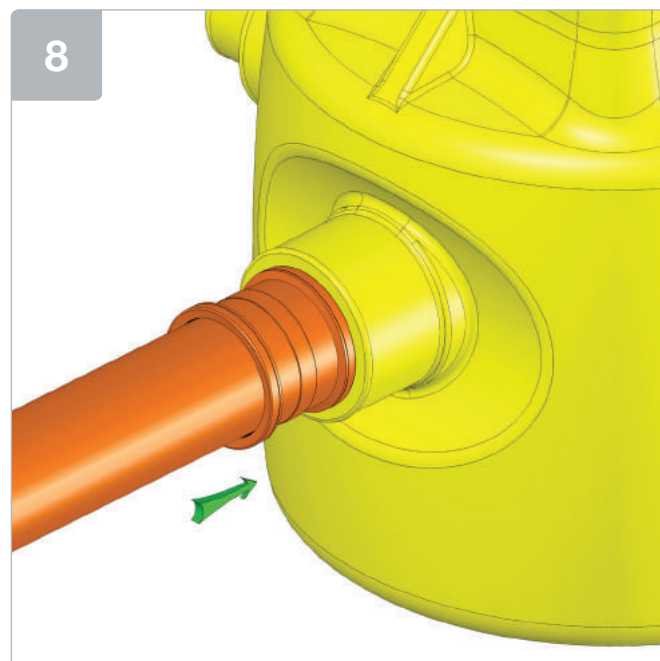
Saw off socket end/s, where inlet pipe/s are to be connected.



Position chamber in RC box.



Fit push fit coupler.



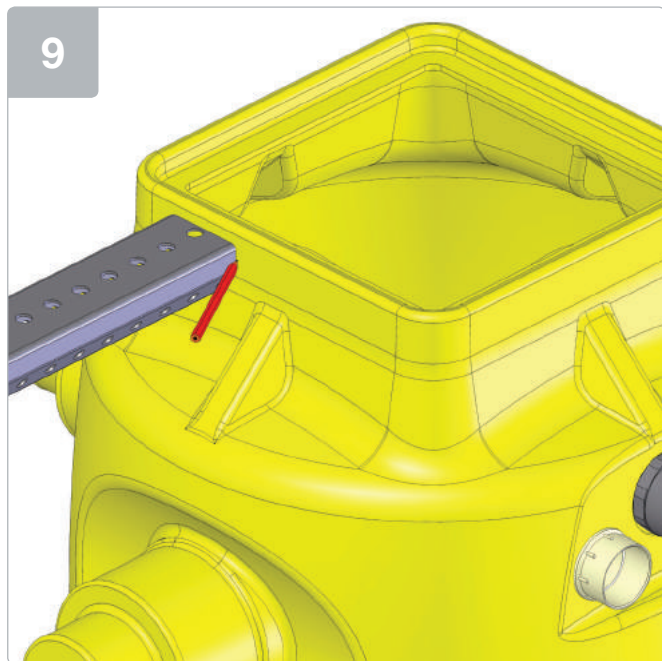
Connect inlet pipework to the required chamber spigot.

# Delta Dual V3

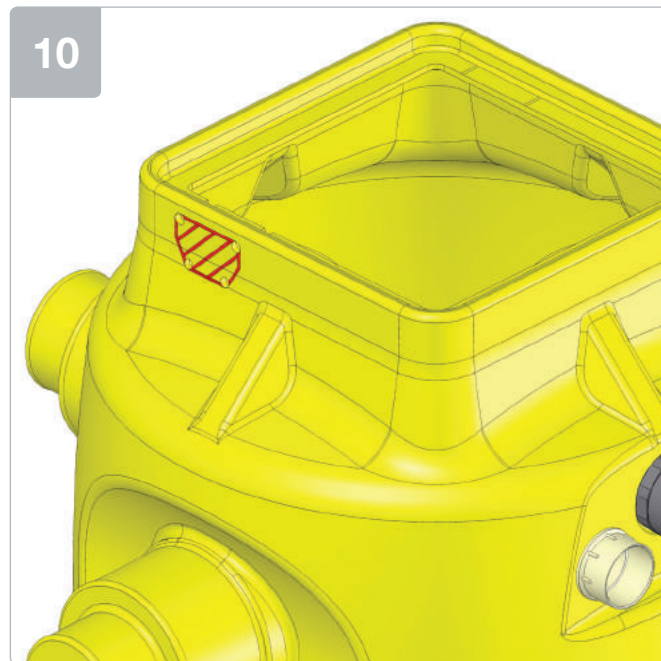
## 11.0 Installation of Chamber - Section B2

### Connecting perimeter channel to chamber

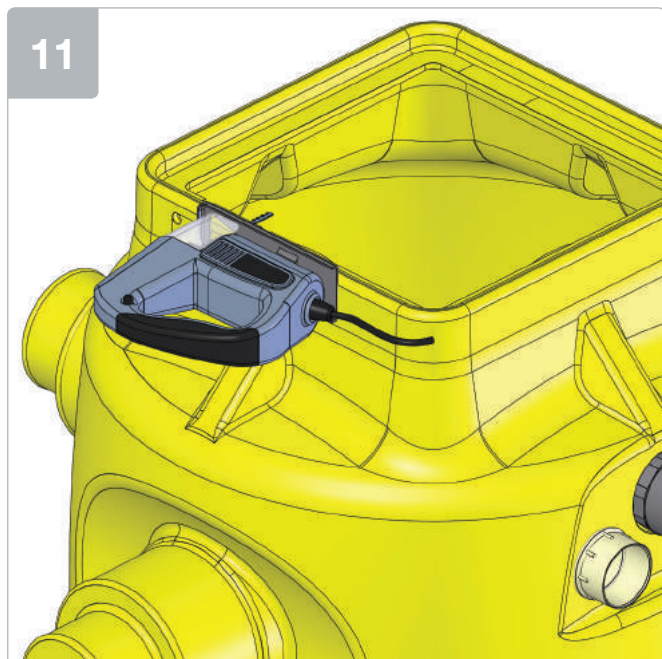
To be followed when installing perimeter channel directly into upper side of chamber.



