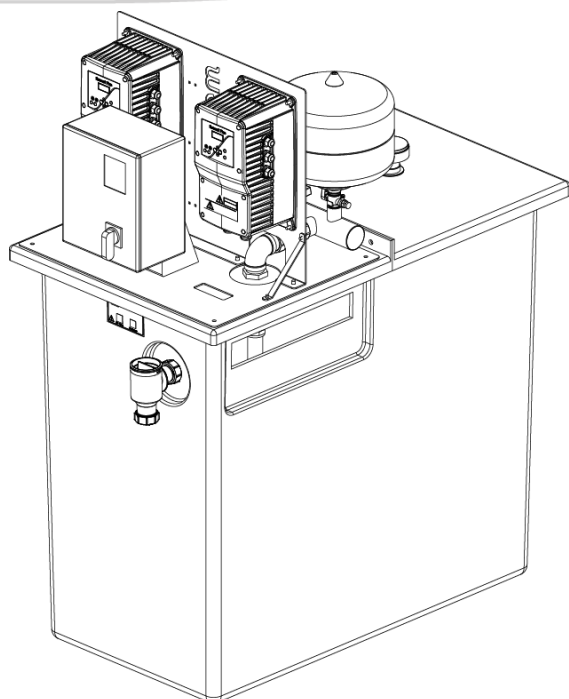


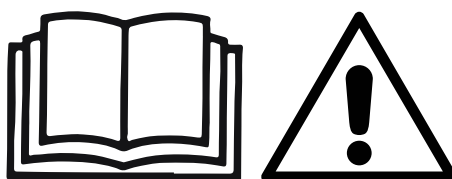


RESVARI PLUS IOM

UKLIT0219B

Original Instructions – English
Keep for future reference.

CAUTION: Read instructions before using this machine



Resvari Plus

Installation, Operations and Maintenance manual – June 2025

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1. Introduction & Safety

1.1 Introduction

This manual contains information to enable the safe Installation, Operation and Maintenance of the Resvari Plus Cold-Water Booster Set

This manual is an integral part of this product. The following instructions must be read and understood by all persons responsible for the installation, operation, and maintenance of this product. This manual must always be made available to the user, stored in the proximity of the unit and kept in good condition.

1.2 Manufacturers details

The Resvari Plus is manufactured by:

Xylem Water Solutions UK
Millwey Rise Industrial Estate
3 Weycroft Ave
Axminster
EX13 5HU
United Kingdom

Tel: 01297 630200
Email: lowara_uk.enquiries@xylem.com
Website: www.xylem.com/uk

1.3 Warning Symbols

Before using the unit, the user must read, understand, and comply with the indications of the danger warnings in order to avoid the following risks:

- Injuries and health hazards
- Damage to the product
- Unit malfunction



Safety instruction where noncompliance would affect safety.



Safety instruction where electrical hazard is involved.



Safety instruction where noncompliance could cause damage to the equipment.



Safety instruction where PPE (Personal Protective Equipment) is required.



Where shown indicates the location of a Protective Earth bonding point



Where shown advises the user to consult the manual

1.4 Instruction for safe use



This product has been designed for boosting cold water in potable water installations to the operating conditions shown. This product should not be installed until this leaflet has been studied carefully. Handling, transportation and installation of this equipment should only take place with the proper use of lifting equipment. This product must be stored in a dry frost-free, environment.

1.5 Warning to inexperienced users



This product must be operated by qualified personnel only. Be aware of the following precautions:

This product is not to be used by anyone impaired by physical or mental disabilities, or anyone without the relevant experience and knowledge, unless they have received instructions on using the equipment and on the associated risks or are supervised by a responsible person.

Children must be supervised to ensure that they do not play on or around the product.

1.6 Protection of the environment

You must comply with local regulations when disposing of the product or packaging.



WARNING:

If the Resvari Plus has been exposed to ionizing radiations, implement the necessary safety measures for the protection of people. When shipping the pump set, inform the carrier and the recipient accordingly, so that appropriate safety measures can be put in place.

2 Handling and Storage

2.1 Packaging

The domestic booster set is dispatched mounted on a wooden pallet and covered in a protective film; it is recommended that the unit be retained in the protective packaging until the product is to be installed. The unit will arrive pre-packaged and wired ready for installation.

2.2 Unit inspection Upon Delivery

This product has been fully run tested at our works under simulated site conditions. The unit should be thoroughly checked for physical damage that may have been caused during transit. If the unit is found to have damage it must be reported immediately and should not be installed

2.3 Unit Handling

Handling, transportation and installation of this equipment should only take place with the proper use of lifting equipment.

Use crane, ropes, lifting straps, hooks and clamps that comply with the current regulations and that are suitable for the specific use. Due to the size of the unit, it is recommended that two engineers manoeuvre the Resvari Plus into place. Make sure that the harnessing does not hit and / or damage the unit.

During handling, make sure to avoid injury to people or animals, and/or damage to property.

2.4 Storage

The unit must be stored:

- In a covered and dry place
- Away from heat sources
- Protected from dirt.
- Protected from vibrations.
- At and ambient temperature between 10°C and +60°C and relative humidity between 5% and 95%

Do not place heavy loads on top of the unit.

Protection the unit from collisions

3 Technical Description

3.1 Designation

The Resvari Plus is a cold water, variable speed break tank booster set.

3.2 Data plate

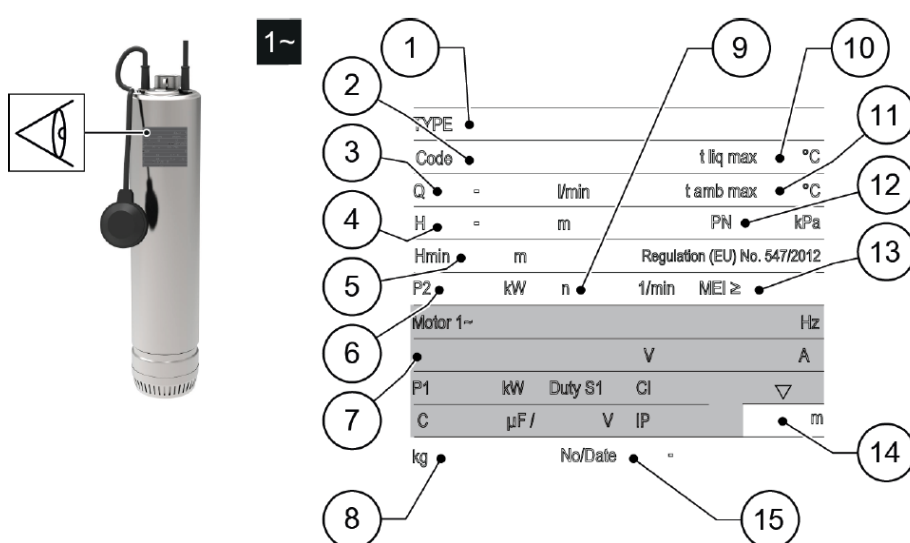
On the Resvari Plus, there will be two Name plates on the unit. One supplying information for the Scuba pump installed inside the tank and the other is the Model data for the Resvari Plus booster set. The labels will be located on the "Bottom Plate", in the bottom right position. Please see exploded parts diagram for indication of each component.

3.2.1 Scuba Pump Data Plate



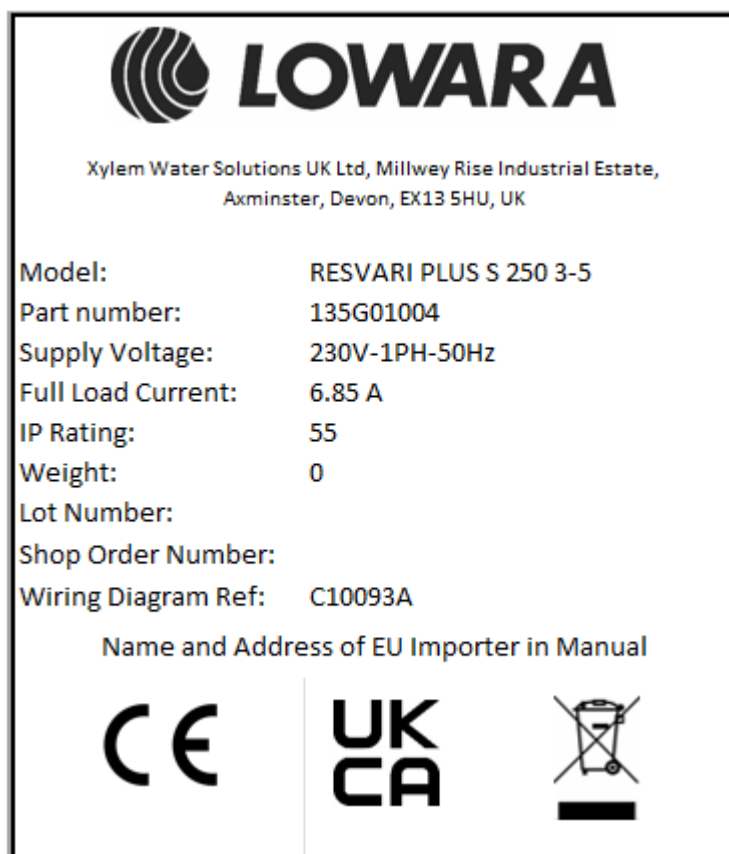
WARNING

Information stated on the pump data plate is only relevant for the pump. For installation conditions such as maximum operating temperature, please refer to the Resvari Plus data plate.



Position Number	Description	Position Number	Description
1	Pump unit type	9	Rated speed
2	Pump unit code	10	Maximum liquid temperature
3	Flow rate	11	Maximum ambient temperature
4	Pressure produced	12	Maximum operating pressure
5	Minimum head	13	Minimum efficiency index MEI
6	Rated output	14	Maximum immersion depth
7	Motor characteristics	15	Serial number + manufacturing date
8	Weight		

3.2.2 Resvari Plus Data Plate



Label	Description
Model	Set model reference
Part number	Set part number
Supply Voltage	Set supply Voltage, (Voltage, phase and speed Hz)
Full Load Current	Full load current of the unit – this may differ from the pump FLC
IP Rating	IP Rating of the set – including the drive
Lot Number	Internal use only
Shop order number	Internal use only
Wiring Diagram Ref	Drawing number for the Wiring Diagram for the control panel / Drive

3.3 Identification Code / Nomenclature

Example:

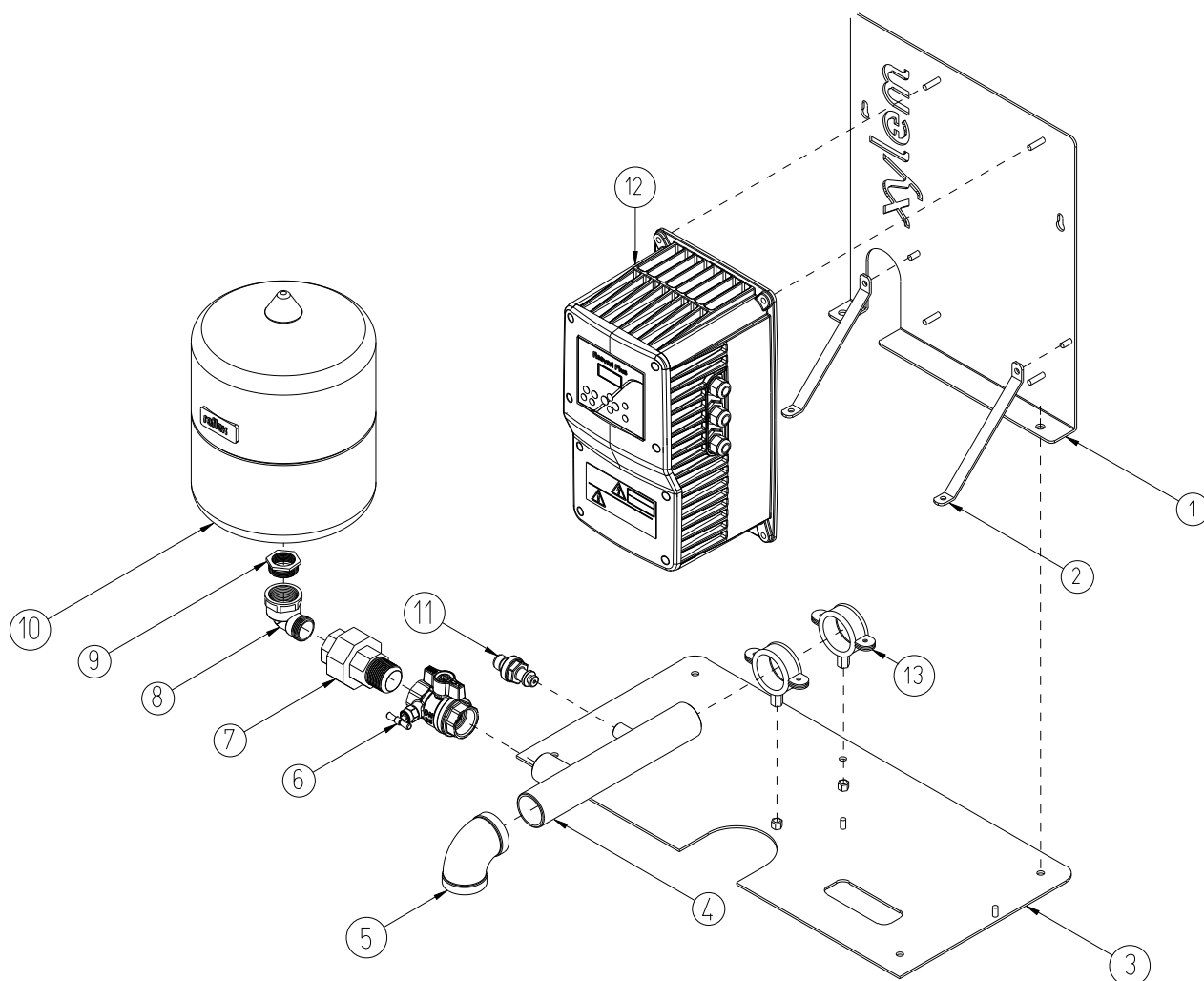
Resvari Plus D 500 5-3

Reference	Description
Resvari Plus	Product range name
D	S – Single pump set D – Twin pump set
500	Nominal Size of the Break tank in litres
5	Flow rate at BEP (Best Efficiency Point) produced by the pump in m3hr
3	Pressure at BEP (Best Efficiency Point) produced by the pump in bar

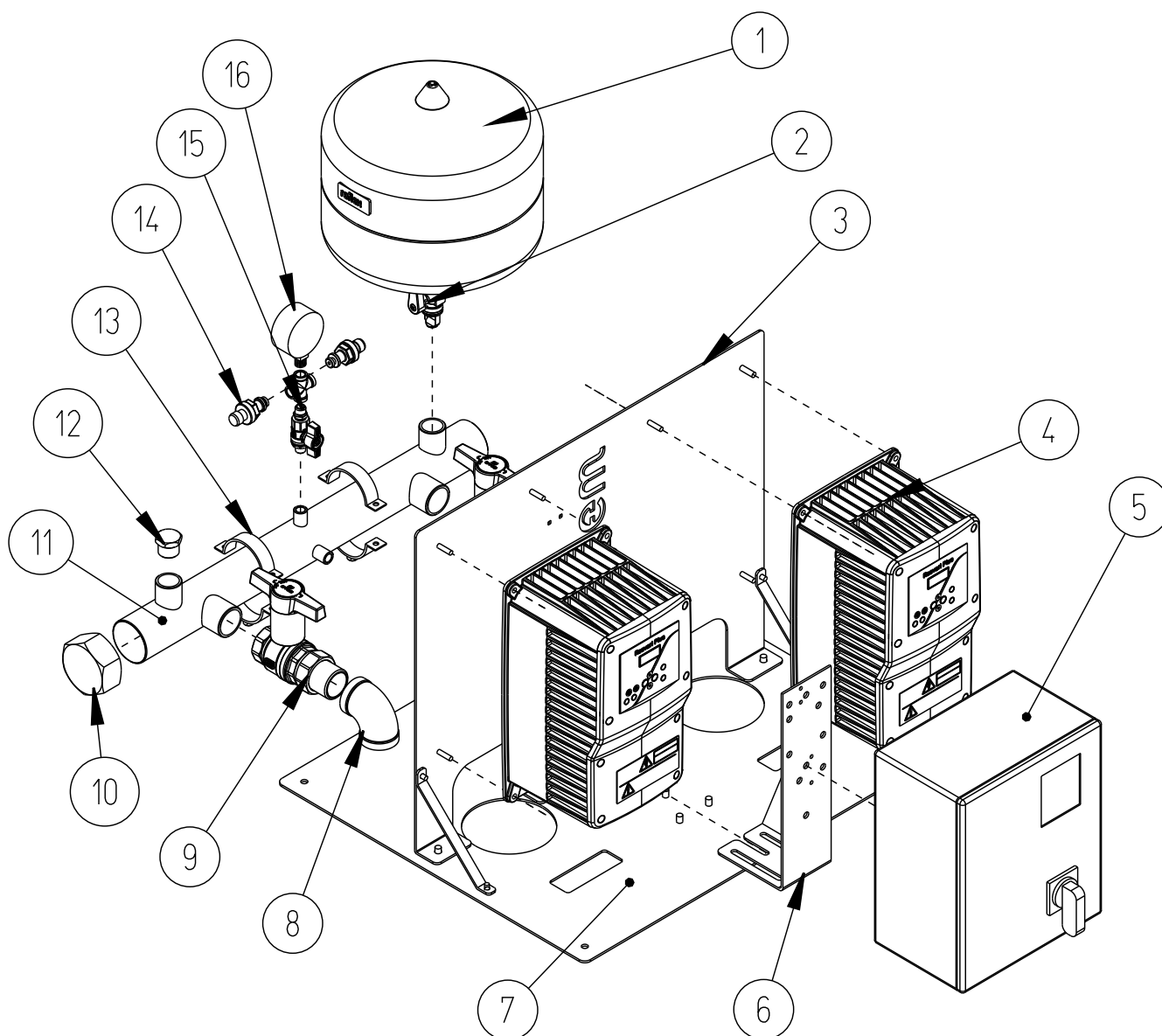
3.4 Names of the Main Components / Exploded parts.

For procurement of spare parts or exploded parts diagram, please contact the sales office.

