INNOVATION | MANUFACTURER | DESIGN | SOLUTION

INSTALLATION GUIDE
Delta Battery Backup

www.deltamembranes.com

THIS MANUAL SHOULD BE KEPT WITH THE PRODUCT OR THE HOMEOWNER

Contents

1. Delta Battery Backup overview

1.1 Delta Battery Backup overview

The Delta Battery Backup system will automatically provide power to one 240 V submersible pump when there is a loss of mains power.

The Delta Battery Backup system will keep submersible pumps running during this power outage, so that you can continue to use your appliances.

Whilst reconnected to mains power the system will charge and maintain the batteries to ensure they are always ready.

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

The Delta Battery Backup is offered in three ranges:

- Delta Battery Backup V3 – for Delta V3 pumps
- Delta Battery Backup V4/6 – for Delta V4/6 pumps
- Delta Battery Backup Foul V3 – for Delta Foul V3 pumps

Within these ranges, there are standard, Plus and XL models which provide increasing levels of battery autonomy.

1.2 Key features

- Capable of running one submersible pump without mains power for more than 24 hours
- Industry leading backup power
- 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

1.3 Specification

- European Directive 2006/95/CE
- Electromagnetic Compatibility Directive 2004/108/EC
- And these harmonised standards as applicable:
  EN 61439-1, EN 61439-2, EN 60204-1, EN 55014-1,
  EN 55014-2, EN 61000-3-2, EN 61000-3-3

1.4 Associated products

- Delta Dual V3
- Delta Dual V4
- Delta Dual V6
- Delta Foul V3
- Delta 800 Dual V3
- Delta 800 Dual V4
- Delta 800 Dual V6
- Delta 800 Single Foul V3

The Delta Battery Backup is not suitable for Delta 800 Dual Foul V3 systems. Please contact Delta Membranes for battery backup options for these systems.

1.5 Remote monitoring

The system features four volt-free contacts:

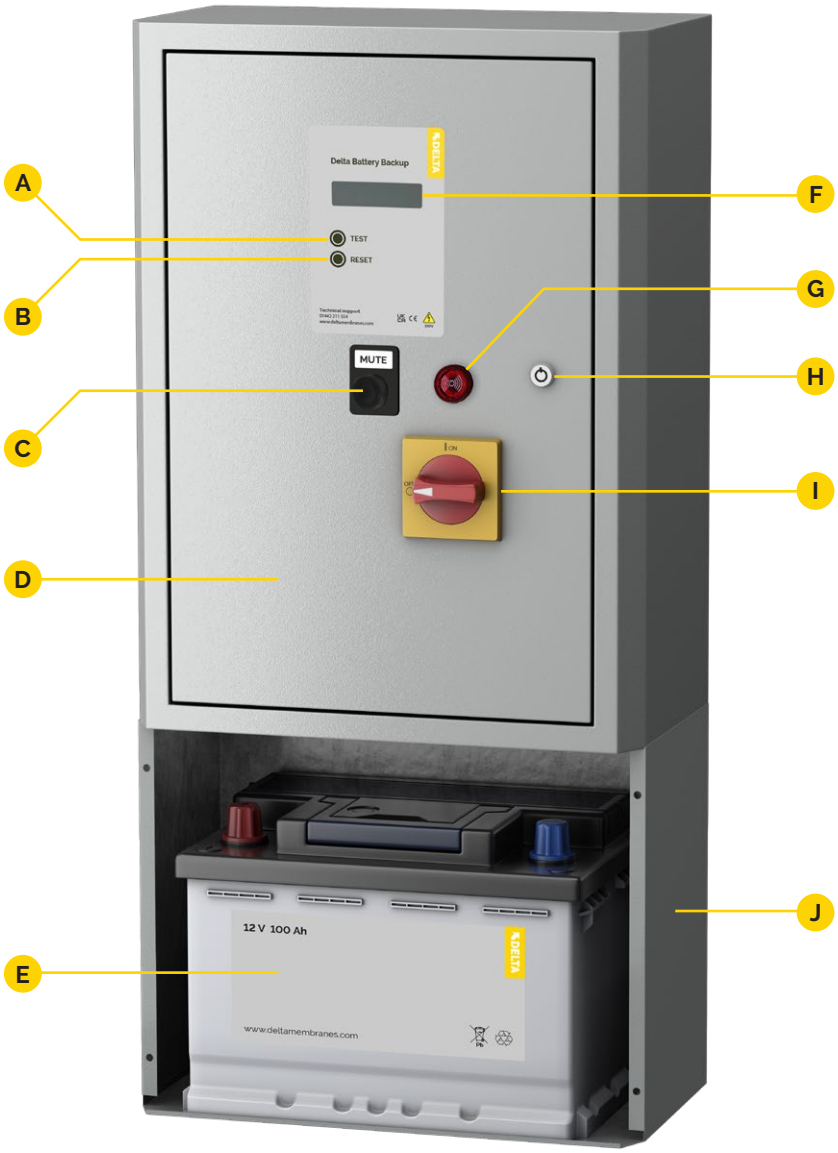
- High level alarm
- No network power alarm
- Anomaly load alarm
- Battery fault alarm

The system also features an RS-485 serial port.

- High level alarm
- No network power alarm
- Inverter fault alarm
- Anomaly load alarm
- Battery fault alarm
- Test function

The RS-485 interface also provides a 12 V contact to power a remote communication device via the serial line, should it be required.

For more information, please refer to Section 7.

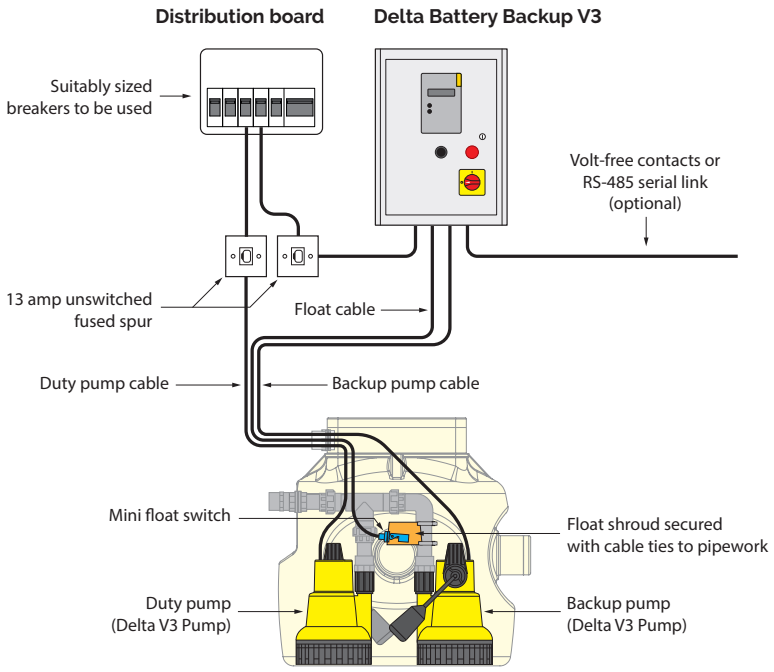


A Test button
B Reset button
C Mute button
D IP55 steel enclosure
E 12 V battery
F Illuminated LCD display
G Audio-visual alarm
H Lock
I Door locking isolator
J Battery holder

Figure 1. The Delta Battery Backup system.

1.6 Typical installations

1.6.1 Dual pump systems



Applicable packaged pumping stations:

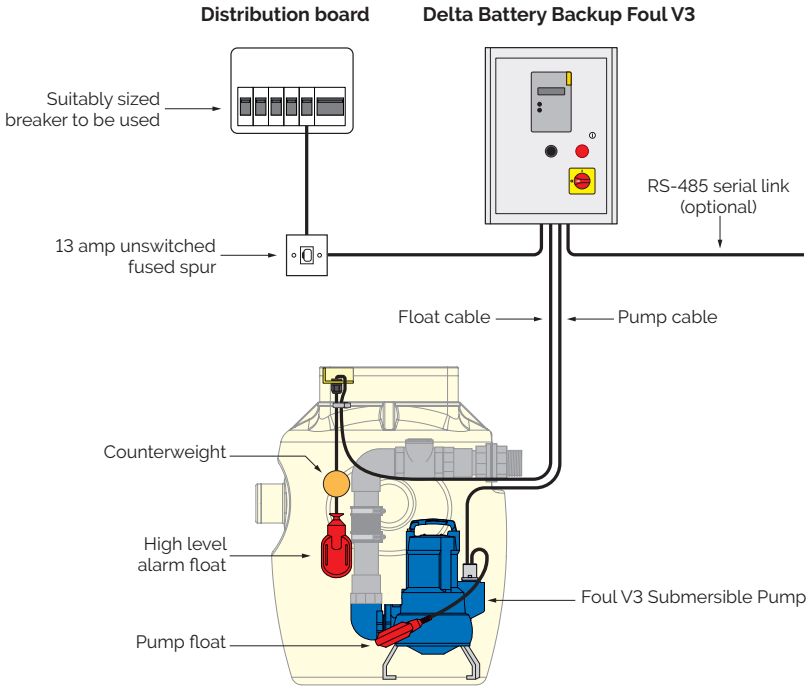
- Delta Dual V3
- Delta Dual V4
- Delta Dual V6
- Delta 800 Dual V3
- Delta 800 Dual V4
- Delta 800 Dual V6

This example shows a Delta Battery Backup V3 and Delta Dual V3 packaged pumping station.