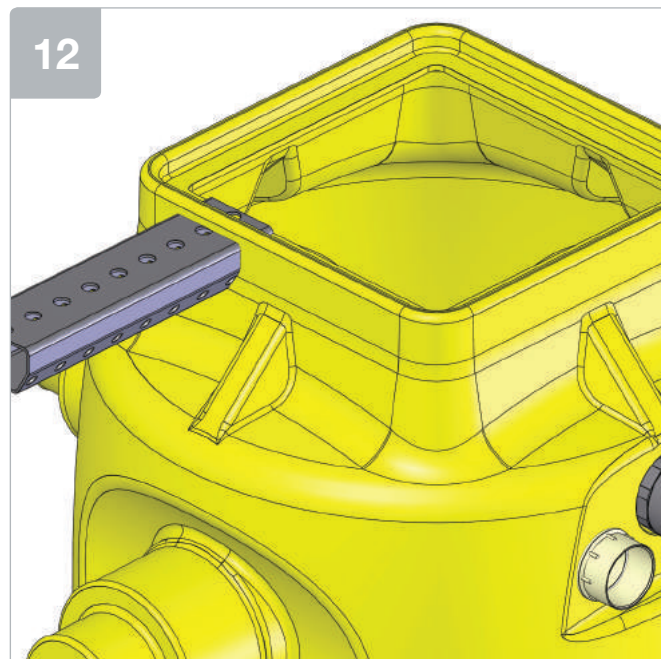
Mark perimeter channel position on side of chamber.



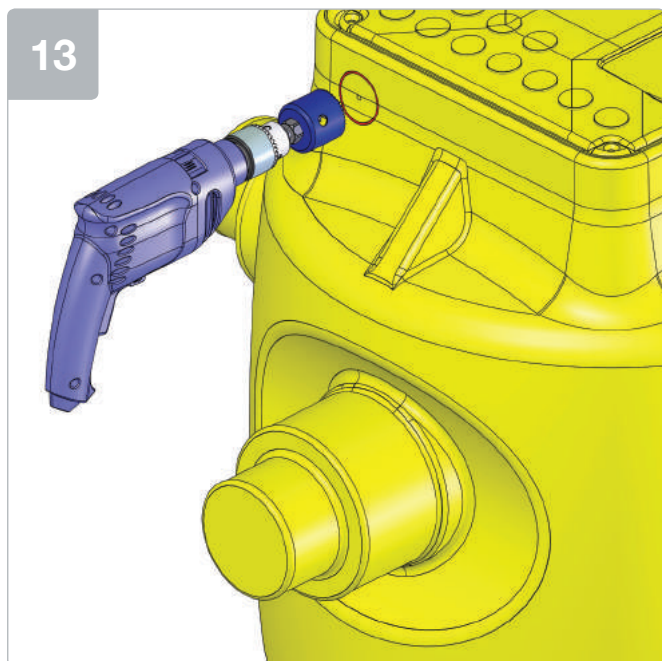
Drill holes in the corners inside the area marked in red.



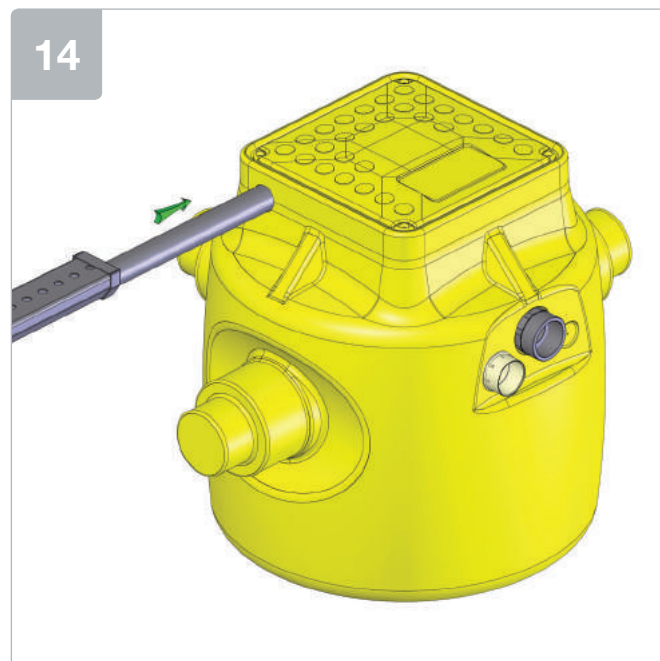
Cut around the marked line outlining the perimeter channel using a jigsaw.



Insert the perimeter channel into the chamber allowing 35mm of overhang inside the chamber.

**11.0 Installation of Chamber - Section B3****Connecting perimeter channel via a 1.5"/40mm inlet pipe**

Mark position of the 40mm pipe on the side of the chamber and cut out the marked line using a 1.5"/40mm holesaw.



Cut 40mm pipe to length allowing an overhang of 35mm inside the chamber.