3.4.1 Resvari Plus S Head:

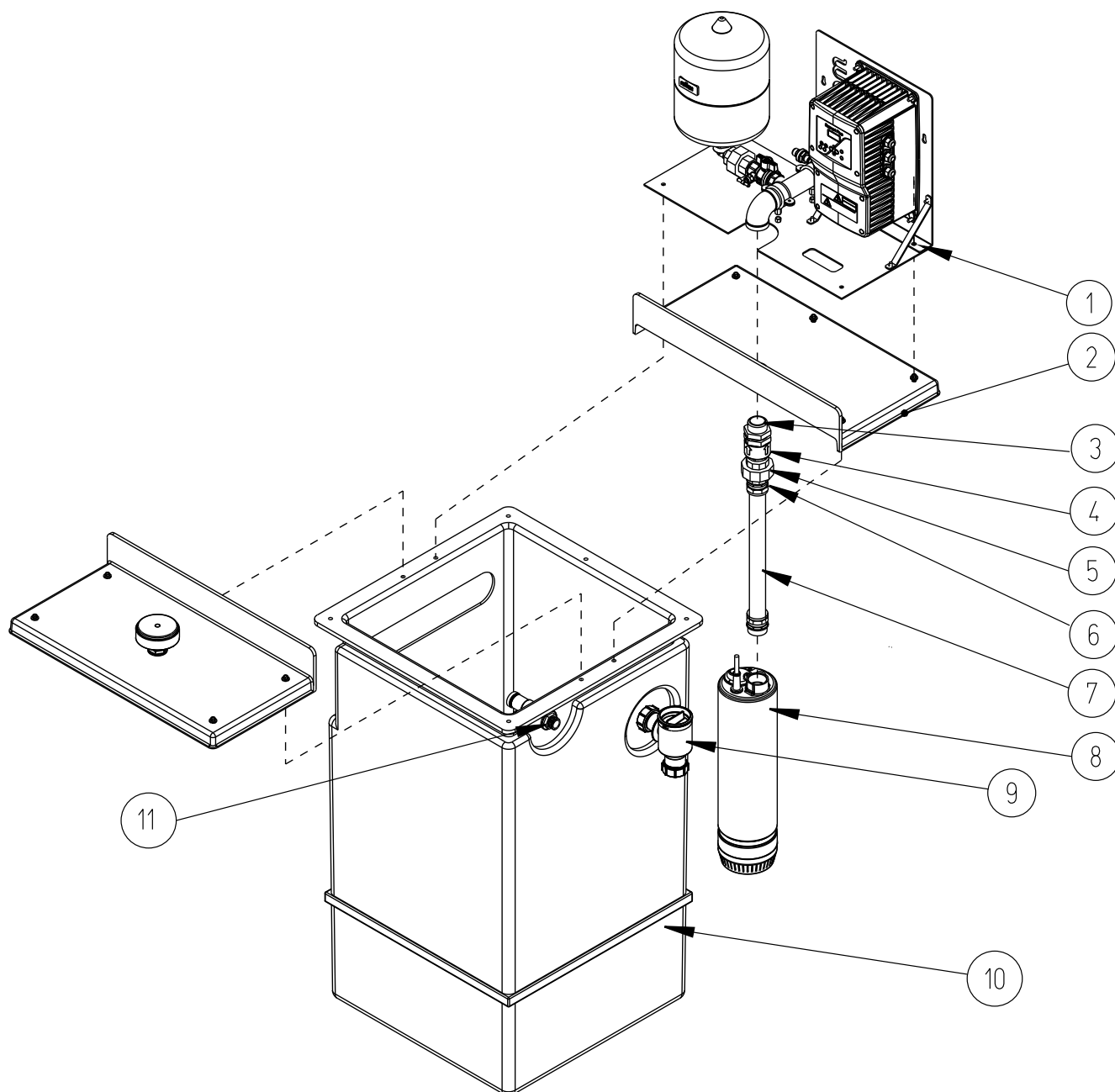


Position	Description
1	Back Bracket
2	Side Bracket
3	Bottom Plate
4	1 1/4" Stainless Steel manifold
5	Delivery Elbow
6	Union 1"
7	Pressure Vessel Isolation and drain valve
8	Vessel Elbow
9	Bush
10	Pressure Vessel – 10 bar, 8 litre
11	Pressure Transducer
12	Resvari Plus Drive
13	Pipework clamp

3.4.2 Resvari Plus D Head:

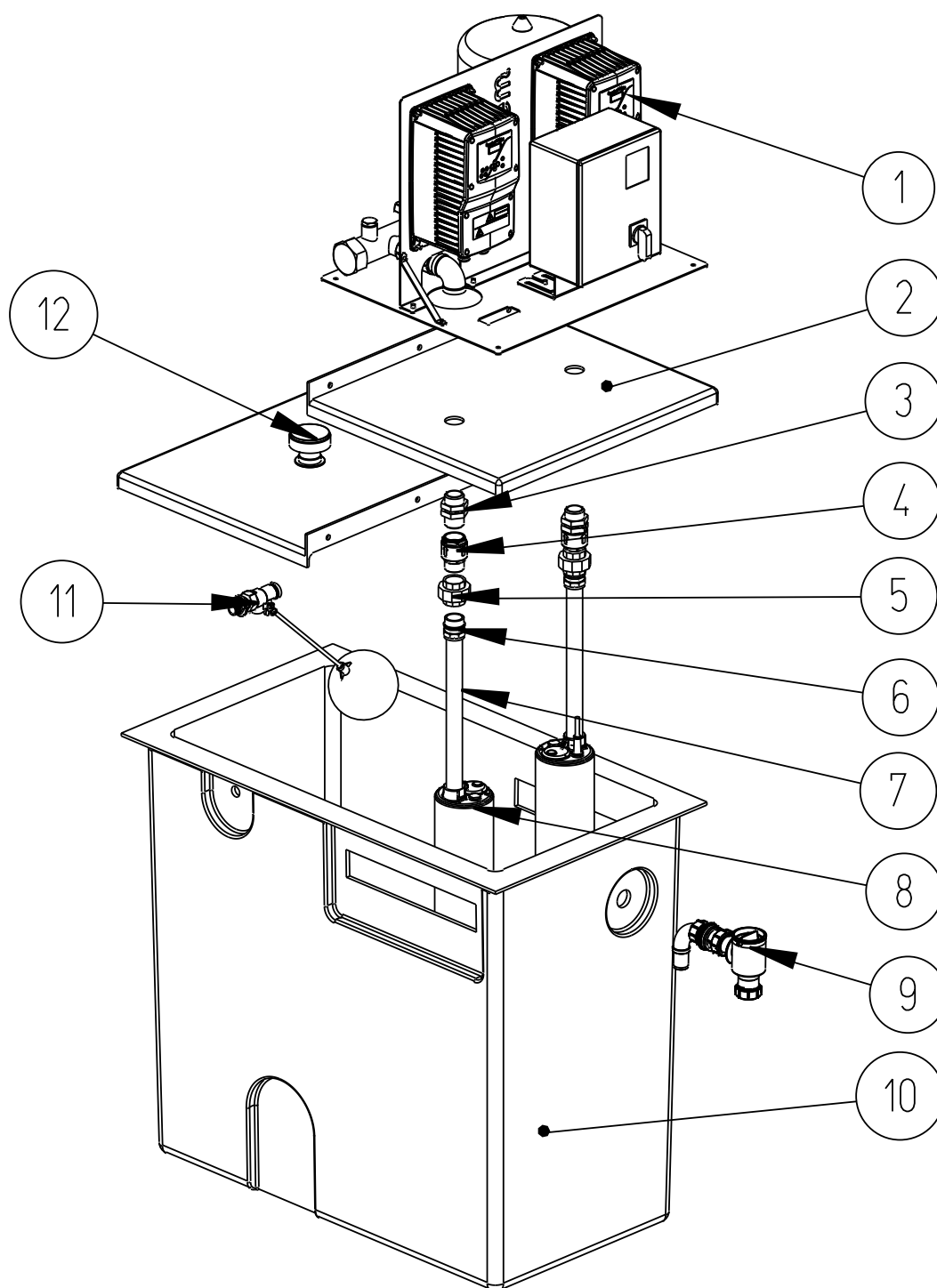
Position	Description
1	Pressure Vessel
2	Pressure Vessel flow through and isolation valve
3	Back bracket
4	Resvari Plus Variable speed drive
5	Resvari Plus D Control panel
6	Control Panel stand
7	Bottom Plate
8	1 1/4" Elbow
9	Isolation valve with union fitting
10	End cap
11	Twin pump Manifold
12	3/4" Plug
13	Pipework Clamp
14	Pressure transducer
15	Isolation valve
16	Pressure gauge

3.4.3 Resvari Plus S Complete



Position	Description
1	Resvari Plus Head
2	Break tank Lid
3	Bulk head fitting
4	Non-Return Valve
5	1 ¼" Union
6	Compression fitting
7	Copper Riser
8	Scuba Pump
9	Tank Overflow
10	Break Tank
11	Float Valve

3.4.4 Resvari Plus D Complete



Position	Description
1	Resvari Plus D Head
2	Break tank lid
3	Bulk head fitting
4	Non-Return Valve
5	1 1/4" Union
6	Compression Fitting
7	Copper Riser
8	Scuba Pump
9	Overflow
10	Break tank
11	Float valve (Inlet)
12	Tank Breather

3.5 Intended use

Typical applications include:

- Boosted cold water supply for use in domestic and light commercial environments.
- Boosting cold water for tap outlets in Schools, science labs, nurseries.
- Use as a washdown set, for example for vehicles, bin stores, milking parlours etc.
- Boosting cold water for agriculture and irrigation applications for example supply water for water troughs.

Pump liquids

- Clean
- Cold to medium temperature (Not exceeding 40°C)
- Free of solids particle or fibres
- Chemically and mechanically nonaggressive
- Non-flammable

3.6 Improper use



WARNING:

The unit was designed and built for the use described in the Intended Use Section. Any other uses are prohibited, as they could compromise the safety of the user and the efficiency of the unit itself. For more information, please contact the sales office.



DANGER

It is prohibited to use this unit to pump flammable and/or explosive liquids.



DANGER: Potentially explosive atmosphere hazard

It is prohibited to start and run the unit in environments with potentially explosive atmospheres or with combustible dust.

Examples of improper use:

- Pumping Liquids not compatible with construction materials of the unit
- Pumping hazardous, toxic, explosive, flammable, or corrosive liquids
- Pumping drinking liquids other than water, for example wine or milk
- Pumping liquids containing abrasive, solid or fibrous substances
- Using the unit for flow rates exceeding the flow rate indicated on the data plate.

Examples of improper installation

- Explosive and corrosive atmospheres
- Areas which exceeded the ambient temperature rated for the product.
- Areas that are exposed to the elements and direct sunlight. For information of installation environments please see section **4 Installation**

4 Installation

4.1 Precautions

Before starting, make sure the safety instructions shown in the Introduction and Safety on page 4 have been fully read and understood.



DANGER:

All the Hydraulic and electrical connections must be completed by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

DANGER: Potentially explosive atmosphere Hazard

It is prohibited to start and run the unit in environments with potentially explosive atmospheres or with combustible dust.



WARNING:

Always wear personal protective equipment

WARNING:

Always use suitable working tools

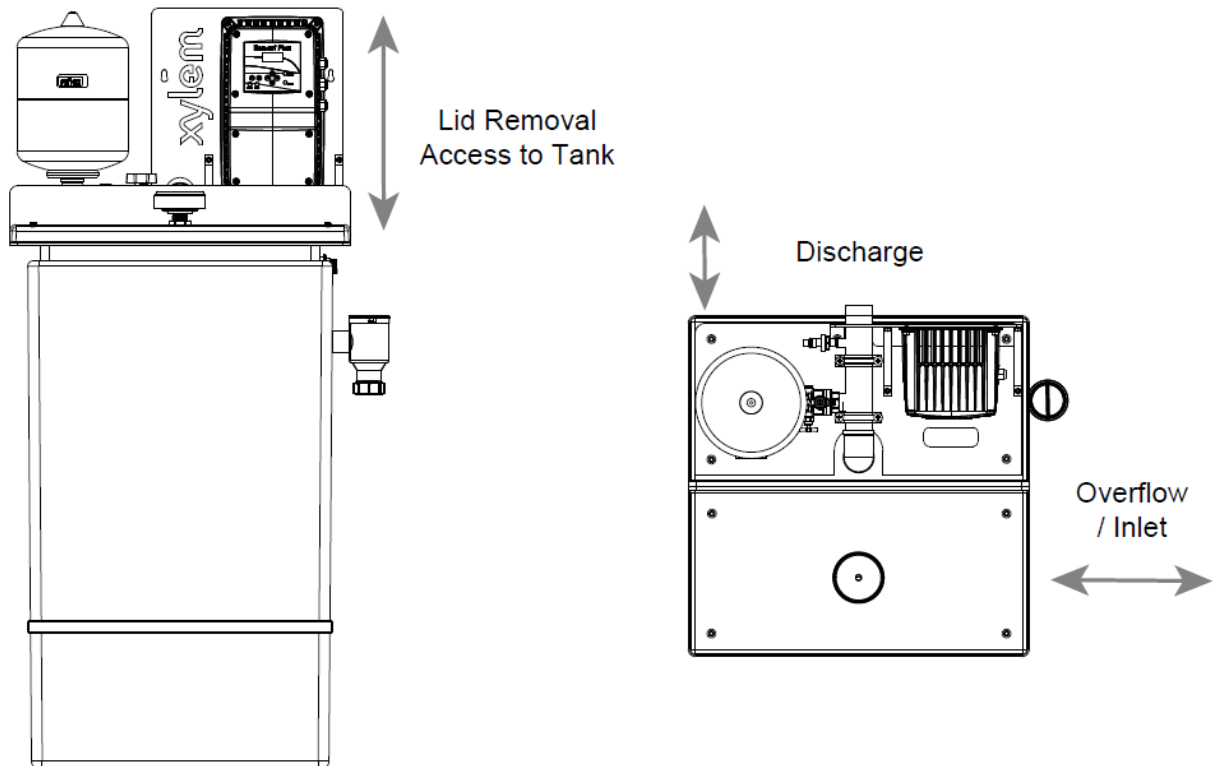


WARNING:

When selecting the place of installation and connecting the unit to the hydraulic and electric power supplies, strictly comply with current regulations.

4.2 Installation Considerations

When installing the Resvari Plus. Please ensure that there is enough room above the tank to allow for the removal of the split lid and to access inside the tank for maintenance of the pump, float switch or float valve. It is also recommended to allow for enough room behind and to the right of the tank for the pipework connections into and from the Resvari Plus unit.



4.3 Installation area

Follow the provision in Operating environment see section **8.1 Operating Environment**

- Check that the chosen Resvari Plus installation area is a level, flat surface that is structurally sound.
- It is recommended to position the Resvari Plus unit away from any walkways to avoid obscuring access.
- Please consider space around and above the unit for maintenance.
- In the extremely unusual circumstances where the float valve and plumbed overflow was to fail / block, water may overflow from the weir on the left-hand side of the tank. Please ensure provisions are made to

- ensure water can be drained or pumped away from the area to avoid flooding.
- The unit should be sited in a dry frost-free environment.

4.4 Alternative Installation Set ups

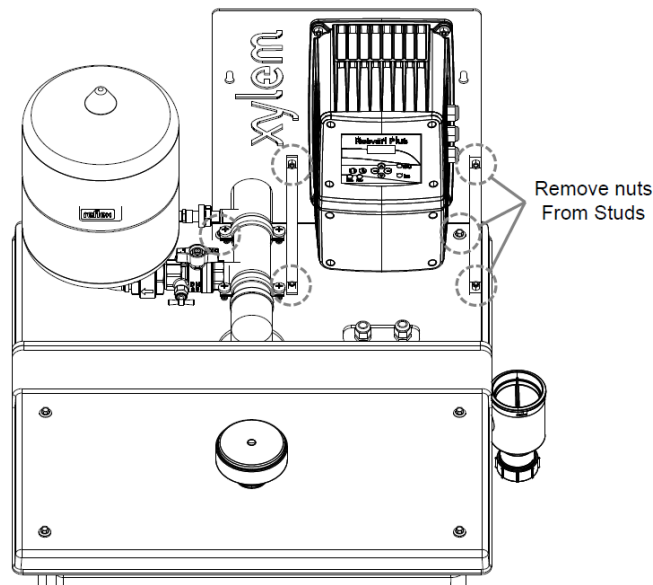


Please note:

This alternative installation method is not compulsory and gives the installer another option to the traditional installation method.

The Resvari Plus is designed for Flexible Installations enabling the installer to remove the back bracket (which holds the variable speed drive) and fit to a wall away from the tank. This is beneficial for applications where the Resvari Plus is installed in a space which has limited access for monitoring and modified the parameters of the drive.