The **BACKUP** pump should be powered via the Delta Battery Backup. The backup pump switches on at a higher level than the duty pump.

Figure 2. Typical installations for dual pump systems.

1.6.1 Single pump systems



Applicable packaged pumping stations:

- Delta Foul V3
- Delta 800 Single Foul V3

This example shows a Delta Battery Backup Foul V3 and a Delta Foul V3 packaged pumping station.

Please contact Delta Membranes for battery backup systems for Delta 800 Dual Foul V3 packaged pumping stations.

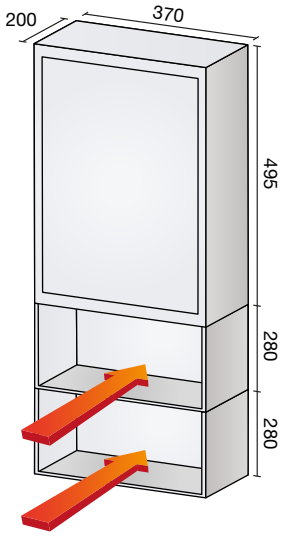
Figure 3. Typical installations for single pump systems.

1.7 Technical specifications

1.7.1 Control panel specifications

Range	V3	V4/6	Foul V3
Input			
Nominal voltage	230 VAC		
Nominal current	9.7 A		
Breaker size	RCBO Type-C 10 A		
Output			
Output voltage	230 VAC		
Waveform	50 Hz pure sine wave		
Nominal current	2 A	10 A	12 A
Nominal power	500 W	1500 W	2200 W
Miscellaneous			
Connectivity	4no volt-free contacts, RS-485 serial interface		
Ambient temperature	-5°C to +40°C		
Relative humidity	< 50% at +40°C		
Protection	Invertor protection fuse, battery polarity inversion protection, short circuit and overload protection, fuse charge protection, door-locking isolator		
Case construction	Metal, IP55		
Security	Locking with coded key		
Weight	9 kg (excl. batteries)		

1.7.2 Dimensions



For number of battery compartments per model please refer to the table below.

1.7.3 Battery capacities and autonomy

Model		Delta Battery Backup V3		Delta Battery Backup V4/6		Delta Battery Backup Foul V3
		Standard (DMS E023)	Plus (DMS E024)	Standard (DMS E026)	Plus (DMS E027)	(DMS E030)
Battery type and						
Number of batteries/holders		1	1	1	2	2
Battery type		12 V 60 Ah	12 V 100 Ah	12 V 100 Ah	12 V 100 Ah	12 V 100 Ah
Battery autonomy (based on a 3.5 metre head)						
Delta V3	Intermittent*	60 hours	120 hours	–	–	–
	Continuous	60 mins	120 mins	–	–	–
Delta V4	Intermittent*	–	–	45 hours	90 hours	–
	Continuous	–	–	45 mins	90 mins	–
Delta V6	Intermittent*	–	–	45 hours	90 hours	–
	Continuous	–	–	45 mins	90 mins	–
Delta Foul V3	Intermittent*	–	–	–	–	–
	Continuous	–	–	–	–	90 mins

* Based on PCA guidance of 3 activations of 20 seconds each per hour and a 3.5 metre head. Deviation from these parameters will change the battery autonomy.

2. Safety

Strictly follow the instructions contained in this manual.

DANGER!

Do not wear metallic objects such as watches, rings, bracelets. May cause burns in the event of a short-circuit between the battery poles.

DANGER!

Always assume the presence of 230 VAC 50 Hz mains power even in the event of a mains power failure.

DANGER!

The batteries are sealed units and should not be opened. If battery acid comes into contact with the eyes wash immediately and thoroughly with water. Seek medical help immediately. Do not smoke, create sparks or use naked flames near the batteries.

DANGER!

To prevent injury and damage to the equipment, it is important that the system is installed in the correct order as listed in the *Section 4.2 Order of installation*

WARNING!

Be careful not to short circuit the battery cables. Before making the connections, ensure the cables are in good condition.

WARNING!

For connection to the mains electrical supply it is imperative that the Delta HLA is connected to a dedicated power supply and not via a ring main.

3. Site preparation

3.1 Advisory

All products are manufactured and developed to the highest standards and assembled with precision and care. Each product has been rigorously tested. We constantly strive to develop our products to provide you with the most innovative products possible.

Please read these installation and operating guidelines carefully prior to installation. These guidelines contain important information and hazard warnings, which will enable you to install and operate your product safely, economically, and reliably.

Only qualified personnel should carry out the installation in accordance with the latest IET wiring regulations BS7671. All works should be in line with the Health and Safety at Works Act 1974.

It is important to note that these guidelines are for guidance only and it is the installer's responsibility to satisfy themselves that the installation procedure is in accordance with good practice, this will then eliminate any potential damage to the product during or after installation.

If you are unsure on any point, then please contact Delta Membranes on 01992 523 523 between 8am and 5pm, Monday to Friday or by email at info@deltamembranes.com for more information.

3.2 Intended use

Delta Battery Backup is designed for use indoor use only. Under no circumstances should the product be installed outdoors.

Do not operate the Delta Battery Backup in direct sunlight, in contact with fluids, or where there is excessive dust or humidity. Allow adequate space for proper ventilation.

The output power can be set by selecting the inverter size. In choosing this, it is advisable to exceed the rated power of the pump by 30%. For example if the pump is 500 W, set the output power to 750 W.

3.3 Siting the product

Select a suitable location for the Delta Battery Backup, taking into account cable lengths from the base of the pump chamber/sump, through the cable duct to the panel. If you need to mount the panel further away from the pump chamber/sump, please contact Delta Membranes on 01992 523 523 between 8am and 5pm, Monday to Friday or by email at info@deltamembranes.com for more information.

Install the equipment in a dry and well-ventilated place and accessible by the end user and service engineers.

It must be located where the panel's alarm is audible. Please consider the Noise Pollution Act.

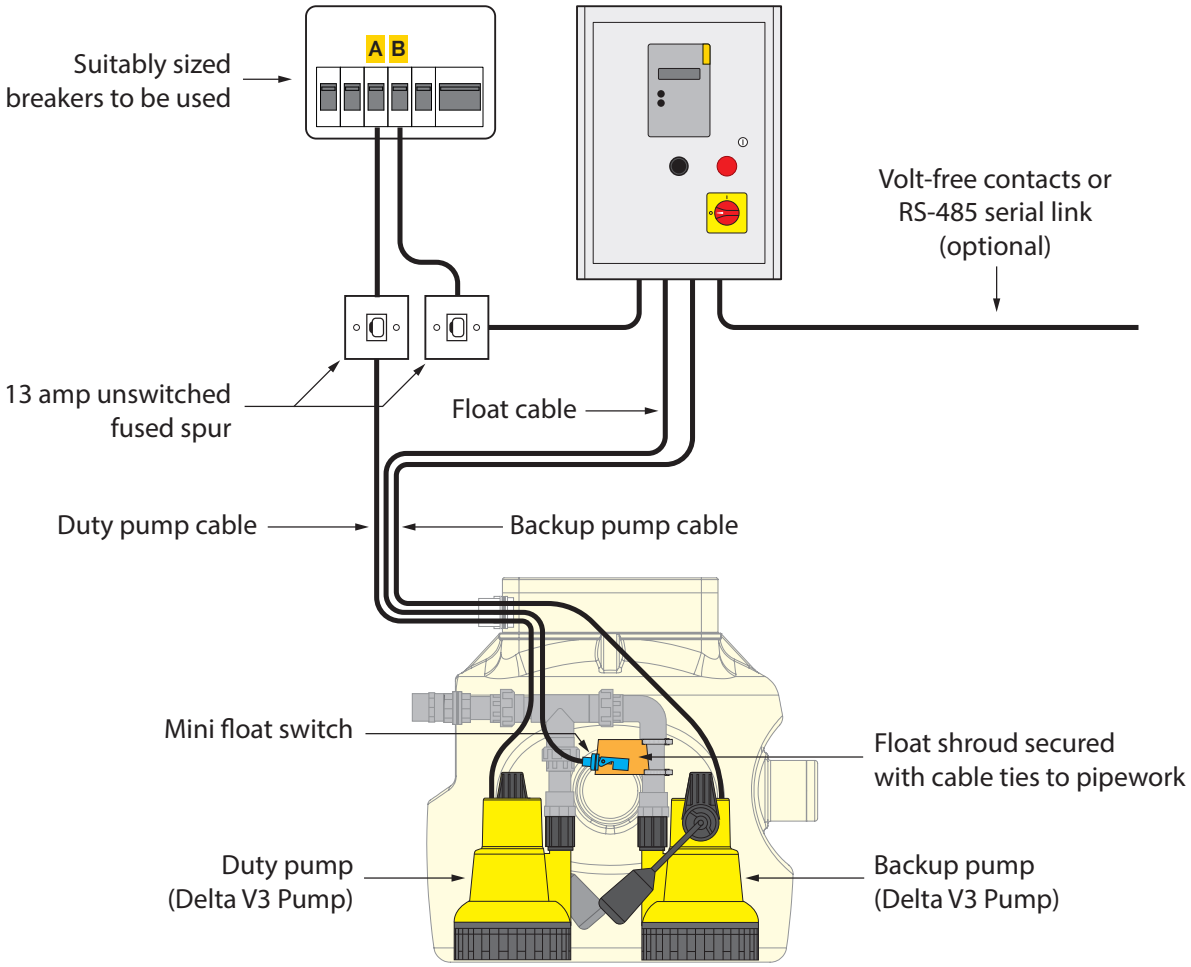
The equipment should be fixed to the wall a minimum of 500 mm above FFL. The battery holder(s) must to be fixed to the Delta Battery Backup enclosure as well as to the wall.

