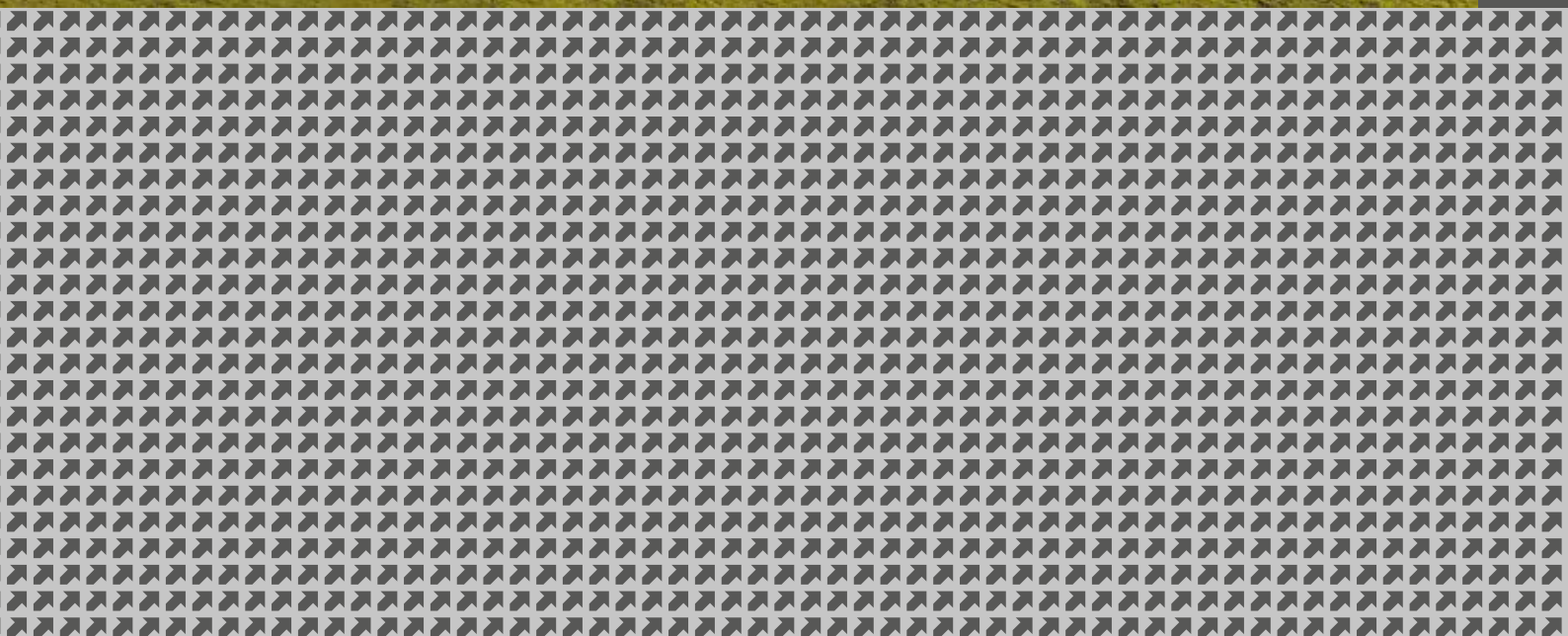


Delta Membranes

# Pumps and Drainage Systems

INNOVATION | MANUFACTURER | DESIGN | SOLUTION



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## ABOUT US

# Delta Membranes Systems Limited

Delta Membrane Systems Limited is a leading supplier of structural waterproofing systems, basement drainage systems (sump pumps) and the UK's leading manufacturer of Type C, cavity drained membranes.

Delta Membrane Systems Limited provides a full range of waterproofing solutions suitable for all new, retrofit and refurbishment projects.

Our comprehensive Ground Gas Protection membranes are designed to deal with all ground gases, contaminants, and waterproofing related projects.

With over 128 years of manufacturing experience Delta is an impeccable partner on every project. Delta's trusted Technical Team provide the best solutions for architects, engineers, developers, and homeowners to protect properties against the ingress of water and damp. We help from concept to completion. Our hands on approach and knowledge are what sets us apart.

Delta offers a comprehensive range of Packaged Pump Stations which are suitable for the evacuation of Ground water, Surface water and Foul water. In addition, we offer bespoke chambers for larger projects.



## INNOVATION MANUFACTURER DESIGN SOLUTION



We have a dedicated, multi-disciplinary team creating, innovative, robust, and reliable waterproofing solutions. We strive for excellence and manufacturing synergy, utilising each team member's individual skills and own unique approach on design, collaborating to achieve exceptional results.



The Delta Specification team works with architects, designers, contractors, and engineers. Our team provides full consultation services, including CSSW Specification Reports. We offer advice on how Delta specifications can promote the successful outcome of any project.

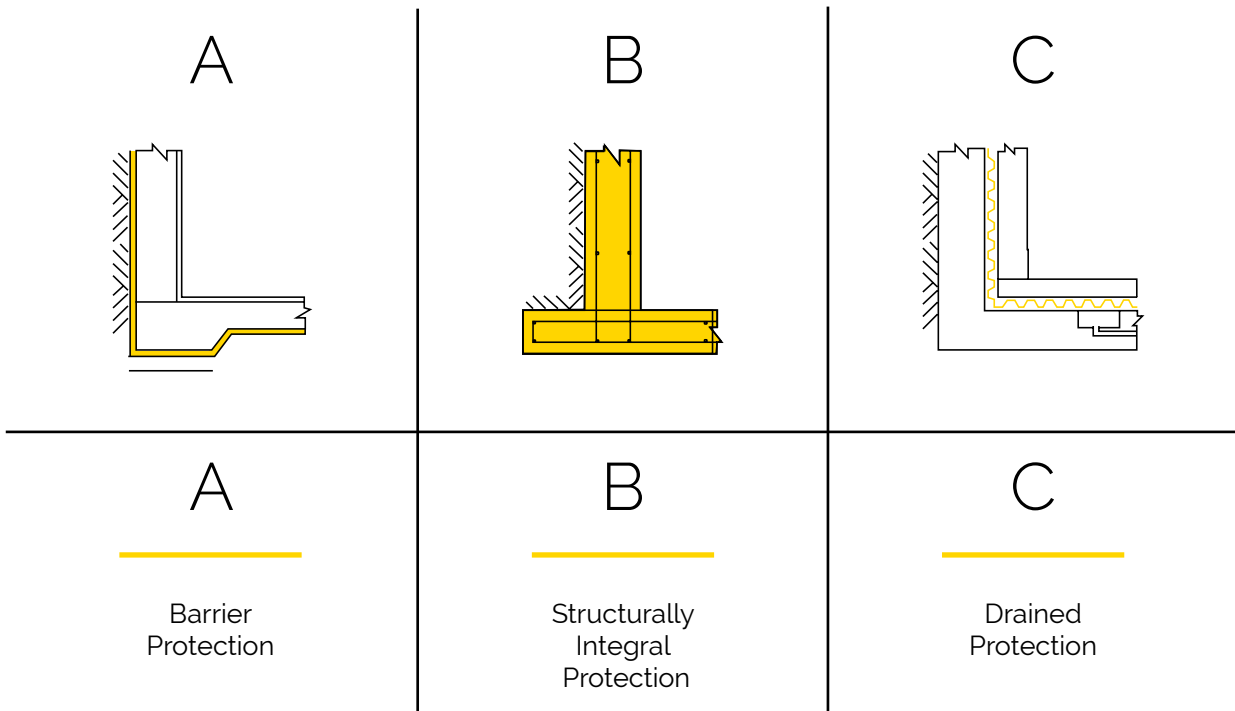


With extensive experience in the field of structural waterproofing, we draw upon knowledge and expertise to offer totally flexible on-site support. As part of our commitment to innovate through the development of best practice, our on-site support will complement any existing design and installation team. We aim to help support and develop the skills of your technicians and, if required, will also provide bespoke on-site training for your technical teams.

# Types of Waterproofing

There are many different approaches to structural waterproofing. The construction methods will in part contribute to the specification of types of waterproofing systems along with a full assessment of risk based on-site investigation, which will determine the overall structural waterproofing strategy.

## Structural waterproofing falls into 3 types



## BASEMENT DRAINAGE

A key component of a Type C, Drained Protection System is the drainage system. Often referred to in the industry as 'basement drainage'.

Type C, Cavity Drained Protection systems are water management systems. The Type C System manages water that penetrates the external shell of a structure by collecting it in a cavity formed between the external wall and an internal lining/wall. There is permanent reliance on this cavity to collect ground water seepage and direct it to a suitable discharge point. For Type C, Cavity Drainage Systems to function as intended, water ingress should be removed by a gravity drain/gravity drainage or mechanical pumping.



BS 8102:2022 gives recommendations and provides guidance on methods of dealing with and preventing the entry of water from external sources into structures that are partly or wholly below ground level.

It covers the use of:

- a) Waterproofing barrier materials applied to the structure
- b) Structurally integral watertight construction
- c) Drained cavity construction

Those responsible for the overall waterproofing design should be identified at the planning stage or as early as possible. All decisions made by others that might have an impact on the waterproofing design should be brought to the attention of the waterproofing specialist, design team and installing contractors. Final decisions and any recommendations should be approved by those taking overall responsibility for the design of the waterproofing.

BS 8102 further covers (but is not limited to):

- Types of construction
- Water table classification
- Scope and limitations
- Site evaluation
- Water-resistant design philosophies
- General construction issues
- Remedial measures



## British Standard 8102:2022 (Protection of Below Ground Structures Against Water Ingress. Code of Practice).

### NHBC Chapter 5.4

gives guidance on technical requirements for the waterproofing of basements and other structures below, or near to ground level, (these include but are not limited to):

- Design standards
- Compliance
- Statutory requirements
- Provision of information
- Waterproofing
- Ground conditions
- Structural stability
- Design considerations
- Thermal insulation and vapour control layers
- Waterproofing systems and surface finishes
- Rainwater drainage
- Handling, storage and protection



## DESIGN AND BUILD PHILOSOPHY

### Type C

One of the primary requirements of waterproofing design is the prevention of water ingress and the management of water and water vapour movement through and out of a structure. This ethos is identical for any below ground areas of a structure.

Type C waterproofing protection manages water that penetrates the external shell of a structure by collecting it in a cavity formed between the external wall and an internal lining/wall. There is permanent reliance on this cavity to collect ground water seepage and direct it to a suitable discharge point.

A Waterproofing Designer's philosophy defines what they wish to accomplish in the design of their waterproofing system and which principles they will use to do so. Fully assessing the risks and identifying a robust and suitable design philosophy is an important aspect when designing a continuous system, as this will not only directly impact in how users install the system but also in future maintenance which will directly impact on the property owner.

Continuity is crucial for successful construction and waterproofing. BS 8102:2022 places additional emphasis on good planning, correct sequencing and that site management processes are in operation. Waterproofing measures should be designed on the basis that during the life of the structure water might come against any part of the structure that is at or below ground level or is earth retaining. Waterproofing should therefore be continuous.

To ensure waterproofing designs are durable and fit for purpose, correct detailing and implementation of penetrations are an important discipline. Whether pre- or post- construction these should be carefully detailed to minimize the risk of water ingress.

As part of a waterproofing solution Designers are required to include assessment of remedial treatment of their designs and be included as a contingency measure. As with all elements of construction, workmanship and quality control are crucial in designing for success.

As with all elements of construction, workmanship and quality control are crucial in designing for success.

BS 8102:2022 recognises the importance of transparency between manufacturer and installer in verifying compatibility between products.

A robust quality assurance process/ integrity testing should always be conducted to avoid any potential mistakes.

Considerations for effects of climate change, burst water mains, flooding, etc should be included in all designs.

Type C systems within the industry are considered one of the safest forms of waterproofing.

## DESIGN AND BUILD PHILOSOPHY

# Drainage Design

The purpose of a sump chamber is to collect and discharge (to a suitable evacuation point) any water ingress which has collected behind the cavity drain membrane system.

Basement drainage 'pumped systems' should be engineered to cope with worst-case scenario of water ingress. It should always be assumed that ground water is expected to rise against any structure at some point during its service life. Waterproofing designs should always be to the full height of the external ground level with consideration to the connection with the dpc 150mm above ground level. This may be within the cavity or dressed externally with a flashing.

Drainage channels ideally should be installed in rebates and laid level at the wall/floor junction around the perimeter of the structure to allow water to drain by hydraulic gradient and to discharge passively into sump chambers. For larger projects, cross-floor span channels should be included in designs.

Inspection and access ports should be included in the perimeter drainage channel design. These allow for inspection, maintenance, and future cleaning of the drainage system.

The number of sump pump systems required for each project will (in part) depend on the overall basement size, perimeter, and the method of drainage. Type C membranes should be installed above drainage channels.

For each sump system, we recommend two pumps to reduce risk in case of mechanical failure of the duty pump. In the event of failure of the duty pump, the secondary back up pump will take over discharging water ingress, ensuring the basement drainage is functional, significantly reducing the risk of potential flooding.

For each sump system,  
we recommend two  
pumps to reduce risk  
in case of mechanical  
failure of the duty pump.



Basement drainage systems are further enhanced with additional protection with high level water alarms, control panels and battery backups as a second line of defence. A high-level water alarm will notify a building owner/occupier if the sump pump system has stopped working. Battery backups will maintain power supply to sump pumps in the event of a power outage.

Multi-level systems should be detailed to allow water ingress to bypass any intermediate suspended floor slab(s) to reach drainage installed at the lowest level of the structure. For multi-level systems we recommend the additional use of a Type A or Type B waterproofer to offer a continuous waterproofing approach.

Design considerations should be given to the serviceability and maintainability of the system, such as maintainable perimeter drainage and servicing of sump pumps.

# BASEMENT DRAINAGE

## Groundwater

### Ground Water

Groundwater is water that exists underground in saturated zones beneath the land surface.

A water table is an underground boundary between the soil surface and the area where groundwater saturates spaces between sediments and cracks in rock. Water pressure is equal to atmospheric pressure in any given vicinity.

The shape and height of water tables is influenced by the land surface that lies above it. A water table will curve up under hills and drop under valleys. The groundwater found below the water table comes from precipitation that has seeped through surface soil. Water tables can and will vary even within the same area!!

Groundwater packaged pump stations should be considered for all basements/below ground structures.

### Ground Water Drainage

Drainage systems should be designed in accordance with relevant codes and standards.

Waterproofing solutions should be designed to cope with worst-case scenario of water ingress. It should always be assumed that groundwater is expected to rise against any structure at some point during its service life. Waterproofing designs should be designed on the basis of water to the full height of the retained ground.

Protection against water ingress from the following sources should be considered:

- the water pressures acting on the external retaining wall system
- the water pressures below the base slab or raft

### PUMP CAPACITY CALCULATIONS/GUIDELINES

Where Perimeter Drainage Channel is incorporated into a Type C, cavity drained system we recommend a minimum of 1 sump per 50 linear metres of channel. For systems incorporating sub floor drainage, such as modular drainage, we recommend a minimum of 1 sump per 150m<sup>2</sup> floor area.

Accurate prediction or evaluation of groundwater inflows into below ground structures is of foremost importance.

Where water ingress cannot be accurately measured, the flow rate calculation for water seepage should be based on 0.1l/s per 100m<sup>2</sup> of basement floor and wall area for basements situated above the water table.

Where water ingress cannot be accurately measured, the flow rate calculation for water seepage should be based on 0.2l/s per 100m<sup>2</sup> of basement floor and wall area for basements situated below the water table. We recommend allowing a safety factor of 5 when selecting a duty pump.





# BASEMENT DRAINAGE

## Surface Water

### Surface Water

Surface water occurs when rainwater falls. Surface water is located on top of land and should not be confused with groundwater.

Surface water can be measured as annual runoff. This includes the amount of rain and snowmelt drainage left after the uptake of nature, evaporation from land, and transpiration from vegetation.

Surface water flooding occurs when the rainwater does not drain away through the normal drainage system or infiltrate the ground, but instead lies on or flows over the ground. This type of flooding is usually short lived and associated with heavy downpours of rain, thunderstorms, etc.

Often there is limited advance notice of surface water flooding owing to its localised nature.

Surface water flooding is the most widespread flood risk in England, affecting 3.2 million properties at risk of flooding (62% of properties at risk of flooding). It is caused by a combination of factors including intense rainfall, soil permeability, topography, drainage system capacity and maintenance, and physical barriers such as buildings.

### Surface Water Drainage

It should be expected, if a building footprint is to remain unchanged, it is acceptable to adapt the existing surface water drainage system.

We recommend where expected surface water from an area exceeding 12m<sup>2</sup> (such as lightwell or patio) that a dedicated packaged pump station be incorporated to the project.

Drainage systems should be designed in accordance with relevant codes and standards.

**Fig.01** Constant rate rainfall intensity or an event of 5 minutes duration probability of exceedance of 0,002 in 1 year (a return period of 500 years)

### PUMP CAPACITY CALCULATIONS/GUIDELINES

A one-hundred-year flood is a flood event that has a 1% probability of occurring, or being exceeded in any given year.

The flow rate calculation for the collection and discharge of surface water should be based on a 5-minute storm event, per one-hundred-year flood event, along with the storage capabilities of a sump pump chamber for a 24 hour period.

Calculations should be based on surface area x L/s x m<sup>2</sup> x length of flood event x capabilities of sump pump chamber.

Rainfall intensity is based on a 1 in 500-Year storm, as per BSEN 752:2008.

Sufficient storage in each pumping station should offer emergency storage for a 5-minute peak storm duration.



# BASEMENT DRAINAGE

## Foul (Grey) Water

### Foul Water

Calculating Foul Water pump station requirements.

Foul water is wastewater from the kitchens, bathrooms and/or utility rooms, which discharges into the mains drainage system.

Foul (grey) water packaged pump stations typically have larger chambers than those used for collecting surface and groundwater. Foul packaged pump stations are supplied with one or two automatic pumps to move wastewater from a lower elevation to a higher mains drainage system (when gravity flow is not an option).

Foul drainage and ground/surface water drainage should always be kept as separate systems.

Basement pumps are designed to only take ground and some surface water (subject to surface area). Combining groundwater from a cavity drained waterproofing system directly into a foul system, (either foul sump pump system or foul drains), is not recommended or advised\*.

All Delta Foul Packaged Pump Stations have inbuilt storage, the storage is calculated based on the facilities being discharged into the Foul Packaged Pump Station. The storage is calculated from the invert level to the base of the chamber. A high-level alarm is also incorporated to ensure that if the storage capacity is ever exceeded, a warning system is in place before the remaining capacity inside the sump and drainage system becomes compromised.

### Foul Water Drainage

Foul pumping chambers should be specified to hold 24-hour inflow.

When housing a foul packaged pump station, the inlet drain should not be submerged.

Drainage systems should be designed in accordance with relevant codes and standards.

Foul Water pump stations should be vented to external atmosphere in accordance with Approved Document, Part H Building Regulations\*\*.



\*For further guidance, please refer to Delta Technical Guidance Note TGN 003 – Combining Groundwater Sumps & Foul)

\*\*Additional information can be found on Delta Technical Guidance Note TGN 007 – Guidance on Venting Foul Pump Systems

## Storage Capacities

Foul packaged pump stations are typically chambers with mechanical pumps which move foul water from a lower elevation to a higher “effective discharge point” such as mains drainage (when gravity flow is not an option). Consideration to flow paths and the potential effects of flooding resulting from blockages, pump station failure alone or surcharging are essential.

Storage capacities of foul water packaged pump stations should, at the discretion of the designer and calculated in accordance with BS EN 12056-2 Gravity Drainage Systems inside buildings. Sanitary pipework, layout, and calculation. Using this basis, a three-bedroomed basement (where all) bedrooms require provisions for removal of foul water, the foul water packaged pump station should allow for 300 litre removal from the first bedroom, with an additional 150 litre capacity for each subsequent bedroom – an example would be a two-bedroomed property (where all bedrooms) require the provision for removal of foul water which would equate to 450 litre storage capacity chamber, below invert level.

Storage capacities of foul water packaged pumping stations should be in accordance with Part H Building Regulations – Drainage and Waste Disposal. In accordance with clause 2.39 of Part H, ‘Where foul water drainage from a building is to be pumped, the effluent receiving chamber should be sized to contain 24-hour inflow to allow for disruption in service. The minimum daily discharge of foul drainage should be taken as 150 litres per head per day for domestic use.

Using this basis, a self-contained property where all wastewater appliances require provisions for removal of foul water via pump, the foul water packaged pumping station should allow for 150 storage capacity per person. The opposite table indicates the occupancy levels from which the storage capacity should be calculated.

## PUMP CAPACITY CALCULATIONS/GUIDELINES

When specifying a foul water package pump system, we recommend adding the total number of fixtures (e.g., w/c(s), bath(s), shower(s), washing machine(s), dishwasher(s), etc) that will drain to the foul system.