The back bracket can be detached from the bottom plate by removing the side brackets (2 nuts on the back bracket and a further 2 on bottom plate) and the 2 bolts which attach the back bracket to the bottom plate using the tabs. Please see the below diagram for the nut locations

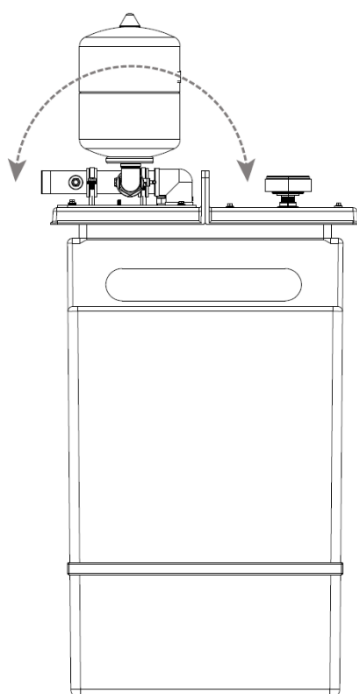
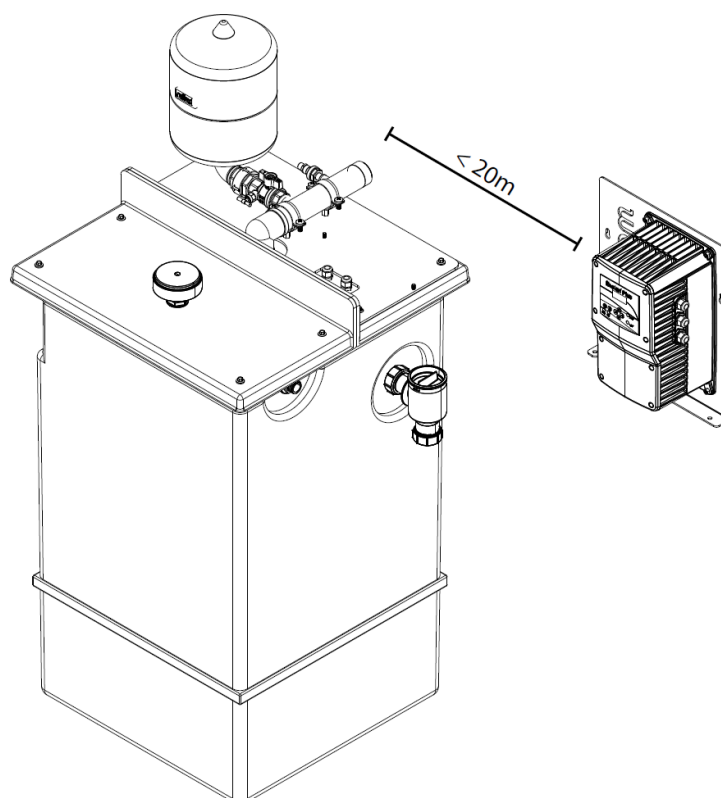


Once the bracket is removed from the bottom plate, you will need to ensure that the cables for the float switch, transducer and power to Scuba pump are long enough.



Please note:

It is not advised to exceed the distance greater than 20 metres between the pump and drive. A longer distance may affect the longevity and performance of the variable speed drive and pump. Please see below diagram.



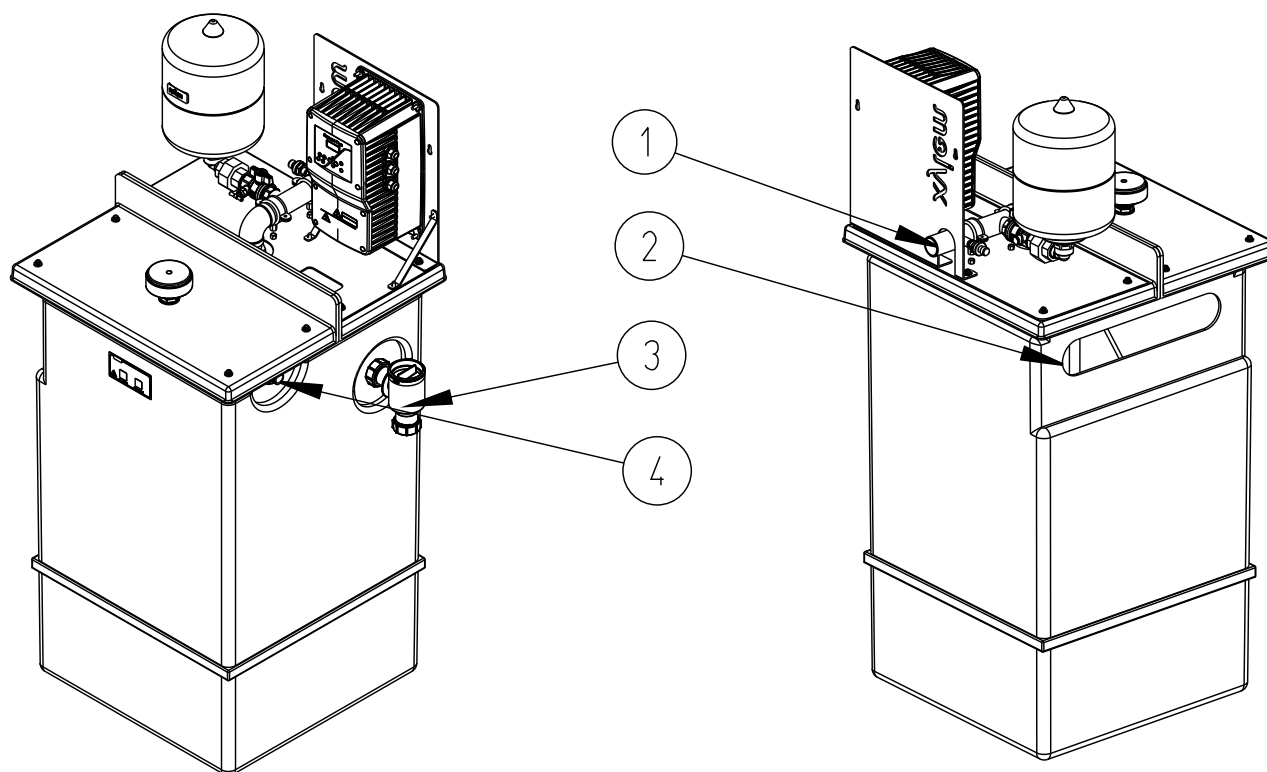
If the installer wishes to reduce the height of the Resvari Plus further, the union between the pressure vessel and stainless manifold can be adjusted to position the vessel at a slight angle reducing the total height of the Resvari Plus



Please note:

If the union is to be readjusted, please ensure the union halves are reconnected correctly to avoid any leaks from the pipework.

4.5 Hydraulic connection



Position	Description
1	Discharge
2	CAT 5 Weir
3	Overflow
4	Tank Inlet / Float valve



DANGER

All the Hydraulic and electrical connections must be completed by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

4.5.1 Tank inlet

Connect the $\frac{3}{4}$ " threaded water inlet connection (right side of tank) to a suitable water supply. It is advisable to fit an external isolation valve for added ease of maintenance. If the pressure available at the ball valve is below 0.3 bar, a low-pressure orifice must be obtained and fitted. Ensure that the water flowing into the tank has been filtered correctly to avoid fine solids from entering the break tank.

4.5.2 Overflow



It is the responsibility of the installer to ensure that the overflow is able to keep up with the incoming water volume, if this is not the case then a pressure reducing valve should be fitted to reduce the incoming mains water volume.

Extend the $1\frac{1}{4}$ " overflow pipe from the side of the unit to a position where an overflow will be noticed and rectified.

4.5.3 Weir overflow



The Break tank is constructed to have a weir slot as required by the water bylaws to prevent back flow contamination, if the inlet float valve or NRV suffered a catastrophic failure the overflow may not be able to keep up with the inflow in which case excess water will be ejected through the weir slot and onto the plant room floor, if this is not acceptable then consideration should be given to fitting the Resvari Plus onto a tray with overflow to drain.

4.5.4 Outlet / Discharge connection Resvari Plus S

Connect the Resvari plus booster set discharge connection located at the rear of the unit. The connection is $1\frac{1}{4}$ " male threaded. It is advised to fit an external isolation valve after the set for added ease of maintenance.

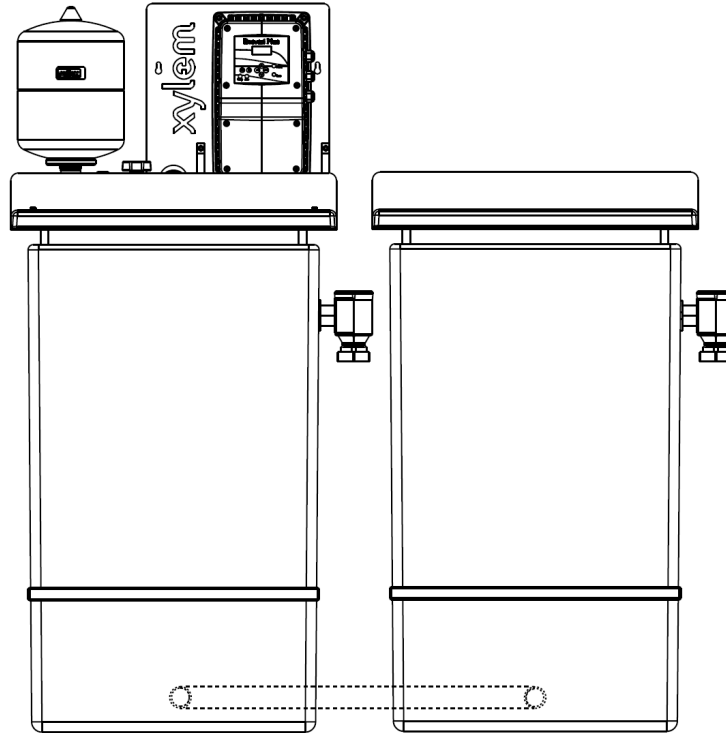
4.5.5 Outlet / Discharge connection Resvari Plus D

The discharge connection of the Resvari Plus D features a 2" male BSP fitting on both sides of the manifold, allowing flexibility in installation. To switch the discharge from the right to the left side (when facing the drive), simply remove the stainless-steel cap from the desired outlet and fit it to the opposite side.



Please note: The installer must reposition the flow-through pressure vessel so that it is fitted to the 3/4" connection closest to the discharge pipework.

4.5.6 Connecting a Resvari Plus S Assist tank.



For applications that require additional storage, an additional 250-litre (nominal volume) break tank can be connected to the Resvari Plus Unit. The Resvari Plus Assist unit can be purchased from Lowara UK as a kit, which includes a 250-litre break tank, ball float valve on the inlet, overflow, two elbows, two tank connectors, and a 2-metre length of 35mm copper pipework. The pipework and accessories are supplied loose alongside the tank for the installer to fit according to the specific application.

Although a hole can be cut in the tank in any position, we recommend drilling the connection hole at the bottom back of the tank where there is a non-insulated section, referred to as a pad. Drill the hole, fit the tank connector and elbow to the back of each unit, and position the tanks so they are parallel to each other. Cut the pipework to match the required length between the units and install it using the compression connection on the elbow.

Since the ball valve is supplied with the assist tank, the installer can choose to connect an inlet to each tank. We recommend this approach to promote balanced water usage between the tanks. If there is any uncertainty, please refer to your local water quality regulations.

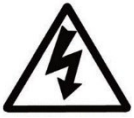
It is also recommended to fit piped overflows for each tank to ensure compliance with backflow prevention guidelines.

4.6 Electrical connections



DANGER

All electrical connections must be carried out by a qualified technician or engineer who meets the technical and professional requirements specified in the applicable regulations.



DANGER

Before starting work, check that the unit is isolated/disconnected from the power and that Resvari Plus unit cannot restart, even unintentionally.



DANGER

Never operate this product with the inverter front panel removed. Wait at least 15 minutes before removing front panel after operation.



DANGER

It is essential that this equipment is earthed to the building earth system. Pump operates at 230V 50Hz.



DANGER: Electrical Hazard

Holding and lowering the Scuba Pump by the power supply cord is strictly forbidden.

4.6.1 Accessing the Drives, Resvari Plus D

In the event of a fault or during a service visit on a Resvari Plus D twin pump booster set, the control panel and panel stand must be pulled forward from their installed position to allow the engineer to remove the front cover of the drive.

The Resvari Plus D has been designed so that the three nuts securing the panel stand to the base can be loosened, enabling the panel to be moved into the service position. Once servicing is complete and access to the drive internals is no longer required, we recommend returning the panel stand to its original position and securely tightening the three nuts.

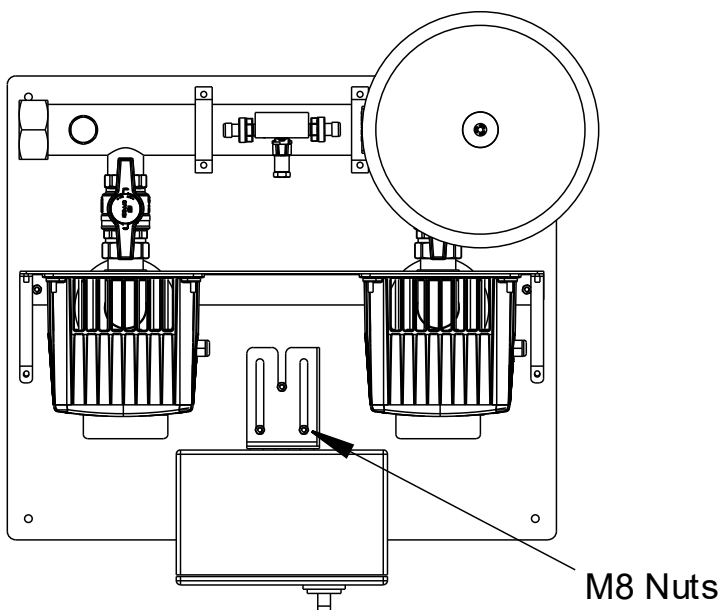
Please refer to the diagram below for guidance.



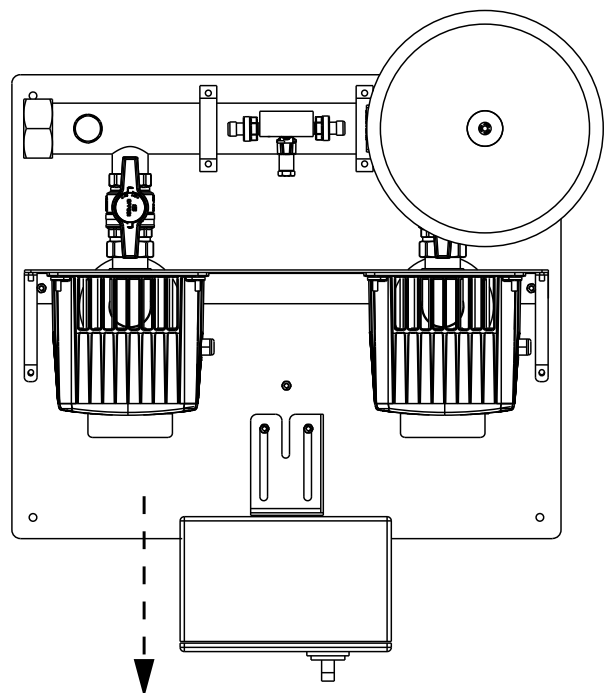
DANGER

Before adjusting the position of the panel stand, ensure that all power to the unit has been safely isolated. Take care to avoid damaging cables or pulling them from their terminals during movement.

Standard Position



Service Position



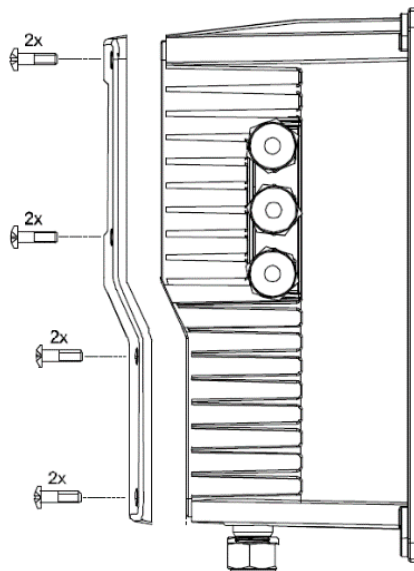
4.6.2 Removing the front cover.

Remove the front panel from the drive, loosening and remove the 8 screws holding the blue front panel to the black plastic housing. This is shown on the below diagram.



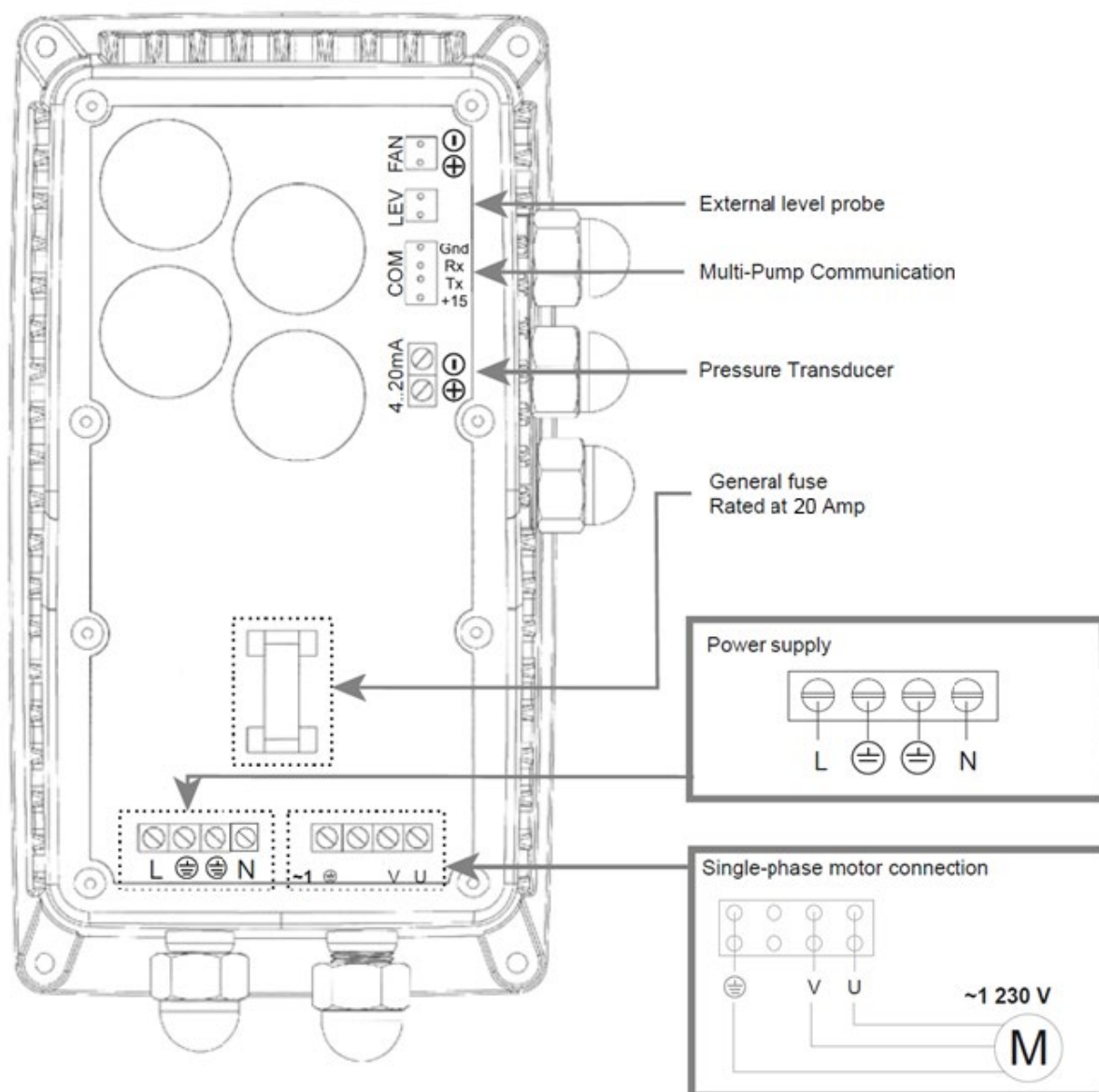
DANGER

Before removing the front cover, ensure that all power to the unit has been safely isolated. Failure to do so could result in electric shock from live components inside the drive



4.6.3 Terminals connections

Below is the diagram showing the electrical terminals inside the drive. To access these terminals, the blue front cover will need to be removed.