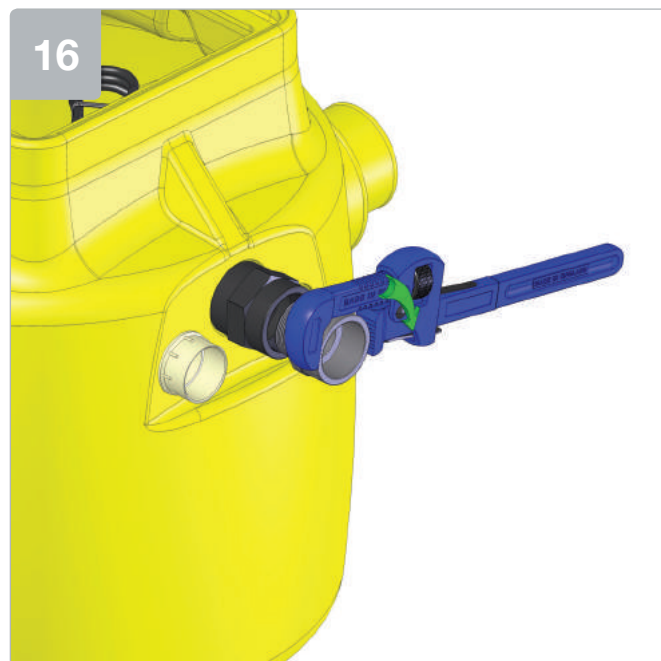
# Delta Dual V3

## 11.0 Installation of Chamber - Section C

### Connecting discharge and cable duct



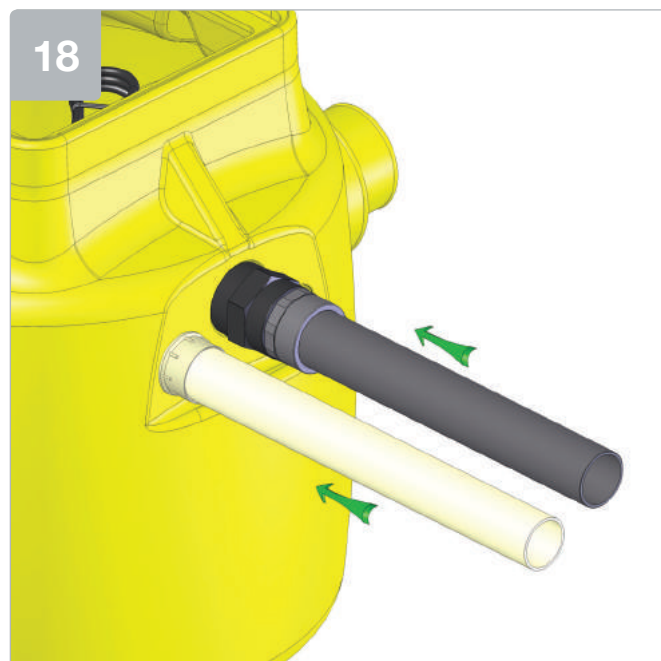
Wrap the thread on a DMS-0143 high pressure male iron with PTFE tape.



Screw the high pressure male iron into the female iron.



Apply DMS-0158 high pressure glue around the first 20mm of the external face of the discharge and cable duct pipe and internal side of their respective male iron.



Push discharge and cable duct pipe into their respective male iron, twisting the pipe as it is pushed into the male iron to remove any trapped air.

**11.0 Installation of Chamber - Section C cont.****Connecting discharge and cable duct**

Ensure a draw cord is pulled through the cable duct as the cable duct is built.

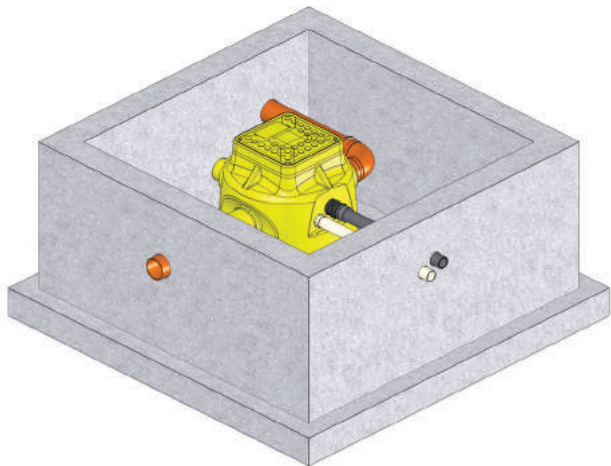
# Delta Dual V3

## 11.0 Installation of Chamber - Section D1

### Backfill around chamber with concrete

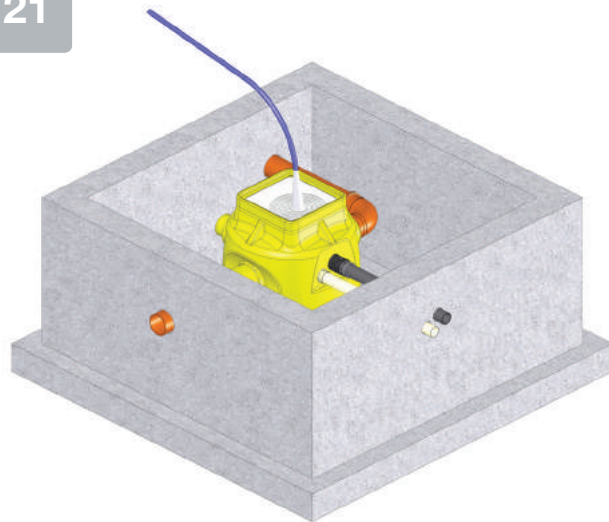
To be followed when installing chamber in an RC box.

20



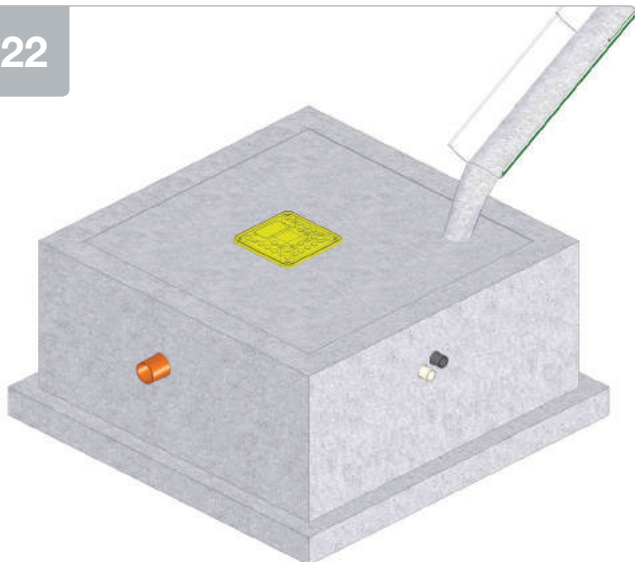
Check all pipes are connected to the chamber correctly.

21



Completely fill chamber with water.