Flow rates should be calculated at worst case scenario.



No. Bedrooms	Occupancy	Storage Volume
1	2	300 litres
2	3	450 litres
3	5	750 litres
4	6	900 litres

For larger properties, take number of bedrooms, plus 2 for total occupancy

## BASEMENT DRAINAGE

# Perimeter Drainage Channel

Perimeter Drainage Channel is a component part used within a Type C Cavity Drainage System for collection and control of water which ingresses. Delta Channel is a distinctive yellow, PVC drainage conduit designed to manage water ingress and hydrostatic water pressure in basements and below ground structures.

Delta Channel is bedded into a preformed rebate (recess/gully) at the floor/wall junction and is suited for use in conjunction with the Delta Membrane range. Preformed holes within the Delta Channel allow for water to enter, then drain into a suitable packaged pump station or suitable discharge point. Access points within the Delta Channel should be installed to allow for maintenance and inspection.

When using drainage channels these should be set directly below the level of the floor cavity membrane, so that the full drainage capacity of the system is available.

We recommend one Packaged Pump System should be installed for each 50 linear metres of Channel; the length of each Channel running to the Sump should not exceed 25m.

Delta Channel is supplied in 2 metre lengths and is available with or without an upstand. Delta Channel is 80 mm wide and 50 mm deep.

The Delta Channel is joined by a range of accessories such as Straight Connectors, Corner Pieces, T Pieces and Drainage Channel End Caps. Where it is not possible to recess the channel into the structural slab we recommend speaking to Delta's Technical Team.

A modular drainage system may also be adopted or combined with a Delta channel system.

We recognise that every project has different requirements and therefore our Technical Team work together as one, to provide tailored solutions that meet specific needs. We manufacture all our packaged pump stations in-house from design, through to assembly and testing. Our Technical Team will help from specification to installation and maintenance.

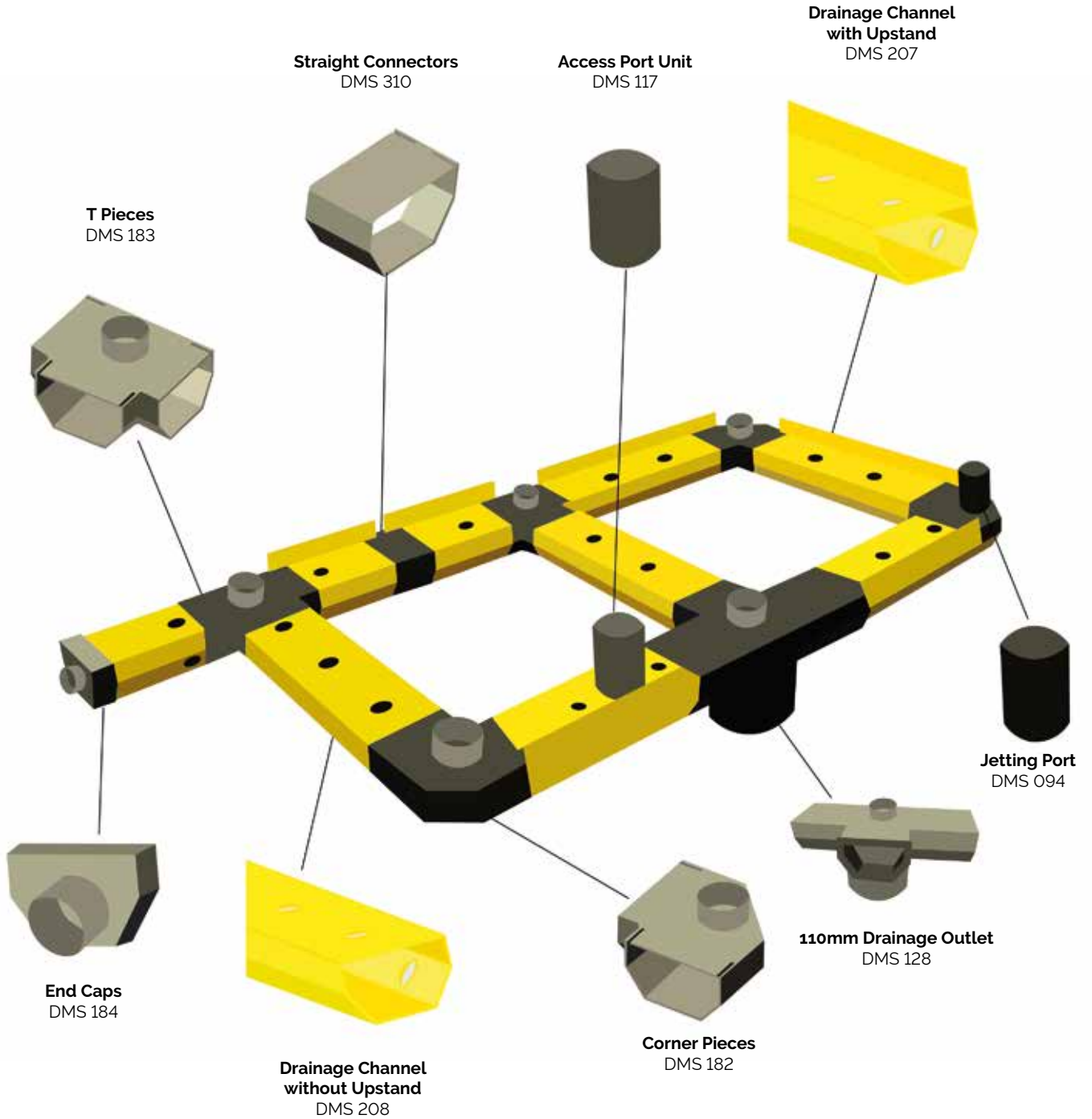


We recognise that every project has different requirements and therefore our Technical Team work together as one, to provide tailored solutions that meet specific needs.

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# BASEMENT DRAINAGE

## Drainage Configuration





# BASEMENT DRAINAGE

## Free Lime

BS 8102:2022 recognises the requirement of a Type C Waterproofing System or Cavity Drained System to be maintainable.

Free lime and mineral salts leach from new construction by groundwater ingress, this then deposits itself within the cavity drainage system (behind and underneath membranes), within perimeter drainage channels and particularly within sump pump chambers and around the sump pumps themselves. The build-up of free lime within the Type C System will eventually cause a failure of the waterproofing system.

It is important when designing Type C, Drained Protection Systems that the issue of, and potential issue of free lime and leachates is considered at the earliest stage. There are several ways to reduce the impact of free lime on Cavity Drainage Systems and these include:

- Inclusion of crystallisation systems, as a primary waterproof coating to structure
- Detailing all construction and dry pack joints
- Application of an anti-lime coating
- Maintainability of Type C System and ongoing maintenance
- Inclusion of a Sump Pump Monitoring System

Inspection and access ports should be included in the perimeter drainage channel design. These allow for inspection, maintenance, and future cleaning of the drainage system.

The use of inspection ports within a Basement Waterproofing Design is key for maintenance or the ability to carry out periodic inspection. When new concrete is introduced to structures, there is a risk of excess free lime leaching out during the curing process in the form of calcium hydroxide. This free lime, if untreated, can enter the Cavity Drainage System which can impede the flow of water and cause sump pump failure.

We recommend during a Cavity Drain System installation that a silicification pre-treatment of concrete be used to reduce the risk of free lime build up. Attention should be observed to dry pack joints often formed between the existing foundation and new concrete underpinning which are classic areas for free lime to infiltrate the structure and should be 'locked' down.

With Delta's yellow channel, 'free lime' can easily be identified and treated in the perimeter channel. Free lime is white in appearance and can build up to a solid mass. With Delta's yellow channel this can easily be visualised during inspection and appropriate action



## BASEMENT DRAINAGE

# Understanding Pump Flow Curves

A pump performance curve (also known as a Q/H curve) helps you select the right packaged pump station for the specific needs of your project. Pump performance curves typically include performance metrics of sump pumps based on pressure, flow, power and impeller.

Understanding each pump's capabilities under specific operating conditions, ensures the right pump is selected.

Pump performance curve charts offer the required information needed in determining a pump's ability to produce flow under the conditions that affect pump performance. Reading a pump curve accurately gives guidance on selecting the right pump based on application variables such as:

- Head (water pressure)
- Flow (the volume of foul/ground/surface water required to be moved in a given time period)

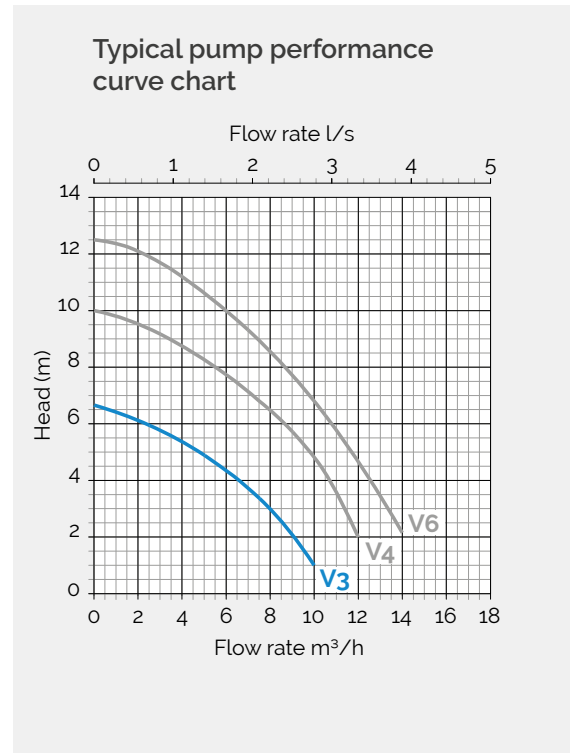
A pump (foul/ground/surface water) has to produce enough differential pressure to overcome head loss created in pipe systems (typically friction, valves, and fittings). The pump curve shows the two performance factors on the X,Y axis (flow rate  $m^3$ /head (m)/flow rate L/s) so you can see the volume of fluids a pump can transfer under various conditions.

Included in this curve chart are variables such as:

- Rev Per Minute (RPM)
- Impeller of pump
- Power
- Efficiency

Once the total pumped head and flow rate have been calculated, refer to the pump curves (found by each Delta Pump) and select the pump that meets the duty at the point of best efficiency (typically in the middle third of the pump curve with an allowance of 10% +/-). It is important that each pump meets the duty as these systems should not be designed on a duty/assist basis.

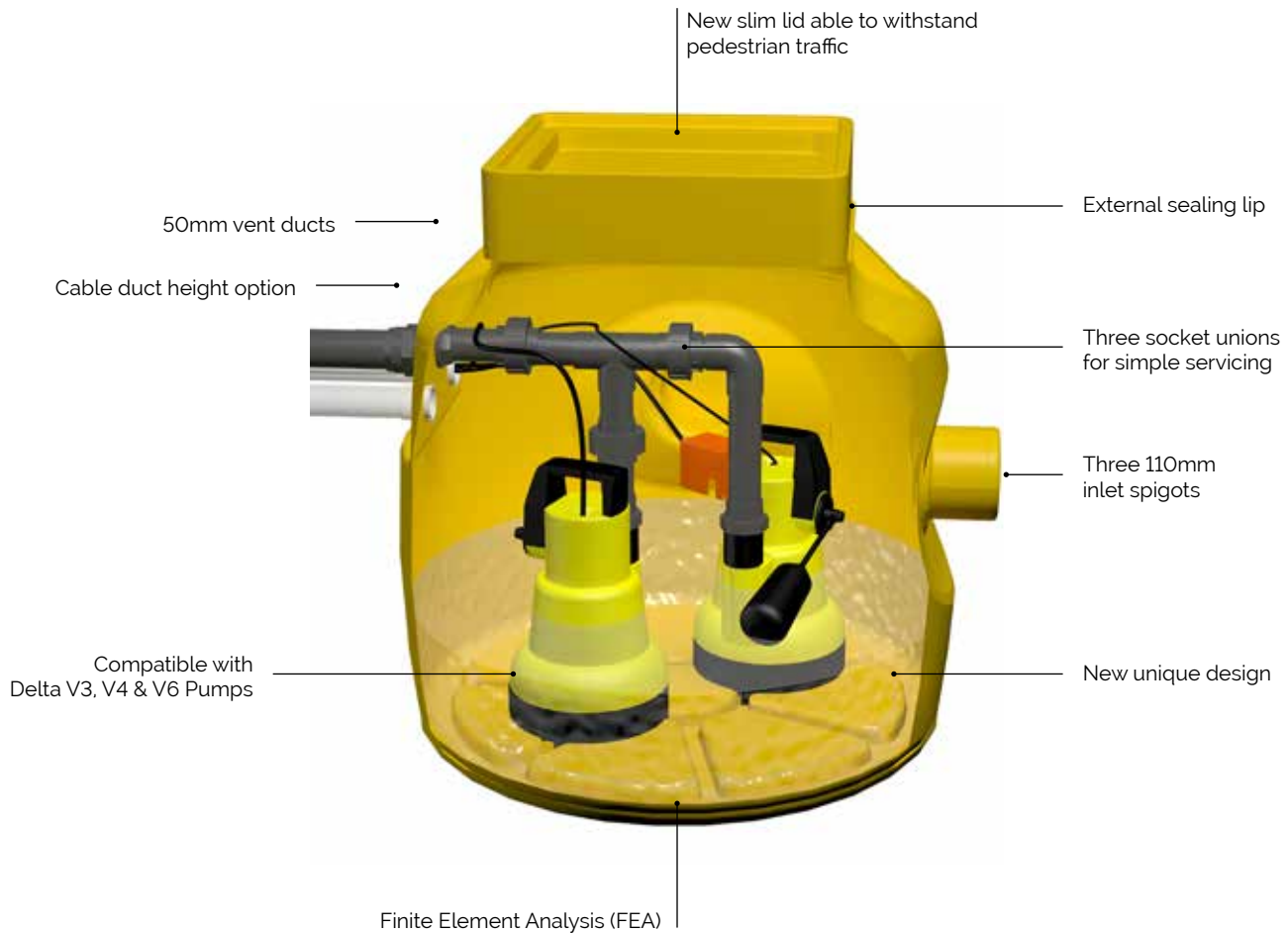
Sump pump stations should always be located at the lowest point within a structure, allowing collection of penetrating water by gravity and then lifting/pumping this to a suitable external discharge point.



Understanding each pump's capabilities under specific operating conditions, ensures the right pump is selected.

Pump performance curve charts offer the required information needed in determining a pump's ability to produce flow under the conditions that affect pump performance.

# Delta 695 Chamber - Groundwater/Surface water



## Description

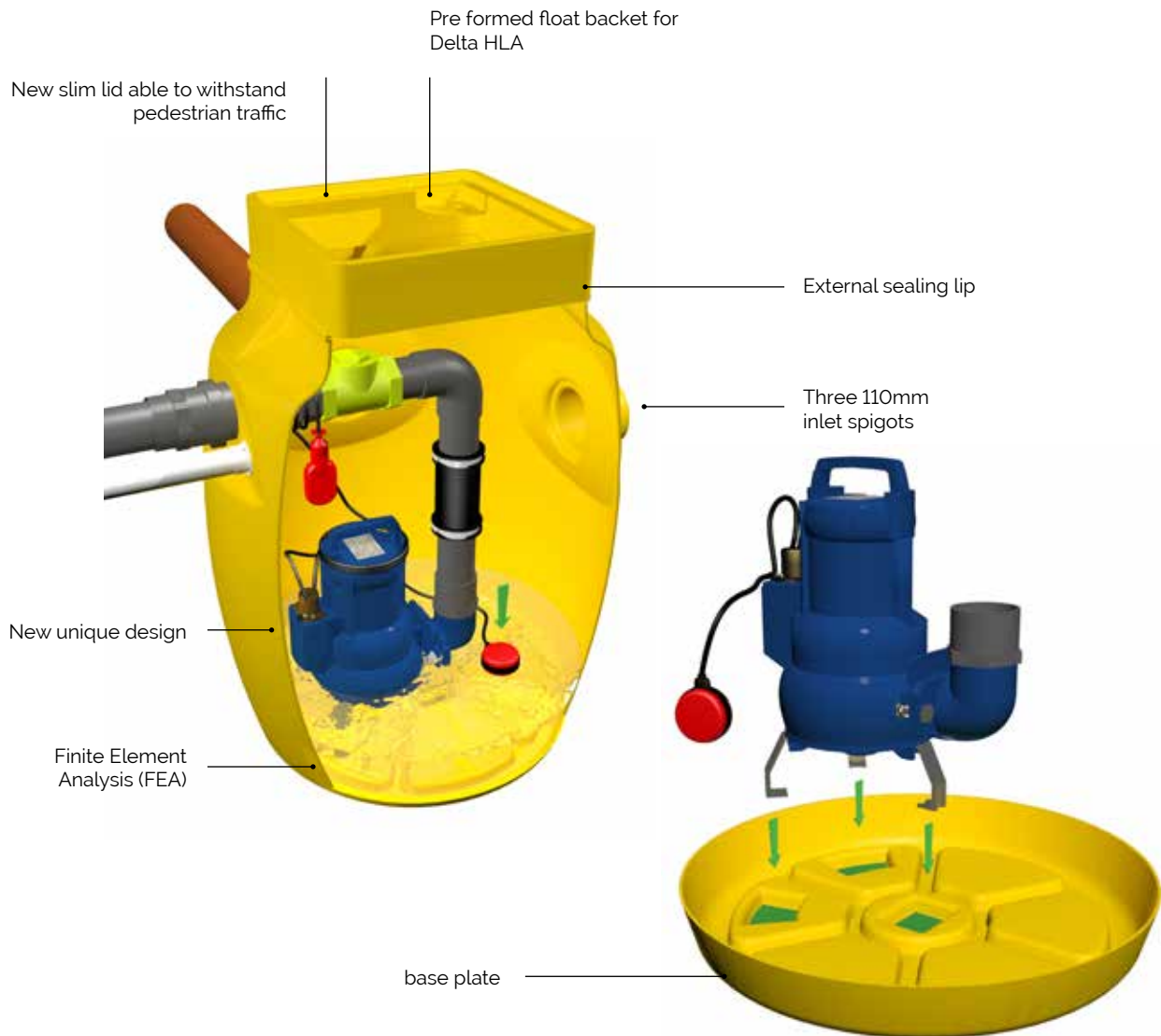
The Delta 695 chamber offers the next level in basement sump chambers. Its compact new size doesn't compromise of capacity or durability. This specially designed sump chamber has many advantages over previous models. The versatility of the Delta 695 chamber is unmatched and is compatible with all Delta V3, V4 and V6 sump pumps.

The Delta 695 chamber may be smaller in size, but has big benefits - less excavation costs, less labour costs, less waste disposal costs, less requirement for concrete/steel (when housed).

The Delta 695 Sump Pump Chambers are suitable for ground and surface water collection.

The Delta 695 chamber has been designed to accommodate all varying pump heights of the Delta V3, V4 and V6 sump pumps.

# Delta 895 Chamber - Foul Water



## Description

The Delta 895 chambers are designed for foul and grey water collection. The Delta V3 Foul Packaged Pump Stations are suitable for collecting wastewater from kitchens, bathrooms and/or utility rooms and discharging this into the mains drainage system.

The Delta Foul V3 is an effective way of moving foul/grey water to where it needs to be.

The Delta 895 chamber offers a large storage capacity, not forgetting the all-important cost savings - less excavation costs, less labour costs, less requirement for concrete/steel (when housed).

# SUBMERSIBLE PUMPS

## Delta V3 Submersible Pump

### Description

The Delta V3 Submersible Pump has been specifically designed for below ground application.

Offering elite performance, the Delta V3 achieves high levels of efficiency thanks to its optimised hydraulic systems and reliable motors.

Fitted with a magnetic float switch the Delta V3 provides variable level control and maximum travel stop.

The powerful vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).

A straightforward locking disk enables adaption of the pump to external control systems.

The Delta V3 Submersible Pump is suitable for collecting ground water from a Cavity Drained System.



V3

V4/V6

### Features

- Suitable for ground, surface, storm, and grey water applications
- Maximum flow rate up to 2.9 l/s
- 1.25" BSP threaded pump outlet
- Superior vortex hydraulics for blockage free pumping
- Internal thermal protection
- Designed for easy installation
- Available with float locking disc for manual level control

### Product details

DMS 116-1



## Delta V4 Submersible Pump

### Description

The Delta V4 Submersible Pump is light-weight and corrosion-proof due to its high-quality plastic casing. Thanks to its noise-absorbing, abrasion proof and impact-resistant features, the Delta V4 is a popular choice with waterproofing professionals.

The Delta V4 is suitable for double depth basements with a head height of 8 m.

The powerful Vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).

The Delta V4 is supplied free standing for quick installation.