Resvari Plus S

Label	Pre-Wired	Description
External Level Control	Yes	This is the connection to the Float switch present inside the tank
Multi-Pump Communication	No	Terminals used for Multi-Pump control between two Resvari Plus units
Pressure Transducer	Yes	Terminals used to supply the signal from the Pressure Transducer
Power Supply	No	Power cable is not supplied. Will need to be sized correctly according to the Full load current of the unit. Please see section 4.6.4 Supplying the Drive with Power
Single phase motor connection	Yes	Single phase connection to the Scuba pump located inside the tank
Fan	Yes	Power supply to the cooling fan located on the back of the drive, underneath the heat sink

Resvari Plus D

Label	Pre-Wired	Description
External Level Control	Yes	This is the connection to the Float switch present inside the tank
Multi-Pump Communication	Yes	Both drives are interconnected to allow the unit to operate in either Duty/Assist or Duty/Standby mode.
Pressure Transducer	Yes	Terminals used to supply the signal from the Pressure Transducer
Power Supply	Yes	Power cable from the drive is connected to the control panel

Single phase motor connection	Yes	Single phase connection to the Scuba pump located inside the tank
Fan	Yes	Power supply to the cooling fan located on the back of the drive, underneath the heat sink

4.6.4 Supplying the Drive with Power, Resvari Plus S

The Resvari Plus S is not supplied with a power supply cable. This will need to be supplied and sized accordingly, taking into account the Full Load current of the Resvari Plus.

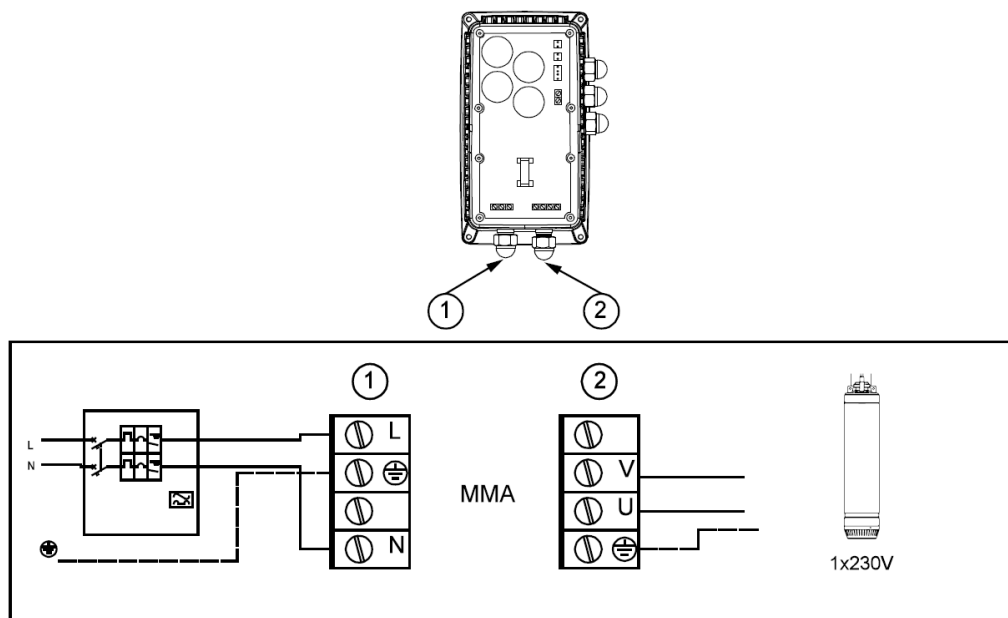
Once the front panel is removed, feed the supply cable through the bottom left entry (Shown as entry 1 in the below diagram). You may need to loosen off the cable gland nut. Make sure the supply cable is also threaded through the metallic ferrite ring. Carry out any necessary preparation to the wire and connect them into the below marked terminals.

Once the connections are made, fix the front panel back into place. Make sure the front panel is secure before applying any power to the unit.



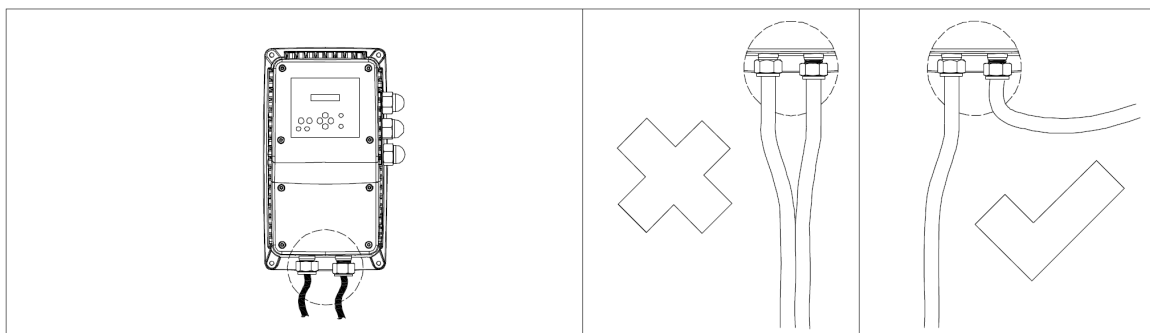
The cable used for the incoming supply must be of adequate size to carry the motor full load current. This is shown on the duty plate. The supply must provide thermal/short circuit protection and be fitted with an RCD suitable for the application/environment. All connections must be made using the appropriate wiring drawings for the equipment being installed, with particular attention being paid to the supply voltages, shown on the duty plate.

4.6.5



Cabling recommendation

You are advised not to tie the electrical supply cable (Shown as 1 above) and the pump supply cable (Shown as 2 above) together. The cables should be apart from each other to prevent electrical interference. Please see below diagram





DANGER:

Make sure the correct line protection is sized correctly for the Resvari Plus

4.6.6 Line Protection (Resvari Plus S only)



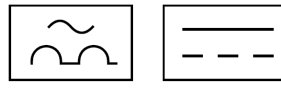
Residual charge from the capacitors in the Resvari Plus drive may be present on the pins of a 3-pin plug. Therefore, it is not recommended to wire a 3-pin plug to the Resvari Plus for direct connection to a domestic electrical wall outlet. Please refer to your local electrical guidelines for supply protection.

The Full Load Current of the Resvari Plus must be taken into account when selecting the appropriate line protection. All electrical work should be performed by a qualified engineer or technician.

4.6.7 RCD (Residual Current Device)

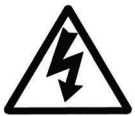
The Resvari Plus is not fitted with a residual current device. The user/installer will need to ensure that the power source (be it fixed or temporary installation) to the Resvari Plus is fitted with an RCD.

Residual Current Devices RCDs (GFCIs) where Ground Fault Circuit Interrupters (GFCIs) and Residual Current devices (RCDs), also known as earth leakage circuit breakers (ELCB), are used, comply with the following: Use GFCIs (RCDs) which are capable detecting AC and DC current. These GFCIs (RCDs) are marked with the following symbols:



- Use GFCIs (RCDs) with an inrush delay to prevent faults due to transient earth currents.
- Size GFCIs (RCDs) according to the system configuration and environmental considerations.

Note: When an earth leakage circuit breaker or ground fault circuit interrupter is selected, the total leakage current of all the electrical equipment in the installation must be taken into account.



Due to earth leakage associated with variable speed drives, it is recommended that the Resvari Plus be installed on its own circuit with a suitable RCD. Installing a device with inherent earth leakage on a ring main alongside other domestic appliances could cause nuisance tripping of the domestic RCD.

4.6.8 Earthing the Resvari Plus

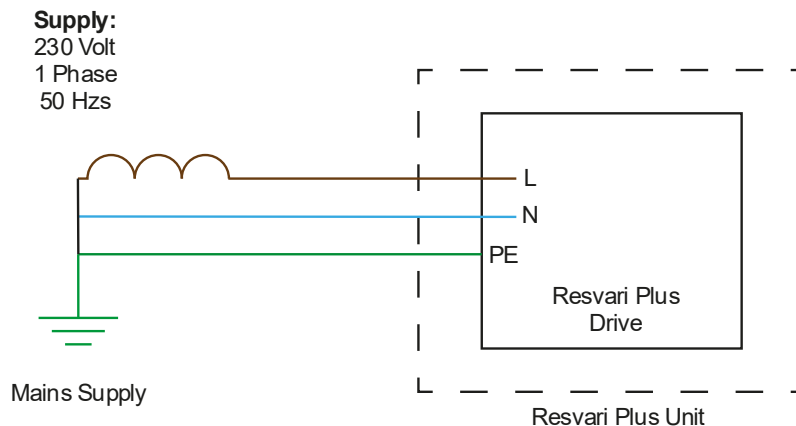


DANGER

Failure to suitably earth the Resvari Plus could lead to serious injury or death in the event of an electrical fault.

The Resvari Plus must always be earthed. The installer / user should ensure that the power supply used for the Resvari Plus includes an earth from the main protective bonding conductors within the building or the supply is fitted with an earth spike. Please ensure that the ground connection is suitable for the power load of the unit.

The recommended earth installation type for the Resvari Plus is TN-S, where the earth connection is supplied by the authority. For more information on earthing systems, please refer to local wiring regulations

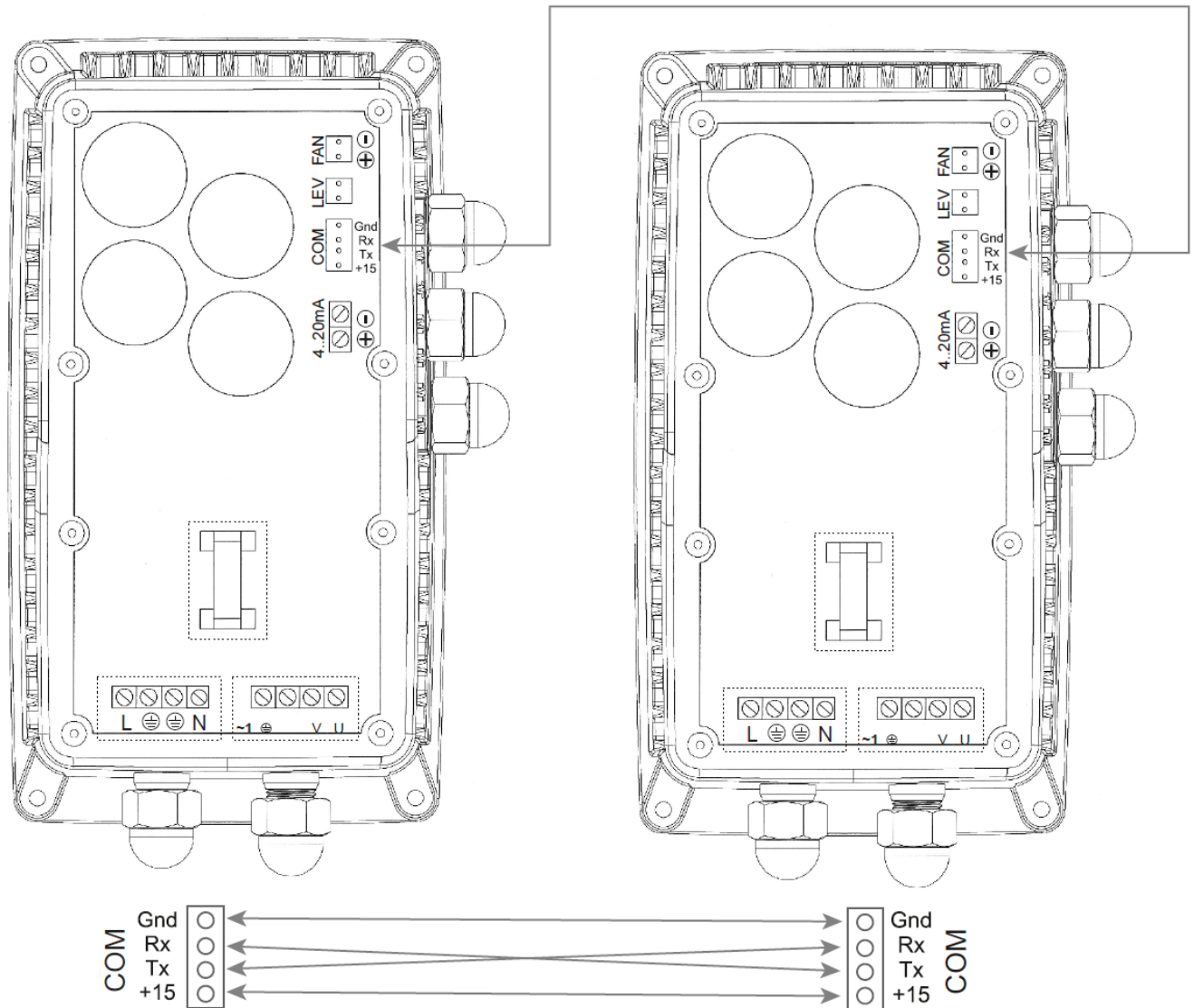


4.7 Multi Pump Use

As standard, all twin pump Resvari Plus D models are fully wired and pre-configured during the build and testing process at our UK production facility.

If the installer is fitting two Resvari Plus S units and wishes to operate them as a twin pump booster set, a shielded cable must be connected between the two drives using the “Multi-Pump Communication” port. We recommend using the RS485 Link Cable (P/N UK0034190), available from the Axminster sales office. Alternatively, a 4 x 0.5mm² screened cable can be used if you prefer to supply your own.

Please refer to the wiring diagram below for guidance.



Please note: The Receive (Rx) and Transmit (Tx) wires need to be crossed, So that:

Rx on Drive 1 and Tx on Drive 2 are connected.
Tx on Drive 1 and Rx on Drive 2 are connected.

Once there is a link between the two drives, please refer to section **5.3.8 Multi-Pump Control** for information on how to commission the two drives for Master / Follower control.

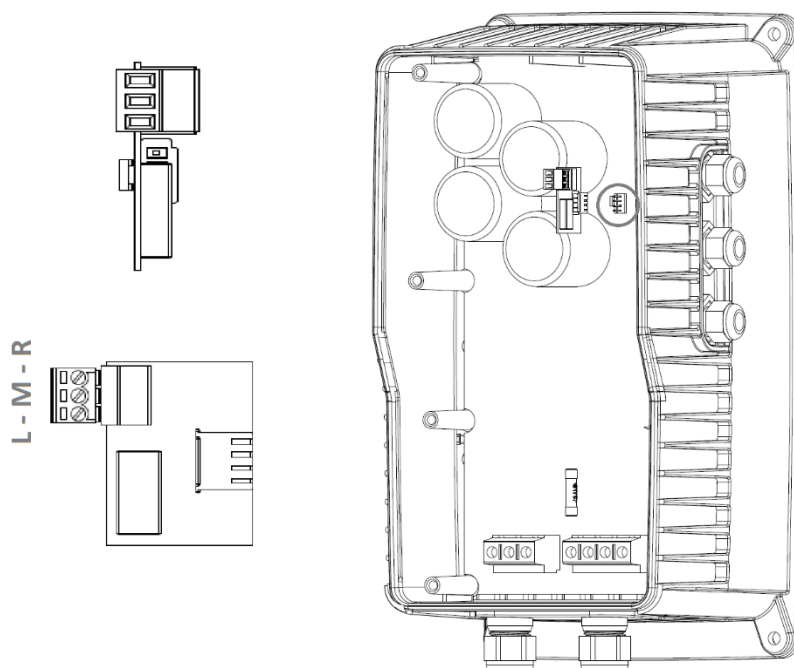
4.8 Volt Free Relay

A volt-free module is supplied as standard with all Resvari Plus S and D units, providing a fault signal via a volt-free contact. The module plugs directly into the designated socket on the Resvari Plus drive PCB (see diagram below). In the event of a fault, the module closes the contact, with the option to select either a Normally Open (NO) or Normally Closed (NC) configuration. This allows the drive to send a fault signal to a local BMS system or activate an external lamp or buzzer to alert users.

On Resvari Plus S models, the module is fitted but not wired.

On Resvari Plus D models, the module is fitted and wired so that it is normally open and closes in the event of a fault, returning the signal to the control panel. A dedicated set of terminals is provided within the panel for the installer to connect to and take the signal from. Please refer to the wiring diagram supplied with the unit.

Left screwed connection is Normally Open
Middle screwed connection is common.
Right screwed connection is Normally Closed



5 Use and Operation

5.1 Operation

When a draw off point connected to the system is opened water will be discharged from the vessel, if the demand continues the system pressure will start to fall until the pump cut in pressure is reached. The pump will now start and ramp up maintaining the system pressure. The pump will modulate the speed until demand ceases and the pump will then slow down and stop.

5.1.1 Dry run protection and inflow Resvari Plus

The Resvari Plus features a float switch installed inside the break tank to prevent the pump from operating when the water level drops.

On the Resvari Plus S the float switch is wired into the drive

On the Resvari Plus D the float switch is wired into the control panel.

When activated in a dry run scenario, it triggers alarms on both variable speed drives. Please note that the cut-off level inside the tank is not adjustable.

The inflow into the break tank is managed by the supplied $\frac{3}{4}$ " equilibrium ball valve, which is also non-adjustable. The flow rate into the tank is influenced by the pressure of the mains supply. For details on the inflow rate and minimum pressure, please refer to section **8.6: Inflow Rate / Minimum Pressure**.

5.2 Commissioning



DANGER

Commissioning of the Resvari Plus must be carried out by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

DANGER

Before commission the product, please familiarise yourself with the contents of the manual.