22



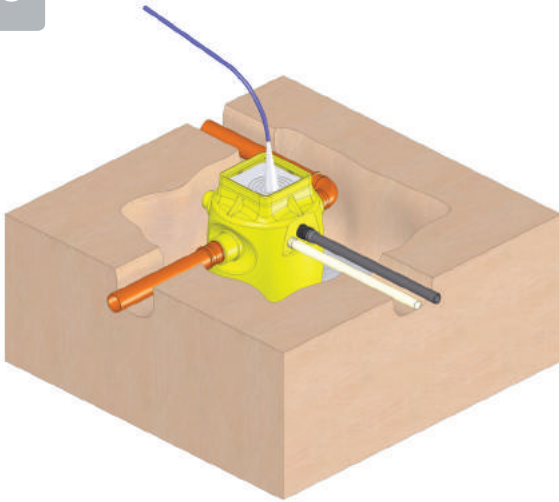
Fill void between RC box and chamber with concrete (min. C35 grade) or as per structural engineer's drawings.

## 11.0 Installation of Chamber - Section D2

**Backfill around chamber with concrete**

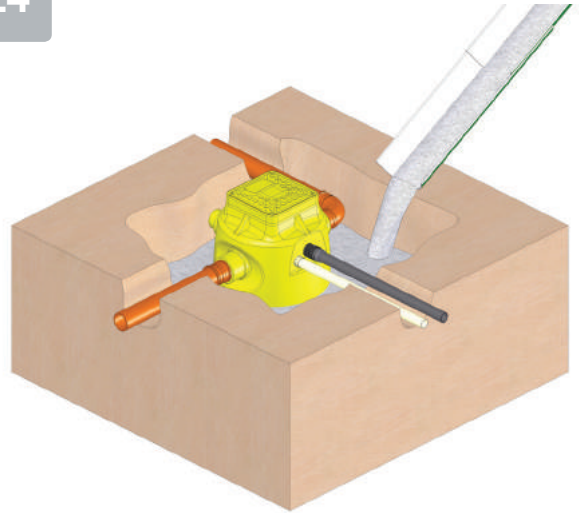
To be followed when installing chamber in the ground.

23



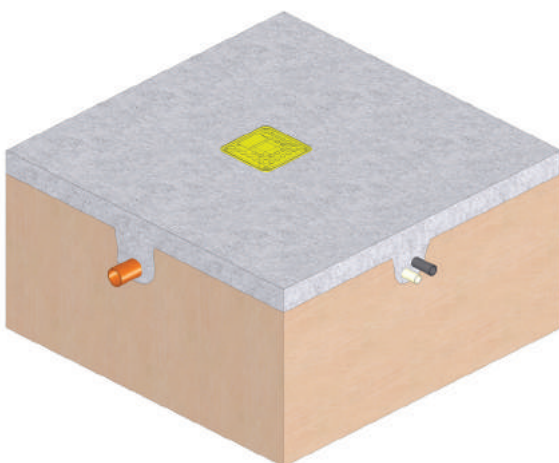
Completely fill chamber with water.

24



Fill void between soil and chamber with concrete (min. C35 grade) or as per structural engineer's drawings.

25

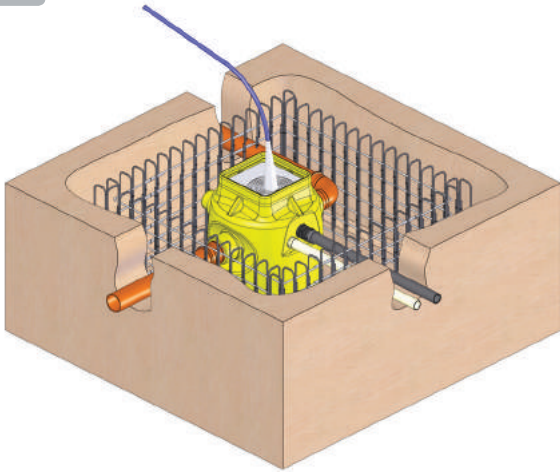


Allow concrete to cure.

### Backfill around chamber with concrete

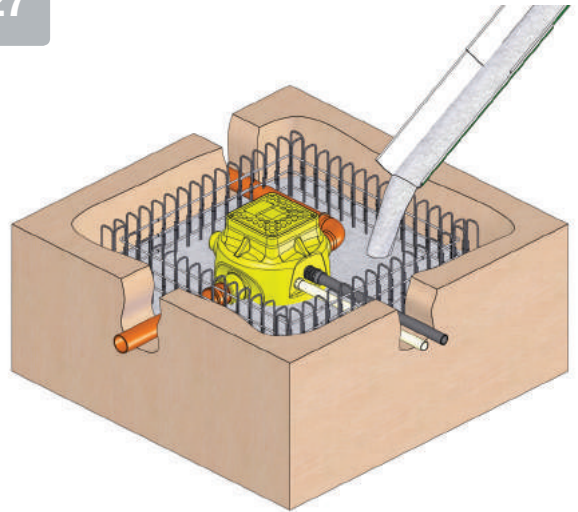
To be followed when installing chamber in the ground with a reinforced cage.

26



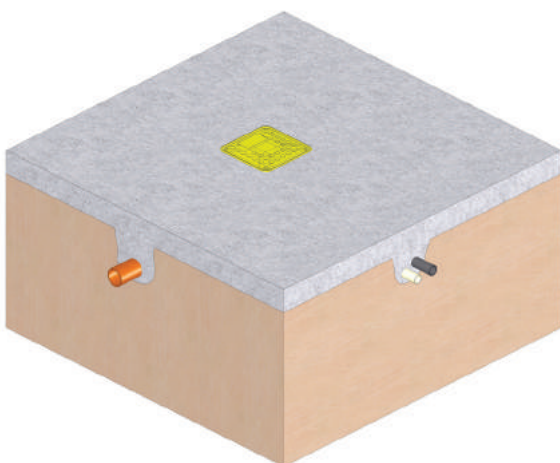
Completely fill chamber with water.

27



Fill void between soil and chamber with concrete (min. C35 grade) or as per structural engineer's drawings.