### Features

- Suitable for ground, surface, storm, and grey water applications
- Maximum flow rate up to 3.3 l/s
- 1.25" BSP threaded pump outlet
- Superior vortex hydraulics for blockage free pumping in critical conditions
- Internal thermal protection
- Designed for easy installation
- Available with float locking disc for manual level control

### Product details

DMS 216-1





# Delta V6 Submersible Pump

## Description

The Delta V6 Submersible Pump is a reliable heavy-duty pump. The Delta V6 is suitable for double and triple depth basements with a head height up to 12 m.

The Delta V6 Submersible Pump is suitable to collect ground water from a 150 m<sup>2</sup> basement and surface water from 12 m<sup>2</sup> of light well area. The Delta V6 Submersible Pump is suitable for pumping of surface water.

The powerful vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).

The Delta V6 is supplied free standing for quick installation.

## Features

- Suitable for ground, surface, storm, and grey water applications
- Maximum flow rate up to 3.9 l/s
- 1.25" BSP threaded pump outlet
- Superior vortex hydraulics for blockage free pumping in critical conditions
- Internal thermal protection
- Designed for easy installation
- Available with float locking disc for manual level control

## Product details

DMS 084-1



# Delta Foul V3 Submersible Pump

## Description

The Delta Foul V3 Submersible Pump is designed as a compact and cost-effective solution for collection of foul and/or grey water from basements, below ground structures and ground floor extensions.

The robust and reliable Delta Foul V3 is an exceptionally popular choice with waterproofing professionals due to its generous sized motor, thermal overload protection and ease of installation.

The powerful Vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation). With a 45mm solids clearance the Delta Foul V3 offers reliable and effective discharging.

The Delta Foul V3 can be supplied free standing or on pedestal mounting for permanent installation.

The Delta Foul V3 Submersible pump is not suitable for collecting ground water from a Cavity Drained System.

## Features

- Maximum flow rate up to 6.3 l/s
- Maximum head (lift height) 12m
- 2" BSP threaded pump outlet
- Includes float, elbow and outlet reducer adaptors
- Trouble free operation
- Free flowing impeller (preventing clogging)
- Corrosion resistant stainless-steel shaft and bi-rotational mechanical seal
- Designed for easy installation
- Available with pedestal mounting

## Product details

DMS E029 (Manual)

DMS 120-1 (Automatic)



## PACKAGED PUMPS

# Delta Dual V3 Packaged Pumping Station



## Description

The Delta Dual V3 packaged pump station has been specifically designed to work in harmony with Cavity Drained Systems to collect Ground Water via a perimeter drainage channel or modular drainage.

Manufactured from superior High-Density Polyethylene (HDPE) this packaged pump station can withstand hydrostatic forces encountered in applications with high water tables. Pumping applications are invariably demanding – typically operating in unsympathetic, arduous, or extreme environments, where quality matters.

The powerful Vortex pump offers innovative design and advanced technology making it extremely dependable even when subjected to continuous use (subject to correct installation).

The Delta Dual V3 pump offers unrivalled capabilities. The Delta Dual V3 sump offers versatility of collecting water from external light wells. The Delta Dual V3 packaged pump station includes chamber, all internal pipe work and two powerful Delta V3 pumps. The Delta Dual V3 pump station is suitable for collecting ground water from a 150m<sup>2</sup> basement and surface water from a maximum 12m<sup>2</sup> light well.

## Features

- Suitable for ground, surface, storm, and grey water applications
- Flow rate up to 2 l/s at 4m head
- Chamber manufactured from superior virgin tank grade HDPE enabling the Delta Dual V3 to withstand hydrostatic forces encountered in applications with high water tables
- All internal pipework is pre-assembled within chamber including non-return valve
- Quick and simple installation
- Supplied with two powerful Delta V3 Pumps
- Suitable for residential, commercial and heritage projects

## Specification

- NBS Specification R18 (Clause 310) Pumping Stations and Pressure Pipelines
- BS 8102:2022 Type C Drained Protection

## Associated products

- Battery backup systems
- High-level alarms
- Remote monitoring
- External pipework
- Pumps
- Access covers
- Additional inlets

## Product details

DMS 164-1



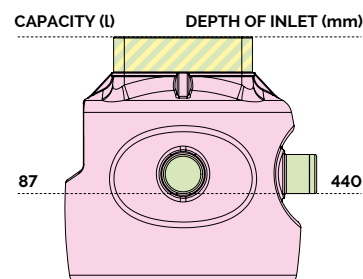
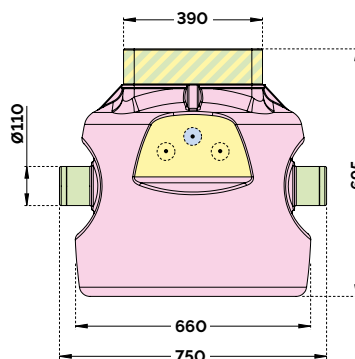
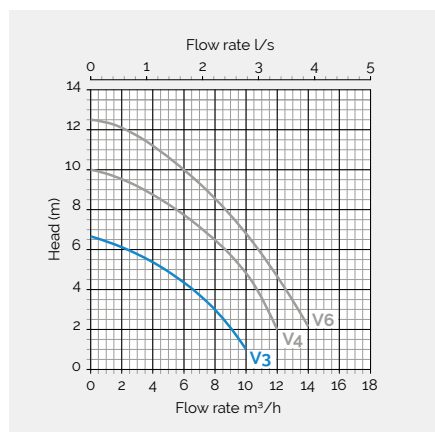
## Technical data

### PUMP SPECIFICATIONS

<b>Pump type</b>	<b>V3</b>
Pump type	Vortex
Control	Automatic
Power supply	230 VAC
Rated current	1.9 A
Motor rating (P2)	180 W
Revs per min.	2800 rpm
Discharge size	1¼"
Free passage	10 mm
Max. vertical	6.8 m
Max. flow rate	2.9 L/s
Max liquid temp.	<40 °C
Cable length	10 m
Weight	5.2 kg



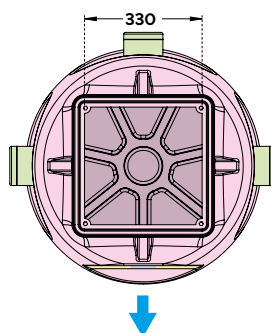
Delta V3 Submersible Pump



All dimensions are in millimetres (mm) and are to the invert level (bottom of pipe). All capacities are in litres (l).

### CHAMBER SPECIFICATIONS

<b>Chamber</b>	<b>Dual V3/4/6 Sump</b>
Material	Tank-grade HDPE
Volume below inlets	87 litres
Clear opening	330 mm x 330 mm
Fixed inlets	3 x 110mm
Discharge	1¼" BSP Class E
Cable duct	2" / 50mm



#### Positioning connections

Discharge only
Inlet location allowed
Inlet, cable ducts or vent allowed
Cable ducts and vents only
No drilling allowed

## Other information

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## PACKAGED PUMPS

# Delta Dual V4 Packaged Pumping Station



### Description

The Delta Dual V4 packaged pump station has been designed specifically to work in unity with the Delta Cavity Drained System (Type C waterproofing) to collect ground water via a perimeter channel or modular drainage.

Delta's robust and distinguished package pumps are capable of diverse applications where quality matters. Using advanced pump design techniques our packaged pump systems are unrivalled.

The Delta Dual V4 offers a higher discharge head to the Delta V3 pump(s). The Delta Dual V4 pump station is suitable to collect ground water from a 150m<sup>2</sup> basement that requires a head height of up to 8 m. The Delta Dual V4 is capable of pumping 12m<sup>2</sup> of surface area in addition to ground water.

The Delta V4 pump station includes chamber, all internal pipework and two powerful Delta V4 Pumps.

The Delta Dual V4 pump station should not be used to collect grey water from showers and hand basins, or foul water from a water closet.

### Features

- Suitable for ground, surface, storm water applications
- Flow rate up to 2l/s at 6.5m head
- Chamber manufactured from superior virgin tank grade HDPE enabling the Delta Dual V4 to withstand hydrostatic forces encountered in applications with high water tables
- All internal pipework is pre-assembled within chamber including non-return valve
- Quick and simple installation
- Supplied with two powerful Delta V4 Pumps
- Suitable for residential, commercial and heritage projects

### Specification

- NBS Specification R18 (Clause 310) Pumping Stations and Pressure Pipelines
- BS 8102:2022 Type C Drained Protection

### Associated products

- Battery backup systems
- High-level alarms
- Remote monitoring
- External pipework
- Pumps
- Access covers
- Additional inlets

### Product details

DMS 217-1



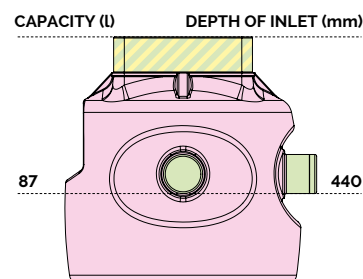
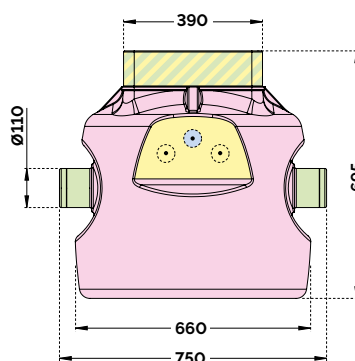
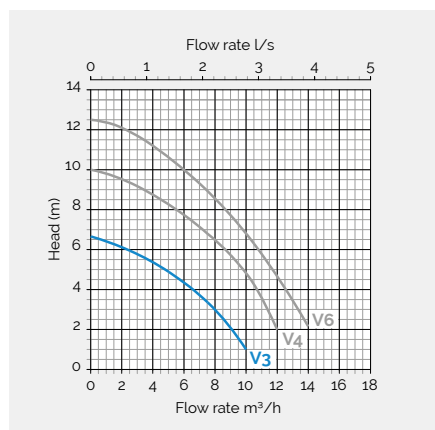
## Technical data

### PUMP SPECIFICATIONS

<b>Pump type</b>	<b>V4</b>
Pump type	Vortex
Control	Auto.
Power supply	230 VAC
Rated current	4.0 A
Motor rating (P2)	360 W
Revs per min.	2800 rpm
Discharge size	1¼"
Free passage	10 mm
Max. vertical	10 m
Max. flow rate	3.3 L/s
Max liquid temp.	<40 °C
Cable length	5 m
Weight	6.0 kg



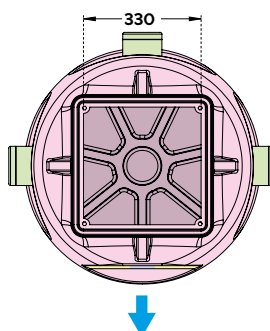
Delta V4 Submersible Pump



All dimensions are in millimetres (mm) and are to the invert level (bottom of pipe). All capacities are in litres (l).

### CHAMBER SPECIFICATIONS

<b>Chamber</b>	<b>Dual V3/4/6 Sump</b>
Material	Tank-grade HDPE
Volume below inlets	87 litres
Clear opening	330 mm x 330 mm
Fixed inlets	3 x 110mm
Discharge	1¼" BSP Class E
Cable duct	2" / 50mm



### Positioning connections

Discharge only
Inlet location allowed
Inlet, cable ducts or vent allowed
Cable ducts and vents only
No drilling allowed

## Other information

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## PACKAGED PUMPS

# Delta Dual V6 Packaged Pumping Station



### Description

Manufactured to the highest of quality, the Delta Dual V6 package pump station can meet the requirements of the toughest environment. The Delta Dual V6 has the capabilities to discharge water ingress from surface areas over 150m<sup>2</sup> or basements that require a head height up to 10 m.

The Delta Dual V6 packaged pump station has been distinctively designed to work in harmony with the Delta Type C System, to collect ground water via a perimeter drainage channel or modular drainage.

Manufactured from High Density Polyethylene (HDPE) this package pump station can effortlessly withstand the strongest hydrostatic stress.

The Delta Dual V6 pump station package includes chamber, all internal pipe work and two powerful Delta V6 pumps. The two Delta V6 pumps within the chamber are factory set to activate at differential levels, offering both primary and secondary protection.

The powerful Delta V6 pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).

### Features

- Suitable for ground, surface, storm, and grey water applications
- Flow rate up to 2l/s at head of 10m
- Chamber manufactured from superior virgin tank grade HDPE enabling the Delta Dual V6 to withstand hydrostatic forces encountered in applications with high water tables
- All internal pipework is pre-assembled within chamber including non-return valve
- Quick and simple installation
- Supplied with two powerful Delta V6 Pumps
- Suitable for residential, commercial and heritage projects

### Specification

- NBS Specification R18 (Clause 310) Pumping Stations and Pressure Pipelines
- BS 8102:2022 Type C Drained Protection

### Associated products

- Battery backup systems
- High-level alarms
- Remote monitoring
- External pipework
- Pumps
- Access covers
- Additional inlets

### Product details

DMS 079-1



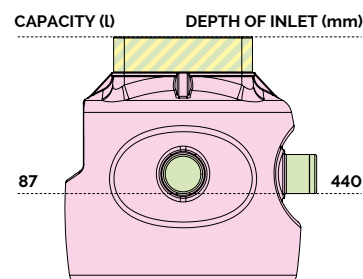
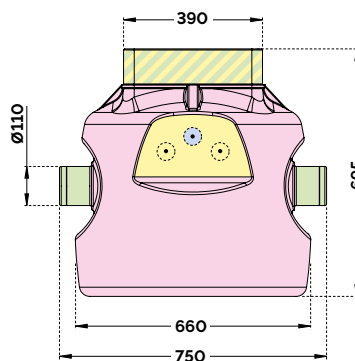
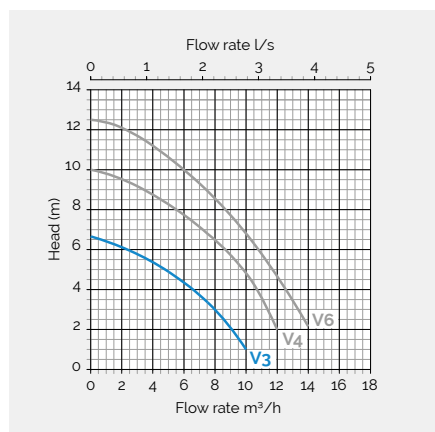
## Technical data

### PUMP SPECIFICATIONS

<b>Pump type</b>	<b>V6</b>
Pump type	Vortex
Control	Automatic
Power supply	230 VAC
Rated current	4.9 A
Motor rating (P2)	500 W
Revs per min.	2800 rpm
Discharge size	1¼"
Free passage	10 mm
Max. vertical	12.5 m
Max. flow rate	3.9 L/s
Max liquid temp.	<40 °C
Cable length	5 m
Weight	6.9 kg



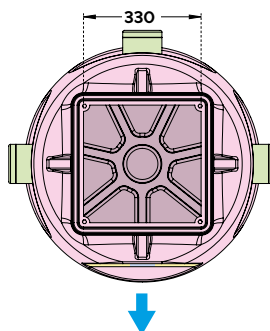
Delta V6 Submersible Pump



All dimensions are in millimetres (mm) and are to the invert level (bottom of pipe). All capacities are in litres (l).

### CHAMBER SPECIFICATIONS

<b>Chamber</b>	<b>Dual V3/4/6 Sump</b>
Material	Tank-grade HDPE
Volume below inlets	87 litres
Clear opening	330 mm x 330 mm
Fixed inlets	3 x 110mm
Discharge	1¼" BSP Class E
Cable duct	2" / 50mm



#### Positioning connections

Discharge only
Inlet location allowed
Inlet, cable ducts or vent allowed
Cable ducts and vents only
No drilling allowed

## Other information

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## PACKAGED PUMPS

# Delta Foul V3 Packaged Pumping Station



**AUTOMATIC PUMP**

### Description

The Delta Foul V3 Packaged Pumping Station has been specifically designed to collect foul and/or grey water from basements, below ground structures and ground floor extensions.

Superior design, precision manufacturing and high-quality assurance has made Delta a trusted name for package pump stations. The robust and reliable Delta Foul V3 is an exceptionally popular choice with waterproofing professionals due to its generous sized motor, thermal overload protection and ease of installation. The powerful vortex pump offers innovative design and advanced technology making it extremely dependable even when subjected to continuous use (subject to correct installation).

The Delta Foul V3 chamber is manufactured from virgin tank grade HDPE and is capable of withstanding hydrostatic forces encountered in applications with high water tables.

The Delta Foul V3 includes a chamber, all internal pipework, and a powerful Delta Foul V3 Submersible Pump.

The Delta Foul V3 Submersible Pump is not suitable for collecting ground water from a cavity drained system.

### Features

- Maximum flow rate up to 6.3 l/s
- Maximum head (lift height) 12m
- 2" BSP threaded pump outlet
- Includes float, elbow and outlet reducer adaptors
- Trouble free operation
- Free flowing impeller (preventing clogging)
- Corrosion resistant stainless-steel shaft and bi-rotational mechanical seal
- Designed for easy installation
- Available with pedestal mounting

### Specification

- Pumps set: 2006/42/EC EC Machinery Directive
- Electrical components: 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
- Electromagnetic Compatibility: 2014/30/EU
- ISO 12100
- EN 809
- EN 60034-1, EN 60034-5/A1
- EN 60335-1/A1, EN 60335-2-41

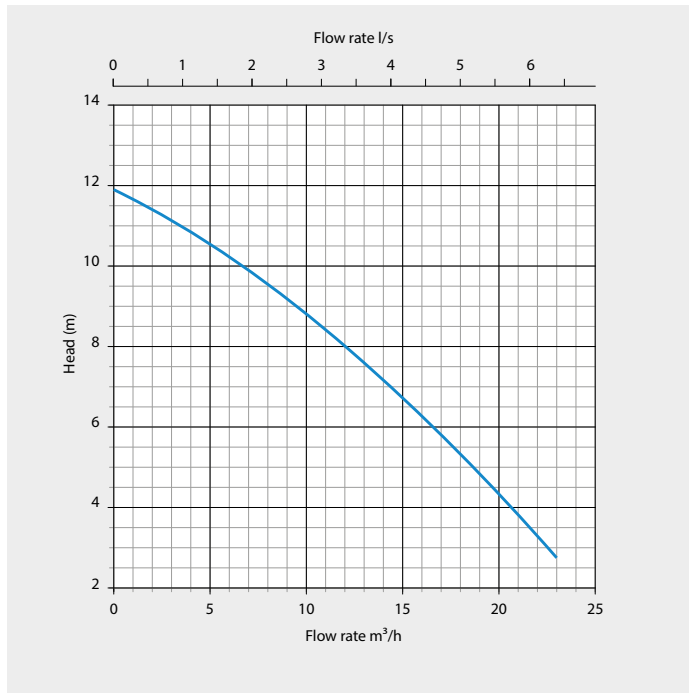
### Product Details

DMS 165-2



### Associated products

- Delta HLA - Foul
- Delta Battery Backup Foul V3



## Technical data

Pump type	Foul V3
Pump type	Vortex
Control	Manual / Automatic
Power supply	230 VAC
Rated current	6.0 A
Motor rating (P2)	750 W
Revs per min.	2900 rpm
Discharge size	2"
Free passage	45 mm
Max. vertical	12 m
Max. flow rate	6.3 l/s
Max liquid temp.	<40 °C
Cable length	10 m
Weight	23.0 kg

## Delta Battery Backup Foul V3

### Description

The Delta Battery Backup Foul V3 is specifically designed to provide power to one Delta Foul V3 Packaged Pumping Station or a Delta Single Foul 800 Packaged Pumping Station when there is a loss of network power. The Delta Battery Backup Foul V3 will keep submersible pumps running during power outage(s).

The Delta Battery Backup Foul V3 will provide power for more than 3 days\* (30 minutes continuously) to one Delta Foul V3 pump in case of a loss of network power. If power failure occurs, the pump automatically takes power from the Delta Battery Backup Foul V3.

Simple to use and easy to install – the Delta Battery Backup Foul V3 will clearly display status and comprehensive fault codes.

\* Based on one activation per hour.



### Features

- Capable of running 1 x Foul V3 sewage pump without mains power for more than 3 days (depending on number of cycles/hr)
- Includes a high level alarm
- Digital display to show status and fault codes
- Virtually inaudible in normal operation
- Lockable steel enclosure
- Door-locking isolator switch
- Four volt-free contacts for remote monitoring
- RS-485 serial line communication for remote monitoring
- Periodic service due reminders
- Can be retrofitted

### Product Details

DMS E030



# HIGH LEVEL ALARMS

## Delta HLA

### Delta HLA - Foul

#### Description

The Delta HLA Foul is designed to detect high water levels within a foul sump pump (submersible pump) chamber. The Delta HLA Foul is an independent high water level alarm with a clear display on the front fascia via LED, which acts as a warning system in the event of:

- power failure to the Delta HLA Foul
- a high water level situation in the chamber/sump
- a high water level situation is recorded
- a service due

The Delta HLA Foul offers a secondary line of protection in the event of mains power failure with a battery backup incorporated within the panel, ensuring continued protection. The Delta HLA foul offers simple installation, requiring three volt free contacts for connection to external systems.