5.2.1 Pre commission checks:

- Ensure that the unit is installed on a level and secure floor.
- That all pipework connections (inlet, overflow, and discharge) are in place and secure.
- All pipe joints are sealed correctly to avoid leakages.
- Check that the cabling to the pump and Resvari Plus drive is complete and that the unit is electrically sound. Please see section: **4.6 Electrical connections**
- That there is no damage to the tank or components
- Make sure that the pump is lowered into the bottom of the tank and that there is a tight connection on the union between the copper riser and connection to the Resvari Plus head.

5.2.2 Drive Pre commissioned during manufacturing.

To make the process of commissioning easier for the first time, several parameters have been set during the manufacturing and testing process. As a result, the drive only requires power for the unit to start.



Please note:

To avoid dry running of the pump, which could lead to premature failure of the unit, please make sure that the water level is above the pump discharge port before applying power to the drive.

5.2.3 First time Commissioning

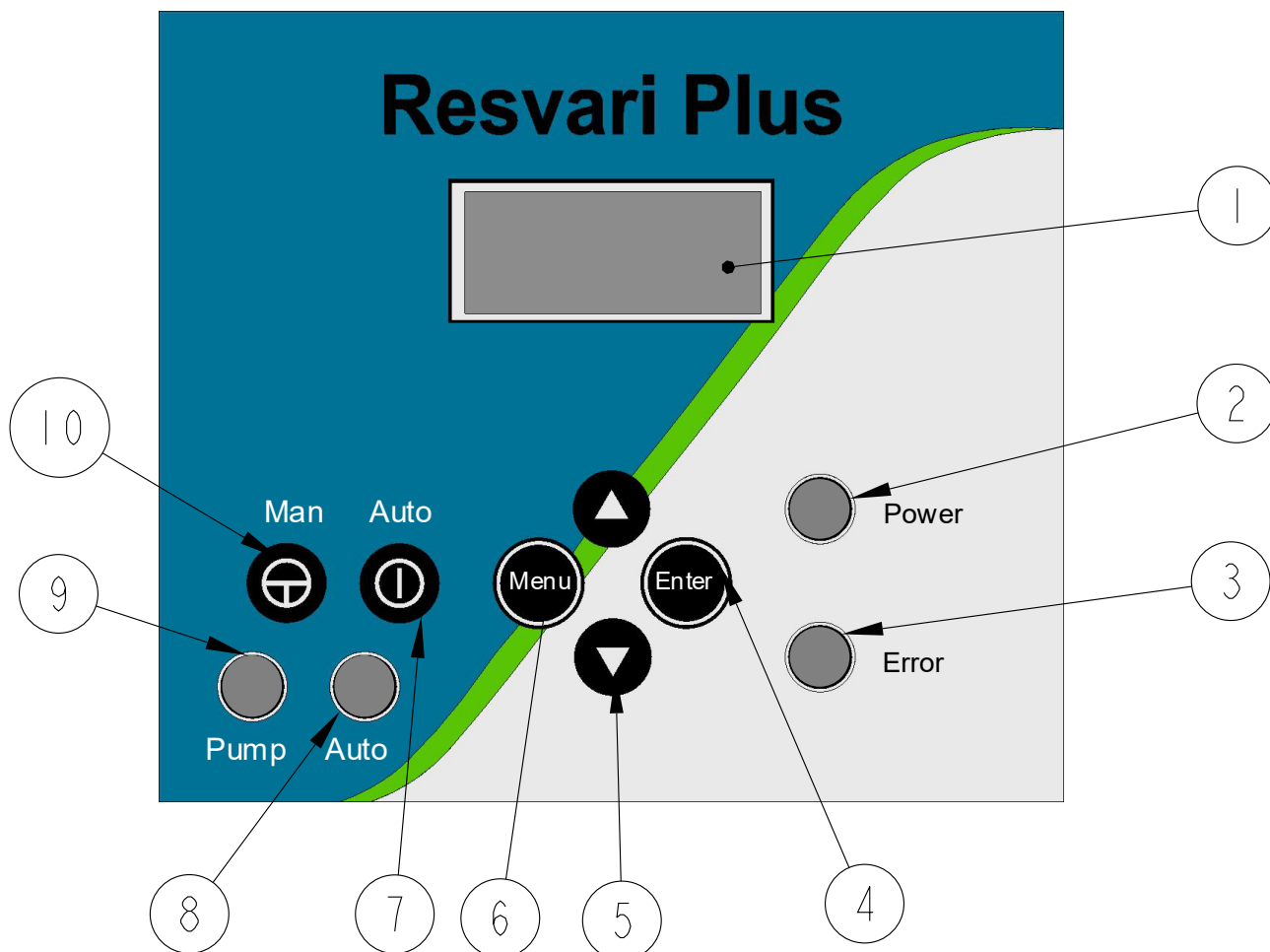
It is recommended that the below steps are carried out in order from 1 to 12:

1. Ensure the bottom and side walls of the tank is clean.
2. Check the vessel pre-charge, this should be set to 0.2 bar below the system pressure, Re-charge with Nitrogen or dry air if required. Open vessel isolation valve.
3. Open the water supply to the unit set and let the water tank fill with water until the float valve rises, thus closing the inlet valve and stops further filling.
4. Make sure that the float switch inside the tank is free and not tangled up. The square float will need to be flat and floating on the surface of the water.
5. Once the tank is full and the float valve has closed stopping water from entering the tank, Turn on the power to the unit.
6. The Resvari Plus drive will now start to boot up. All the LEDs Indicators (Pump On, Auto On, Power and Error) turn on and, if there are no faults, turn off again within 10 seconds.
7. The Drive performs an auto test, and the Power indicator LED turns on.

8. The display shows the software version.
9. If needed change the set point of the unit to match the requirement of your application. For information on how to change the Required value see section **5.4 Parameters**
10. The pump will run until the pressure in the discharge line reaches the set point (Pressure setting in the "Required Value" parameter)
11. Open the discharge valve slowly until fully open.
12. The initial commissioning is now complete. The pump will now run when its sense's a drop in pressure and is set to maintain the "Required Value".

5.3 Resvari Plus Drive

5.3.1 HMI / Interacting with the drive.



Position	Label	Description
1	Screen	LCD with 2 lines of 8 characters
2	Power LED Indicator	Steady yellow LED, indicating the pump is running.
3	Error LED Indicator	Steady red LED, indicating a fault. The LED is illuminated when there is an alarm.
4	Enter Button	Button for selecting parameters in AUTOMATIC mode. In MANUAL mode, this is an alarm reset button.
5	Navigation (Up & Down)	Decreasing or increasing the value of a parameter selected in MANUAL mode. Viewing the operating parameters in AUTOMATIC mode, Operating parameters
6	Menu Button	Counter / Button for accessing the Standard Menu parameters in MANUAL mode.
7	Auto On / Off toggle button	Button for enabling AUTOMATIC mode.
8	Auto On LED Indicator	Illuminated and steady in automatic mode. Flashing in manual parameter configuration mode (Standard menu, Advanced menu)
9	Pump Run LED Indicator	Steady yellow LED, indicating the pump is running.

10	Manual Pump Run	Button for running the electric pump in MANUAL mode. Press and hold the button to run the electric pump. This feature is used for priming the pump or to spin the shaft of the pump to avoid seizing after long periods of inactivity
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5.3.2 Automatic and Manual Mode



Please note:

A number of parameters cannot be accessed or changed if the unit is in Automatic Mode. Press AUTO to Toggle between AUTOMATIC mode On or Off. The Auto on LED indicates if Auto mode is on or off.

5.3.3 Status Screen

To access the status screen: In AUTOMATIC mode, press the navigation buttons (UP & DOWN) to view the following operating data of the Drive:

Parameter	Description	Unit	Range
Pset	Set point pressure	bar	0.0 – Full Scale of sensor (10 bar)
Pbar	Instantaneous pressure of the system	bar	0.0 –Full Scale of sensor (10 bar)
Hz	Instantaneous operating frequency of the motor	Hz	30-50
A	Instantaneous current absorbed by the motor	Ampere	0 - 10
°C	Temperature of the power module	Degrees Celsius	0 - 95
STATE	Drive diagnostics for technical assistance	—	—

5.3.4 Parameters

The parameters in the basic menu can be edited ONLY in MANUAL mode. Press AUTO ON / OFF Toggle button to switch between AUTOMATIC and MANUAL mode. The Auto on LED indicates if Auto mode is on or off.

- In MANUAL mode, press and hold MENU for a few seconds until the first parameter to be edited appears on the display and Auto On LED indicates flashes.
- Press UP & DOWN to edit the value of the parameter or ENTER to confirm and select the next parameter.
- Press MENU to exit the list of parameters to be edited and the Auto On LED Indicator turns off.
- Press AUTO ON / OFF Toggle to set AUTOMATIC mode and Auto On LED indicates is illuminated and remains solid.



Please note:

In automatic mode, the electric pump runs if the pressure of the system is below the set point. The standard Menu can be accessed by pressing and holding the MENU button for three seconds.

5.3.5 Standard Menu

The standard Menu can be accessed by pressing and holding the MENU button for three seconds.

Name / Code	Description	Default Value	Description
REQ VAL	Required Value	Unique to the model of Resvari Plus Best Efficiency point e.g., Resvari Plus 5-3 = 3 bar	This value is the pressure the pump will look to maintain when a demand is sensed but eh pressure transducer. The default value will match the BEP (best efficiency point) of the pump fitted to the Resvari Plus. Change this parameter to meet the requirements of the application
MIN.FREQ	Minimum Frequency	30 Hz	Minimum start-up and stop frequency of the motor. Frequency at which the Drive begins to run (upon start-up and shut- down) without using the ramps.
STRT VAL	Start Value	10%	This parameter is the value for starting the pump after a stop, calculated as a percentage of the required set point value. Example: SET PRESS= 4.0bar START VALUE=10% (3.6 bar) If the pressure in the system reaches the required

			pressure of 4.0 bar and there is no additional consumption, the Resvari Plus drive disables the pump. As consumption increases and the pressure decreases, the drive turns on the pump when the pressure falls below the START VALUE of 3.6 bar
MIN THRS	Minimum Threshold	0.00	Pressure value of the system below which the A4 "minimum pressure" alarm is triggered. When the alarm is triggered, the pump stops, and the ART function is enabled. Triggering of the alarm is delayed by the length of time set in the MINT DLY parameter.
MINT DLY	Minimum Threshold Delay	20 Secs	Delay for activating the MINTHRS alarm condition. Please note: This parameter will only appear if the MIN THRS (Minimum Threshold) has a value other than 0.0 bar

5.3.6 Advanced Menu

To access the Advanced menu of parameters: In MANUAL mode and with the Auto On LED Indicator off:

- Press and hold MENU and ENTER at the same time for a few seconds. The Auto On LED Indicator flashes.
- Press UP & DOWN to edit the value of the parameter.
- Press ENTER to confirm and move on to the next parameter.
- Press MENU and ENTER in sequence to exit the menu. The Auto On LED Indicator turns off.

Name / Code	Description	Default Value	Description
LANGUAGE	Language Select	English	This parameter allows you to change the language of the text on the drive is set to.
NOM CURR	Nominal Current	N/A	This Parameter allows you to change the current protection the drive provides the pump. This value (In Amps) should match the Full Load Current of the pump to ensure adequate protection
EXLOWWTR	External Low water enabled	YES	This parameter Enables or Disables the low water protection via the float switch. We strongly recommend enabling this parameter at all times and use the supplied Float switch to protect the pump from dry running
P SENSOR	Pressure Sensor Rating	10 Bar	The value shown on this parameter needs to match the maximum pressure rating stated on the pressure transducer. As standard the pressure transducer fitted is 10 Bar
MULT PMP	Multiple Pump operation	SING?	This parameter is set when using the Resvari Plus in a multi-pump application. Please see details on wiring the drive ready for multi-pump operation 4.7 Then follow guidance 5.7 for setting this parameter
t. ALT	Forced Duty Cycling	00 HOURS	When multiple pump operation is selected, the Forced Duty Cycling parameter allows the installer to set an hourly timer for alternating the duty pump. Duty cycling ensures equal wear across both pumps in the booster set.
SLOWFIL?	Slow fill mode	NO	Allows the user to enable "Slow Fill" mode. Upon power lost, the set will restart and run at a lower pressure for 2 mins. For more information see Section 5.8 Slow fill mode
SF PRESS	Slow fill pressure	1 Bar	Only visible when Slow Fill mode is activated. Allows the user to set the Slow fill mode target pressure. Please note: This value must not exceed the Required value
ACCELER	Acceleration ramp timing	10 Seconds	Acceleration time. Minimum time required for the frequency of the motor to go from minimum to maximum frequency
DECELER	Deceleration ramp timing	10 Seconds	Deceleration time. Minimum time required for the frequency of the motor to go from minimum to maximum frequency
FREQ SW	Frequency Switching	4 kHz	Selection of the switching frequency of the power module
DEFAULT PAR	Reset the	NO	Select YES to set the default values

	parameters to Default		
RESET CONT	Reset Counter / Alarm log	NO	Select YES to reset the operation counters and the alarm log.

5.3.7 Counter / Alarm Logs

- To access the Logs screen: In MANUAL mode, in addition to the parameters indicated in the Status Menu, it is possible to view information on the counter log and the alarm log.
- To access the menu, press and hold MENU and UP at the same time for a few seconds.
- Press ENTER to select the next parameter.
- Press ENTER several times to return to the initial parameter, or MENU to exit the function and alarm log.

To view the list of alarms displayed on the Resvari Plus, please see section **6.2 Resvari Plus Drive Alarms**

Relating to Alarm Ref:	Label	Description
n/a	HOURS	Number of hours the drive has been running (power on).
n/a	CYCLES	Number of times the electric pump has been turned on and off.
n/a	SWITCH ON	Number of times the drive has been turned on
A1	DRYRUN	Total number of times the digital input has triggered the no water alarm
A6	OVER TEMP	Total number of times the power module overtemperature alarm has been triggered
A2	OVER CURR	Total number of times the overcurrent alarm has been triggered.
A7	SHORT CIRCUIT	Total number of times the Short Circuit alarm has been triggered.
A8	HIGH VOLTAGE	Total number of times the High Voltage alarm has been triggered.
A9	LOW VOLTAGE	Total number of times the Low Voltage alarm has been triggered.
A13	MINIMUM THRESHOLD	Total number of times the Minimum Threshold alarm has been triggered.
A14	LEVEL	Total number of times the lack of water alarm has been triggered

5.3.8 Multi-Pump Control

The Resvari Plus drive has the capability to communicate with another Resvari Plus unit to work in Master / Follower operation. First ensure that the two drives have been correctly wired, please see section **4.7 Multi Pump Use** for more details.



Please note:

On twin pump Resvari Plus models (Resvari Plus D), the drives are already set up for multiple pump operation. No additional settings need to be changed



Please note:

Before setting up the Multi Pump communication ensure that both units have been commissioned correctly following the steps described in **5.2 Commissioning**

Nominate which drive will first become the Master and the other to be the Follower device.

1. On the Master drive, navigate to the "MULT PMP" parameter in the Advanced menu and change the value from SING to MASTER
2. On the Follower drive, navigate to the "MULT PMP" parameter in the Advanced menu and change the value from SING to SLAVE

When linking two Resvari Plus units together in Multi-Pump Communication, after enabling the automatic mode in the Master drive, the Auto On LED Indicator will flash intermittently on the Follower device. This is to indicate that the connection between the two drives is ready. If the LED light does not flash on the Follower device as described, please check the wiring connection between the two drives.

When operating two Resvari Plus units in Multi Pump configuration, the alarms may behave differently compared to single unit arrangement. Please see section **5.7 ART function (Automatic Reset Test)**

5.3.9 ART function (Automatic Reset Test)

When alarm A4 PRESS MIN is triggered with the Error LED indicator illuminated, the drive performs automatic reset tests on the electric pump.

The system does the following:

The drive enters an A4 PRESS MIN fault mode, indicated by the Error LED illuminating. Approximately 5 minutes after the alarm activates, the system attempts to start the electric pump to raise the pressure to the MIN THRS setpoint. Refer to Standard Menu parameters in section **5.4.2 Advanced Menu**. If the system pressure exceeds this setpoint, the alarm clears, and the electric pump operates without faults, with the Error LED off.

If the A4 alarm remains active and the Error LED is still illuminated, the system initiates an automatic reset procedure, repeating every 30 minutes for up to 24 hours. If the A4 alarm persists after these attempts, the system will remain in a disabled state with the Error LED on until an operator resolves the issue.

During the ART attempts, it is possible to reset the A4 alarm as follows:

1. Press Auto On / Off toggle button to enter MANUAL mode.
2. Press ENTER to reset the alarm and turn off the Error LED indicator.
3. Start up the pump, press Start / Stop toggle button and check that the pressure reaches or exceeds the set MINIMUM PRESSURE value. If this does not happen, stop the pump and resolve the problem.
4. Enter AUTOMATIC mode and press Auto On / Off toggle button.

5.3.10 Slow fill mode

The Resvari Plus features a built-in Slow Fill mode. This feature, once enabled, allows the booster set to restore water to the system at lower pressure after power loss to prevent water hammer. Slow fill mode operates for 2 minutes, then reverts to the duty point set in the "REQ VALUE" parameter.

To activate the Slow fill mode:

1. Navigate to the advanced menu as described in section **5.4.2 Advanced Menu**
2. Change the default value of "SLOWFIL?" from NO to YES
3. The "Slow fill" mode target pressure can be adjusted in parameter "SF PRESS". This is set to 1 bar as standard.

Please note: The Slow Fill pressure must be set lower than the target pressure.