28

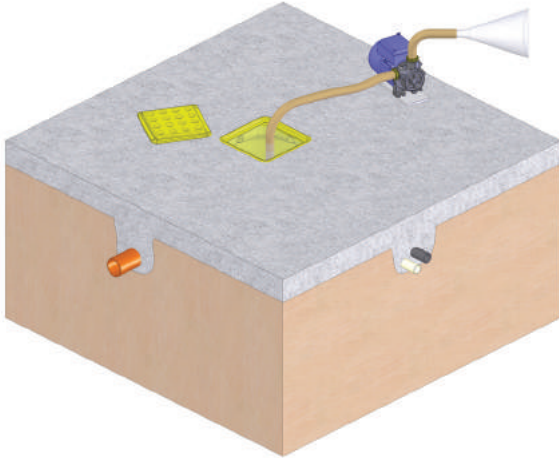


Allow concrete to cure.

## 11.0 Installation of Chamber - Section E

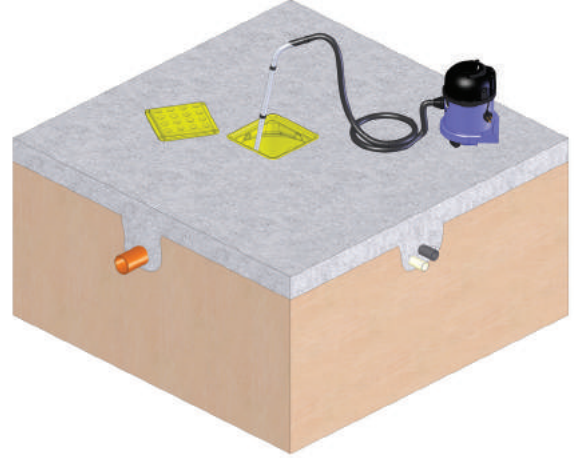
### Installing pumps and high level alarm in chamber

29



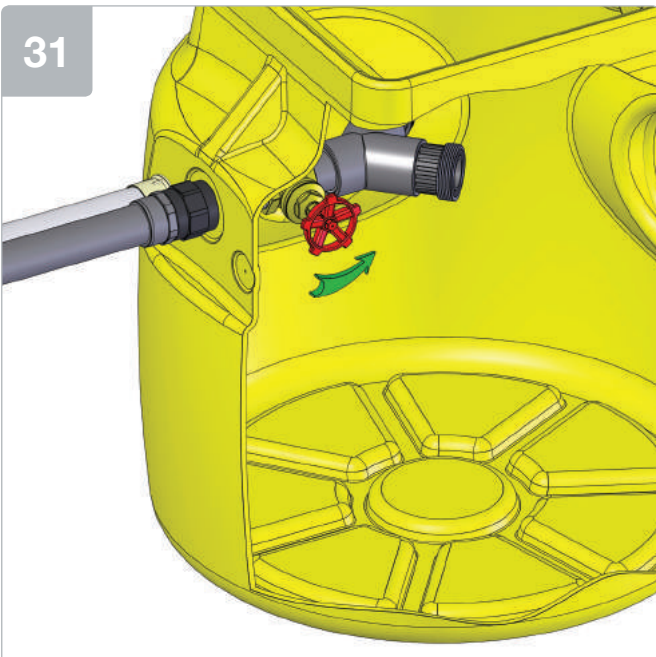
Pump out water from chamber using a temporary site pump.

30



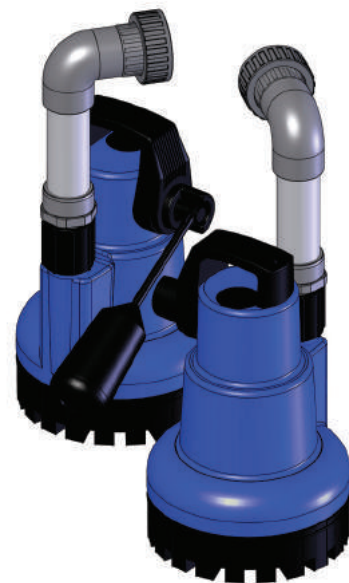
Manually remove any debris from chamber and residual water using a wet vac.

31



Remove discharge arms from 'Y' piece manifold and screw 'Y' piece on to gate valve. Ensure gate valve is fully open.

32



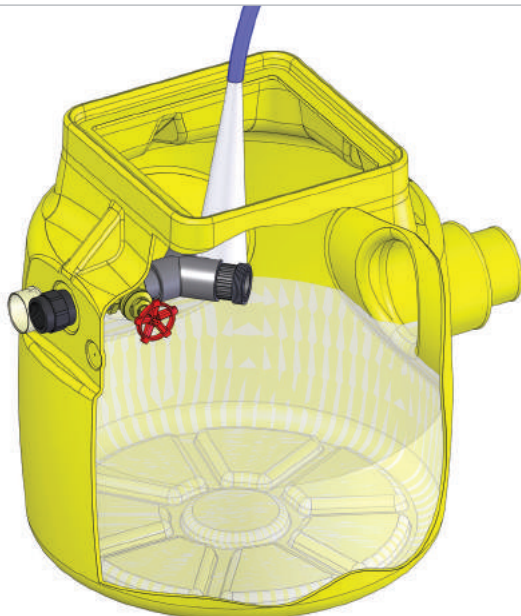
Wrap PTFE tape around thread located on male irons at the bottom of the discharge arms and screw discharge arms on to pumps.

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## 11.0 Installation of Chamber - Section E cont.

### Installing pumps and high level alarm in chamber

33



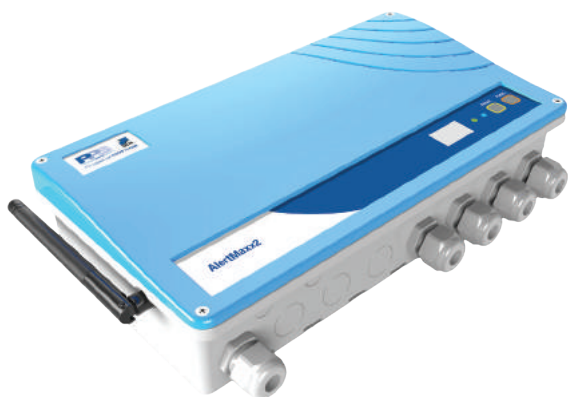
Fill chamber half full with water.

