MINI FIX TANK VF IOM

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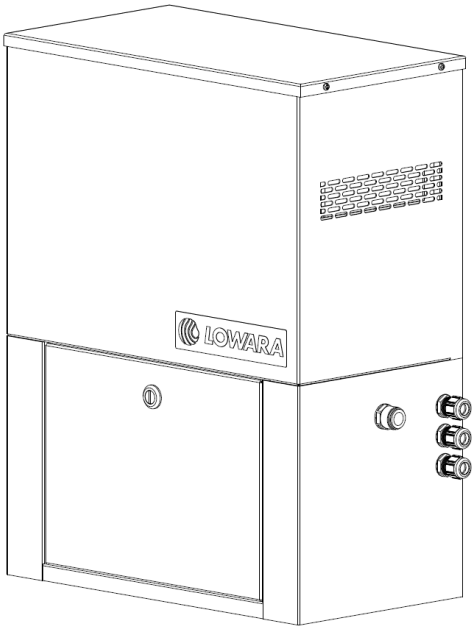
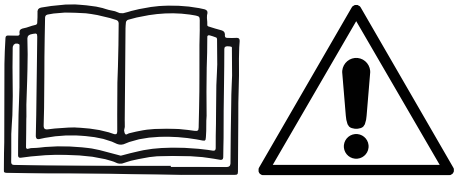


Original Instructions – English
Keep for future reference.

CAUTION: Read instructions before using this machine



Mini Fix Tank VF

Installation, Operations and Maintenance manual – April 2025

Complementary Documents:

- PABLRM15 Pump IOM

LOWARA
a xylem brand

Table of Contents

1. Introduction & Safety

1.1 Introduction

This manual contains information to enable the safe Installation, Operation and Maintenance of the Mini Fix Tank VF 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 Mini Fix Tank VF is manufactured by:

Xylem Water Solutions UK
Millwey Rise Industrial Estate
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 non-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 Mini Fix Tank VF 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 Booster Set is dispatched mounted on a small wooden pallet and covered in a cardboard carton; 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. 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 4°C and +40°C
- Do not place heavy loads on top of the unit.
- Protect the unit from collisions.

3 Technical Description

3.1 Designation

The Mini Fix Tank VF is a cold water, fixed speed Break Tank Booster Set.

3.2 Data plate

On the Mini Fix Tank VF, there will be two Name plates on the unit. One supplying information for the Pump installed inside the cabinet and the other is the Model data for the Mini Fix Tank VF Booster Set.

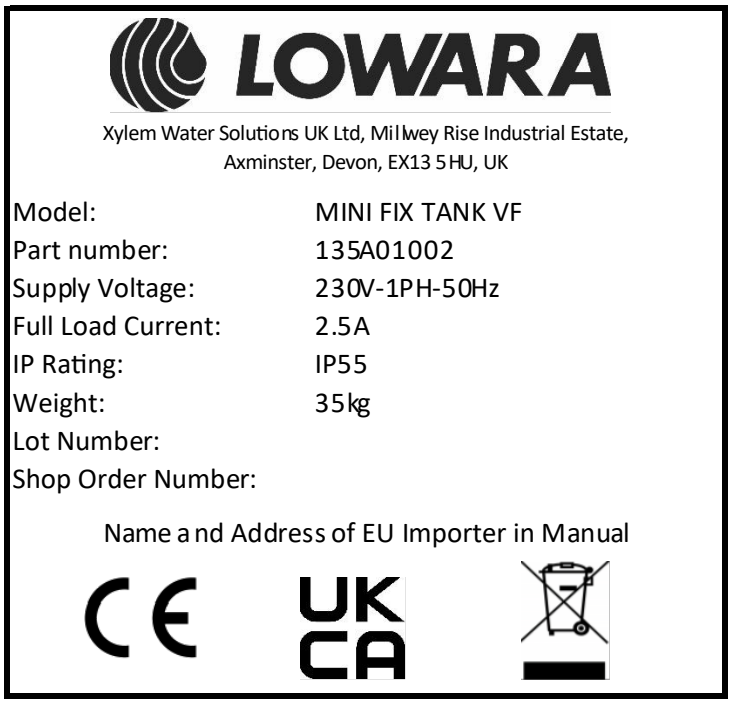
- The data label for the Pump is located on the Pump motor.
- The data label for the Mini Fix Tank VF is located next to the power connection, on the right-hand side of the unit.

Please see exploded parts diagram for indication of each component.