The Delta HLA Foul is designed to activate via the Sump float switch, which is located inside the chamber/sump. When installed the Delta HLA Foul is set to activate when water levels are higher than the activation point of the primary pump, as water levels rise, the float switch lifts until it reaches a point of contact is made inside. This contact signals to the panel that water levels are high and the panel goes into alarm. As soon as the levels drop the switch falls, resetting the alarm.



#### Features

- An internal battery ensures continuous protection in the event of mains power failure
- Quick and simple installation
- Robust and Reliable High Water Alarm
- LED's for visual status and warning
- Mute and reset buttons
- Three volt-free contacts for connection to external systems
- Can be retrofitted

#### Product details

DMS 191-1



### Delta HLA - Groundwater

#### Description

The Delta HLA Groundwater is designed to detect high water levels within a groundwater/surface water sump pump (submersible pump) chamber. The Delta HLA Groundwater is an independent high water level alarm with a clear display on the front fascia via LED, which acts as a warning system in the event of:

- power failure to the Delta HLA Groundwater
- a high water level situation in the chamber/sump
- a high water level situation is recorded
- a service due

The Delta HLA Groundwater offers a secondary line of protection in the event of mains power failure with a battery backup incorporated within the panel, ensuring continued protection. The Delta HLA Groundwater offers simple installation, requiring three volt free contacts for connection to external systems.

The Delta HLA Groundwater is designed to activate via the Sump float switch, which is located inside the chamber/sump. When installed the Delta HLA Groundwater is set to activate when water levels are higher than the activation point of the primary pump, as water levels rise, the float switch lifts until it reaches a point of contact is made inside. This contact signals to the panel that water levels are high and the panel goes into alarm. As soon as the levels drop the switch falls, resetting the alarm.



#### Features

- An internal battery ensures continuous protection in the event of mains power failure
- Quick and simple installation
- Robust and Reliable High Water Alarm
- LED's for visual status and warning
- Mute and reset buttons
- Three volt-free contacts for connection to external systems
- Can be retrofitted

#### Product details

DMS 190-1





## Delta HLA - 800 Series

### Description

The Delta HLA 800 Series is designed to detect high water levels within a Delta 800 Series sump pump (submersible pump) chamber. The Delta HLA 800 Series is an independent high water level alarm with a clear display on the front fascia via LED, which acts as a warning system in the event of:

- power failure to the Delta HLA 800 Series
- a high water level situation in the chamber/sump
- a high water level situation is recorded
- a service due

The Delta HLA 800 Series offers a secondary line of protection in the event of mains power failure with a battery backup incorporated within the panel, ensuring continued protection. The Delta HLA 800 Series offers simple installation, requiring three volt free contacts for connection to external systems.

The Delta HLA 800 Series is designed to activate via the Sump float switch, which is located inside the chamber/sump. When installed the Delta HLA 800 Series is set to activate when water levels are higher than the activation point of the primary pump, as water levels rise, the float switch lifts until it reaches a point of contact is made inside. This contact signals to the panel that water levels are high and the panel goes into alarm. As soon as the levels drop the switch falls, resetting the alarm.



### Features

- An internal battery ensures continuous protection in the event of mains power failure
- Quick and simple installation
- Robust and Reliable High Water Alarm
- LED's for visual status and warning
- Mute and reset buttons
- Three volt-free contacts for connection to external systems
- Can be retrofitted

### Product details

DMS 191-1



# BATTERY BACKUPS

## Delta UPS & Battery Backups

### Delta UPS V3

#### Description

The Delta UPS V3 is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. It will keep one Delta V3 Submersible Pump running during a power outage, keeping basements dry.

If power failure occurs, the Delta UPS V3 automatically powers the Delta V3 pump. It can provide power for 30 minutes continuously, based on a 3.5 m head. This is equivalent to 30 hours protection, in accordance with PCA guidance of a minimum of three activations per hour.

A buzzer alerts the user when the pump is drawing power from the battery.

Simple to use and easy to install – the Delta UPS V3 clearly displays its status and comprehensive fault codes.

It is not suitable for powering a Delta V4 or Delta V6 pump. For such installations, please refer to the Delta UPS V4/6 or the Delta Battery Backup V4/6 range.



#### Features

- L V 2014/35/EU low voltage
- EMC 2014/30/EU electromagnetic compatibility
- Safety IEC EN 62040-1
- EMC IEC EN 62040-2
- RoHS compliant

#### Product details

DMS E021



### Delta UPS V4/6

#### Description

The Delta UPS V4/6 is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. It will power one Delta V3, Delta V4, or Delta V6 Submersible Pump during a power outage, keeping basements dry.

If power failure occurs, the Delta UPS V4/6 automatically powers the pump. It can provide power to a Delta V6 pump for 30 minutes continuously, based on a 3.5 m head. This is equivalent to 30 hours protection, in accordance with PCA guidance of a minimum of three activations per hour.

A buzzer alerts the user when the pump is drawing power from the battery.

Simple to use and easy to install – the Delta UPS V4/6 clearly displays its status and comprehensive fault codes.



#### Features

- L V 2014/35/EU low voltage
- EMC 2014/30/EU electromagnetic compatibility
- Safety IEC EN 62040-1
- EMC IEC EN 62040-2
- RoHS compliant

#### Product details

DMS E022



# Delta Battery Backup V3

## Description

The Delta Battery Backup V3 is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. The Delta Battery Backup V3 will keep submersible pumps running during a power outage, ensuring pumps are continuously running, keeping structures dry.

The Delta Battery Backup V3 provides abundant battery backup power, so your sump pump system can continue working through short and medium length power outages. Safeguarding your sump pump equipment and keeping basements remaining dry.

The Delta Battery Backup V3 will provide power for 60 hours\* to one or two Delta V3 pumps (not simultaneously) in case of a loss of mains power. If power failure occurs, the pumps(s) automatically take power from the Delta Battery Backup V3.

Simple to use and easy to install – the Delta Battery Backup V3 will clearly display status and comprehensive fault codes.

\*Based on PCA guidance of minimum 3 activations per hour.



## Features

- Capable of running primary or secondary pump(s)
- Capable of running 1 x V3 ground water pump without mains power for up to 2.5 days (depending on number of cycles/hr)
- Industry leading backup power
- Digital display to show status and comprehensive fault codes
- Virtually inaudible and offers tamper-proof installation

## Product details

DMS E023



# Delta Battery Backup V3 Plus

## Description

The Delta Battery Backup V3 Plus is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. The Delta Battery Backup Plus will keep submersible pumps running during a power outage, ensuring pumps are continuously running, keeping structures dry.

The Delta Battery Backup V3 Plus provides abundant battery backup power, so your sump pump system can continue working through short and medium length power outages. Safeguarding your sump pump equipment and keeping basements remaining dry.

The Delta Battery Backup V3 Plus will provide power for 120 hours\* to one or two Delta V3 pumps (not simultaneously) in case of a loss of mains power. If power failure occurs, the pumps(s) automatically take power from the Delta Battery Backup V3 Plus.

Simple to use and easy to install – the Delta Battery Backup V3 Plus will clearly display status and comprehensive fault codes.

\*Based on PCA guidance of minimum 3 activations per hour.



## Features

- Capable of running primary or secondary pump(s)
- Capable of running 1 x V3 ground water pump without mains power for up to 5 days (depending on number of cycles/hr)
- Industry leading backup power
- Digital display to show status and comprehensive fault codes
- Virtually inaudible and offers tamper-proof installation

## Product details

DMS E024



# BATTERY BACKUPS

## Delta Battery Backups

### Delta Battery Backup V3 XL

#### Description

The Delta Battery Backup V3 XL is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. The Delta Battery Backup V3 XL will keep submersible pumps running during a power outage, ensuring pumps are continuously running, keeping structures dry.

The Delta Battery Backup V3 XL provides abundant battery backup power, so your sump pump system can continue working through short and medium length power outages. Safeguarding your sump pump equipment and keeping basements remaining dry.

The Delta Battery Backup V3 XL will provide power for 240 hours\* to one or two Delta V3 pumps (not simultaneously) in case of a loss of mains power.. If power failure occurs, the pumps(s) automatically take power from the Delta Battery Backup V3 XL.

Simple to use and easy to install – the Delta Battery Backup V3 XL will clearly display status and comprehensive fault codes.

\*Based on PCA guidance of minimum 3 activations per hour.



#### Features

- Capable of running primary or secondary pump(s)
- Capable of running 1 x V3 ground water pump without mains power for up to 10 days (depending on number of cycles/hr)
- Industry leading backup power
- Digital display to show status and comprehensive fault codes
- Virtually inaudible and offers tamper-proof installation

#### Product details

DMS E025



### Delta Battery Backup V4/6

#### Description

The Delta Battery Backup V4/6 is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. The Delta Battery Backup V4/6 will keep submersible pumps running during a power outage, ensuring pumps are continuously running, keeping structures dry.

The Delta Battery Backup V4/6 provides abundant battery backup power, so your sump pump system can continue working through short and medium length power outages. Safeguarding your sump pump equipment and keeping basements remaining dry.

The Delta Battery Backup V4/6 will provide power for 45 hours\* to one or two Delta V6 pumps (not simultaneously) in case of a loss of mains power. If power failure occurs, the pumps(s) automatically take power from the Delta Battery Backup V4/6 .

Simple to use and easy to install – the Delta Battery Backup V4/6 will clearly display status and comprehensive fault codes.

\*Based on PCA guidance of minimum 3 activations per hour.



#### Features

- Capable of running primary or secondary pump(s)
- Capable of running 1 x V6 ground water pump without mains power for up to 15 days (depending on number of cycles/hr)
- Industry leading backup power
- Digital display to show status and comprehensive fault codes
- Virtually inaudible and offers tamper-proof installation

#### Product details

DMS E026



## Delta Battery Backup V4/6 Plus

### Description

The Delta Battery Backup V4/6 Plus is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. The Delta Battery Backup Plus will keep submersible pumps running during a power outage, ensuring pumps are continuously running, keeping structures dry.

The Delta Battery Backup V4/6 Plus provides abundant battery backup power, so your sump pump system can continue working through short and medium length power outages. Safeguarding your sump pump equipment and keeping basements remaining dry.

The Delta Battery Backup V4/6 Plus will provide power for 90 hours\* to one or two Delta V6 pumps (not simultaneously) in case of a loss of mains power. If power failure occurs, the pumps(s) automatically take power from the Delta Battery Backup V4/6 Plus.

Simple to use and easy to install – the Delta Battery Backup V4/6 Plus will clearly display status and comprehensive fault codes.

\*Based on PCA guidance of minimum 3 activations per hour.



### Features

- Capable of running primary or secondary pump(s)
- Capable of running 1 x V6 ground water pump without mains power for up to 3.5 days (depending on number of cycles/hr)
- Industry leading backup power
- Digital display to show status and comprehensive fault codes
- Virtually inaudible and offers tamper-proof installation

### Product details

DMS E027



## Delta Battery Backup V4/6 XL

### Description

The Delta Battery Backup V4/6 XL is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. The Delta Battery Backup V4/6 XL will keep submersible pumps running during a power outage, ensuring pumps are continuously running, keeping structures dry.

The Delta Battery Backup V4/6 XL provides abundant battery backup power, so your sump pump system can continue working through short and medium length power outages. Safeguarding your sump pump equipment and keeping basements remaining dry.

The Delta Battery Backup V4/6 XL will provide power for 140 hours\* to one or two Delta V6 pumps (not simultaneously) in case of a loss of mains power. If power failure occurs, the pumps(s) automatically take power from the Delta Battery Backup V4/6 XL.

Simple to use and easy to install – the Delta Battery Backup V4/6 XL will clearly display status and comprehensive fault codes.

\*Based on PCA guidance of minimum 3 activations per hour.



### Features

- Capable of running primary or secondary pump(s)
- Capable of running 1 x V6 ground water pump without mains power for up to 5.5 days (depending on number of cycles/hr)
- Industry leading backup power
- Digital display to show status and comprehensive fault codes
- Virtually inaudible and offers tamper-proof installation

### Product details

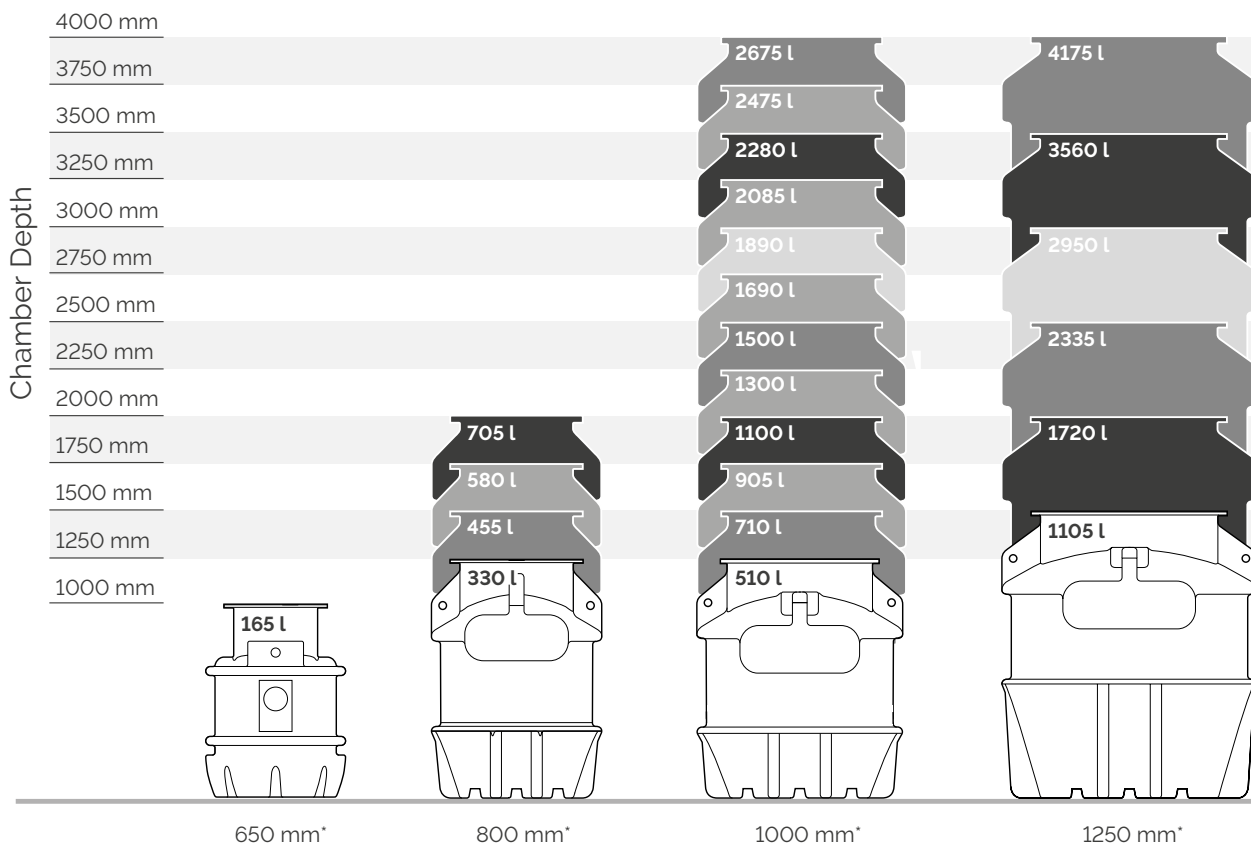
DMS E028





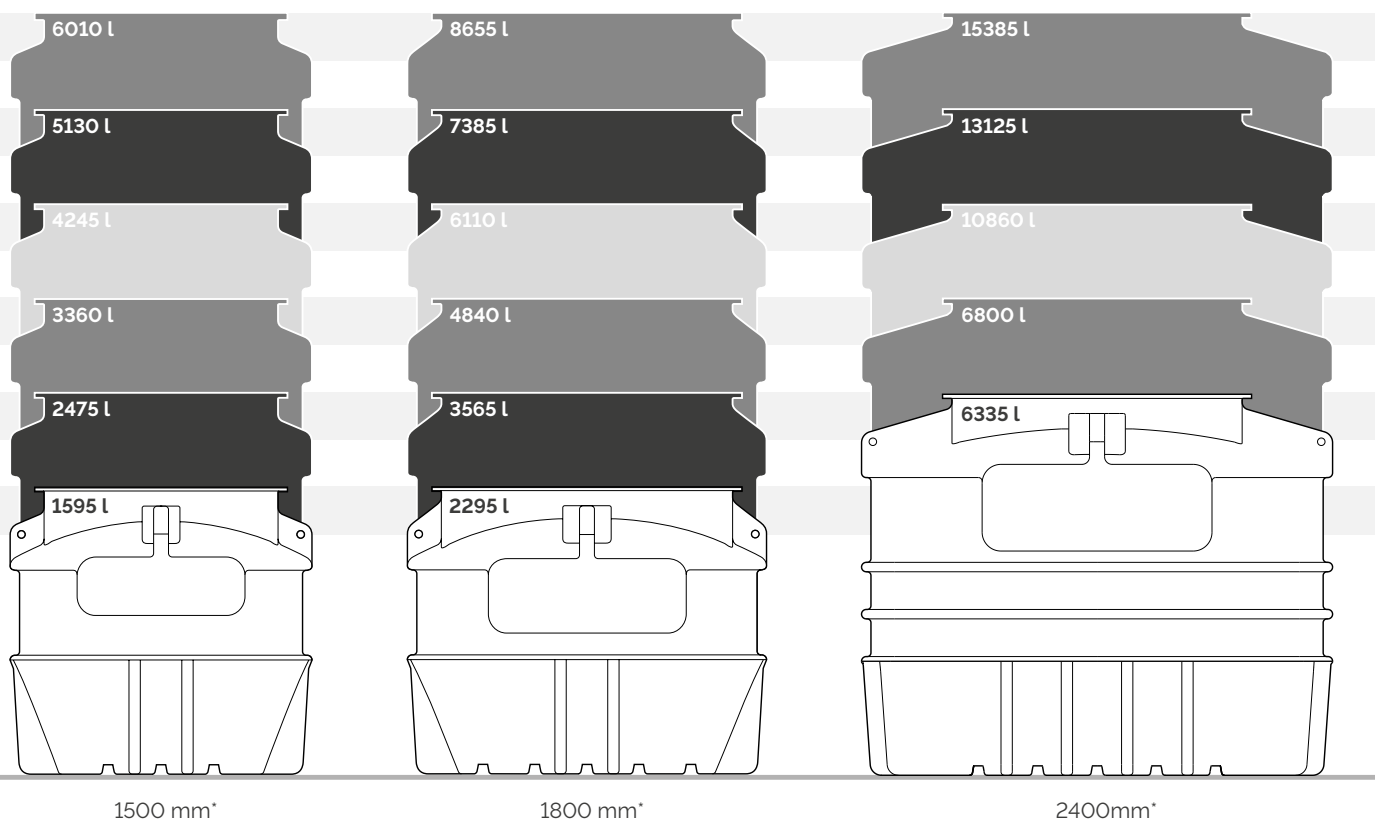
# DELTA BESPOKE PACKAGED PUMPING STATIONS

## Chamber size and storage capacity



\*Chamber diameter (add 100mm for total external diameter).

Capacities shown are for highest possible inlet invert. Please contact us for fabrication sheets detailing chamber dimensions and capacities for varying inlet depths.