34



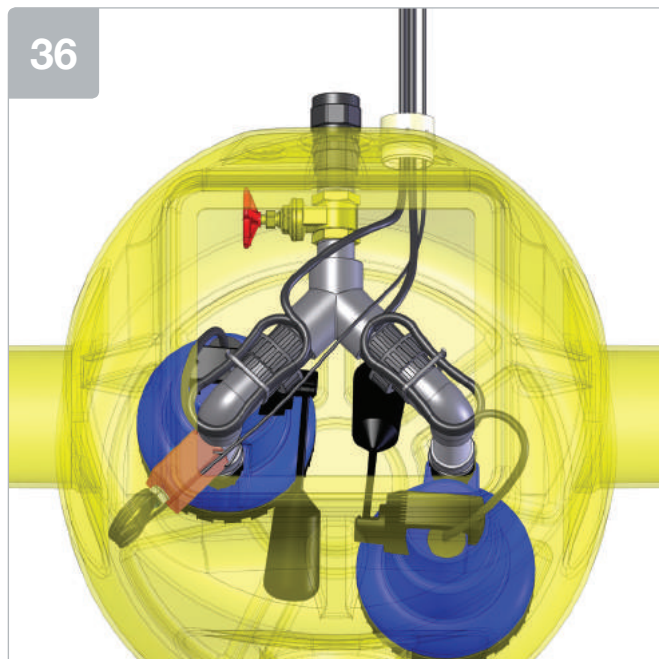
Lower pumps in to chamber. Ensure 'O' rings are correctly seated in unions and screw discharge arms to 'Y' piece manifold.

35



When installing an AlertMaxx2 high level alarm, refer to the high level alarm installation instructions.

36

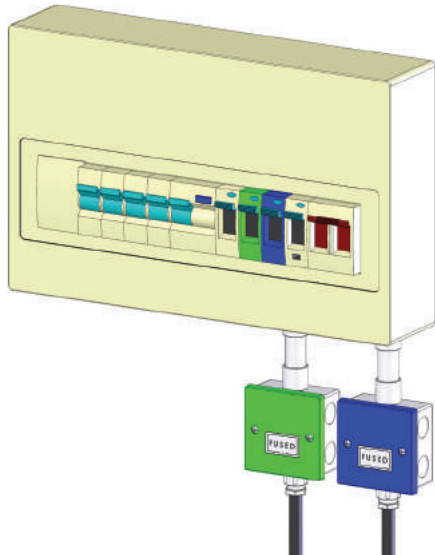


Pull pump and high level alarm cables through cable duct.

## 11.0 Installation of Chamber - Section E cont.

### Installing pumps and high level alarm in chamber

37



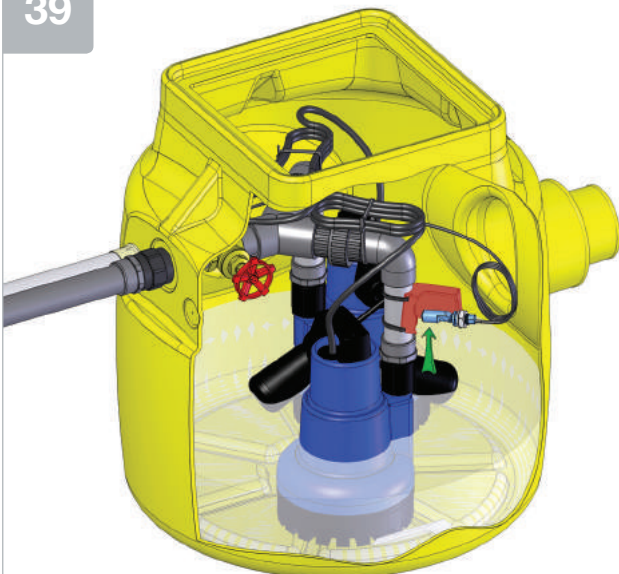
Isolate main supply and connect each pump to a separate non-switched fused spur. When installing an AlertMaxx2, follow the wiring diagram on page 22.

38



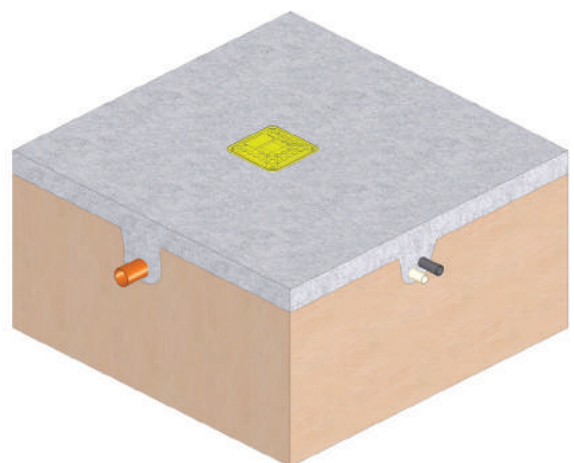
Turn mains supply on and lift each pumps float arm to test water is discharging correctly.