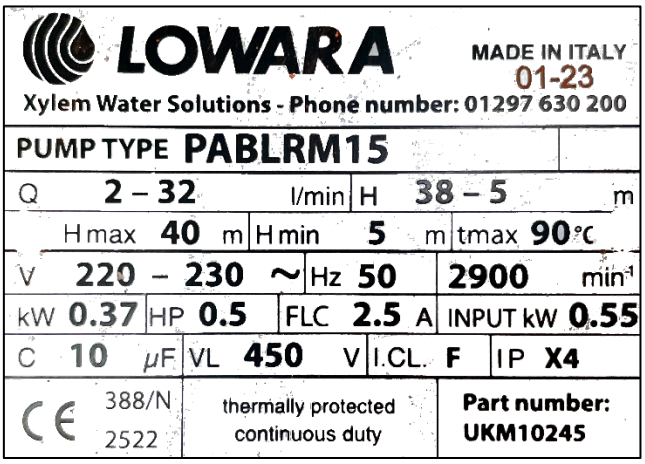
3.2.1 Mini Fix Tank VF Data Plate

Label	Description
Model	Set model reference
Part number	Set part number
Supply Voltage	Set supply Voltage, (Voltage, Phase and Frequency Hz)
Full Load Current	Full load current of the unit – this may differ from the Pump FLC

Label	Description
Weight	Dry weight of the product
IP Rating	IP Rating of the set – including the controller
Lot Number	Internal use only
Shop order number	Internal use only



3.2.2 Mini Fix Tank Pump Data plate



Label	Description
Pump Type	Model Description of the pump
Q	Range of pump Flow rate (l/min)
H	Range of pump generated Pressure (l/min)
H Max	Maximum generated pressure in metres head (Before running outside recommended performance area)
H Min	Minimum generated pressure In metres head (Before running outside recommended performance area)
tmax	Max medium temperature
V	Input voltage range in volts
Hz	Input frequency in Hz
Min	Running speed in RPM

Label	Description
kW	Rated power output of the motor in kW (kilowatts)
HP	Rated power output of the motor in HP (horsepower)
FLC	Full load current in Amps
INPUT KW	Rated input power of the motor in Kw (kilowatts)
C	Rating of the capacitor in µF (microfarads)
VL	Voltage Limit in volts
I.CL	Capacitor classification marking,
IP	Ingress protection rating of the motor
Part Number	Part Number of the pump