4. Installation

4.1 Installation overview

- The Delta Battery Backup should be connected to a dedicated RCBO Type-C 10 A breaker at the mains distribution board.
- The equipment must be installed by qualified personnel.
- The connections must be made in the order listed in *Section 4.2 Order of installation.*
- The connections must be made in the absence of voltage.
- Use tools with an insulating handle.
- Respect the phase-neutral connections and the indicated polarities. Damages due to non-compliance with this warning are not be covered by the manufacturer's warranty.
- The cable glands (supplied) must be passed over both containers (equipment/battery compartment).

4.1.1 Wiring schematic for dual pump installations



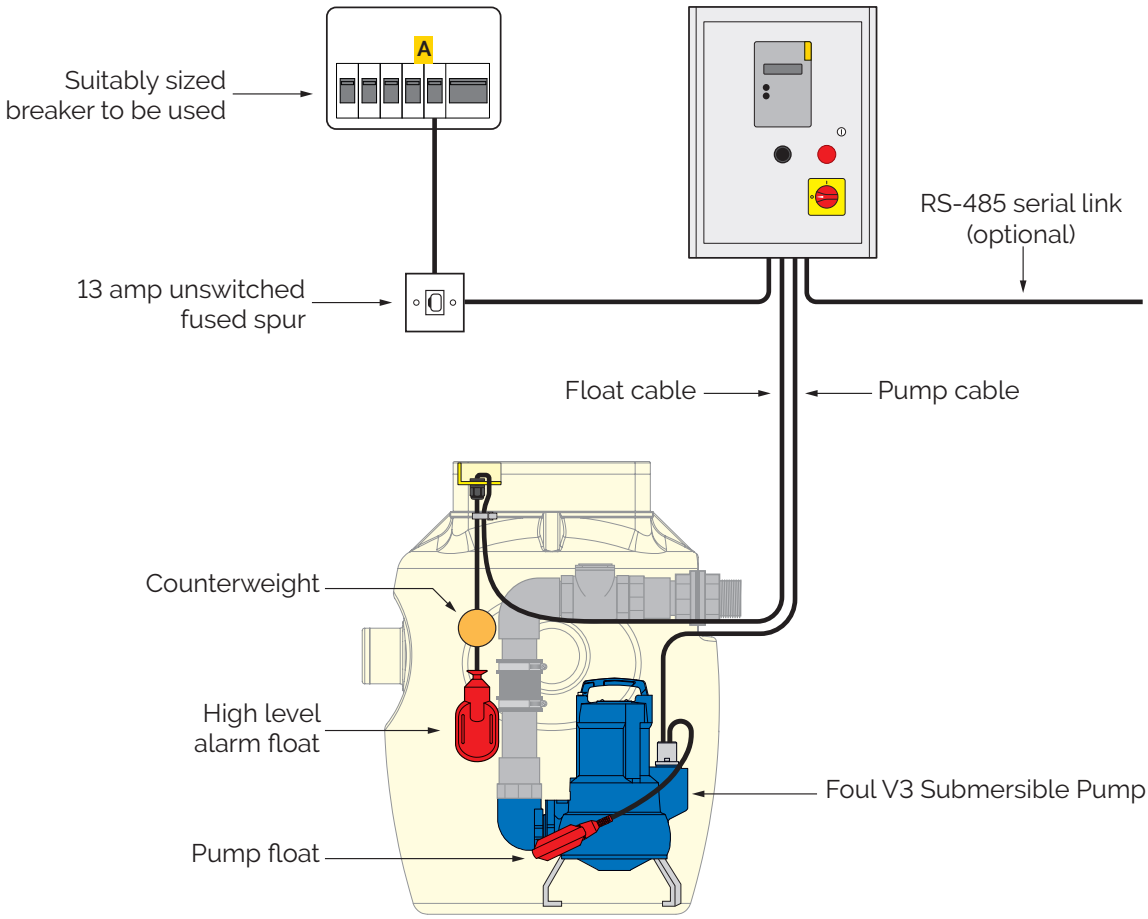
Breaker specification

	Description	Device type	Rating
A	Submersible pump	RCBO, Type C	By pump*
B	Delta Battery Backup	RCBO, Type C	10 A

* Please refer to the pumping system installation guide for RCBO rating for each pump type.

Figure 4. Wiring schematic for dual pump installations.

4.1.2 Wiring schematic for single pump installations



Breaker specification

	Description	Device type	Rating
A	Delta Battery Backup	RCBO, Type C	10 A

Figure 5. Wiring schematic for single pump installations.

4.1.3 Wiring diagram

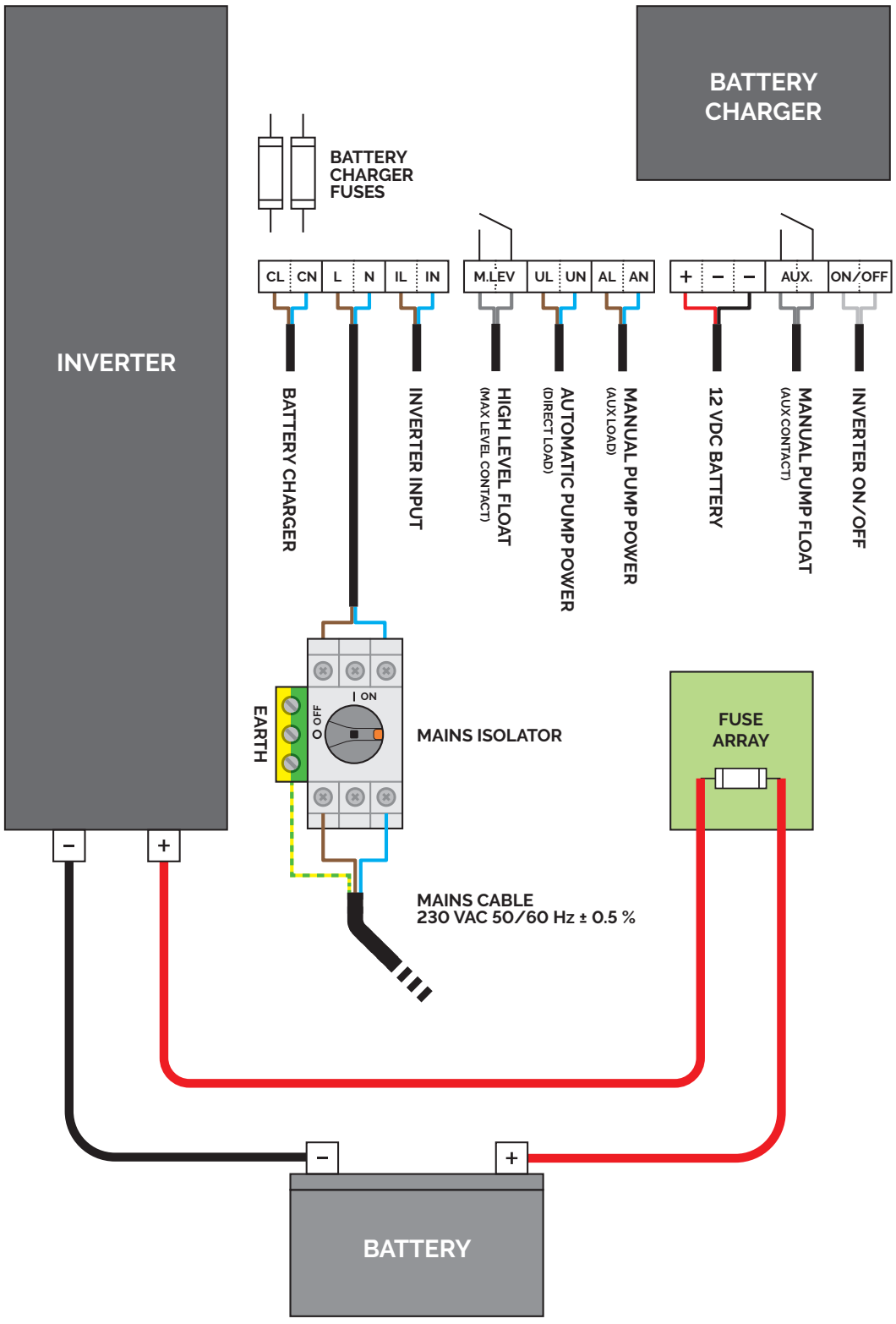


Figure 6. Delta Battery Backup wiring diagram.