39



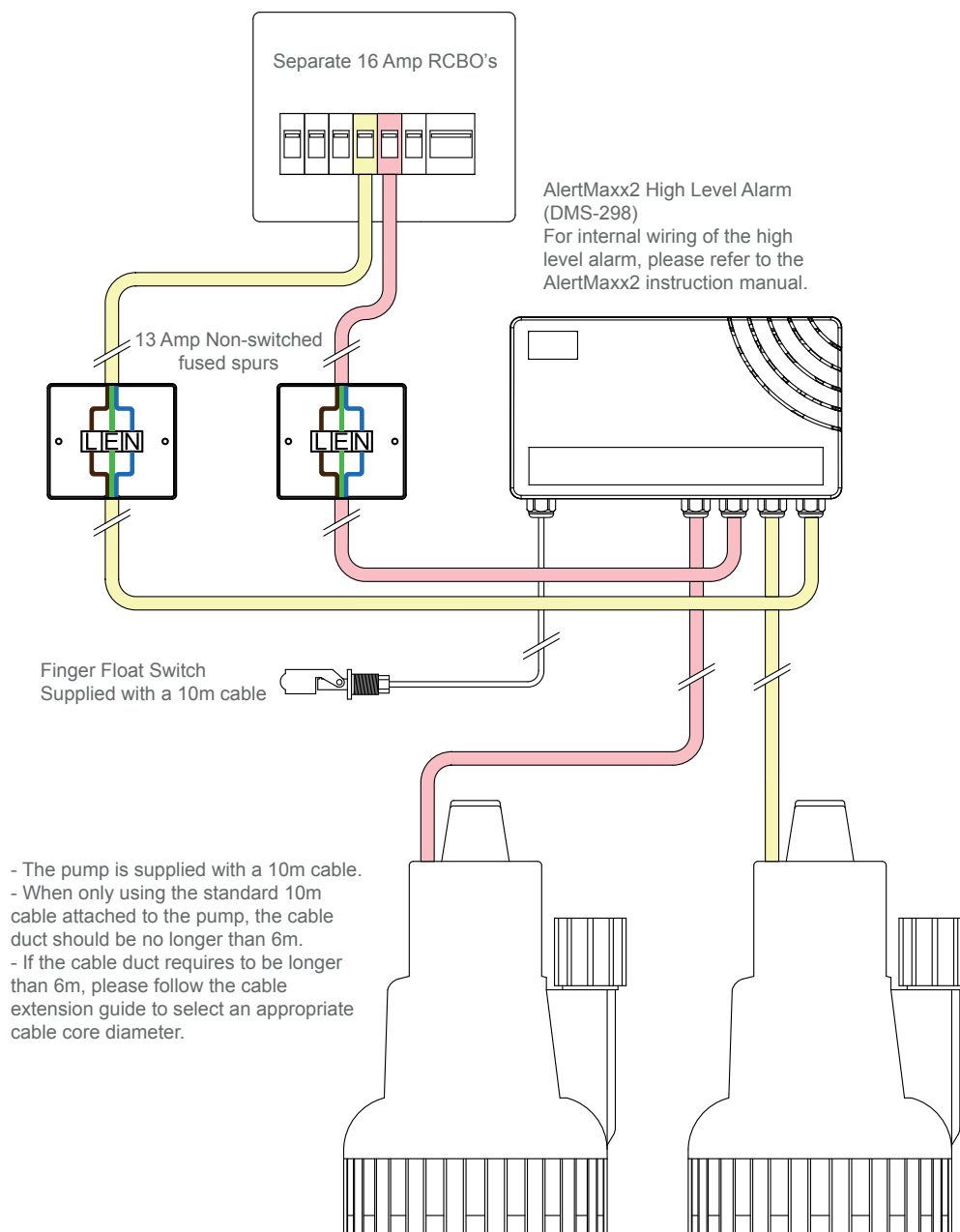
To test float switch, refer to the high level alarm installation instructions.

40



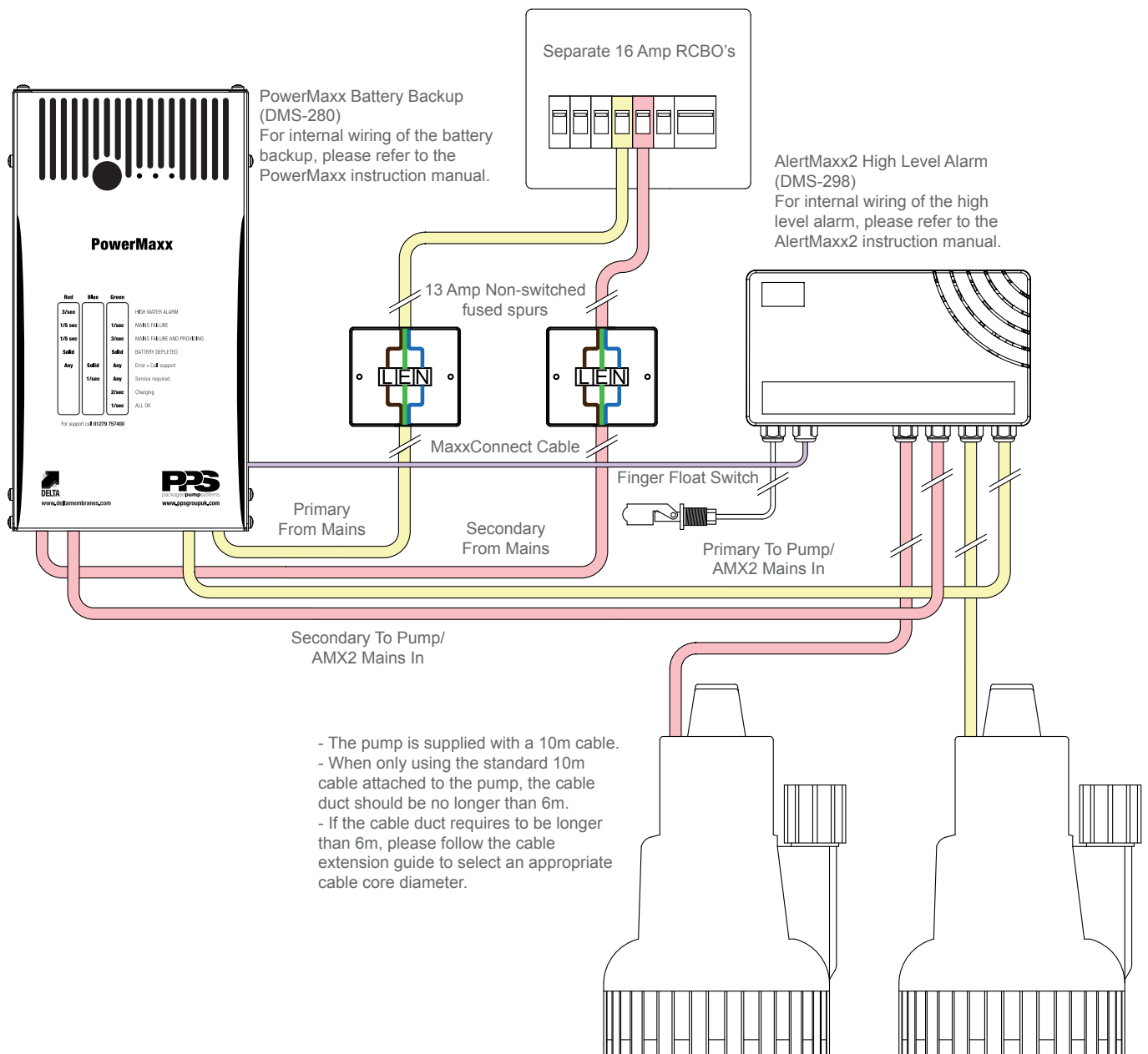
Re-fit temporary site cover to protect the pump station.