6. Troubleshooting

6.1 General fault-finding guide

Fault	Possible Cause	Remedy
Automatic Mode is activated, but the pump doesn't switch off	"Start Value" Parameter not at correct value	Change the value in parameter "Start Value" further away to the required value. E.g., Increase the % value so that the differential between the Start Value and Require Value is greater
Automatic Mode is activated, but the pump doesn't turn on	"Start Value" Parameter not at correct value	Change the value in parameter "Start Value" closer to the required value. E.g., Reduce the % value so that the differential between the Start Value and Require Value is smaller
Pump fails to start / No power to Drive	Power supply failure	Reinstate incoming power supply.
	Isolator fuse blown/MCB tripped	Replace fuse/reset MCB
Pump fails to stop	Set point set too high.	Lower set point
	System pressure low due to large leak in system	Switch unit off until leak is repaired
Pump switches on and off quickly	Air in system	Purge air from pumps and pipework
	Vessel pre-charge incorrect	Check vessel pre-charge and Charge as necessary with Nitrogen or dry air
	Pump air locked	Vent pump
Pump runs but will not make pressure	Passing too much water	Check system for leaks
	Air trapped in the pump	Check the water level inside the tank first. If full, press and hold the manual run button until water is discharged
Pump overheating	Pump partially seized	Remove pump and check for sediment build up or foreign objects
Break tank overflowing	Leaking ball valve	Replace ball valve seal.
	Non-return valve letting by	Replace/clean non-return valve
Pump stops and pressure drops immediately	Non-return valve letting by	Replace non-return valve.
	Vessel pre-charge incorrect	Check vessel pre-charge and Charge as necessary with Nitrogen or dry air
The pump runs but starts and stops frequently	There could be a problem with the level float in the break tank.	Check the float and the tank.
The pump always runs at maximum speed	There could be a problem with the pressure transducer.	Check the hydraulic connection between the transmitter and the system. Check the working order of the sensor. There is air in the sensor, or the hydraulic circuit concerned.
	The set point is too high, and the pump doesn't achieve the pressure desired.	Reduce the set point.
	The pump is not primed.	Control the suction condition of pump.

6.2 Drive Error fault-finding guide

Name / Code	Description	System Reaction	Solution
A1 Dry Running	No flow of water to the pump. Causes: 1. No flow of water on the intake side of the pump. The pump must not run dry because this causes severe damages.	Automatic, when the alarm stops	AUTOMATIC mode: Alarm triggered, and pump locked. It is possible to run the pump in manual mode when the alarm is triggered. The pump can be run and primed in this way, but it is important not to run it on dry for more than 5 seconds. Solutions: • Check for the presence (level) of water in the tank
A2 Over Current	Overcurrent on the motor side of the electric pump	Automatic. Maximum of 4 attempts to start are made at 2 second intervals. Permanent locking of the electric pump if the alarm continues to be active after these attempts.	The drive supplies current to the electric motor above the set rated value. The drive protects the motor against current over- load. Solutions: • Check the condition of the windings of the electric motor. • Check the power consumption of the electric motor. • Check the cross-section of the motor's power cable: this must be suited to the length of the cable and to the power of the motor. • Check configuration of the rated current parameter. Please see section 5.4.3 • The value of the drives rated current must be at least equal to the current value on the data plate. If the power cable for the motor is longer than 30 metres, it is advisable to increase the value by a minimum of 10%.
A3 Disconnected Power	An automatic function of the drive that detects current consumption while the motor is running. The drive cuts out the power supply to the motor and remains locked.	Manual.	• In the case of single-phase motors, the thermal circuit breaker (motor protector) trips automatically. • Breaking or failure of a phase of the motor. • Failure/disconnection/deterioration of a phase of the motor's power cable. • Breaking of the Resvari Plus Drive fuse
A5 Transducer Error	Fault with the pressure sensor. The alarm is triggered if the pressure transducer sends a signal of less than < 3.2 mA or greater than > 22 mA signal.	Automatic Reset	The pressure sensor is faulty. • Check that the sensor and connector are connected. • Open the cover and check that the power cord of the sensor is connected and secured to the terminals. See section 4.6.1 • Check the cable of the sensor is connected correctly. Please see 4.6.1. • The power cable of the sensor has deteriorated: replaces the cable. • If the above action(s) do not resolve the issue, the sensor may have failed, and you may need to replace the faulty sensor
A6 Excessive Temp	Alarm indicating that the power module of the drive has overheated. The cooling fan turns on at 60°C and turns off at 50°C (The Resvari Plus Drive has a built in Fan). If the temperature reaches 85°C, the output frequency of	Automatic Reset.	• The ambient temperature exceeds the limits for use of the drive. See Technical data on page 27. • The cooling fan does not work. Open the cover and check the power cable of the fan is connected and secured to the relative terminals. Please see 4.6.1. • The cooling fan is faulty. Contact the assistance service. • The power module is faulty: contact the assistance service.

	the motor is automatically reduced by 3Hz down to 75°C. At 95°C, and in AUTOMATIC mode, the drive stops the pump and does not restart it until the temperature falls below 80°C.		
A7 Short-circuit	Alarm indicating a short circuit on the power supply side of the motor. An automatic function of the drive that detects current consumption while the motor is running. The drive cuts out the power supply to the motor and remains locked.	Automatic. A max of 4 attempts to start are made at 2 second intervals. The pump is permanently locked if the alarm persists after the reset tests.	•The motor is damaged and must be replaced. •The power cable of the motor is faulty or worn replace the cable.
A8 Over Voltage	Alarm indicating the voltage supply of the drive is high. An automatic function of the drive that detects the voltage value of the power line. The drive stops the electric pump when the voltage value exceeds the permitted limit (254 V). The pump automatically starts up when the voltage drops below the limit (chapter 2.5).	Automatic Reset.	Troubleshooting: • Problems with the power line: contact the utility provider. • For systems with more than one pump, the electric pump with drive acts as a current generator when the non-return valve of the hydraulic system is faulty. The water flows through the non-return valve in the opposite direction. •The DC Bus power circuit of the drive is faulty.
A9 Under Voltage	Alarm indicating that the voltage supply of the drive is too low. An automatic function of the drive that detects the voltage value of the power line. The Drive stops the electric pump when the voltage value is below the permitted limit (184 V). The pump automatically starts when the voltage exceeds the limit.	Automatic Reset	• The cross-section of the power cable, to the Resvari Plus Drive, is too small. Replace the cable with one of a suitable cross-section taking into account the voltage drop at the supply point of the drive. • The power cable for the drive is too long. Replace the cable with one of a wider cross-section taking into account the voltage drop at the supply point of the drive • Check and make sure the voltage of the electrical supply is stable • This error will also show when the power is cut to the drive before shutting off completely
A13 Minimum Pressure	Minimum pressure alarm		Troubleshooting: • No water on the intake side of the pump: check the level or pressure of the water. • Pump not primed. Prime the pump.

			• The pipe on the delivery side of the pump is broken. The flow of water is too high. • The pump (impeller or diffuser) is damaged. Contact the technical assistance service. • The motor is damaged and must be replaced.
A14 Low Water	When the EXLOWWTR parameter is enabled, and the digital input is open. E.g., The Float switch inside the tank has detected no water inside the tank		Solutions: • Check the working order of the level sensor.
A10 Communication	Alarm indicating the connection between the two drives (When configuring the Resvari Plus unit in Multi-Pump operation) is disconnected or there is a bad connection	The Multi-Pump Operation will stop and both Resvari Plus units will operate individually	Troubleshooting: • Check the cable connection on both units and ensure the Rx and Tx wires are crossed (as described in section 4.7) • Check that there is on drive set as Master and the other Follower in Parameter MULT PMP (Please see section 5.7 for more information)

Please note: A10 communication error is only present when Multi-Pump operation is enabled / active.

6.3 Alarms in Multi-Pump Configuration

When two Resvari Plus units are being used in Multi-Pump operation, the following alarms may differ to the standard behaviour in single pump operation:

Alarms that differ are as follows:

Communication Failure A10: Alarm indicating the connection between the two drives (When configuring the Resvari Plus unit in Multi-Pump operation) is disconnected or there is a bad connection. The Multi-Pump Operation will stop and both Resvari Plus units will operate individually.

Dry Run Alarm A1: If there is a lack of water alarm in one of the units, the other pump assumes the role of “Main Device”. If the demand exceeds the performance of one unit, the system will try and restore the device which has failed due to the dry run error. If the device status is restored in the unit encountering the alarm, then the two units will restore alternated operating mode. If there is a lack of water on both units, the system will activate the ART (Automatic Reset Test) system in the MASTER unit.

All other Alarms: If the alarm has occurred in one single device, the other unit in the Multi-Pump operation will act as the “Main Device”. If the demand exceeds the performance of one unit, the system will try and restore the device which has failed due to the error. After 4 consecutive attempts without success restoring the status of the drive, the unit in question is turned off and will need to be reset manually. (This involved switching the unit on / off once the issue has been resolved).

In the case of both devices experiencing alarms / errors the system will attempt to restore the device. After 4 consecutive attempts without success restoring the two devices, the two drives are disabled and will need to be restored manually.

7. Maintenance



DANGER

Maintenance of the Resvari Plus must be carried out by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.



WARNING:

Always wear personal protective equipment.



WARNING:

Always use suitable working tools.

7.1 Routine check (6 monthly intervals)

- Check the pump produces the correct pressure.
- Check that the pump operates without undue noise or vibration.
- Check the break tank is clean and that the correct water level has been maintained.
- Check that all screws are tight on electrical components.
- Check that the earth connections are tight and making good contact.
- Check that the gas pre charge is at the correct pressure, this should be done by isolating the vessel from the system and draining water out of the vessel via the isolation valve drain point. Once the water has been discharged, a tyre gauge can be connected to the pre charge valve to display the vessel pre charge pressure. Recharge as necessary with Nitrogen or dry air.
- Any other expansion vessels connected to the system can be checked in the same manner.

7.2 Long Periods of inactivity

1. Disconnect the tank from the inlet.
2. Empty the unit and pipework of water.
3. Ensure that there is no water sitting at the bottom of the tank.
4. Take the unit out of service.

Before restarting the unit

1. Remove the bottom filter of the pump and check that the shaft is rotating freely, without mechanical impediment.
2. Ensure the inside of the tank is clean.
3. Reconnect the inlet and fill the tank with fresh clean water.

7.3 Spare parts

Spare parts for the Resvari Plus are available to purchase from Lowara UK. Please contact the sales office for more information or visit the Lowara Spark website for Exploded parts diagrams.

<https://rcwemea.xyleminc.com/Spark/>

7.6.4 Replacement of Fuses & MCB – Resvari Plus D Panel (QESM20)

In the event of a MCB failure, replacement components can be sourced via a third party. The components must meet the following specification to ensure adequate protection and functionality of the booster set.

Diagram Ref	Description	Function	Manufacturer, Model	Current rating / Protection
QF1	MCB	Pump overload and short circuit protection	ABB, SN201L C6	6 Amp
			ABB, SN201L C10	10 Amp
QF2	MCB	Pump overload and short circuit protection	ABB, SN201L C6	6 Amp
			ABB, SN201L C10	10 Amp

7.3.1 Replacing Electrical components



Warning

During the life of the product, it is likely that electrical components such as MCBs may fail. These components have been sized and installed for the electrical loads of this product. Its strongly advised, when replacing an electrical component, to use the same manufacturer and specification as the original part. Using an alternative product with a different specification may cause damage to the product and / or endanger the user.

7.4 Resvari Plus wiring diagrams

The wiring diagram specific to the Resvari Plus Model can be found in the supplied document pack. For the drawing reference, please see section **8.7 Electrical specification**

8. Technical Information

8.1 Operating Environment

The Resvari Plus unit has an IP rating of IP54 due to the electrical components situated on the Resvari Plus head. Please ensure that if the Head is attached to the Resvari Plus unit, that the drive is protected against weather, extreme heat and water.

IP protection	54
Ambient temperature	0–40°C
Ambient humidity	< 50%, non-condensing
Elevation	≤1000m above sea level
Cooling	Forced Air

8.1.1 Installation Environment

The Resvari Plus drive has an IP rating of IP54 and should not be installed in an environment where the drive is exposed to direct sunlight and/or near heat sources.

8.2 Materials in contact with the water

8.2.1 Resvari Plus S Head

Description	Material	WRAS Approved
Delivery elbow	Brass	n/a
Pressure vessel – 10 bar, 8 litre	Outer Shell: Carbon Steel Flange: Galvanized steel Diaphragm: Butyl Rubber	Yes
Vessel Elbow	Brass	n/a
Union 1"	Stainless steel	n/a
Pressure vessel Isolation and drain valve	Stainless steel	n/a
1 1/4" Stainless Steel manifold	Stainless steel	n/a
Pressure Transducer	Stainless steel	n/a

8.2.2 Resvari Plus D Head

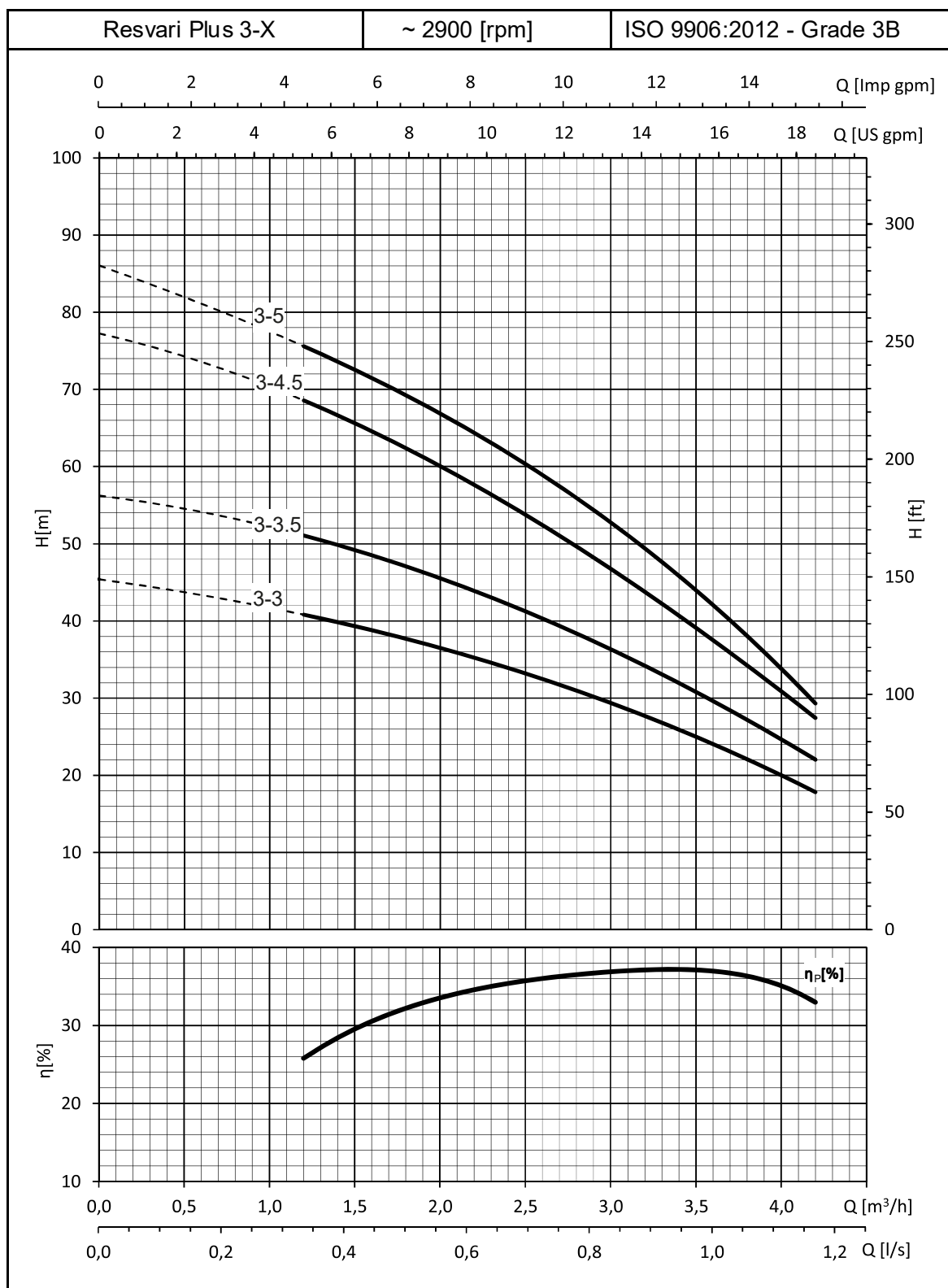
Description	Material	WRAS Approved
Pressure Vessel	Outer Shell: Carbon Steel Flange: Galvanized steel Diaphragm: Butyl Rubber	n/a
Pressure Vessel flow through and isolation valve	Brass	n/a
1 1/4" Bulk head fitting	Stainless steel	n/a
1 1/4" Elbow	Brass	n/a
Isolation valve with union fitting	Stainless steel	Yes
Twin pump Manifold	Stainless steel	n/a
3/4" Plug	Stainless steel	n/a
Pressure transducer	Stainless steel	n/a
Isolation valve	Stainless steel	n/a
Pressure gauge	Stainless steel	n/a