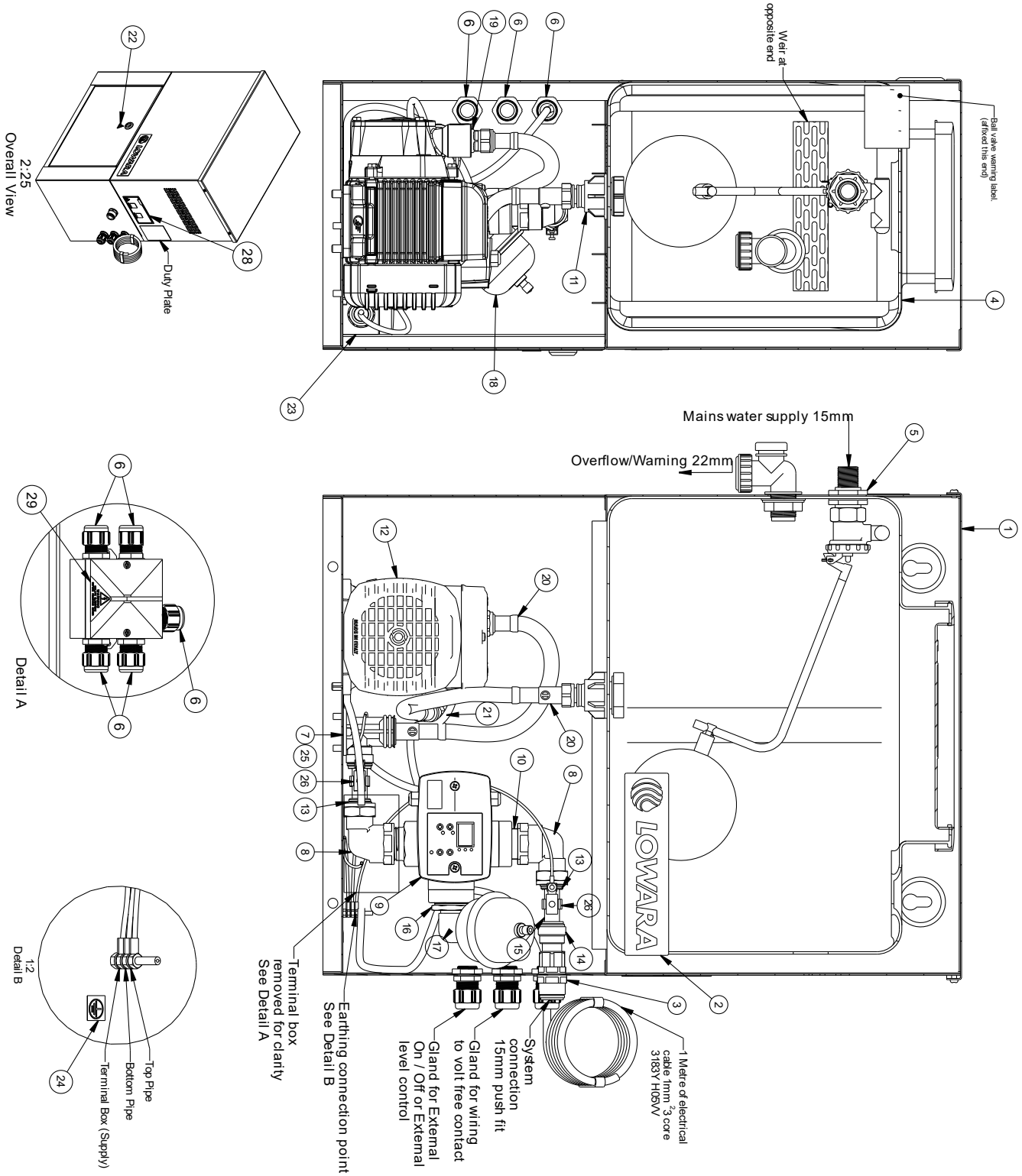
3.3 Identification Code / Nomenclature

Example:
Mini Fix Tank VF

Reference	Description
Mini Fix Tank	Product range name
VF	Version with volt free output for fault

3.4 Names of the Main Components

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



Label	Description
1	Washdown Booster Set enclosure
2	Blue Lowara Logo
3	Tap Connector 15mm to ½”
4	18 Litre Break Tank
5	½” Ball valve
6	M20 Cable gland
7	½” Elbow
8	Elbow 1” x 22mm Compression
9	Switchmatic Controller
10	1” Running Nipple
11	15mm Push fit Tank connector
12	PABLRM15 Pump
13	Reducer
14	Bulkhead fitting
15	Copper Pipework
16	Reducing bush
17	Brass Elbow
18	0.16 Litre pressure vessel
19	½” Coupling
20	Flexible connector
21	½” Compression elbow
22	Electrical warning label
23	IP65 rated terminal box
24	Earth warning label
25	4 Core, 0.5mm^2 cable
26	Earth Strap
27	Blanking plug
28	Mini Fix VF QR label
29	Electrical warning label

3.5 Intended use.

Typical applications include:

- 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 Water
- 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 liquids containing abrasive, solid or fibrous substances

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

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 correct technical-professional requirements.

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

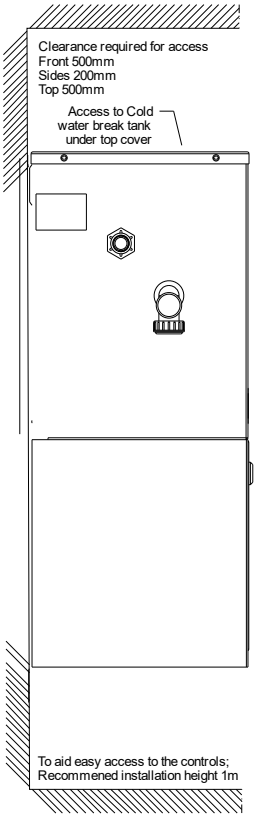
WARNING:
Always use suitable working tools

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 Mini Fix Tank VF, make sure there is sufficient space above the unit to facilitate the removal of the cabinet lid and access to the Break Tank for maintenance. Additionally, it is advisable to provide adequate space on both the right and left sides of the unit to accommodate the pipework connections going into and out of the Mini Fix Tank VF.

Clearance required around the unit is as follows:
Front Access: 500mm
Side Access: 200mm
Top Access: 500mm



4.3 Installation – Floor Installation

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

- Check that the chosen Mini Fix Tank VF installation area is a level, flat surface that is structurally sound.
- It is recommended to position the Mini Fix Tank VF 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.