## 12.0 Wiring Diagram (inc. AlertMaxx2)



The electrical installation must comply with the requirements of  
BS 7671:2008 'Requirements for  
Electrical Installations' incorporating amendment 3:2015

## 12.0 Wiring Diagram (inc. AlertMaxx2 & PowerMaxx)



**The electrical installation must comply with the requirements of  
BS 7671:2008 'Requirements for  
Electrical Installations' incorporating amendment 3:2015**

# Delta Dual V3

## 13.0 Maintenance

Sump pumps must be maintained. We recommend a qualified engineer examines and services equipment every year. Pumps running frequently due to higher water table, water drainage, or weather conditions should be examined more frequently, we recommend every 6 months. Sump pumps, being mechanical devices, may fail if not maintained which could lead to a flooded basement and costly repairs.

Regular servicing of sump pumps will increase efficiency and extend the life of the pump. All Delta Membrane pump systems can be maintained by our partners, Packaged Pump Systems (PPS) or installing contractor.

## 14.0 Health and Safety

In order to minimise the risk of ill health or accidents when installing and/or servicing pump chambers, workers must be fully trained, competent and follow the health and safety guidelines below:

- Do not work without a risk assessment being in place.
- Work in accordance with the control measures identified in the risk assessment.
- All personnel must be vaccinated against diseases to which they may be exposed to, i.e. Tetanus, Polio, Hepatitis A&B, etc.
- At the time of writing, due to there being no vaccine against leptospirosis/weil's disease, where rats may be present, ensure appropriate personal protective equipment (skin protection) is worn and ensure any cuts or abrasions are fully covered.
- There should be no eating or drinking during works and only afterwards following a change of clothing and washing.
- Ensure electrical power to the pump is turned off/isolated before carrying out installation or maintenance.
- A suitable first aid kit must be close to hand.

## 15.0 Guarantee

The Dual V3 pump chamber is offered with an 18 month component guarantee. This guarantee only covers any defects in workmanship, construction or material. This guarantee does not cover, defects caused by incorrect installation, installer error, abnormal working conditions, misuse or neglect.

Pump chambers that have not been commissioned have a 18 month component guarantee from date of delivery. Pump chambers that have been commissioned by Packaged Pump Systems (PPS) have an 18 month component guarantee from date of commissioning.

Any defects or malfunctions should be reported to Delta Membranes immediately to avoid any damage to other components. All broken components must be sent to Delta Membranes at the customers cost.

To make a pump warranty claim, please visit: [www.ppsgroupuk.com/servicing/pump-warranty-claim](http://www.ppsgroupuk.com/servicing/pump-warranty-claim)

To make an accessory warranty claim, please visit: [www.ppsgroupuk.com/servicing/accessory-warranty-claim](http://www.ppsgroupuk.com/servicing/accessory-warranty-claim)

We exclude all liability for any consequential or other damage or losses which may occur. We will not be liable if the pumping system fails due to it having been incorrectly specified (e.g. where a pump is subjected to flow rates higher than recommended or where a pump is used to discharge inappropriate fluids/solids, such as building debris or materials).

## 16.0 Troubleshooting

Please ensure the installation process has been completed thoroughly and all steps have been followed correctly.

Use the table below to assist with troubleshooting and if problems still occur, please contact the PPS Technical Department on **01279 757400** from 9:00am - 5:00pm or email **info@ppsgroupuk.com**.

Fault	Cause
Water leaking from discharge arms.	<p>'O' rings missing or not installed correctly in unions.</p> <p>PTFE tape not applied to male irons on discharge arms when attached to pumps.</p>
Pump isn't running.	<p>Pump hasn't got power - check wiring with reference to section 12.0 wiring diagram.</p> <p>Float arm isn't lifting - check float arm is free moving and not catching on chamber or other pump - make sure pumps are positioned as diagram 38.</p> <p>Float arm not turning on pump - can you hear a click when lifted slowly? If not, call PPS for further assistance.</p>
Pump running but not pumping water or discharging very slow (more than 40 seconds to empty chamber).	<p>Gate valve isn't open or partially closed - turn valve anticlockwise to open.</p> <p>Pump is air locked - make sure there is a level of water to the top of the pumps, remove pump from union and lower back into water, lift float arm to activate pump before reconnecting to discharge arm.</p> <p>Discharge pipe is blocked - a drainage company is required.</p> <p>Pump impellor is jammed - turn off power and isolate pump, remove pump from chamber, unscrew pump base using Torx screwdriver and free impellor.</p> <p><b>WARNING! - Insure mains power and pump is isolated before taking pump apart and seek advice from a qualified electrician.</b></p>
Pump is tripping.	<p>Pump is wired incorrectly or not on a separate supply - refer to section 12.0 wiring diagram.</p> <p>Pump impellor is jammed - turn off power and isolate pump, remove pump from chamber, unscrew pump base using Torx screwdriver and free impellor.</p> <p><b>WARNING! - Insure mains power and pump is isolated before taking pump apart and seek advice from a qualified electrician.</b></p>
High Level Alarm not functioning.	Refer to the high level alarm installation & operating instructions.

Notes

Notes