## HEALTH & SAFETY

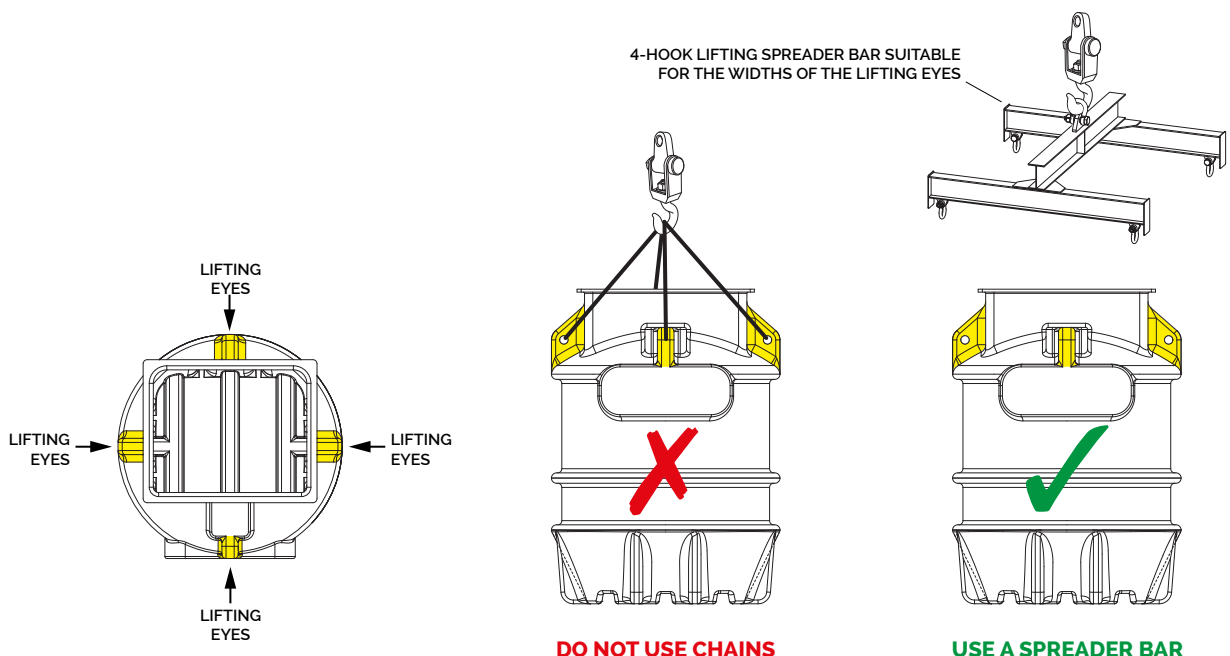
# Delta Bespoke 800 Series lifting instructions





## These instructions must be followed to prevent injury to operatives or damage to the product.

- Create a lifting plan, noting the following specifics, to prevent injury to operatives or damage to the product during the lifting process.
- Refer to the individual pallet / product's weight sticker and make sure the lifting equipment is suitable for this weight.
- Inspect all the chamber's lifting eyes.
- Do not use chains. The product must be lifted using a 4-hook lifting spreader beam with the correct length and breadth for the widths of the chamber's lifting eyes.
- Under no circumstances should the lifting equipment impinge on the clear opening flange. This will apply pressure to the flange and will damage the chamber.
- Adhere to all current legislative and training requirements.



**If you require further advice call 01992 523 523  
before attempting to lift the product**

## PACKAGED PUMPING STATIONS

# Delta Bespoke 800 Series Groundwater



### Description

The Delta Bespoke 800 Series of Packaged Pumping Stations are available in depths from 1250mm to 2000mm and with varying pumping capabilities from the Delta Dual V3 to powerful Delta Dual V6 pump.

The robust and reliable Delta Bespoke 800 Series Packaged Pumping Station has been specifically designed to collect ground and surface water from basements, below ground structures.

Typical applications include (but are not limited to) Type C, Cavity Drained Waterproofing solutions and/or surface water from roofs, buried roofs, terraces and patios (subject to selection criteria).

Delta Bespoke 800 Series – system includes: a polyethylene chamber, 1¼" PVC internal pipework, two Delta V3, V4 or V6\* sump pumps, 110mm inlet, 50mm cable duct, 110mm vent and 2" discharge.

This product is specifically designed for below ground applications where hydrostatic water pressure may be present. We recommend surrounding the Delta Bespoke 800 Series with concrete to prevent movement. An access cover is not supplied, as these are generally site specific and installed in the final finish. If required, the chamber will accept a standard 450mm x 600mm cover and frame. Inlets can easily be drilled and sealed on site, making this product straightforward to install.

The Delta Bespoke 800 Series - Groundwater is not suitable for collecting foul water.

### Features

- Suitable for ground, surface, storm, and grey water applications
- Available from stock
- Wide selection of pumps, options and accessories
- Unrivalled quality
- Large chamber, manufactured from superior polyethylene to withstand hydrostatic forces encountered in applications with high water tables
- Quick and simple installation
- Suitable for residential, commercial, health care/learning institution and heritage projects

### Specification

- NBS Specification R18 (Clause 310) Pumping Stations
- and Pressure Pipelines
- BS 8102:2022 Type C Drained Protection



Part	Description	DMS Code
A	Delta V3/V4/V6 Submersible Pump, inc.: - float switch assembly (DMS E-192) - non-return valve (DMS E-195)	DMS 116-1 (V3) DMS 216-1 (V4) DMS 084-1 (V6)
B	Male threaded adaptor, 1.25"	DMS E104
C	High pressure PVC pipe (Class E), 1.25"	DMS E100
D	Socket union, 1.25" c/w 'O' ring	DMS E106
E	Barrel nipple PL/TH, 1.25"	DMS E108
F	Brass swing check valve, 1.25"	DMS E191
G	90° elbow, 1.25"	DMS E101
H	Tee-piece, 1.25"	DMS E105
I	Brass gate valve, 1.25"	DMS E187
J	Tank connector, 1.25"	DMS E110
K	Reducing bush, PL/TH, 1½" to 1¼"	DMS E161
L	Reducer, PL/PL, 2" to 1½"	DMS E160

## Associated products

- Battery backup systems
- High-level alarms
- Remote monitoring
- External pipework
- Pumps
- Access covers
- Additional inlets

## Product Details

### Delta Dual V3

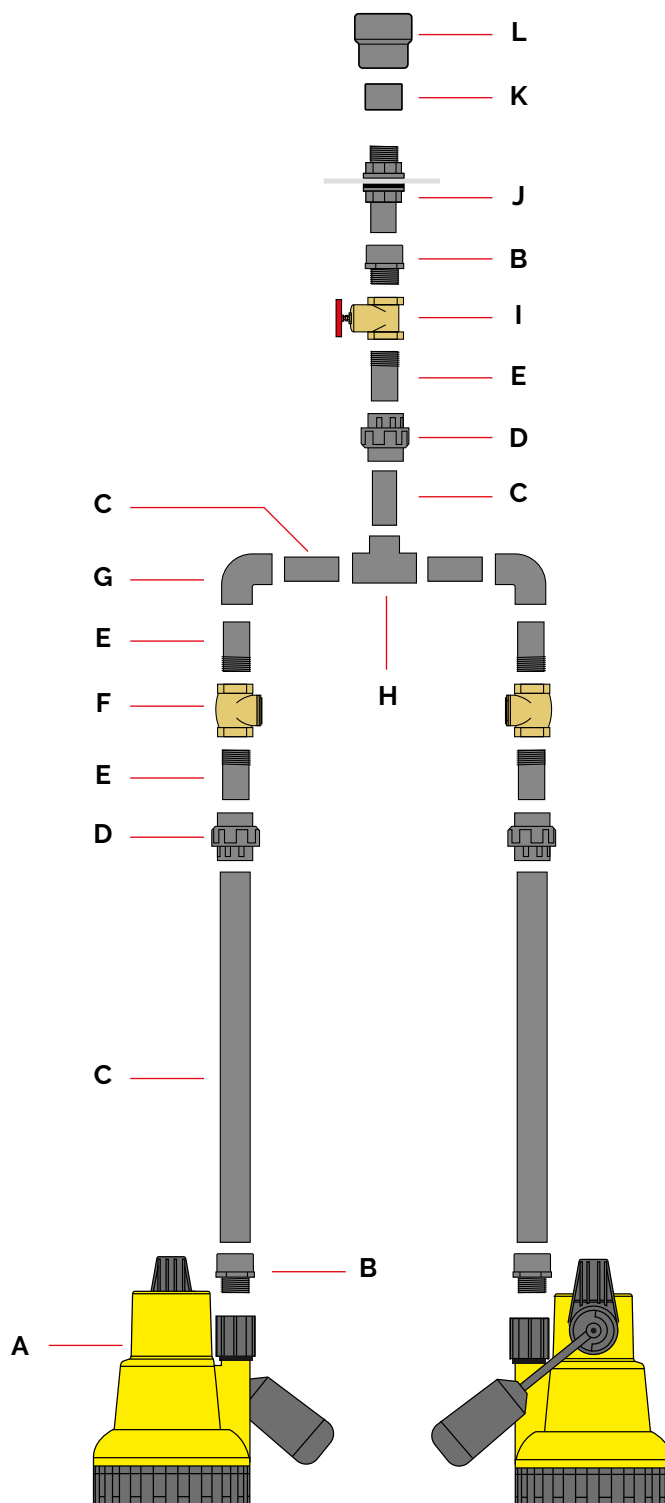
800-1250 Pump Station	DMS-E001
800-1500 Pump Station	DMS-E002
800-1750 Pump Station	DMS-E003
800-2000 Pump Station	DMS-E004

### Delta Dual V4

800-1250 Pump Station	DMS-E005
800-1500 Pump Station	DMS-E006
800-1750 Pump Station	DMS-E007
800-2000 Pump Station	DMS-E008

### Delta Dual V6

800-1250 Pump Station	DMS-E009
800-1500 Pump Station	DMS-E010
800-1750 Pump Station	DMS-E011
800-2000 Pump Station	DMS-E012



## PACKAGED PUMPING STATIONS

# Delta Bespoke 800 Series Foul



### Description

The Delta Bespoke 800 Series of Package Pumping Stations are available in depths from 1250mm to 2000mm.

The robust and reliable Delta Bespoke 800 Series - Foul Packaged Pump Station has been specifically designed to collect foul and/or grey water from basements, below ground structures and ground floor extensions or where foul water cannot be drained by gravity.

For kitchen applications we recommend fitting a grease trap prior to the pump station installation.

This product is specifically designed for below ground applications where hydrostatic water pressure may be present. However, we recommend surrounding the Delta Bespoke 800 Series – Foul with concrete to prevent movement. A manhole cover is not supplied as these are generally site specific and installed in the final finish.

The Delta 800 Series Foul Packaged Pumping Station can be installed at the initial building stage or retro fitting to existing buildings.

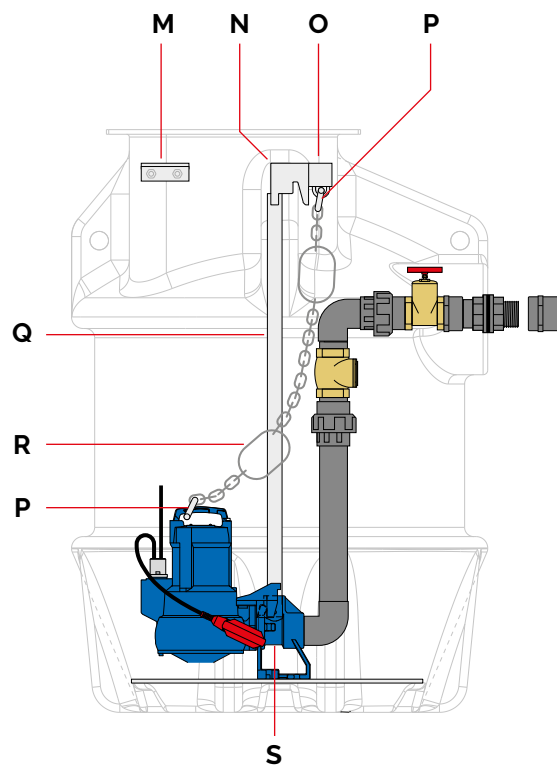
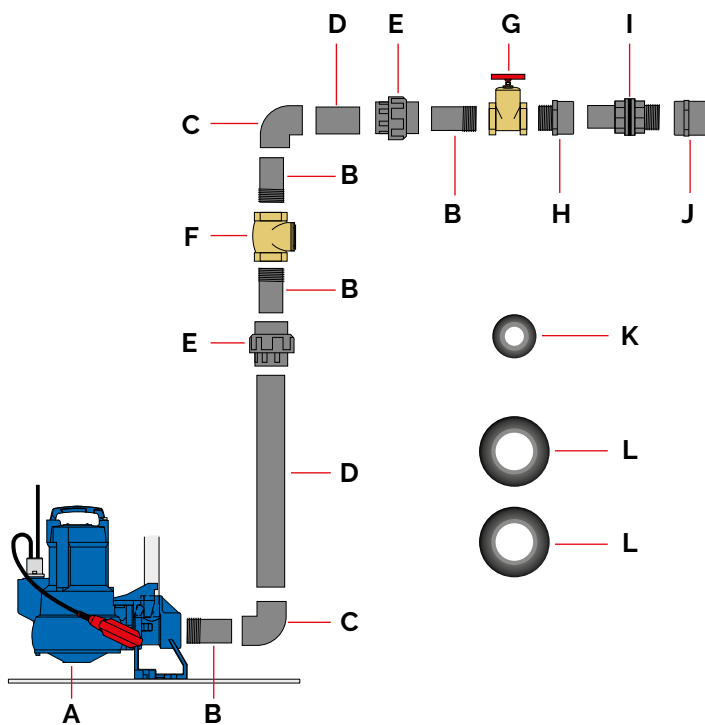
The Delta Bespoke 800 Series - V3 Foul is not suitable for collecting ground water from a cavity drained membrane system.

### Features

- Suitable for foul/grey water applications
- Available from stock
- Large chamber, manufactured from superior polyethylene enabling the Delta 800 Series to withstand hydrostatic forces encountered in applications with high water tables
- Quick and simple installation
- For kitchen applications, we recommend fitting a grease trap prior to the pump station
- Wide selection of pumps, options and accessories
- Unrivalled quality
- Suitable for residential, commercial, health care/learning institution and heritage projects

### Specification

- NBS Specification R18 (Clause 310) Pumping Stations and Pressure Pipelines
- BS EN 12050-3:2015 Wastewater lifting plants for buildings and sites. Lifting plants for limited applications
- BS 8102:2022 Type C Drained Protection



Part	Description	DMS Code
A	Delta Foul V3 (Automatic)	DMS-120-1
B	Barrel nipple PL/TH, 2"	DMS-E128
C	90° elbow, 2"	DMS-E121
D	High pressure PVC pipe (Class E), 2"	DMS-E120
E	Socket union, 2" c/w 'O' ring	DMS-E126
F	Brass swing check valve, 2"	DMS-E193
G	Brass gate valve, 2"	DMS-E188
H	Male threaded adaptor, 2"	DMS-E124
I	Tank connector, 2"	DMS-E130
J	Coupling PL/TH, 2"	DMS-E127

Part	Description	DMS Code
K	Rubber wall seal, 50 mm (cable duct, 50 mm inlets)	DMS-E168
L	Rubber wall seal, 110 mm (vent duct, 110 inlets)	DMS-E169
M	2-hole sump float bracket, steel	DMS-E234
N	Guide rail top bracket	-
O	Unistrut kit c/w bracket	-
P	Galvanised steel shackle, 8 mm	-
Q	Guide rail tube, galvanised steel, 25 mm	-
R	Galvanised steel lifting chain	-
S	Pedestal for foul V3 Submersible Pump	DMS-E163

## Product Details

### Delta Single V3 Foul

800-1250 Pump Station	DMS-E013
800-1500 Pump Station	DMS-E014
800-1750 Pump Station	DMS-E015
800-2000 Pump Station	DMS-E016

### Delta Dual V3 Foul (inc control panel)

800-1250 Pump Station	DMS-E017
800-1500 Pump Station	DMS-E018
800-1750 Pump Station	DMS-E019
800-2000 Pump Station	DMS-E020



## Associated products

- Battery backup systems
- High-level alarms
- Remote monitoring
- External pipework
- Pumps
- Access covers
- Additional inlets

## DELTA 1000 SERIES - BBA PACKAGED PUMPING

# Delta Pluto Packaged Pumping Station

### Description

The Delta Pluto Packaged Pumping Station is available in association with TT Pumps and has been specifically designed to work in harmony with Cavity Drained Systems to collect Groundwater via a perimeter drainage channel or modular drainage.

This package pump station can withstand hydrostatic forces encountered in applications with high water tables. Pumping applications are invariably demanding – typically operating in unsympathetic, arduous, or extreme environments, where quality matters.

The powerful Delta Goliath/Delta Blue 50 (foul water) pump offers innovative design and advanced technology making it extremely dependable even when subjected to continuous use (subject to correct installation).

The Delta Pluto Packaged Pumping Station sump offers versatility of collecting water from external light-wells. The Delta Pluto packaged pump station includes chamber, all internal pipe work, valves and pumps. The Delta Pluto Packaged Pumping Station is suitable for collecting ground water from a 150m<sup>2</sup> basement and surface water from a maximum 12m<sup>2</sup> light well.

The extension turret is an innovative design that allows the installer to change the depth of the chamber installation to suit site specific levels. Due to possibility of site complications and changing requirements, it would be useful to be able to extend the depth of the tank. The extension turret is placed on top of the tank and clamped and sealed in place and can be cut at set increments to adjust the height of the pumping station chamber. The focus on this is to aid in reducing of installation time and to provide product flexibility in site conditions.

The Delta Pluto (150, 400, 550) Packaged Pumping Stations are not suitable for collecting foul water, for foul water applications the Delta Blue 50 should be specified.

### Features

- BBA Approval and Accreditation
- Suitable for ground, surface, storm, and grey water applications
- Flow rate up to 7.5 l/s at up to 11m head
- Chamber manufactured from superior virgin tank grade HDPE enabling the Delta Pluto Packaged Pumping Station to withstand hydrostatic forces encountered in applications with high water tables
- Quick and simple installation
- 156 litre operating storage
- Supplied with Delta Goliath / Foul Blue 50 powerful Delta Pluto Pumps
- Suitable for residential, commercial and heritage projects



### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of Practice
- NBS Specification R18 (Clause 310) Pumping Stations and Pressure Pipelines

### Product Details

<b>Delta Dual Pluto</b>	
150 including TT HLA Duty	DMS T001
400 including TT HLA Duty	DMS T002
550 including TT HLA Duty	DMS T003
Delta Pluto Dual Foul Blue 50 (including TT HLA Duty)	DMS T004
Delta Pluto Extension Turret (inc clamping kit and seal)	DMS T009



**Delta Pluto with turret**





# DELTA 1000 SERIES - BBA PACKAGED PUMPING

## Delta Pluto Packaged Pumping Station

### Technical data

#### PUMP SPECIFICATIONS

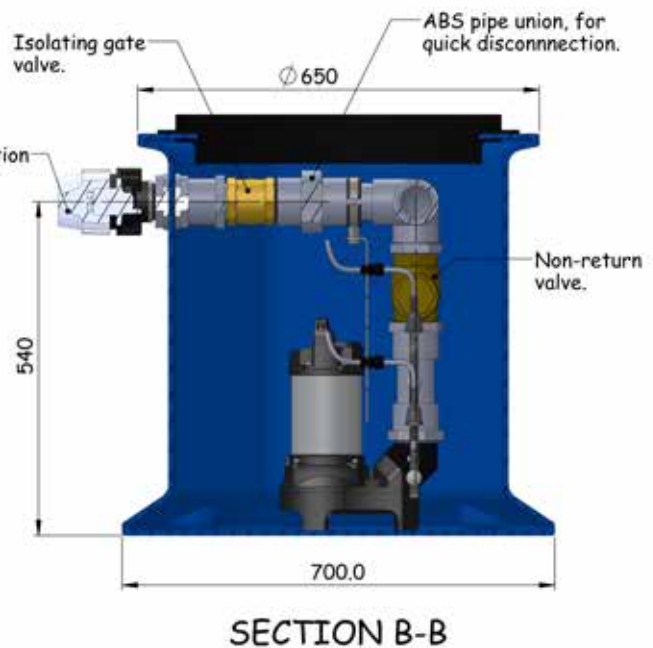
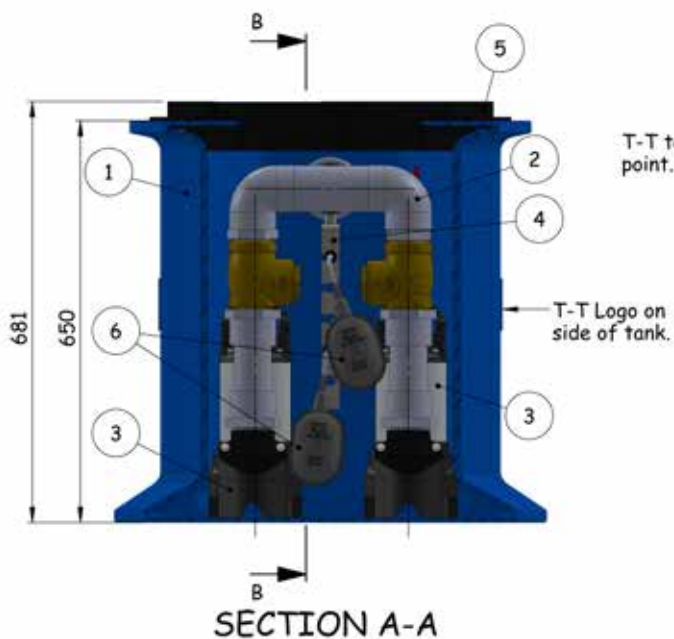
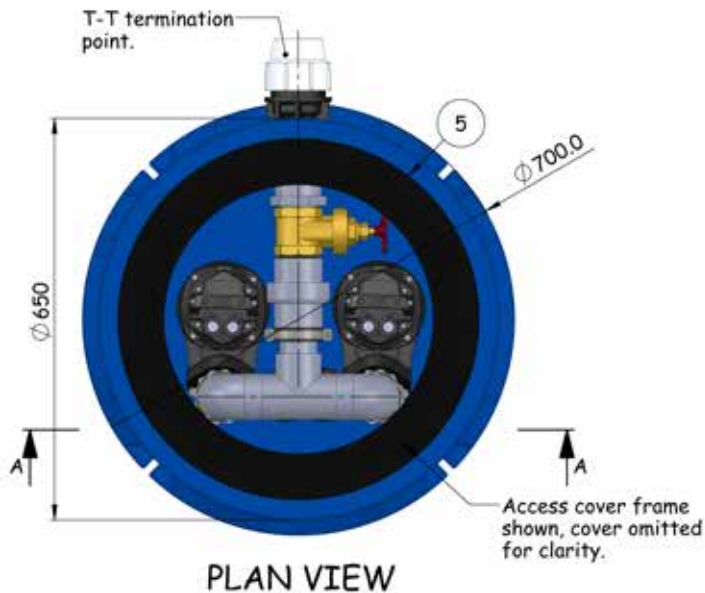
PUMP TYPE	Motor Power		Discharge		Maximum		Free Passage mm	Cable m	Weight KG
	amp	kW	mm	inch	Head m	Capacity L/sec			
Delta Pluto Dual 150 230V/1Ph	1.6	0.15	50	2	6.3	4.1	30	5	8
Delta Pluto Dual 400 230V/1Ph	3.2	0.4	50	2	9.2	6.1	35	5	9.3
Delta Pluto Dual 550 230V/1Ph	3.6	0.55	50	2	10	7.2	35	5	15.8
Delta Pluto Dual Foul Blue 50 /2G40v 230V/1Ph	2.8	0.37	40	1½	7	5.2	40	10	13