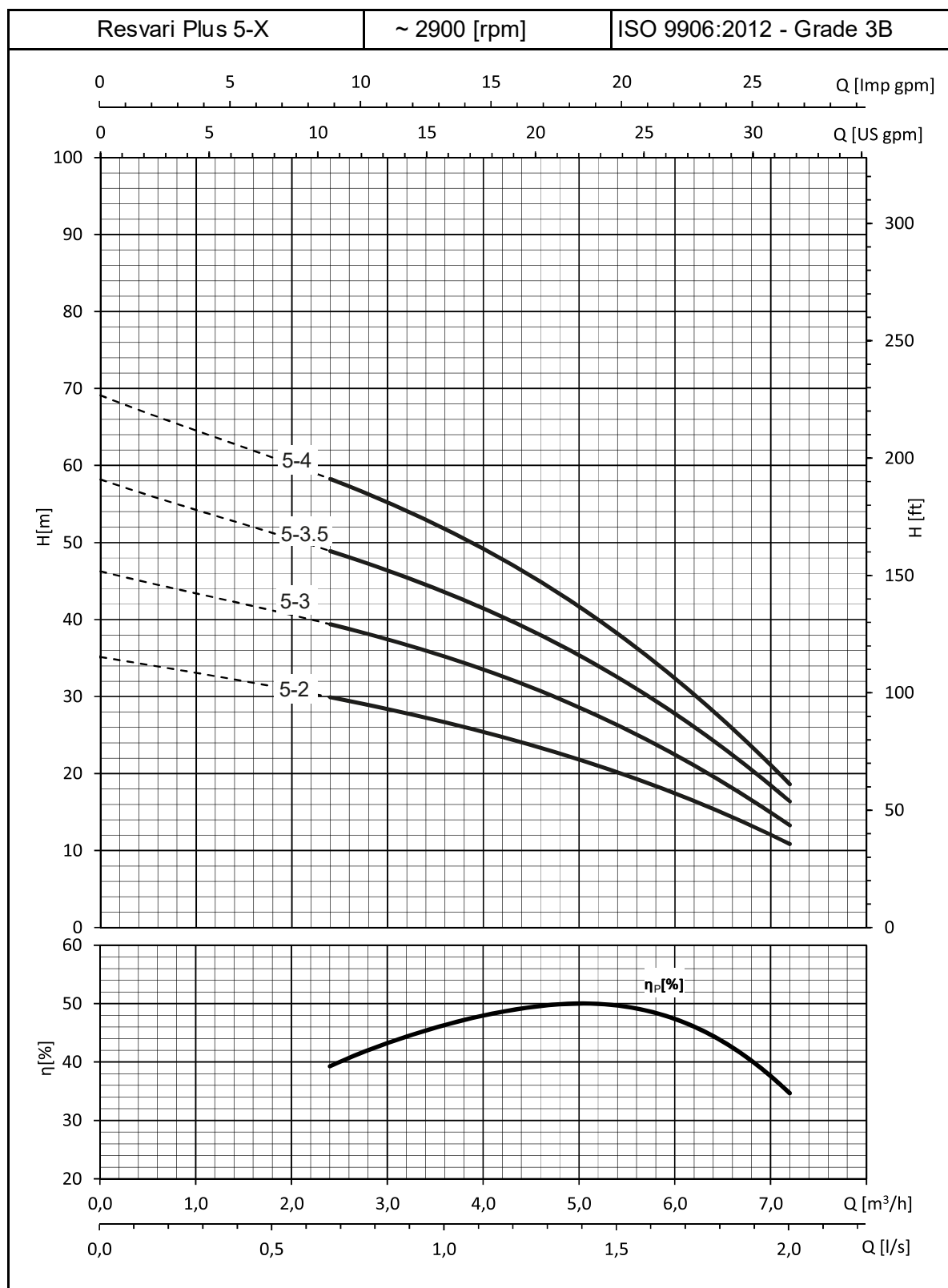
8.2.3 Resvari Plus Complete (D & S)

Description	Material	WRAS Approved
Non return valve	Brass	n/a
1 1/4" Union	Stainless steel	n/a
Copper Riser	Copper	n/a
Scuba Pump	Casing: Stainless steel, Impeller: Technopolymer (Plastic)	Yes
Break tank	GRP (Glass Reinforced Plastic)	Yes
Tank overflow	Plastic	Yes
Float valve	Float: Copper Valve: Brass	Yes
Tank Breather	Plastic	Yes
Float switch	Plastic	No

8.3 Performance / Pump Curves

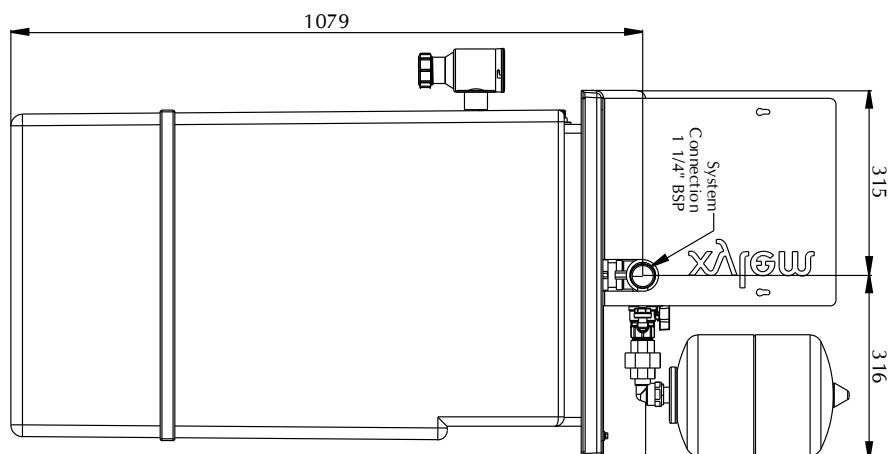
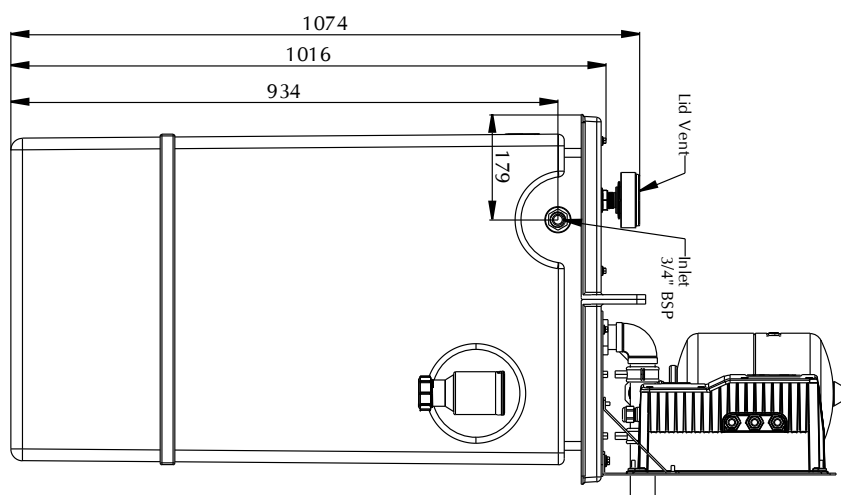
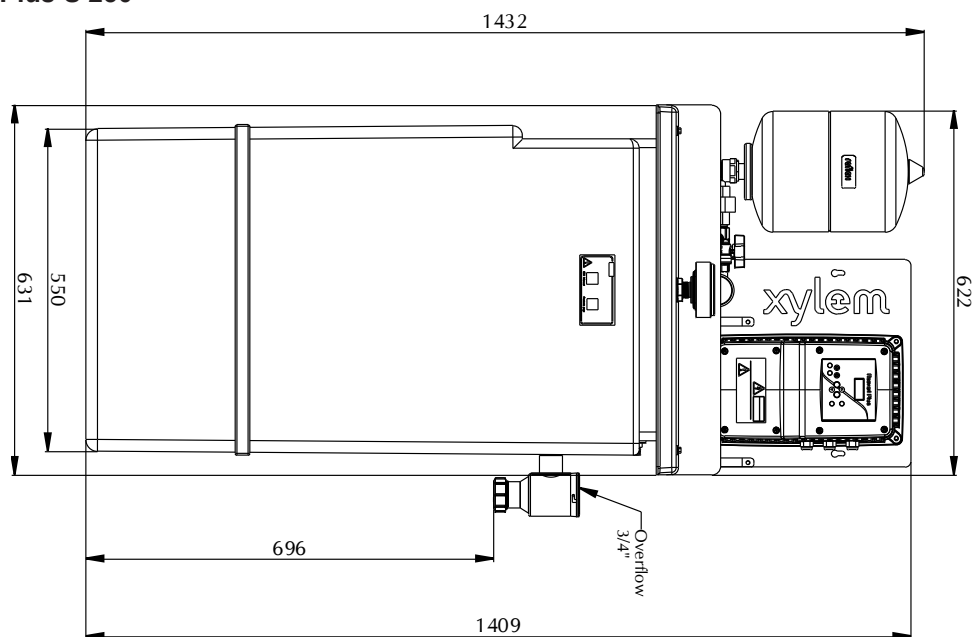
Resvari Plus 3-X (SC3 Pump)



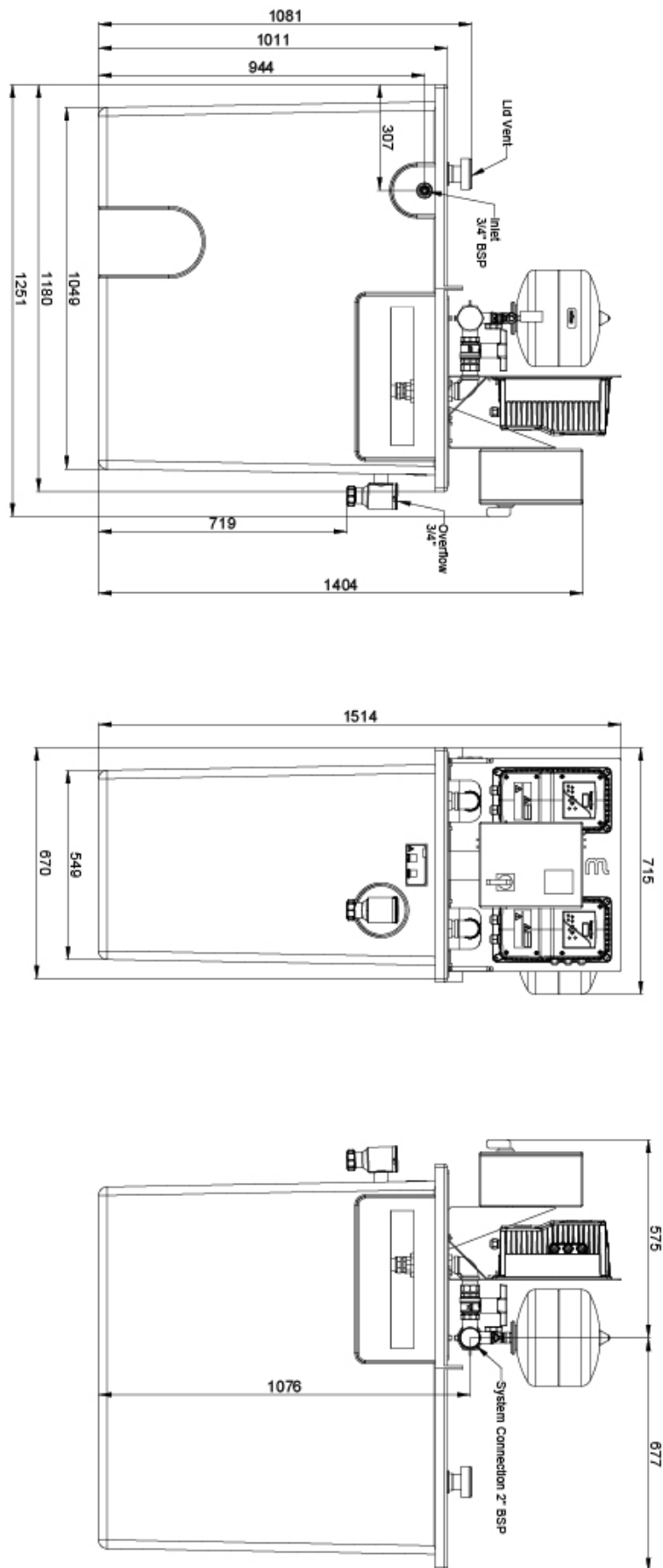
Resvari Plus 5-X (SC5 Pump)