4.2 Order of installation

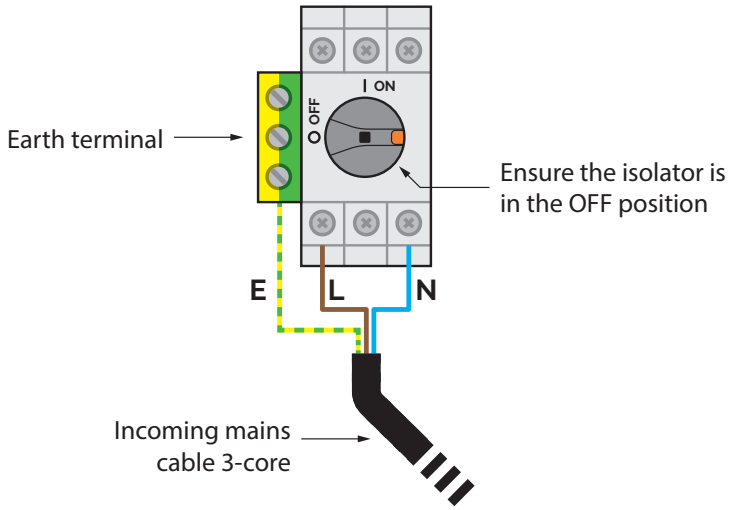
DANGER!
To prevent injury and damage to the equipment, it is important that the system is connected in the correct order.

1. With the mains isolator in the OFF position and mains power to the system OFF, connect the mains power cable and earth cable (Section 4.3).
2. Connect the pump (Section 4.4).
3. Connect the high level alarm float (Section 4.5).
4. Connect the batteries (Section 4.6).
5. Turn on mains power to the system at the distribution board.
6. With the door closed, turn on the mains power isolator on the front of the enclosure (Section 5.2).
7. Wait until the initial battery voltage reading is displayed on the screen.

4.3 Connecting the mains power cable and earth cable

DANGER!
To prevent injury and damage to the equipment, ensure mains power is OFF and the product's mains isolator switch is set to the OFF (O) position.

Ensure the mains isolator switch is set to the OFF (O) position and mains power is OFF at the distribution board. Connect the mains power cable to the system's door locking isolator switch.



4.4 Connecting a pump to the Delta Battery Backup

4.4.1 Connecting an automatic pump to the Delta Battery Backup

All standard Delta packaged pumping stations that are compatible with the Delta Battery Backup feature automatic pumps (pumps which come with a float already attached).

- Delta V3 Pump
- Delta V4 Pump
- Delta V6 Pump
- Delta Foul V3 Pump (Automatic)

These connect to the UL/UN (Direct Load) terminals.

In operation, there will always be a voltage across these terminals. The pump's integral float switch will activate the pump.

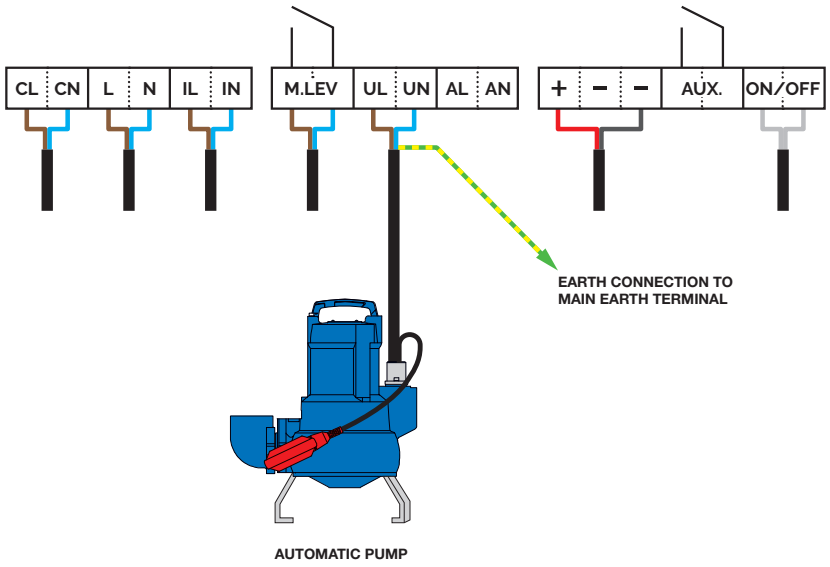


Figure 15. Connecting an automatic pump to the Delta Battery Backup.

4.4.2 Connecting a manual pump to the Delta Battery Backup

Should you need to connect a manual pump to the Delta Battery Backup, use the AL/AN (Aux Load) terminals instead of the UL/UN (Direct Load) terminals.

The level control (float, pressure switch etc) which controls the pump should connect to the Aux Contact terminals.

When the Aux Contact terminals are closed by the activated level control, a voltage is applied across the AL/AN terminals thus powering the pump. When the level control deactivates, the Aux Contact is opened and the pump is de-powered.

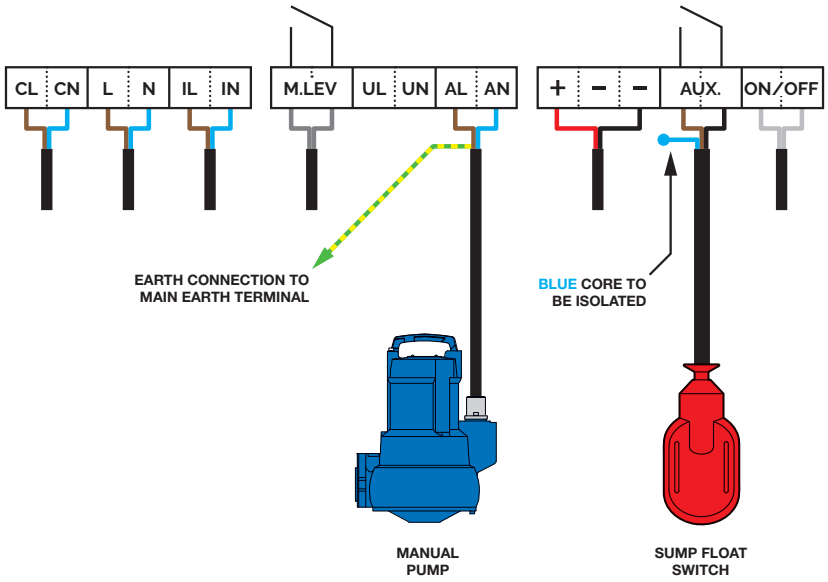


Figure 16. Connecting a manual pump to the Delta Battery Backup.

4.5 Connecting a high level alarm float to the Delta Battery Backup

4.5.1 Mounting a high level alarm mini float (Delta Dual V3/V4/V6)

Please refer to the specific installation and operating guidelines for the chamber/sump when installing the float switch.

The mini float switch is supplied with a 10 m cable. If you require more than 10 metres please contact Delta Membranes on 01992 523 523 between 8am and 5pm, Monday to Friday or by email at info@deltamembranes.com for assistance.

1. The mini float switch should be positioned between the activation points of the two pumps, as shown in Figure 7. This will cause the alarm to trigger if Pump 1 has failed, before Pump 2 empties the chamber. This periodic triggering is a useful indicator that there is a fault in the pumping station.
2. The mini float switch should be installed in the float shroud. The float shroud should be positioned on the vertical pipework of the rear pump so that it butts up to the base of the elbow and secured with cable ties. See Figure 8.
3. When positioning the mini float switch insert the float cable through the green washer.
4. Place the mini float switch into position with the activation arm located in the downwards position as shown in Figure 9.
5. Insert the mini float cable through the blue plastic washer and nut and tighten fully.
6. Cable to be drawn through cable duct between the chamber/sump and control panel location for removal at a later date.

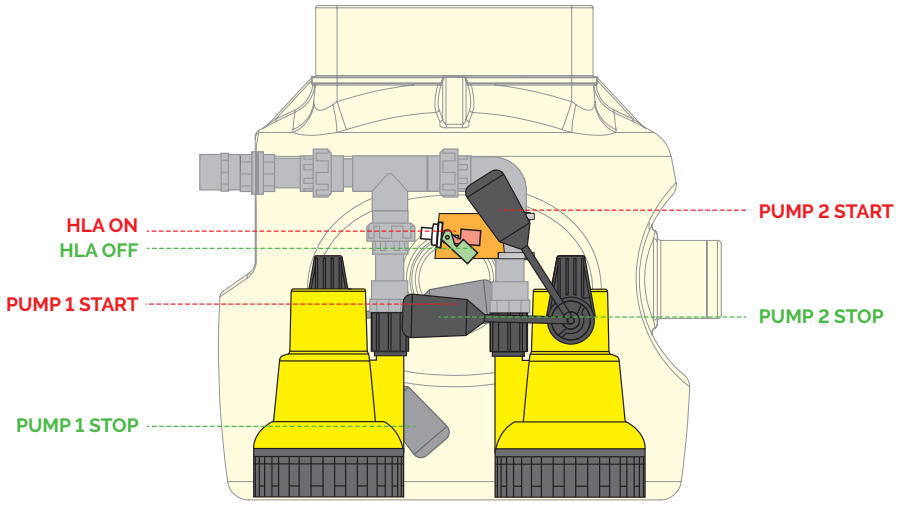


Figure 7. Mini float switch on and off positions.