#### CHAMBER SPECIFICATIONS

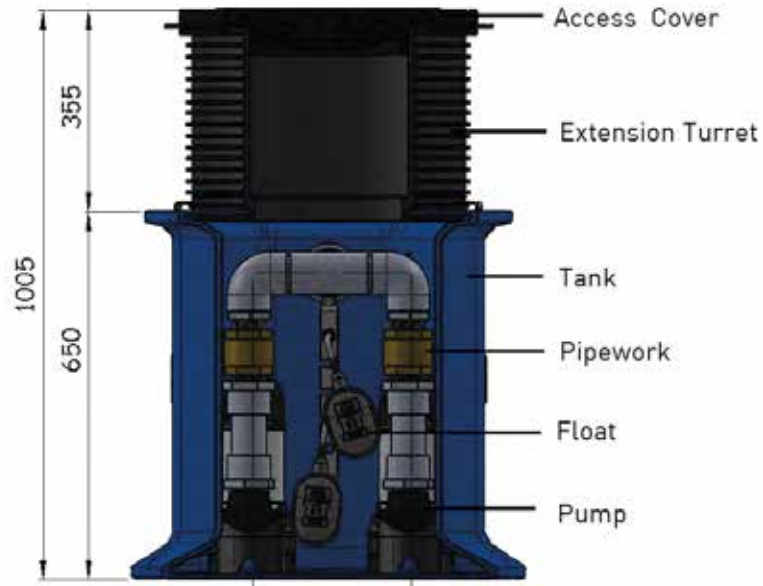
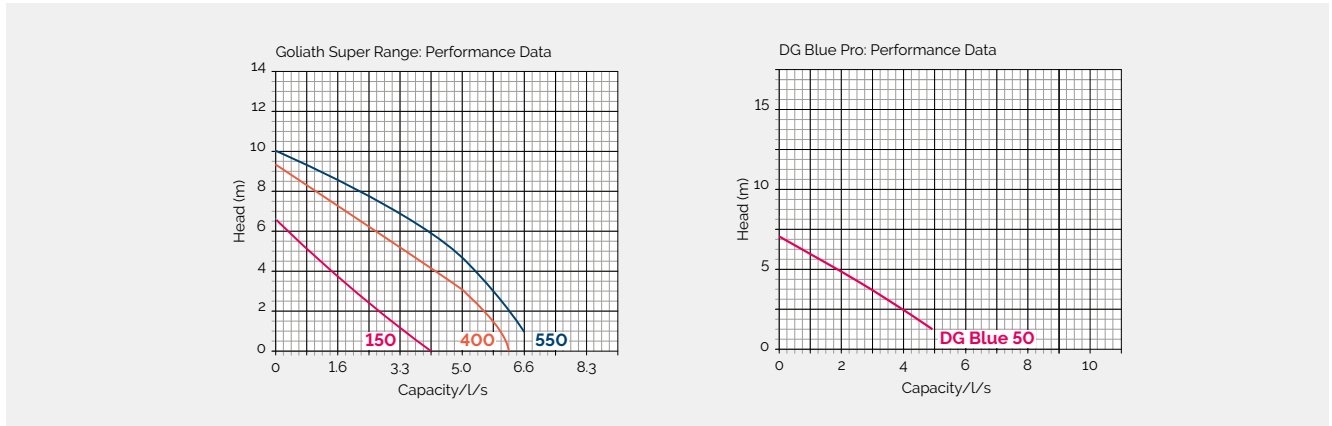
ITEM	PART	MATERIAL
1	Chamber	Polyethylene
2	Pipework & fittings	ABS & Brass
3	Pump	Stainless steel / Cast iron / Engineered plastic
4	Float bracket kit	Stainless steel
5	Cover & frame	Polypropylene
6	Float	Polypropylene

#### ADDITIONAL INFORMATION

Clear Opening	Ø 450mm
Discharge	63mm HDPE Adaptor



## Technical data



### PLUTO WITH TURRET

This item CANNOT be retrofitted to previously installed tanks.

### CONTROL SYSTEM

CONTROL PANEL	SINGLE & DUAL SYSTEMS
Material	Plastic IP66 rated enclosure*
Volt free contact	Yes - High Level Power Failure
Voltage	240V / 1PH / 50Hz
Max Rating	9.3A
Alarm	Audible c/w mains fail fault
Mains on indicator	Yes c/w mains fail fault

Other control & enclosure options available inc.  
Automatic float control  
\*IP66 rated enclosures if spare glands plugged



## DELTA 1000 SERIES

# Delta Bespoke Mercury Foul



### Description

The Delta 1000 Series - Mercury Foul Packaged Pumping Station is available in association with TT Pumps. The robust and reliable Delta 1000 Series - Mercury Series Packaged Pumping Station has been specifically designed and manufactured in the United Kingdom to provide an efficient and economical way of installing a sewage/drainage pumping station.

The extension turret is an innovative design that allows the installer to change the depth of the chamber installation to suit site specific levels. Due to possibility of site complications and changing requirements, it would be useful to be able to extend the depth of the tank. The extension turret is placed on top of the tank and clamped and sealed in place and can be cut at set increments to adjust the height of the pumping station chamber. The focus on this is to aid in reducing of installation time and to provide product flexibility in site conditions.

The Delta 1000 Series – Mercury Foul Package Pumping Station, is not suitable for collecting ground water from a cavity drained membrane system.

### Features

- BBA Approval and Accreditation
- Pump chambers are well engineered and manufactured, and have passed rigorous and detailed testing, site inspections and factory production control assessment
- Each pump chamber is made of strong, medium-density polyethylene
- Smooth internal walls aid the hygienic disposal of effluents, to avoid smells and septicity.
- Comes complete with pipework pre-assembled in the chamber, ready for installation into the ground, after which the pumps and control equipment are added.
- All packaged pumping stations are supplied with controls for fully automatic operation, and a high-level alarm indicator
- Units can be adapted to suit individual requirements at manufacturing stage
- Packages are available on short lead-times to fit in with tight construction schedules.

### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of Practice
- BS EN 10256-4:2000 Gravity drainage systems inside buildings - Wastewater lifting plants
- Construction (Design & Management) Regulations 2015
- Construction (Design & Management) Regulations (Northern Ireland) 2016

### Product details

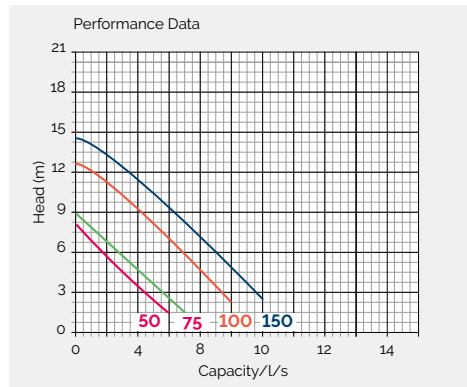
Mercury DGO 50	DMS T005
Mercury DGO 75	DMS T006
Mercury DGO 100	DMS T007
Mercury DGO 150	DMS T008
Extension Turret	DMS T010



## Technical data

### PUMP SPECIFICATIONS

PUMP	Motor Power		Discharge		Maximum		Free Passage	Cable	Weight
	amp	kW	mm	inch	Head m	Capacity L/sec	mm	m	kg
DGO 50/2/G50H	2.9	0.37	50	2	6.3	6	40	10	16.5
DGO 75/2/G50H	3.9	0.55	50	2	9	7.2	40	10	16.5
DGO 150/2/G50H	8.2	1.1	50	2	14.3	10.5	50	10	20.5



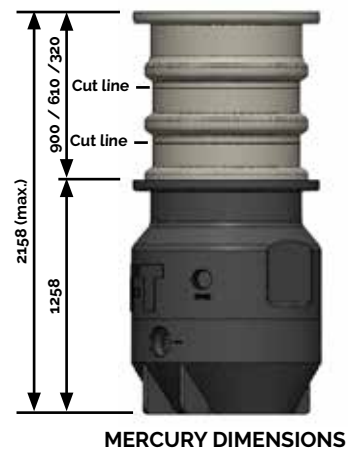
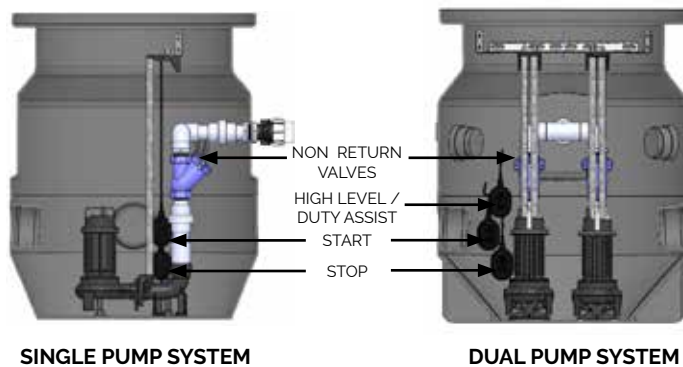
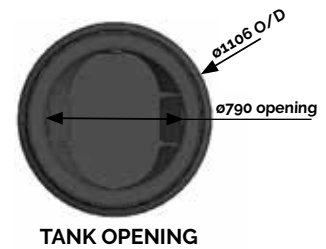
### CONTROL SYSTEM

CONTROL PANEL	SINGLE & DUAL SYSTEMS
Material	Plastic IP66 rated enclosure*
Volt free contact	Yes - High Level Power Failure
Voltage	240V / 1PH / 50Hz
Max Rating	9.3A
Alarm	Audible c/w mains fail fault
Mains on indicator	Yes c/w mains fail fault

Other control & enclosure options available inc.  
Automatic float control  
\*IP66 rated enclosures if spare glands plugged

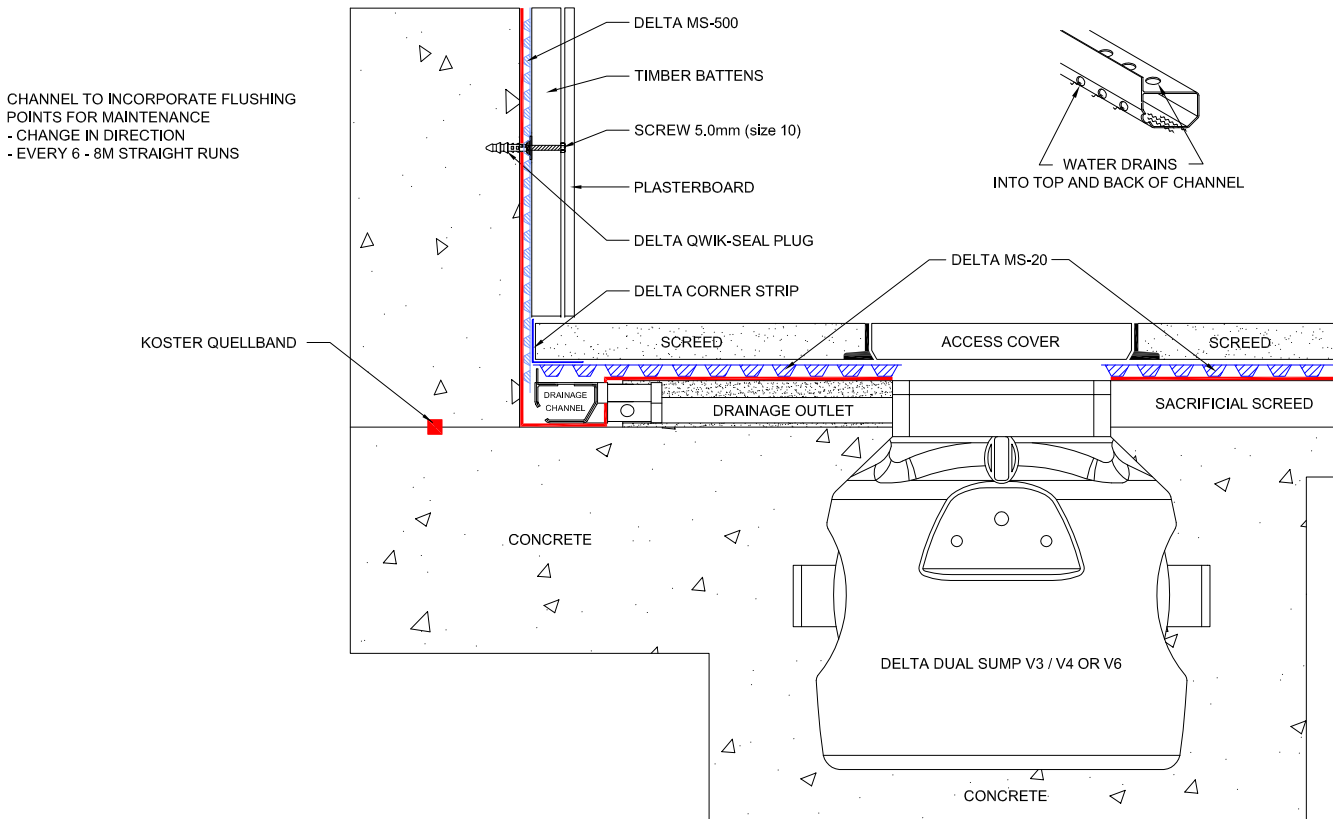
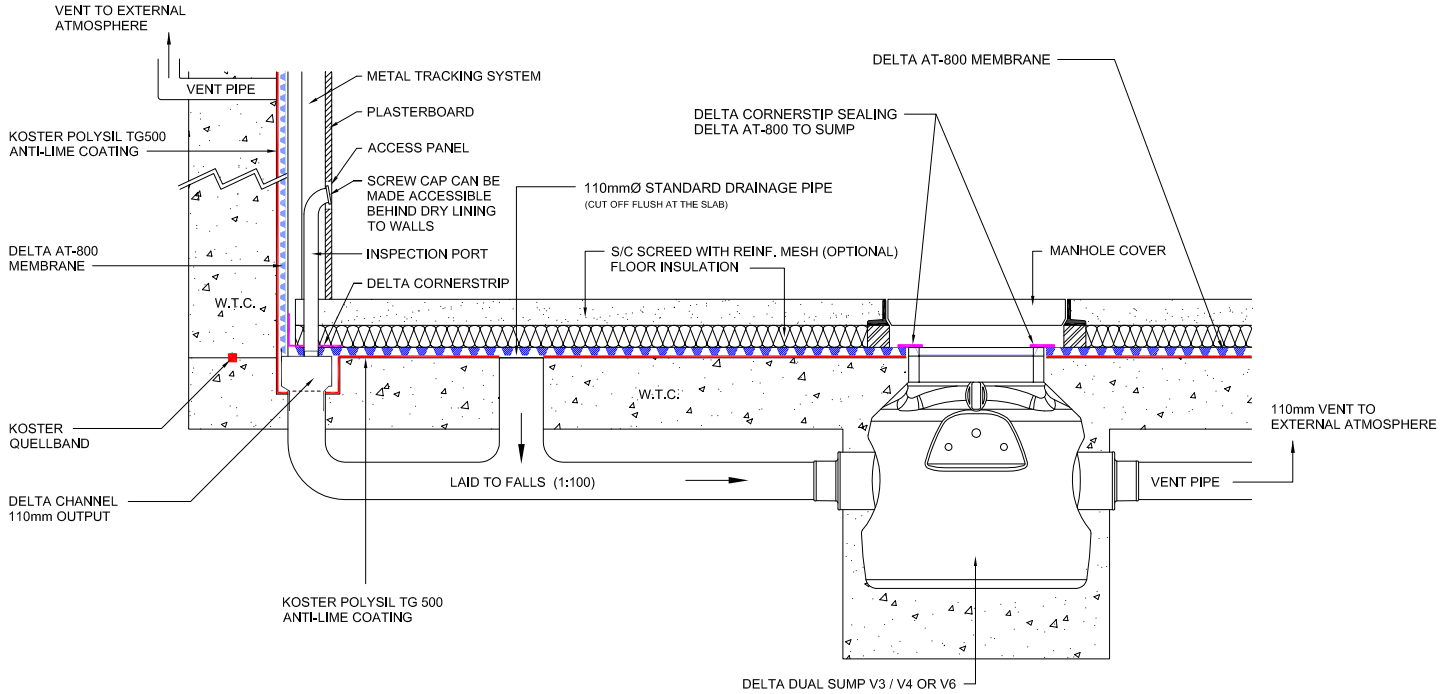
### CHAMBER SPECIFICATIONS

CHAMBER	MERCURY
Material	Tank grade polyethylene
Clear opening	Ø790mm
Discharge	63mm HDPE Adaptor