8.4 Dimensions Resvari Plus

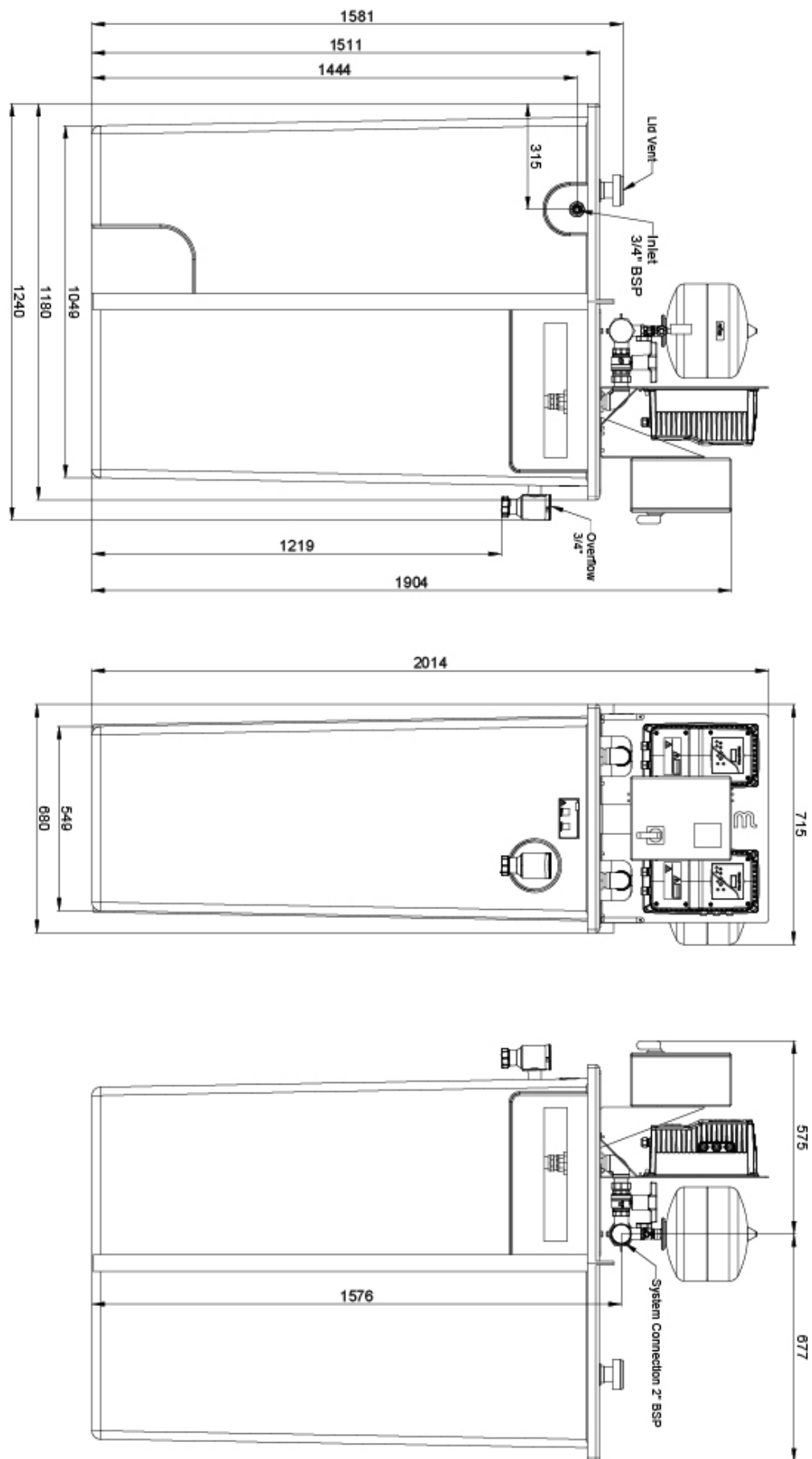
8.4.1 Resvari Plus S 250



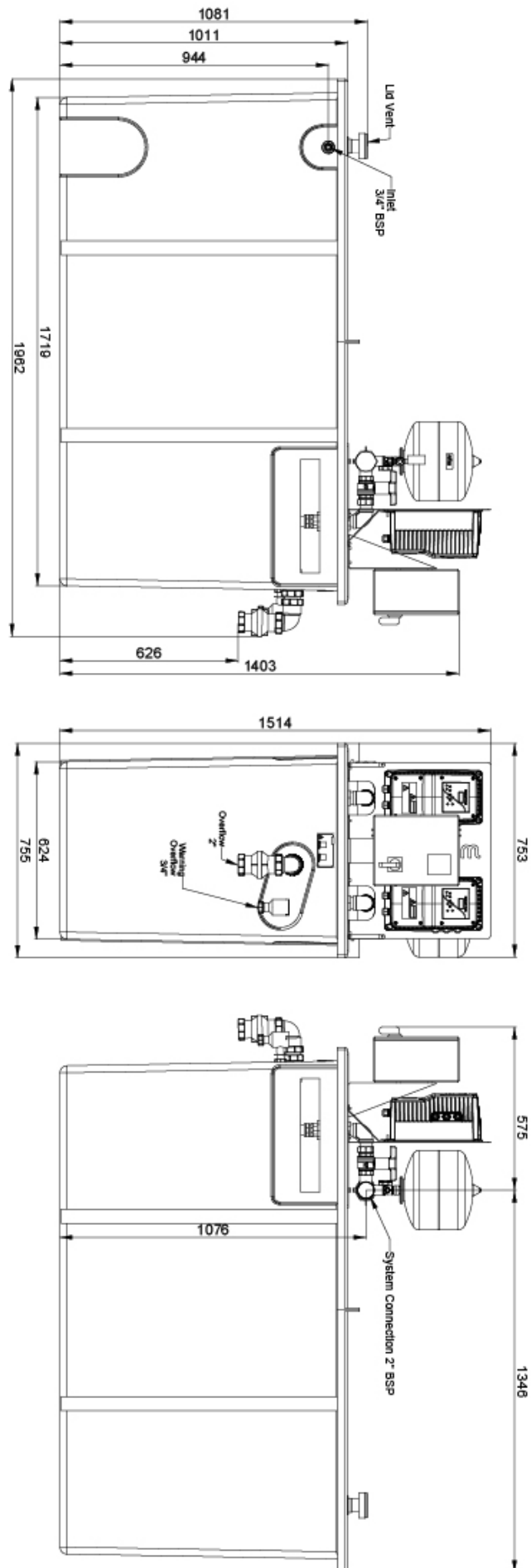
8.4.2 Resvari Plus D 500



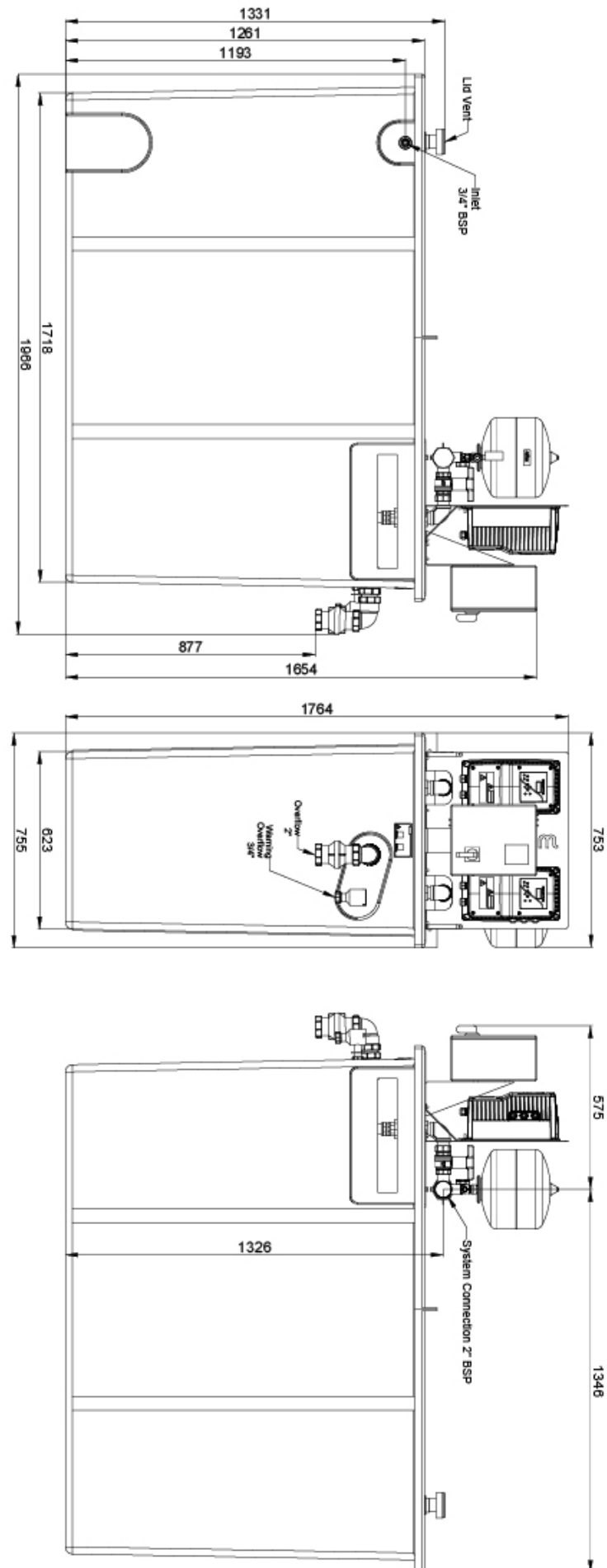
8.4.3 Resvari Plus D 750



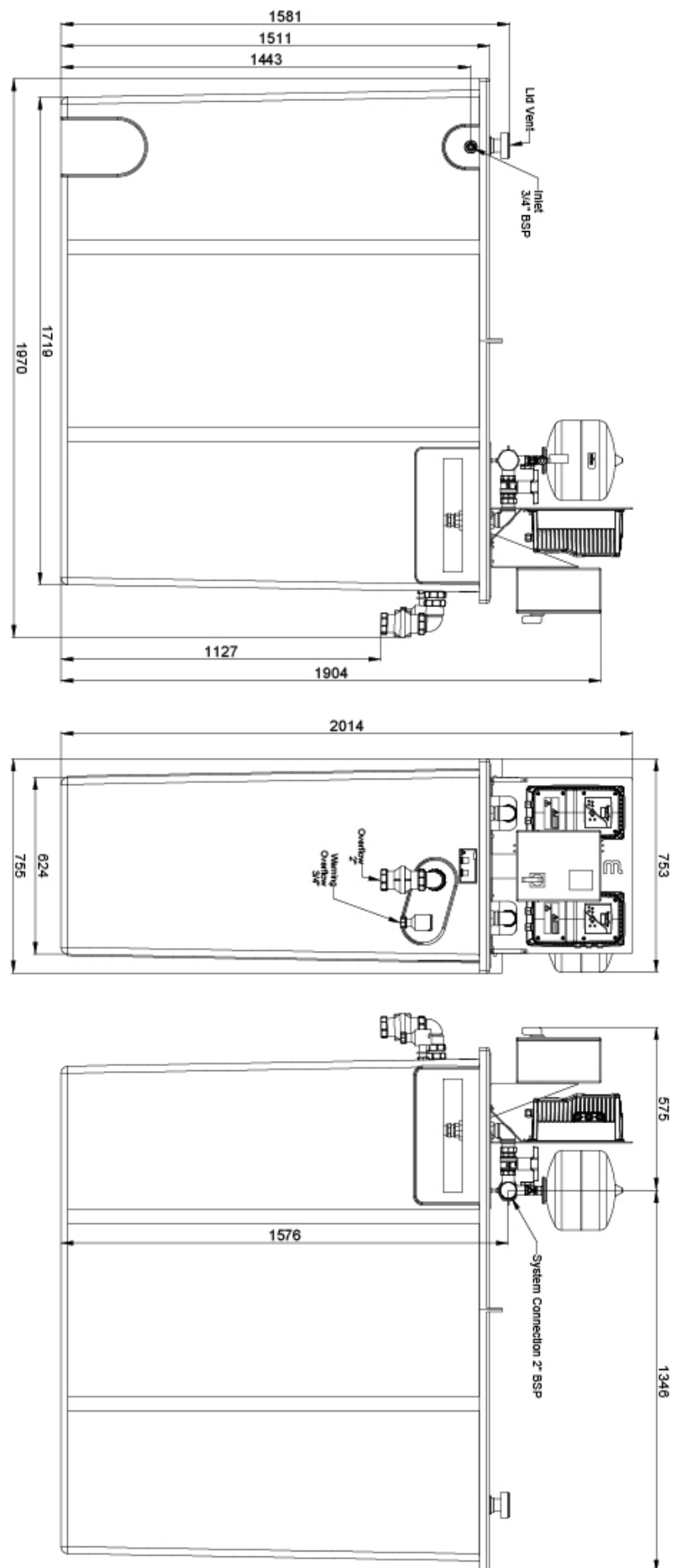
8.4.4 Resvari Plus D 1000



8.4.5 Resvari Plus D 1250



8.4.6 Resvari Plus D 1500



8.5 Inflow Rate / Minimum pressure – 22mm / ¾" Inlet

Incoming pressure		Flow: Litres per min
Bar	PSI	
0.5	7.2	56.8
1	14.5	80.5
1.5	21.7	98.7
2	29	113.7
2.5	36.2	127.3
3	43.5	140.9
4	58	159.1
5	72	177.3
6	87	195.5
7	101	209.1
8	116	227.3
9	130	240.9
10	145	254.6
11	159	268.2
12	174	277.3
13	188	290.9
14	203	300.0

Flow Rate and Size Selection Chart general notes:

The discharge through a floatvalve is governed by the running pressure maintained at its inlet. In practice this is difficult to measure and so the tables shown indicate the 'estimated' flow rate in gallons per minute that will occur at various static heads for each size of floatvalve or for each size of seat in floatvalve that accept a variety of seat sizes. The flowrates quoted will only occur when the floatvalve is fully open and will reduce as the water level in the tank rises. Excessive pipe runs to the floatvalve will result in lower running pressures and thus reduced flowrates.

8.6 Resvari Plus Electrical specification

Part Number	Full Description	Pump	Pump Motor (Kw)	FLC (amps)	Control Panel	Drawing Ref
135G01001	RESVARI PLUS S 250 3-3	3SC4/05/5 C L05	0.55	4.06	N/A	C10093A
135G01002	RESVARI PLUS S 250 3-3.5	3SC5/07/5 C L05	0.7	4.80	N/A	C10093A
135G01003	RESVARI PLUS S 250 3-4.5	3SC7/09/5 C L05	0.9	5.88	N/A	C10093A
135G01004	RESVARI PLUS S 250 3-5	3SC8/11/5 C L05	1.1	6.85	N/A	C10093A
135G01005	RESVARI PLUS S 250 5-2	5SC3/05/5 C L05	0.55	4.08	N/A	C10093A
135G01006	RESVARI PLUS S 250 5-3	5SC4/07/5 C L05	0.7	4.98	N/A	C10093A
135G01007	RESVARI PLUS S 250 5-3.5	5SC5/09/5 C L05	0.9	5.72	N/A	C10093A
135G01008	RESVARI PLUS S 250 5-4	5SC6/11/5 C L05	1.1	6.90	N/A	C10093A
135G01049	RESVARI PLUS D 500 3-3	3SC4/05/5 C L05	0.55 x 2	8.1	QESM20/1.007	C10126A
135G01050	RESVARI PLUS D 500 3-3.5	3SC5/07/5 C L05	0.7 x 2	9.6	QESM20/1.007	C10126A
135G01051	RESVARI PLUS D 500 3-4.5	3SC7/09/5 C L05	0.9 x 2	12	QESM20/1.015	C10126A
135G01052	RESVARI PLUS D 500 3-5	3SC8/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01053	RESVARI PLUS D 500 5-2	5SC3/05/5 C L05	0.55 x 2	8.2	QESM20/1.007	C10126A
135G01054	RESVARI PLUS D 500 5-3	5SC4/07/5 C L05	0.7 x 2	10	QESM20/1.007	C10126A
135G01055	RESVARI PLUS D 500 5-3.5	5SC5/09/5 C L05	0.9 x 2	11	QESM20/1.015	C10126A
135G01056	RESVARI PLUS D 500 5-4	5SC6/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01057	RESVARI PLUS D 750 3-3	3SC4/05/5 C L05	0.55 x 2	8.1	QESM20/1.007	C10126A
135G01058	RESVARI PLUS D 750 3-3.5	3SC5/07/5 C L05	0.7 x 2	9.6	QESM20/1.007	C10126A
135G01059	RESVARI PLUS D 750 3-4.5	3SC7/09/5 C L05	0.9 x 2	12	QESM20/1.015	C10126A
135G01060	RESVARI PLUS D 750 3-5	3SC8/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01061	RESVARI PLUS D 750 5-2	5SC3/05/5 C L05	0.55 x 2	8.2	QESM20/1.007	C10126A
135G01062	RESVARI PLUS D 750 5-3	5SC4/07/5 C L05	0.7 x 2	10	QESM20/1.007	C10126A
135G01063	RESVARI PLUS D 750 5-3.5	5SC5/09/5 C L05	0.9 x 2	11	QESM20/1.015	C10126A
135G01064	RESVARI PLUS D 750 5-4	5SC6/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01065	RESVARI PLUS D 1000 3-3	3SC4/05/5 C L05	0.55 x 2	8.1	QESM20/1.007	C10126A
135G01066	RESVARI PLUS D 1000 3-3.5	3SC5/07/5 C L05	0.7 x 2	9.6	QESM20/1.007	C10126A
135G01067	RESVARI PLUS D 1000 3-4.5	3SC7/09/5 C L05	0.9 x 2	12	QESM20/1.015	C10126A
135G01068	RESVARI PLUS D 1000 3-5	3SC8/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01069	RESVARI PLUS D 1000 5-2	5SC3/05/5 C L05	0.55 x 2	8.2	QESM20/1.007	C10126A
135G01070	RESVARI PLUS D 1000 5-3	5SC4/07/5 C L05	0.7 x 2	10	QESM20/1.007	C10126A
135G01071	RESVARI PLUS D 1000 5-3.5	5SC5/09/5 C L05	0.9 x 2	11	QESM20/1.015	C10126A
135G01072	RESVARI PLUS D 1000 5-4	5SC6/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01073	RESVARI PLUS D 1250 3-3	3SC4/05/5 C L05	0.55 x 2	8.1	QESM20/1.007	C10126A
135G01074	RESVARI PLUS D 1250 3-3.5	3SC5/07/5 C L05	0.7 x 2	9.6	QESM20/1.007	C10126A
135G01075	RESVARI PLUS D 1250 3-4.5	3SC7/09/5 C L05	0.9 x 2	12	QESM20/1.015	C10126A
135G01076	RESVARI PLUS D 1250 3-5	3SC8/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A

135G01077	RESVARI PLUS D 1250 5-2	5SC3/05/5 C L05	0.55 x 2	8.2	QESM20/1.007	C10126A
135G01078	RESVARI PLUS D 1250 5-3	5SC4/07/5 C L05	0.7 x 2	10	QESM20/1.007	C10126A
135G01079	RESVARI PLUS D 1250 5-3.5	5SC5/09/5 C L05	0.9 x 2	11	QESM20/1.015	C10126A
135G01080	RESVARI PLUS D 1250 5-4	5SC6/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01081	RESVARI PLUS D 1500 3-3	3SC4/05/5 C L05	0.55 x 2	8.1	QESM20/1.007	C10126A
135G01082	RESVARI PLUS D 1500 3-3.5	3SC5/07/5 C L05	0.7 x 2	9.6	QESM20/1.007	C10126A
135G01083	RESVARI PLUS D 1500 3-4.5	3SC7/09/5 C L05	0.9 x 2	12	QESM20/1.015	C10126A
135G01084	RESVARI PLUS D 1500 3-5	3SC8/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A
135G01085	RESVARI PLUS D 1500 5-2	5SC3/05/5 C L05	0.55 x 2	8.2	QESM20/1.007	C10126A
135G01086	RESVARI PLUS D 1500 5-3	5SC4/07/5 C L05	0.7 x 2	10	QESM20/1.007	C10126A
135G01087	RESVARI PLUS D 1500 5-3.5	5SC5/09/5 C L05	0.9 x 2	11	QESM20/1.015	C10126A
135G01088	RESVARI PLUS D 1500 5-4	5SC6/11/5 C L05	1.1 x 2	14	QESM20/1.015	C10126A

8.7 Resvari Plus drive – Electrical specification

Digital input for float switch contact	24Vdc, 23.9mA
Maximum power cable section	2.5mm ²
Maximum motor power cable section	2.5mm ²
Consumption in standby	4W
Rated voltage input (U _{in})	1x230V (-20% – +10%)
Overcurrent	20%, 10 second maximum

8.8 Sound output

Noise Emissions Less than 70 dB (A).

9. Disposal

9.1 Precautions



Warning

The unit must be disposed of through approved companies specialised in the identification of different types of materials (steel, copper, plastic, etc.) It is prohibited to dispose of lubricating fluids and other hazardous substances in the environment.

9.2 WEEE (EU/EEA)



INFORMATION TO USERS pursuant to art. 14 of the Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE). The crossed bin symbol on the appliance or on its packaging indicates that the product at the end of its useful life must be collected separately and not disposed of together with other mixed urban waste. Appropriate separate collection for the subsequent start-up of the disused equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favours the re- use and / or recycling of the materials it is composed of the equipment.

WEEE other than WEEE from private households: The separate collection of this equipment at the end of its life is organized and managed by the producer. The user who wants to get rid of this equipment can then contact the producer and follow the system that it has adopted to allow the separate collection of equipment at the end of life or select a supply chain independently authorized to manage.

9.3 WEEE (UK)



INFORMATION TO USERS pursuant to art. 44 of the Waste Electrical and Electronic Equipment Regulations 2013 (S. I. 2013 No. 3113). The crossed bin symbol on the appliance or on its packaging indicates that the product at the end of its useful life must be collected separately and not disposed of together with other mixed urban waste. Appropriate separate collection for the subsequent start-up of the disused equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favours the re-use and / or recycling of the materials it is composed of the equipment.

WEEE other than WEEE from private households: The separate collection of this equipment at the end of its life is organized and managed by the producer. The user who wants to get rid of this equipment can then contact the producer and follow the system that it has adopted to allow the separate collection of equipment at the end of life or select a supply chain independently authorized to manage.

10. Declaration of conformity



EC DECLARATION OF CONFORMITY

We

Company name: Xylem Water Solutions UK Ltd
 Postal address: Millwey Rise Industrial Estate, Devon
 Town: Axminster
 Postcode: EX13 5HU

Declare that this DOC is issued under the sole responsibility of the manufacturer.

Apparatus model/Product:	RESIDENTIAL BOOSTER SET	
Type:	RESVARI PLUS 250	RESVARI PLUS S & D
	RESVARI PLUS ASSIST	RESVARI PLUS S & D (EXR)
Part number:	UKRESVARI250XXX	135G01XXX
	UKRESVARIASSIST	135G01XXXEXR

The object of the declaration described above is in conformity with the relevant union harmonisation legislation:

Machinery Directive (2006/42/EC)
 Electromagnetic Compatibility (EMC) Directive (2014/30/EU)
 ROHS Directive (Restrictions on Hazardous Substances) (2011/65/EU)

The following harmonised standards and technical specifications have been applied:

EN ISO 12100:2010, EN 60204-1:2018, EN ISO 4413:2010
 EN 61000-6-3:2007/A1:2011 & EN 61000-6-1:2007
 Water Supply and Fittings Regulations 1999

I hereby declare that the equipment named above has been tested and found to comply with the relevant sections of the above referenced specifications. The unit complies with the relevant essential requirements of the Directives.

Signed for and on behalf of: Xylem Water Solutions UK Ltd, Axminster, Devon

Position: Managing Director

Date: 19/12/2024

Signed:

Ian L Thompson

UKDOCRESVPLB



DECLARATION OF CONFORMITY

We

Company name: Xylem Water Solutions UK Ltd
 Postal address: Millwey Rise Industrial Estate, Devon
 Town: Axminster
 Postcode: EX13 5HU

Declare that this DOC is issued under the sole responsibility of the manufacturer.

Apparatus model/Product:	RESIDENTIAL BOOSTER SET	
Type:	RESVARI PLUS 250	RESVARI PLUS S & D
	RESVARI PLUS ASSIST	RESVARI PLUS S & D (EXR)
Part number:	UKRESVARI250XXX	135G01XXX
	UKRESVARIASSIST	135G01XXXEXR

The object of the declaration described above is in conformity with the relevant statutory requirements:

The Supply of Machinery (Safety) Regulations 2008 (S.I 2008:1597)
 Electromagnetic Compatibility Regulations 2016 (S.I 2016:1091)
 The Restriction of the Use of Certain Hazardous Substances in
 Electrical and Electronic Equipment Regulations 2012 (S.I 2012:3032)

The following designated standards and technical specifications have been applied:

EN ISO 12100:2010, EN 60204-1:2018, EN ISO 4413:2010
 EN 61000-6-3:2007/A1:2011 & EN 61000-6-1:2007
 Water Supply and Fittings Regulations 1999

I hereby declare that the equipment named above has been tested and found to comply with the relevant sections of the above referenced specifications. The unit complies with the relevant statutory requirements.

Signed for and on behalf of: Xylem Water Solutions UK Ltd, Axminster, Devon

Position: Managing Director

Date: 19/12/2024

Signed:

Ian L Thompson

UKDOCRESVPLB

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com



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