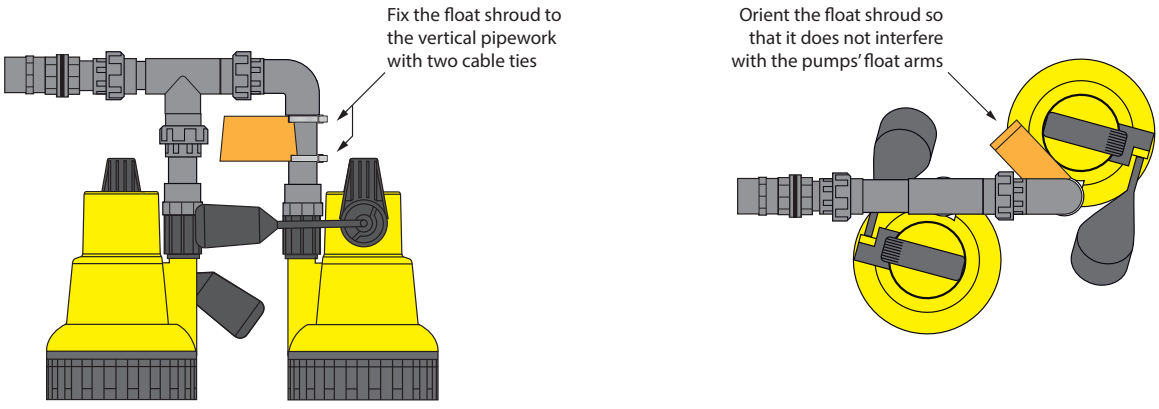


Figure 8. Fixing and orienting the float shroud.

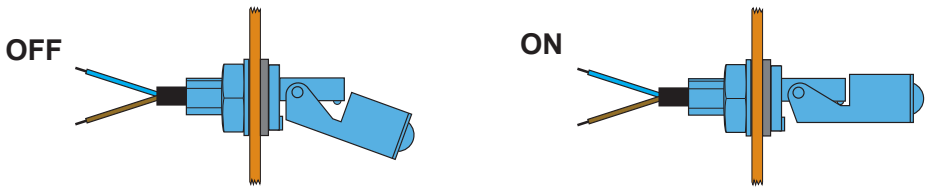


Figure 9. Mini float switch OFF and ON positions.

4.5.2 Connecting a high level alarm mini float to the Delta Battery Backup

1. Loosen the float switch cable gland located on the underside of the Delta Battery Backup.
2. Draw the mini float switch cable through the cable gland.
3. Connect the brown core to the positive and the blue core to the negative terminal of the High Level Float (M.LEV) terminal.

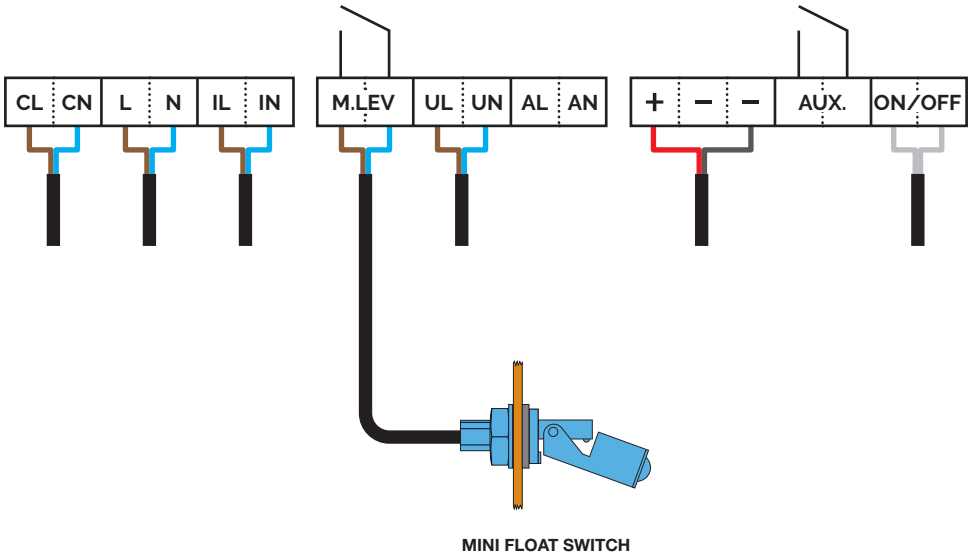


Figure 10. Connecting the mini float switch to the Delta Battery Backup.

4.5.3 Mounting a high level alarm sump float (Delta Foul V3, Delta 800 Series)

Please refer to the specific installation and operating guidelines for the chamber/sump when installing the float switch.

The sump float switch is supplied with a 10 m cable. Should you require more than 10 metres contact Delta Membranes on 01992 523 523 between 8am and 5pm, Monday to Friday or by email at info@deltamembranes.com for assistance.

1. Please ensure you position the sump float switch higher than the primary pump activation point contained within, as shown in Figure 11, 12 or 13.
2. Install the sump float switch cable securely. The sump float switch should be installed using a float bracket. The Delta Foul V3 chamber features an integral float bracket. 800 Series chambers feature a steel float bracket.
3. Attach the counterweight approximately 70 mm from the top of the float switch. You must separate the counterweight by removing the centre screw using a 6 mm Allen key, once separated you will see two grooves, using the smaller of the grooves position the cable into place and put the counterweight back together ensuring the centre screw is tightened.
4. Pull the float cable through the M20 cable gland on the float bracket. Position the sump float switch higher than the primary pump activation point. Once the float has been positioned tighten the M20 gland.
5. Fix the cable into position using a cable tie to ensure the float doesn't drop down.
6. Cable to be drawn through cable duct between the chamber/sump and control panel location for removal at a later date.

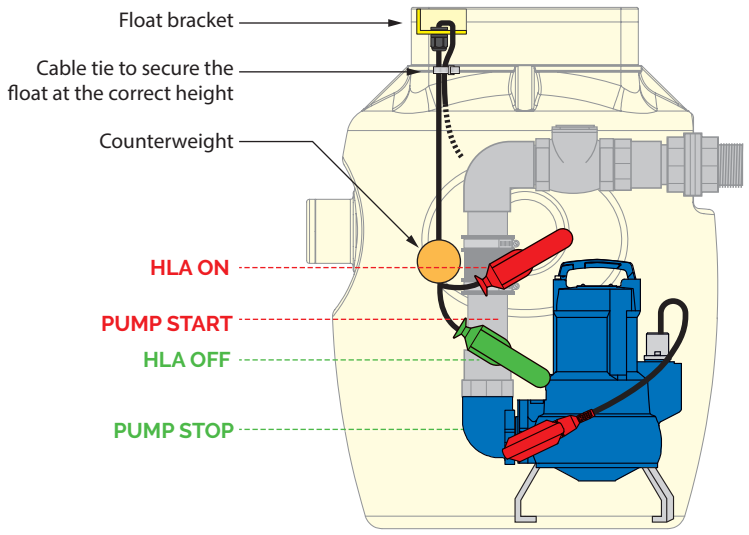


Figure 11. Setting the switching heights of the sump float in a Delta Foul V3 Packaged Pumping Station.

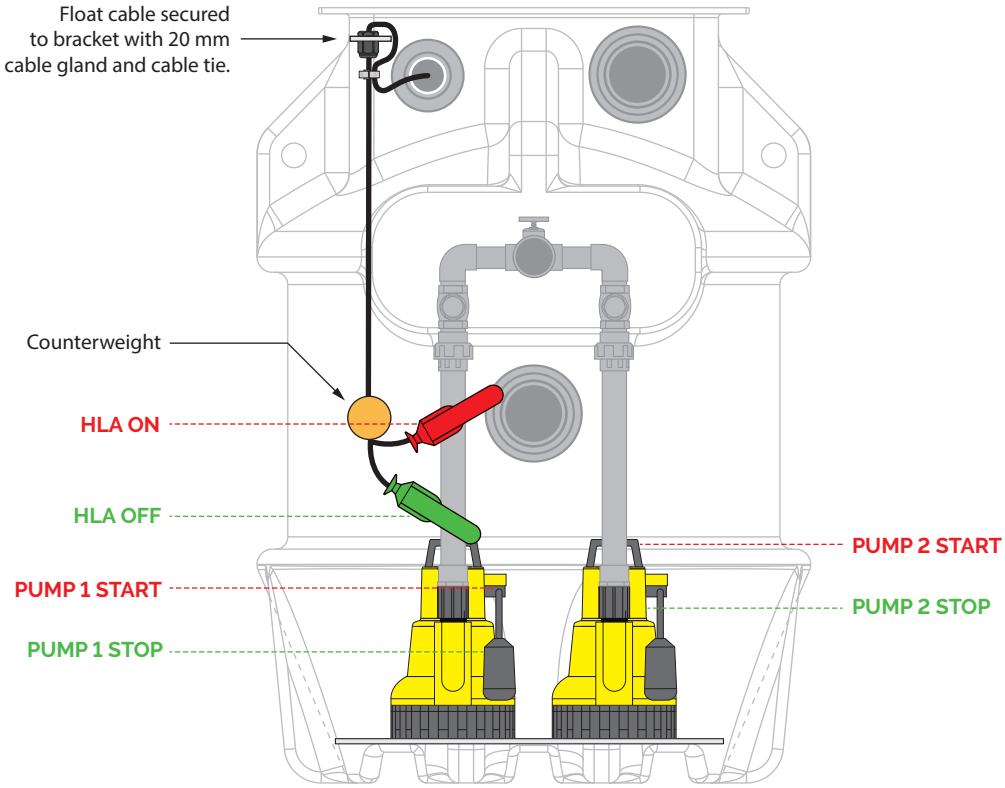


Figure 12. Setting the switching heights of the sump float in a Delta Dual V3/V4/V6 800 Series Packaged Pumping Station.