# TECHNICAL DRAWINGS

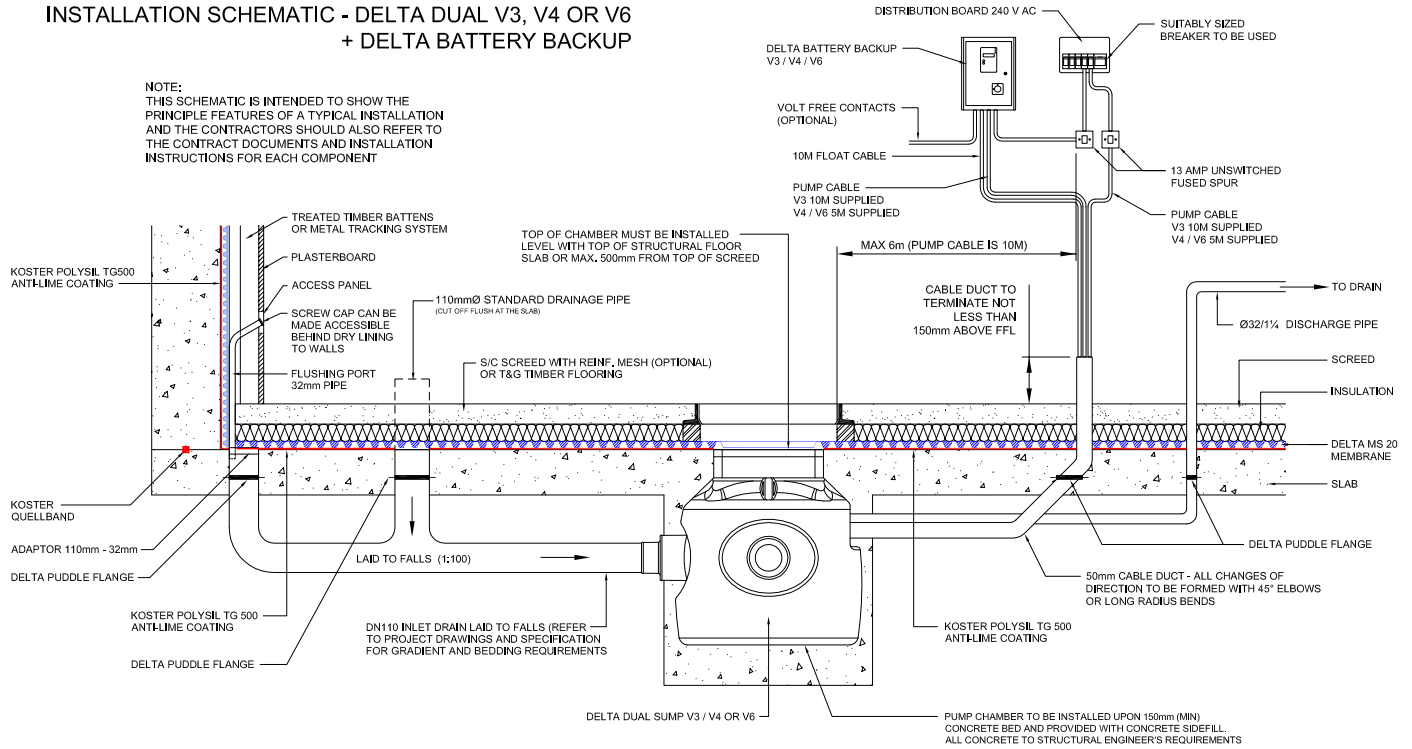
## Type C Waterproofing Drainage



## Type C Waterproofing Drainage

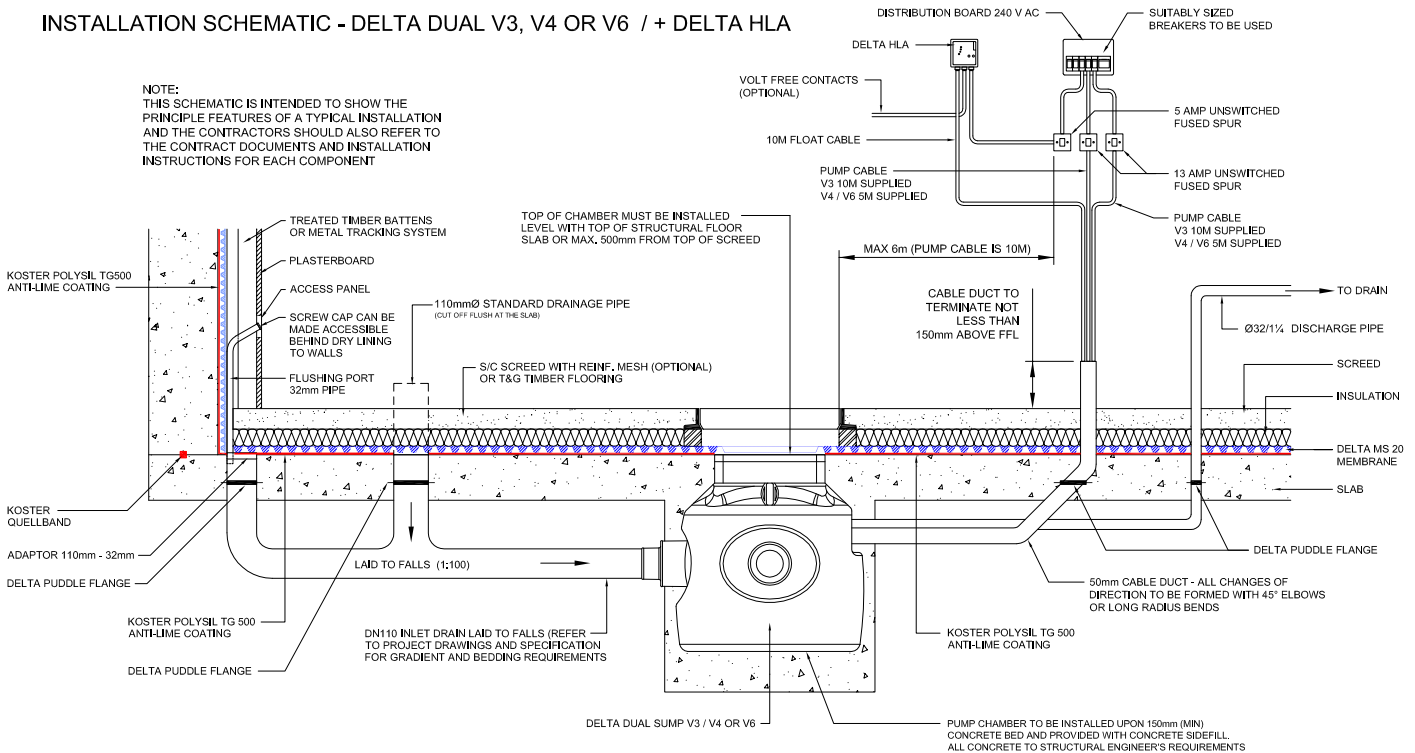
### INSTALLATION SCHEMATIC - DELTA DUAL V3, V4 OR V6 + DELTA BATTERY BACKUP

NOTE:  
THIS SCHEMATIC IS INTENDED TO SHOW THE PRINCIPLE FEATURES OF A TYPICAL INSTALLATION AND THE CONTRACTORS SHOULD ALSO REFER TO THE CONTRACT DOCUMENTS AND INSTALLATION INSTRUCTIONS FOR EACH COMPONENT



### INSTALLATION SCHEMATIC - DELTA DUAL V3, V4 OR V6 / + DELTA HLA

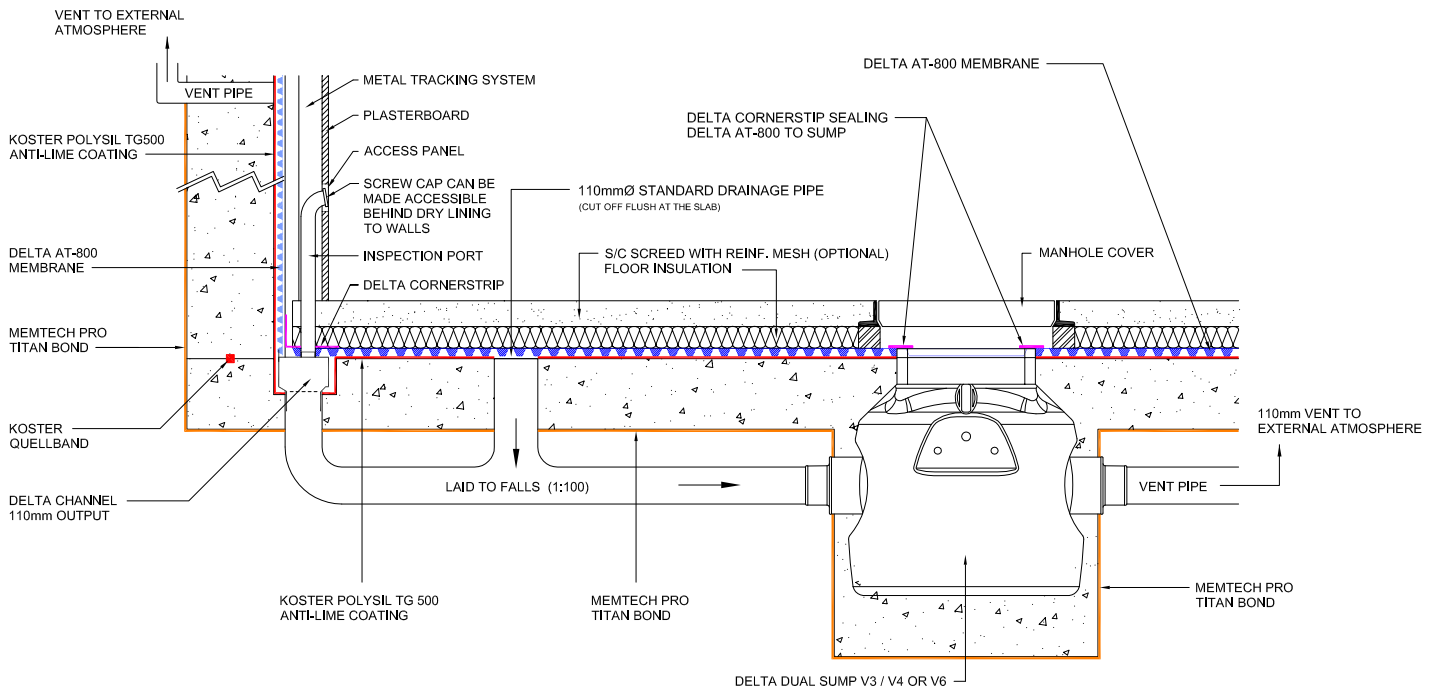
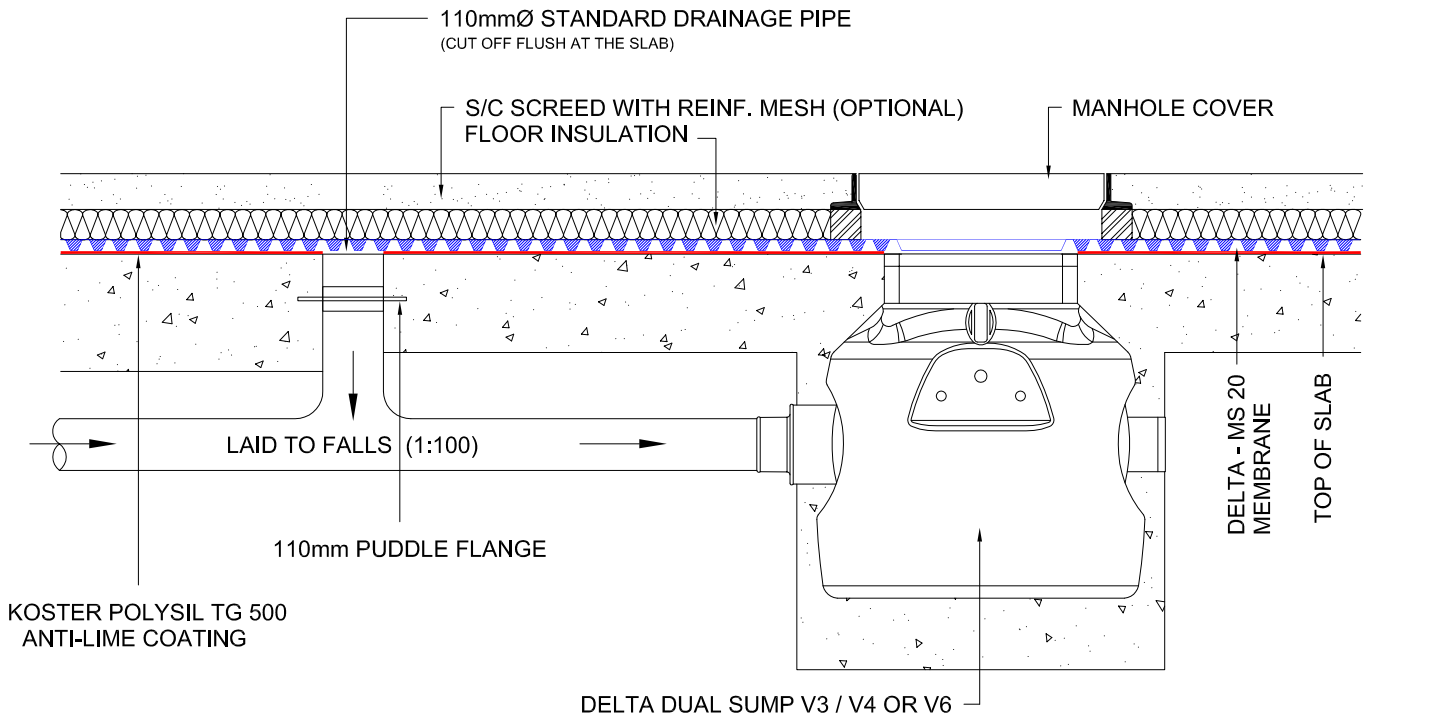
NOTE:  
THIS SCHEMATIC IS INTENDED TO SHOW THE PRINCIPLE FEATURES OF A TYPICAL INSTALLATION AND THE CONTRACTORS SHOULD ALSO REFER TO THE CONTRACT DOCUMENTS AND INSTALLATION INSTRUCTIONS FOR EACH COMPONENT



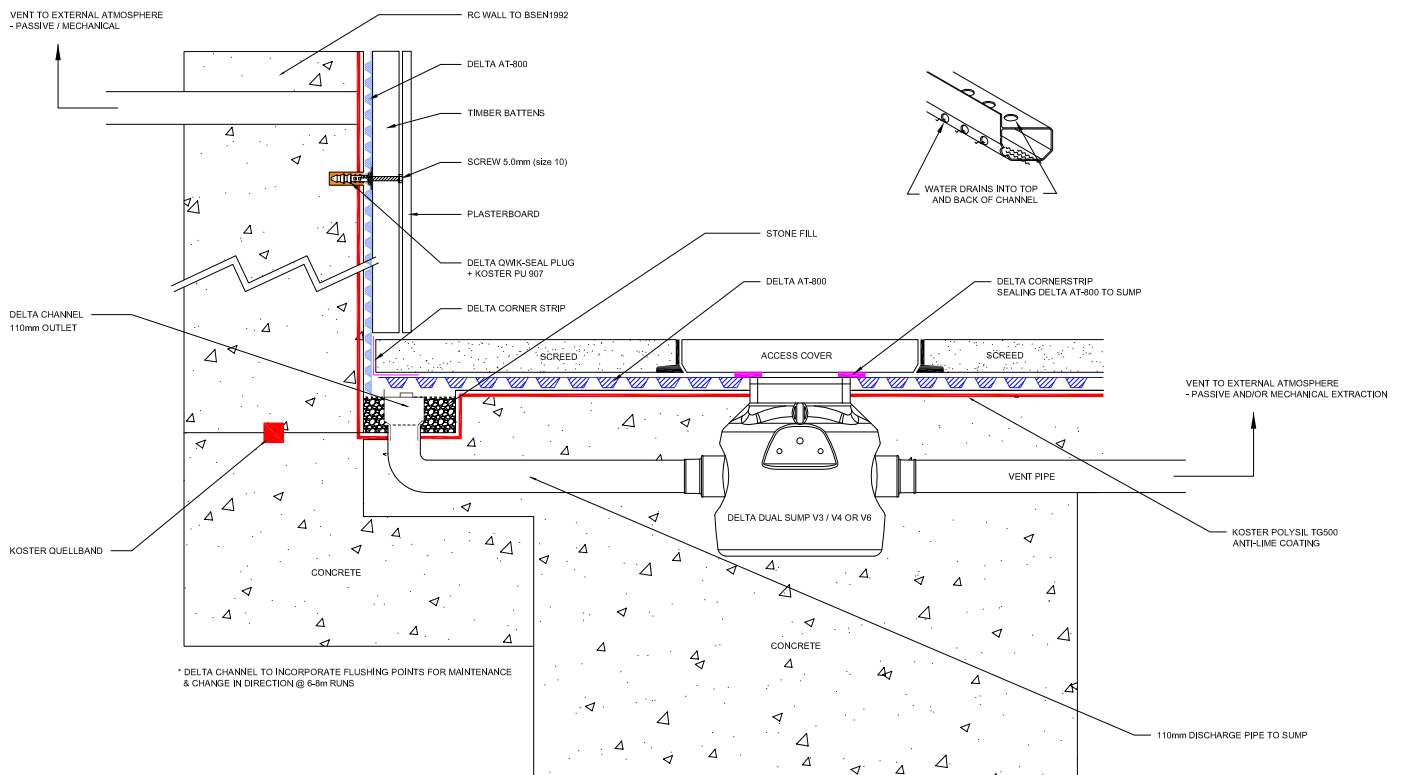


# TECHNICAL DRAWINGS

## Type C Waterproofing Drainage

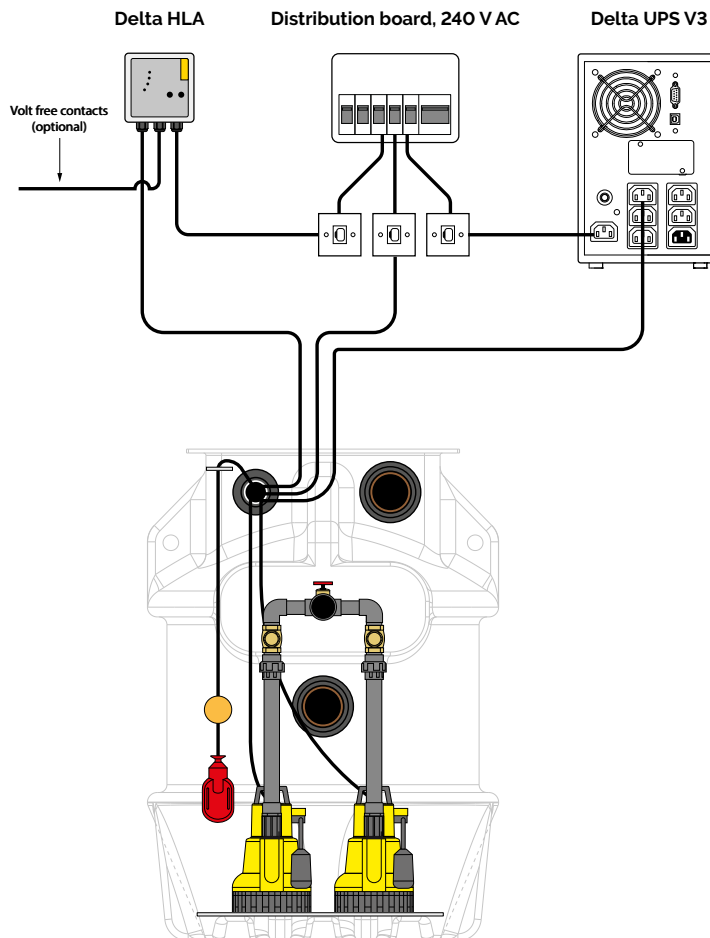
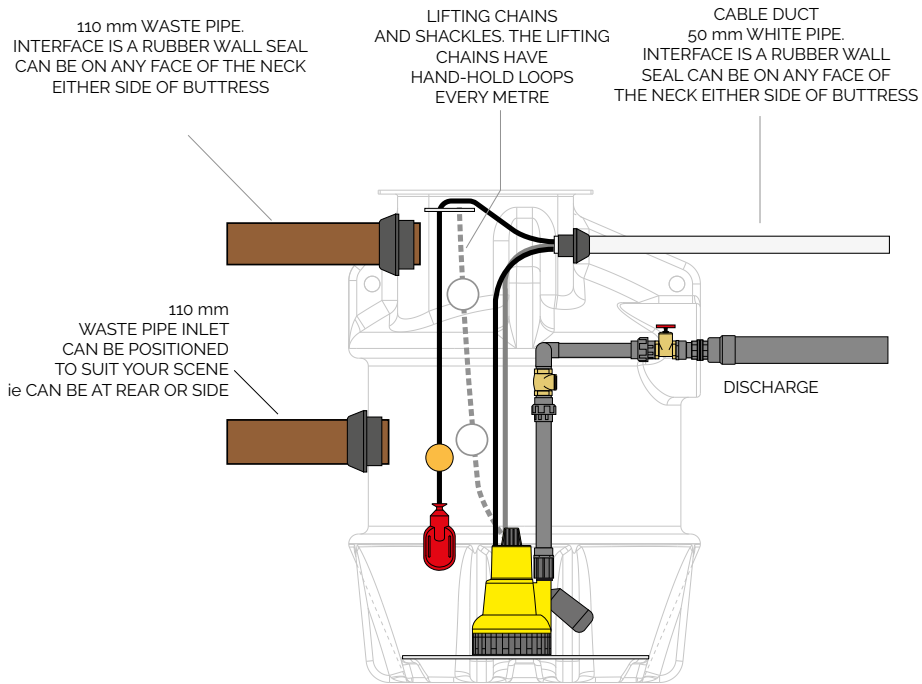