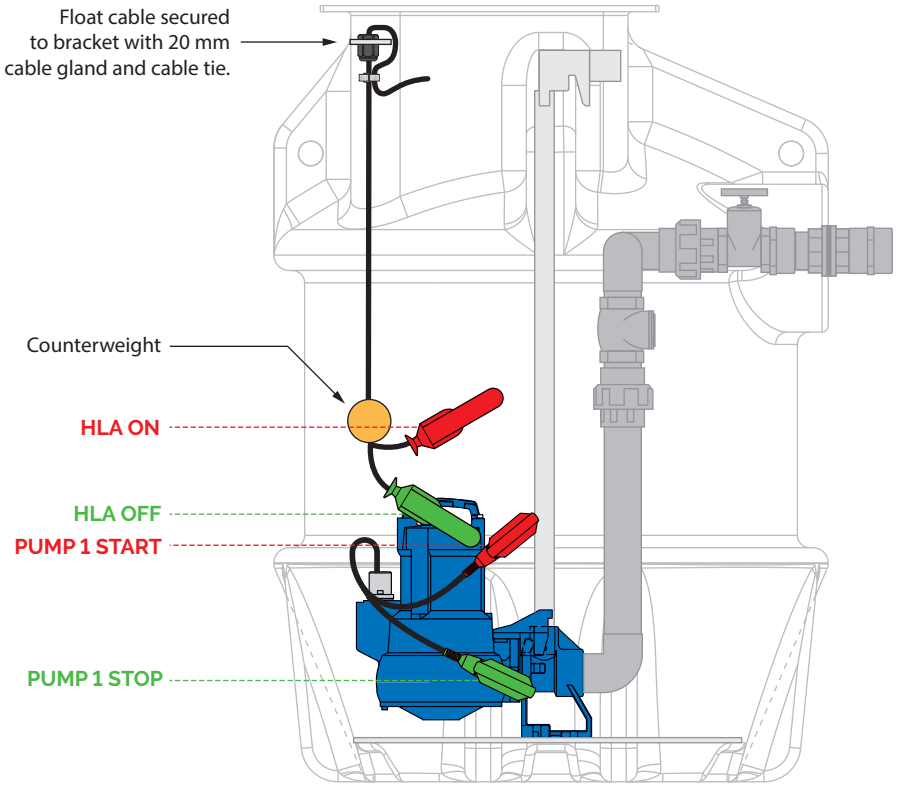


Figure 13. Setting the switching heights of the sump float in a Delta Single V3 Foul 800 Series Packaged Pumping Station.

4.5.4 Connecting a high level alarm sump float to the Delta Battery Backup

1. Loosen the float switch cable gland located on the underside of the Delta Battery Backup panel.
2. Draw the sump float switch cable through the cable gland.
3. Connect the brown core to positive and the black core to the negative terminal, as shown in Figure 14.
4. Ensure that the blue core is isolated.

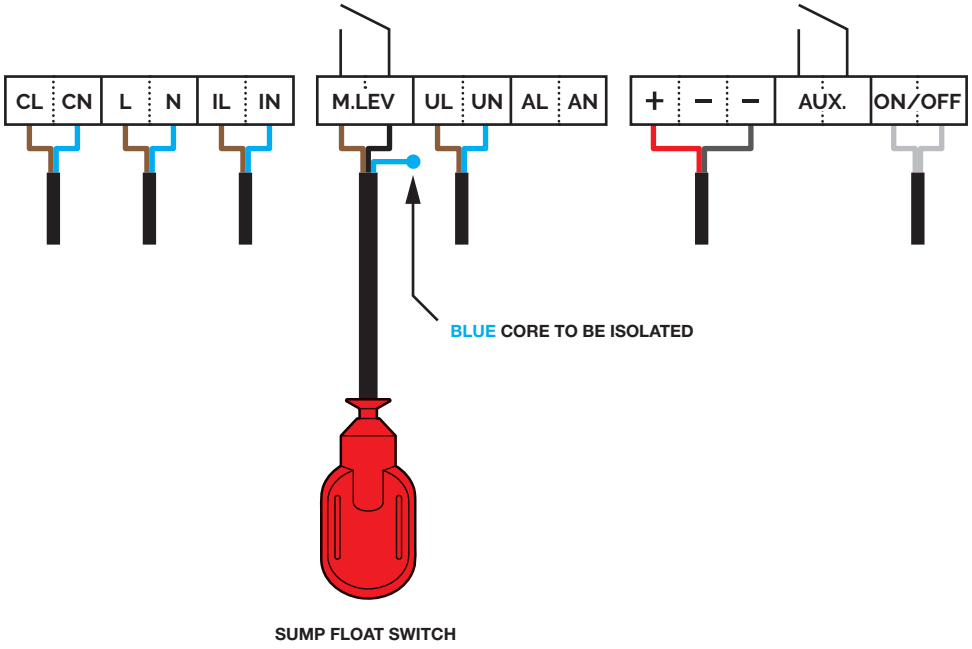


Figure 14. Connecting the sump float to the Delta Battery Backup.

4.6 Connecting the battery / batteries

DANGER!

To prevent injury and damage to the equipment, ensure mains power is OFF and the product's mains isolator switch is set to the OFF (O) position.

The batteries should be installed in the battery holder provided. The battery holder should be fixed to both the panel and the wall.

Only connect the batteries once the mains power cable, pumps and high level alarm float connections have been made.

Each battery's the positive terminal lug is slightly larger in diameter than the negative terminal lug. The corresponding lead clasps are also slightly different in size. Make sure you are using the correct lead for each terminal connection (usually the red cable for the positive and black cable for the negative).

You should not need to force the lead clasp onto the battery terminal lug. If force is required, check that the polarity is correct.

Do not over tighten the screws on the clasps.

Always connect the positive terminal first and then the negative terminal. There may be a spark when the circuit is completed. This is normal.

DMS	Model	Invertor voltage	Number of batteries	Battery type
E023	Delta Battery Backup V3	12V	1	12 V 60 Ah
E024	Delta Battery Backup V3 Plus	12V	1	12 V 100 Ah
E026	Delta Battery Backup V4/6	12V	1	12 V 10 Ah
E027	Delta Battery Backup V4/6 Plus	12V	2	12 V 100 Ah
E030	Delta Battery Backup Foul V3	24V	2	12 V 100 Ah

Figure 15. Battery requirements per Delta Battery Backup system.

4.6.1 Connecting a single battery

1. First connect the red cable to the positive terminal on the battery.
2. Then connect the black cable to the negative terminal on the battery.

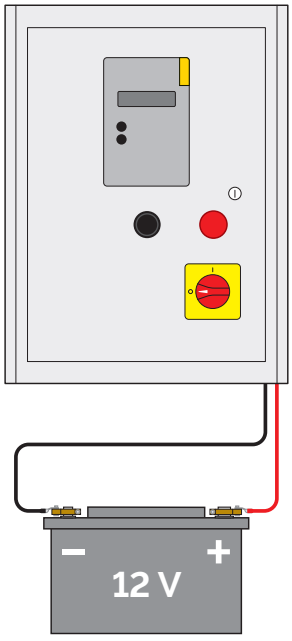


Figure 16. Single battery arrangement.

4.6.2 Connecting two batteries in parallel (Delta Battery Backup V4/6 Plus only)

Connecting batteries in parallel increases the autonomy (the capacity) without increasing the voltage.

Two 12 V 100 Ah batteries connected in series act as a single 12 V 200 Ah battery.

Only connect two batteries of the same specification ie. two 12 V 100 Ah.

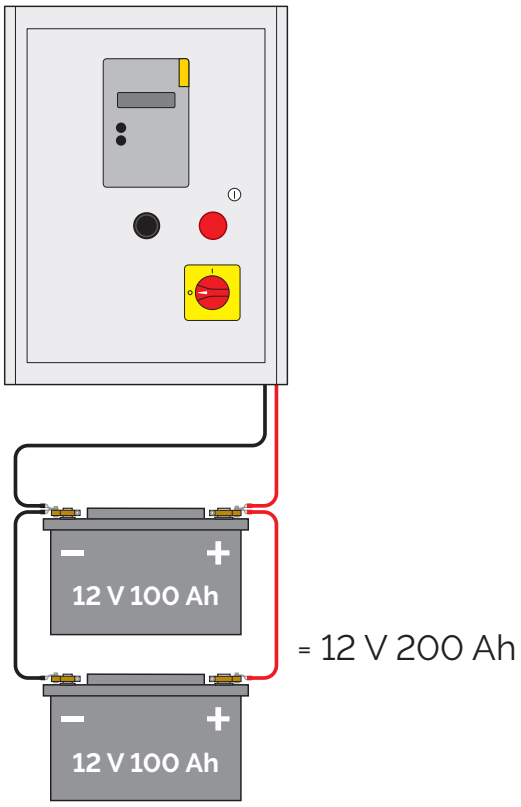


Figure 17. Connecting two batteries in parallel (Delta Battery Backup V4/6 Plus only)

4.6.3 Connecting two batteries in series (Delta Battery Backup Foul V3 only)

Connecting batteries in series increases the voltage without increasing the autonomy (the capacity).

The Delta Battery Backup Foul V3 is a 24 V system. Two 12 V 100 Ah batteries connected in series act as a single 24 V 100 Ah battery.

Only connect two batteries of the same specification ie. two 12 V 100 Ah.

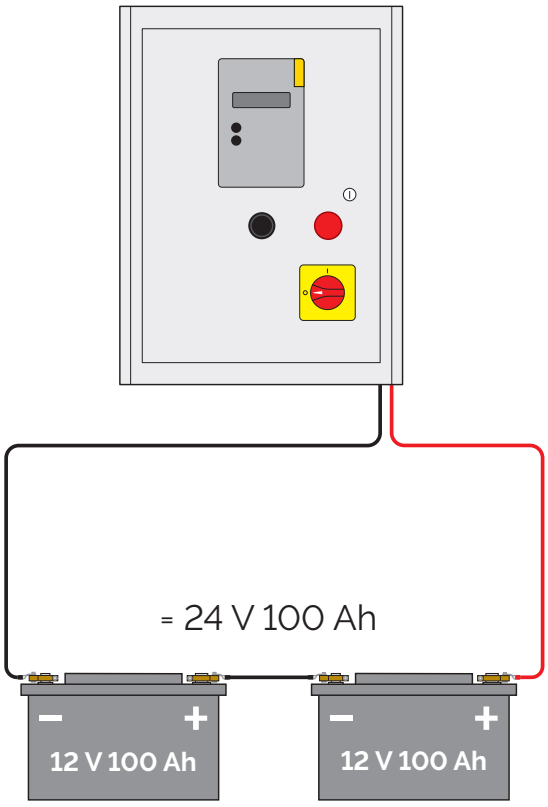


Figure 18. Connecting two batteries in series (Delta Battery Backup Foul V3 only).

5. Operation

5.1 Door-locking isolator switch

The system is protected by a door-locking isolator switch. To open the door It must be in the OFF position.

5.2 Switching on the first time

After installation, close the door and turn the isolator to the ON position.

Assuming there is mains power, the display will read “MAINS POWER ON”.

While the Delta Battery Backup is connected to mains power it will charge and maintain the battery(s). After 15 minutes, it will carry out the first reading of the battery voltage and display it..

The battery voltage reading is updated every two hours.

5.3 Network power failure

In the event of network power failure the Delta Battery Backup automatically disconnects the battery charger and switches to powering the pump from the battery via the inverter. The display will read “MAINS POWER OFF“.

The system continues to power the pump until the input voltage from the battery drops below 10 VDC, after which the system is placed in STANDBY.

5.4 Test function

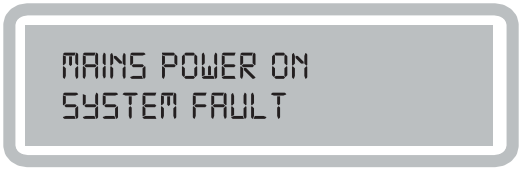
In the “MAINS POWER ON” state, pressing the **TEST** button will carry out the following operations:

- disconnects of the battery charger
- switches from mains power to battery power via the inverter
- powers the Auxiliary Load terminal

To test automatic pumps such as the Delta V3/4/6 or Delta Foul V3 (Automatic) the test should be conducted with the float arm in the raised position so that the pump motor is powered.

If after 30 seconds no faults have been detected in the connected load or in the inverter, the device will return to normal function without any communication.

If a fault is detected, the appliance will make 5 reset attempts and, if all attempts fail, the system will trigger a System Fault alarm (K6 relay) and the screen will display “SYSTEM FAULT”.



To reset the system press the **RESET** button.

WARNING!
The unit must be tested with both mains power connected and disconnected.

5.5 Service Due reminders

The Delta Battery Backup will display a periodic Service Due Reminder. After this interval the screen will display "SERVICE" on the second line of the display. The default setting is 3 months.

5.5.1 Setting the Service Due Reminder interval

There are three possible settings: every 3, 6 or 12 months.

To set the Service Due interval press and hold the **TEST** button for 3 seconds. The following screen will appear:

Press the **RESET** button to scroll through the possible settings.

Press the **TEST** button to confirm.

5.5.2 Clearing the Service Due Reminder

To clear the Service Due Reminder repeat the process for setting the interval (press and hold **TEST** for 3 seconds then press **TEST** again).

6. Alarms

6.1 High level alarm

The high level alarm will trigger when there is a high level alarm float is triggered in the chamber. It is switched by relay K3.

The alarm is self-resetting, so when the level in the chamber falls below the threshold the alarm is automatically reset.

Whilst in a High Level state, the system display will read “HIGH LEVEL ALARM”.

The **MUTE** button will silence the alarm sounder and switch off the alarm beacon without clearing the alarm state.

6.2 Mains power off alarm

The mains power off alarm will trigger when the system detects a loss of mains power. It is switched by relay K4.

The system will automatically switch to powering the pump from the battery(s) via the inverter.

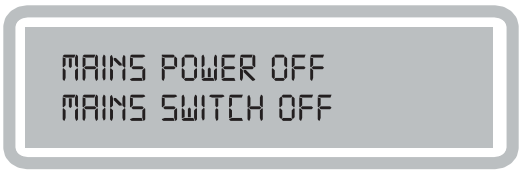
During this period the display will read “MAINS POWER OFF”.

When mains power is restored the display will read “MAINS POWER ON”.

The **MUTE** button will silence the alarm sounder and switch off the alarm beacon without clearing the alarm state.

6.2.1 Loss of mains power while mains isolator is in the OFF position

If there is a loss of mains power while the mains isolator is in the OFF position the following screen is displayed. The mains power off alarm does not trigger.



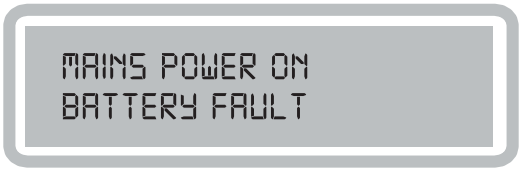
When the mains isolator is in the OFF position, there is no power to the pumps, inverter or battery charger. Also, there is no power to the alarm relays, sounder or beacon. **The system is not operational in this state.**

6.3 Battery fault alarm

If after 40 hours of charging, the battery does not reach a predetermined minimum voltage, the battery fault alarm is triggered. It is switched by relay K5.

The display will read "BATTERY FAULT".

This alarm state does not automatically reset. The **MUTE** button will silence the alarm sounder and switch off the alarm beacon. To clear the alarm, press the **RESET** button.



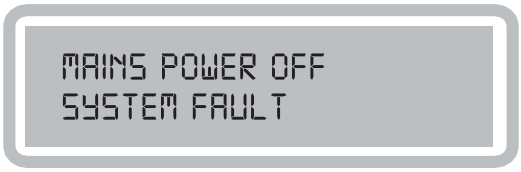
6.4 System fault alarm

This alarm will only trigger if pump is being powered from the battery during a mains power cut.

If the current being drawn by the pump is greater than the inverter's capacity, the inverter will automatically stop powering the pump. After 30 seconds, the system will attempt to power the pump again. After a fifth failed attempt, the system will stop trying to power the pump and trigger the System Fault alarm. It is switched by relay K6.

After the fifth attempt the display will read "SYSTEM FAULT".

This alarm state does not automatically reset. The **MUTE** button will silence the alarm sounder and switch off the alarm beacon. To clear the alarm, press the **RESET** button.



7. Remote monitoring

The Delta Battery Backup can be remotely monitored via four volt-free contacts, or an RS-485 serial port.