### RECESSED CHANNEL - SUMP DETAIL

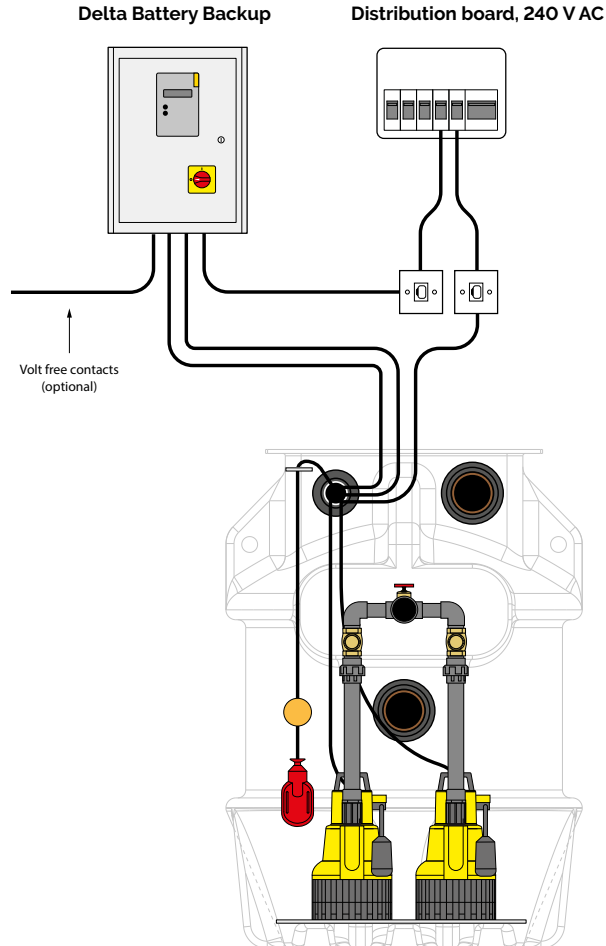
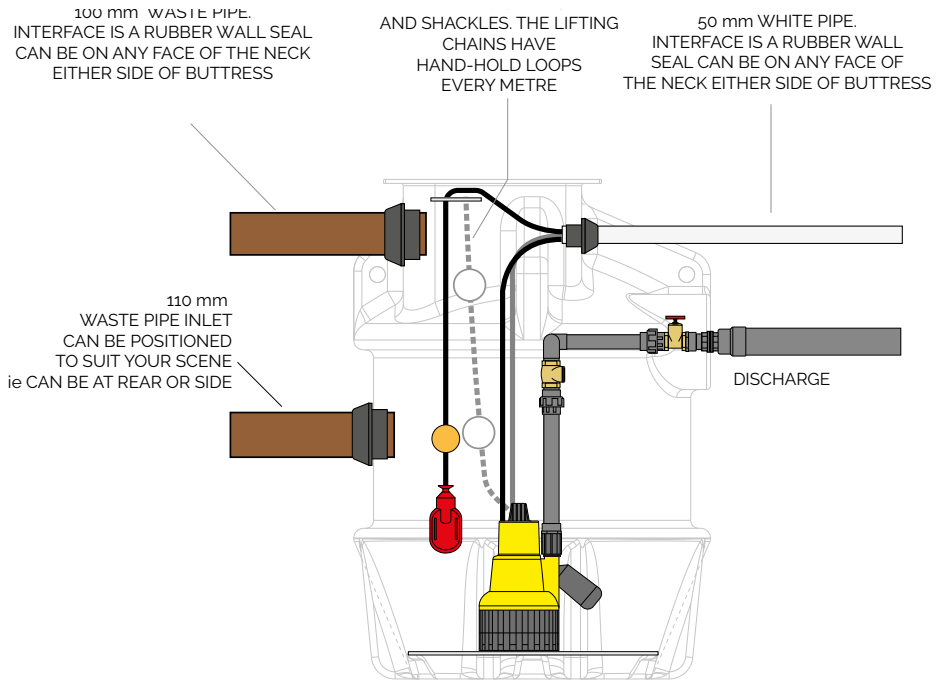


# WIRING DIAGRAMS

## Delta 800 V3 Groundwater with Delta HLA and Delta UPS V3

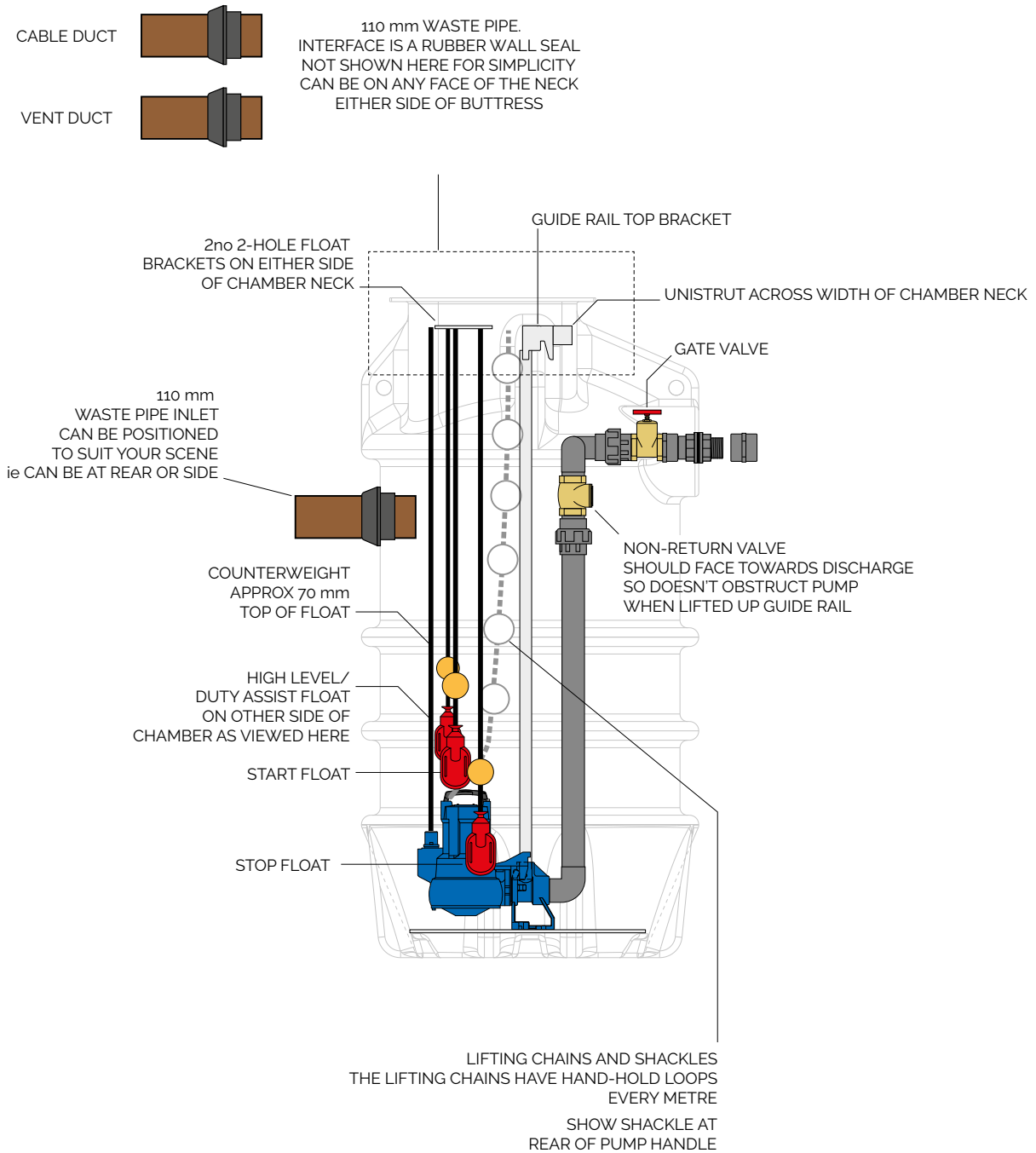


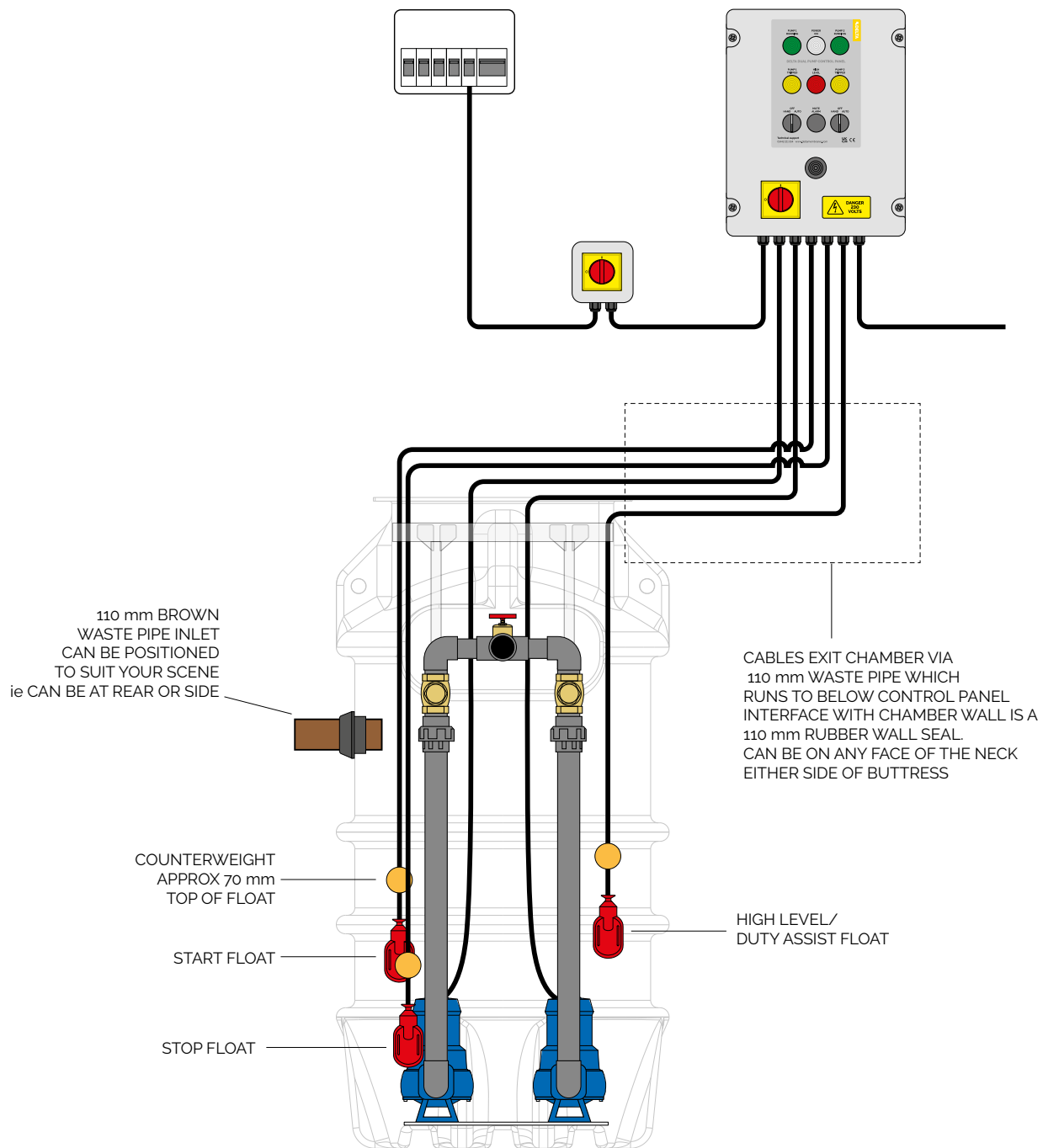
# Delta 800 V4 Groundwater with Delta Battery Backup V4-V6



# WIRING DIAGRAMS

## Delta 800 Foul Twin System Schematic







# PIPEWORK AND FITTINGS

## 1¼" pipework and fittings

DMS	Product	Qty
E100	1¼" pressure pipe, PVC Class E (2 m)	<input type="text"/>
E110	PVC, tank connector, 1¼"	<input type="text"/>
E101	PVC, 90 degree elbow PL/PL, 1¼"	<input type="text"/>
E102	PVC, 45 degree elbow PL/PL, 1¼"	<input type="text"/>
E105	PVC, tee-piece PL/PL, 1¼"	<input type="text"/>
E103	PVC, coupling (socket) PL/PL, 1¼"	<input type="text"/>
E106	PVC, socket union PL/PL, 1¼"	<input type="text"/>
E104	PVC, male threaded adaptor, 1¼"	<input type="text"/>
E107	PVC, coupling PL/TH, 1¼"	<input type="text"/>
E108	PVC, barrel nipple PL/TH, 1¼"	<input type="text"/>
E109	PVC, barrel nipple TH/TH 1¼"	<input type="text"/>
E111	PVC, coupling TH/TH female 1¼"	<input type="text"/>
E112	32 mm male iron, low pressure	<input type="text"/>
E114	1¼" O-ring for socket union, EPDM	<input type="text"/>
E113	PP saddle clamp, 110 mm x 1¼" BSP	<input type="text"/>
E201	PP, industrial pipe clip, black, 1¼"	<input type="text"/>

## 2" pipework and fittings

DMS	Product	Qty
E120	2" Pressure Pipe PVC Class E (2 m)	<input type="text"/>
E130	PVC, tank connector, 2"	<input type="text"/>
E121	PVC, 90 degree elbow PL/PL, 2"	<input type="text"/>
E122	PVC, 45 degree elbow PL/PL, 2"	<input type="text"/>
E125	PVC, tee-piece PL/PL, 2"	<input type="text"/>
E123	PVC, coupling (socket) PL/PL, 2"	<input type="text"/>
E126	PVC, socket union PL/PL, 2"	<input type="text"/>
E124	PVC, male threaded adaptor, 2"	<input type="text"/>
E127	PVC, coupling PL/TH, 2"	<input type="text"/>
E128	PVC, barrel nipple PL/TH, 2"	<input type="text"/>
E129	PVC, barrel nipple TH/TH, 2"	<input type="text"/>
E131	PVC, coupling (socket) TH/TH, 2"	<input type="text"/>
E132	50mm male iron, low pressure, white	<input type="text"/>
E134	2" BSP backnut, white c/w washer	<input type="text"/>
E135	2" O-ring for socket union, EPDM	<input type="text"/>
E133	PP saddle clamp, 110 mm x 2" BSP	<input type="text"/>
E202	PP, industrial pipe clip, black, 2"	<input type="text"/>

## 1¼" to 2" reducer kit

DMS	Product	Qty
E219	Delta 2" to 1¼" Reducer Kit	<input type="text"/>
E160	PVC, 2"-1½" reducing socket, PL/PL	<input type="text"/>
E161	PVC, 1½"-1¼" reducing bush, PL/TH	<input type="text"/>

## 2½" pipework and fittings

DMS	Product	Qty
E140	2½" pressure pipe PVC Class E (2 m)	<input type="text"/>
E145	PVC, tank connector, 2½"	<input type="text"/>
E144	PVC, male threaded adaptor, 2½"	<input type="text"/>
E142	PVC, 45 degree elbow PL/PL, 2½"	<input type="text"/>
E141	PVC, 90 degree elbow PL/PL, 2½"	<input type="text"/>
E143	PVC, coupling (socket) PL/PL, 2½"	<input type="text"/>
E146	PP saddle clamp 110 mm x 2½" BSP	<input type="text"/>

## 3" pipework and fittings


DMS	Product	Qty
E150	3" pressure pipe PVC Class E (2 m)	<input type="text"/>
E155	PVC, tank connector, 3"	<input type="text"/>
E154	PVC, male threaded adaptor, 3"	<input type="text"/>
E152	PVC, 45 degree elbow PL/PL, 3"	<input type="text"/>
E151	PVC, 90 degree elbow PL/PL, 3"	<input type="text"/>
E153	PVC, coupling (socket) PL/PL, 3"	<input type="text"/>
E156	PP saddle clamp 110 mm x 3" BSP	<input type="text"/>

## Miscellaneous

DMS	Product	Qty
E175	Solvent cement, WDF-05, 250 ml	<input type="text"/>
E176	PVC cleaning fluid, 500 ml, tin	<input type="text"/>
E177	PTFE tape, roll	<input type="text"/>

<b>Company name</b>	<input type="text"/>
<b>Contact name</b>	<input type="text"/>
<b>Telephone</b>	<input type="text"/>
<b>Email</b>	<input type="text"/>
<b>PO #</b>	<input type="text"/>
<b>Date</b>	<input type="text" value="D D M M Y Y"/>
<b>OFFICE ONLY</b>	
<b>Net £</b>	<input type="text"/>
<b>Approved by</b>	<input type="text" value="D D M M Y Y"/>

Please scan this order form and email to [pumps@deltamembranes.com](mailto:pumps@deltamembranes.com)

	<b>Pressure pipe, PVC Class E, 2 m</b>	1¼"	2"	2½"	3"		
		E100	E120	E140	E150		
	<b>Tank connector</b>	1¼"	2"	2½"	3"		
		E110	E130	E145	E155		
	<b>90° elbow PL/PL</b>	1¼"	2"	2½"	3"		
		E101	E121	E141	E151		
	<b>45° elbow PL/PL</b>	1¼"	2"	2½"	3"		
		E102	E122	E142	E152		
	<b>Tee-piece PL/PL</b>	1¼"	2"	2½"	3"		
		E105	E125	-	-		
	<b>Coupling (socket) PL/PL</b>	1¼"	2"	2½"	3"		
		E103	E123	E143	E153		
	<b>Socket union PL/PL</b>	1¼"	2"	2½"	3"		
		E106	E126	-	-		
	<b>Male threaded adaptor</b>	1¼"	2"	2½"	3"		
		E104	E124	E144	E154		
	<b>Coupling PL/TH</b>	1¼"	2"	2½"	3"		
		E107	E127	-	-		
	<b>Barrel nipple PL/TH</b>	1¼"	2"	2½"	3"		
		E108	E128	-	-		
	<b>Barrel nipple TH/TH</b>	1¼"	2"	2½"	3"		
		E109	E129	-	-		
	<b>Coupling TH/TH</b>	1¼"	2"	2½"	3"		
		E111	E133	-	-		
	<b>Delta 2" to 1¼" Reducer Kit</b>	2" to 1¼"					
		E219					
	<b>Reducing socket, PL/PL</b>	2" to 1½"					
		E160					
	<b>Reducing bush, PL/TH</b>	1½" to 1¼"					
		E161					
	<b>Male iron, low pressure</b>	1¼"/32 mm	2"/50 mm				
		E112	E132				
	<b>Backnut, ABS c/w rubber washer</b>	2" BSP					
		E134					
	<b>O-ring for socket union</b>	1¼"	2"				
		E114	E135				
	<b>110mm saddle clamp, reinforced</b>	1¼"	2"	2½"	3"		
		E113	E133	E146	E156		
	<b>Rubber drain coupling</b>	50–65 mm					
		E174					
	<b>Rubber wall seal</b>	50 mm	110 mm	160 mm			
		E168	E169	E170			
	<b>Brass gate valve</b>	1¼"	2"				
		E187	E188				
	<b>Brass swing check valve</b>	1¼"	2"				
		E191	E193				
	<b>Delta V3/4/6 non-return valve</b>	1¼"					
		E195					
	<b>PP, industrial pipe clip, black</b>	1¼"	2"				
		E201	E202				
	<b>Solvent cement, WDF-05</b>	250 ml					
		E175					
	<b>PVC cleaning fluid</b>	500 ml					
		E176					
	<b>PTFE tape, roll</b>	12mm x 12m					
		E177					



## Registered Installer Network

As manufacturers of quality systems, it is imperative to work with quality installation companies. At Delta, we pride ourselves that we've built a team of highly qualified, reliable, specialist Registered Installers. Delta Registered Installers Network are an elite group of experienced Delta System installers who share our values – a dedication to quality, authenticity, and exceptional customer services.

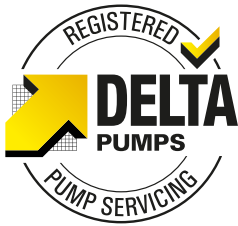
Our Delta Registered Installer Partners all have extensive experience of working with and installing Delta Systems, meaning you can be confident of a quick, efficient installation, carried out with the minimum of disruption and fuss. All Delta Registered Installers adhere to a strict criteria and are required to attend training as well as demonstrating quality of workmanship before accreditation of the Registered Installer title, resulting in a meaningful scheme that provides unrivalled technical excellence.



## Best Practice - Maintenance

As with any electrical equipment, basement sump pumps will require servicing and the entire drainage system will require regular maintenance to ensure it is working effectively.

- Reduced risk of mechanical breakdown
- Increased life expectancy of equipment
- Insures efficient operation of waterproofing system and minimises downtime



## Commissioning

All sump pumps require commissioning. Commissioning ensures your pumping station is installed to manufacturers guidelines and recommendations, and warranty conditions. Once completed a full Commissioning Certificate and Operation & Maintenance manual should be handed over.

## Warranty

All Delta Packaged Pumping Stations, High Level Alarms and Battery Backups are offered with a 12-month component warranty from the date of invoice.

Standard Delta Membrane Systems Limited conditions apply.



## Warranty from date of commissioning

When the Delta Packaged Pumping Station(s), High Level Alarm(s) and Battery Backup(s) are commissioned by a Delta Registered Pump Service Provider, the 12-month warranty period shall start from date of commissioning, provided:

- all services and associated systems are ready to enable commissioning to take place;
- the Delta Packaged Pumping Station(s), High Level Alarm(s) and Battery Backup(s) is commissioned within 12 months from the date of invoice;
- the Delta Packaged Pumping Station(s), High Level Alarm(s) and Battery Backup(s) is commissioned by a Delta Registered Pump Service Provider;
- the Delta Registered Pump Service Provider has logged Commissioning details of the Delta Packaged Pumping Station(s), High Level Alarm(s) and Battery Backup(s) with Delta Membrane Systems Limited;
- the Delta Packaged Pumping Station(s), High Level Alarm(s) and Battery Backup(s) is serviced by a Delta Registered Pump Service Provider with a minimum of a yearly Service (within 12 months from the date of commissioning/last service) depending on site specifications.

**HEAD OFFICE**

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