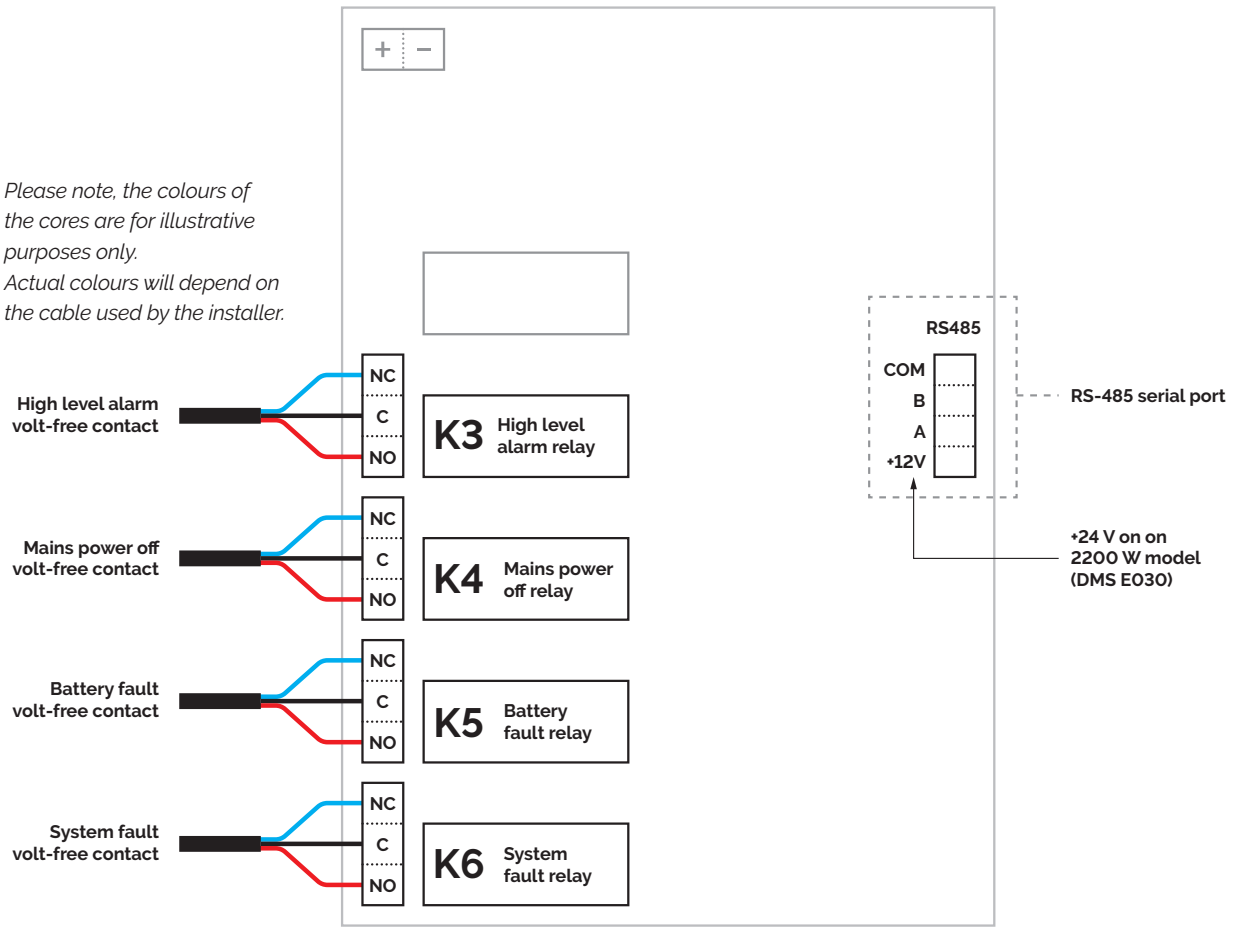


Figure 19. Remote monitoring connections.

7.1 Volt-free contacts

The Delta Battery Backup features four volt-free (dry) contacts for connection to external devices such as a dial-out telemetry or a building management system.

The volt-free contacts are intended for use with low voltage (SELV/ELV) circuits operating at a maximum of 1 amp.

The contacts can be either Normally Closed (NC) or Normally Open (NO) depending on the requirements of the system it is connected to.

7.2 RS-485 serial port

The Delta Battery Backup features an RS-485 serial port for remote monitoring.

7.2.1 Technical specifications

RS-485 port specifications	
Interface	RS-485
Baud rate	19200
Data bit	8
Stop bit	1
Parity	No
Slave address	2

7.2.2 Mapping of registers

Reading register	
Register 0	**Battery voltage**
Battery voltage in tenths of a volt	
Register 1	**Alarms**
BIT 00	Mains power off alarm
BIT 01	Inverter fault
BIT 02	System fault alarm
BIT 03	Battery fault alarm
BIT 04	High level alarm
BIT 05	-
BIT 06	-
BIT 07	-
BIT 08	-
BIT 09	-
BIT 10	-
BIT 11	-
BIT 12	-
BIT 13	-
BIT 14	-
BIT 15	Test OK

Writing register	
Register 0	**Commands**
BIT 00	Run test

7.2.3 Running a system test

The test activates the auxiliary output for 20 seconds. At the end of this period, BIT 15 of the Reading Register will be set to 1.

8. Maintenance

DANGER! DO NOT OPEN THIS UNIT IF NOT QUALIFIED TO DO SO

To reduce the risk of electric shock, do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

IMPORTANT

All maintenance works (inspections and services) MUST be undertaken by a technically qualified/ competent company/engineer.

DANGER!

Before carrying out any maintenance work the system MUST be completely disconnected from the mains power supply, and measures should be taken to prevent the system from being inadvertently switched back on.

WARNING!

When undertaking works within the chamber/sump suitable measures MUST to taken to ensure safe access in accordance with current safety regulations.

8.1 Maintenance overview

The Delta Battery Backup requires minimal maintenance. Basic common sense and good housekeeping will ensure the best results.

When servicing the system, suitable measures MUST to taken to ensure safe access in accordance with current safety regulations. Any maintenance operations must be carried out by expert personnel who are qualified in compliance with current accident prevention regulations..

8.2 Batteries

Periodically check the efficiency of the battery with particular attention to the state of charge. The batteries are sealed, so do not try to open them to top them up. They contain corrosive acid which is dangerous to the eyes in particular.

Periodically simulate a blackout during the control phase, by switching off the dedicated circuit breaker at the distribution board.

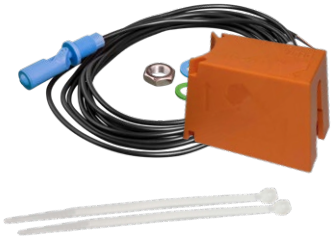
8.3 Spare parts

Always specify the exact initials of the model, together with the construction number. For technical information contact Delta Membranes on 01992 523 523 between 8am and 5pm, Monday to Friday or by email at info@deltamembranes.com.

Use only original spare parts to replace any faulty components. The use of unsuitable spare parts can damage the system, and be a risk of harm to people and property.

9. Ancillaries

Delta Mini Float Kit



E232

Delta Sump Float Kit

E233

10. Declarations

10.1 The European Union Waste Electrical and Electronic Regulations 2013

This PCB assemblies, the battery charger and the inverter are classified as Electrical or Electronic equipment and should not be disposed of in normal domestic or commercial waste.

Additionally, the batteries are lead-acid type.

Under the WEEE Directive, the equipment should be recycled using the best possible techniques to minimise environmental impact and avoid unnecessary landfill.

For further information, visit http://www.legislation.gov.uk/uksi/2013/3113/contents/made

10.2 UKCA and CE approved

The product complies with the relevant sections of:

- European Directive 2006/95/CE
- Electromagnetic Compatibility Directive 2004/108/EC
- And these harmonised standards as applicable:
  EN 61439-1, EN 61439-2, EN 60204-1, EN 55014-1,
  EN 55014-2, EN 61000-3-2, EN 61000-3-3

11. Warranty

11.1 Standard 12-month component warranty

The Delta Battery Backup is offered with a 12-month component warranty from the date of invoice.

Standard Delta Membrane Systems Limited conditions apply.

This warranty does not cover defects caused by incorrect installation, installation/installer error, abnormal working conditions, misuse, or neglect.

Any defects or malfunctions should be reported to Delta Membrane Systems Limited within of seven days when defect becomes apparent. All broken components should be returned to Delta Membrane Systems Limited at customer cost.

To make a Warranty Claim, please email pumps@deltamembranes.com. Forms are available from www.deltamembranes.com.

In no event shall Delta Membrane Systems Limited be liable for any consequential damage, penalties, loss, or expenses howsoever arising, out of or in connection with incorrect installations or misuse, including, without limitation, direct or indirect loss, consequential loss or damage, loss of profit or goodwill, loss arising from any errors or omissions in the pump chamber as a result of, incorrect installation, installation/installer error, abnormal working conditions, misuse, or neglect.

Delta Membrane Systems Limited shall not accept liability if the product fails due to being incorrectly specified by any third parties not employed by Delta Membrane Systems Limited.

11.2 Warranty from date of commissioning

When the Delta Battery Backup is 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 Battery Backup is commissioned within 12 months from the date of invoice;
- the Delta Battery Backup is commissioned by a Delta Registered Pump Service Provider;
- the Delta Registered Pump Service Provider has logged Commissioning details of the Delta HLA with Delta Membrane Systems Limited;
- the Delta Battery Backup 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.

12. Commissioning details

Property address	Commissioning engineers

Customer contact details	
Contact name	
Contact telephone	

Installation details	
Equipment installed	
Delta Registered Pump Service Provider	
Date of commissioning	
Commissioning engineer	
Signature of engineer	

Servicing plans

Sump pumps must be maintained. We recommend a qualified engineer examines and services equipment every year. Pumps running frequently due to higher water table, water drainage, or weather conditions should be examined more frequently, we recommend every 6 months. Sump pumps, being mechanical devices, may fail if not maintained which could lead to a flooded basement and costly repairs. Regular servicing of sump pumps will increase efficiency and extend the life of the pump. All Delta Membrane pump systems can be maintained and serviced by our recommended service companies or installing contractor.

Commissioning

All sump pumps require commissioning. Commissioning provides peace of mind, knowing that the system is installed correctly and in compliance with warranty conditions. All Delta Membrane pump systems can be commissioned by our recommended service companies or installing contractor.

Delta Membrane Systems Ltd, Delta House, Merlin Way, North Weald, Epping, Essex, CM16 6HR.
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