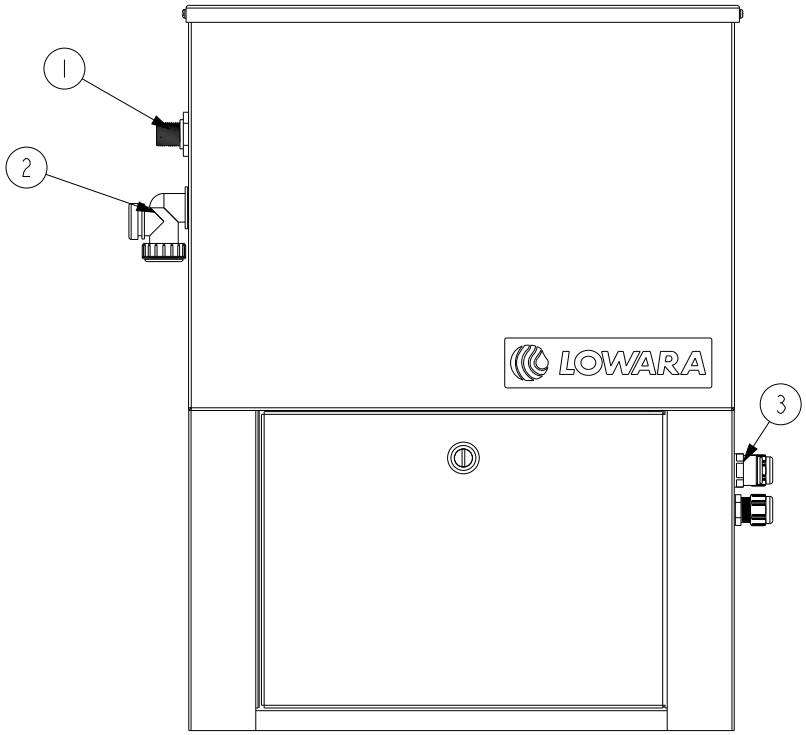
4.4 Installation – Wall Installation

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

In addition to the installation recommendations stated for **4.3 Installation – Floor Installation**

- Check that the chosen Mini Fix Tank VF wall installation area is flat and can support the weight of the Mini Fix Tank VF. The weight of the product can be found in section 8.5.

4.5 Hydraulic connection



Label	Connection size	Description
1	½” BSP	Tank inlet
2	22mm Push fit	Overflow
3	15mm Push fit	Discharge connection

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 ½” BSP water inlet connection (left 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 the minimum required pressure of 0.3 bar (30 kPa), a low-pressure orifice must be obtained and fitted. The inlet Ball Valve has a maximum pressure rating of 14 bar (1400 kPa). 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 22mm 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 Mini Fix Tank VF onto a tray with overflow to drain.

4.5.4 Outlet / Discharge connection

Connect the Mini Fix Tank VF discharge connection located at the rear of the unit. The connection is 15mm Push fit. It is advised to fit an external isolation valve after the set for added ease of maintenance.

4.5.5 Draining the Break Tank.

Draining the Break Tank can be achieved by isolating the suction line ball valve on the flexible connector and removing the flexible end attached to the Pump, the flexible connector can then be positioned over a container to collect the drained water.

4.6 Electrical connections

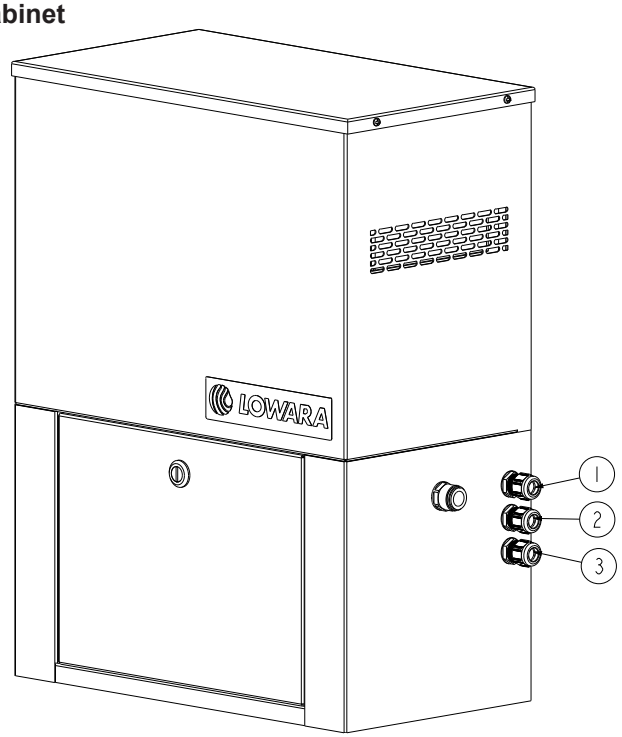
DANGER
All the Hydraulic and Electrical connections must be completed by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

DANGER
Before starting work, check that the unit is isolated/disconnected from the power and that Mini Fix Tank VF unit cannot restart, even unintentionally.

DANGER
Never operate this product with the Pump or Controller Terminal covers removed.

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

4.6.1 Cable entry into the cabinet



Label	Gland size	Description
1	7.5mm-14mm diameter cable	Power supply into the unit. Pre fitted with cable. See section: **4.6.4 Supplying the Controller with Power**
2	7.5mm-14mm diameter cable	Cable gland for Fault Volt Free Contact
3	7.5mm-14mm diameter cable	Cable gland for External Float Switch or External On/Off

4.6.2 Connections for Volt free contact and External On / Off or External Level control

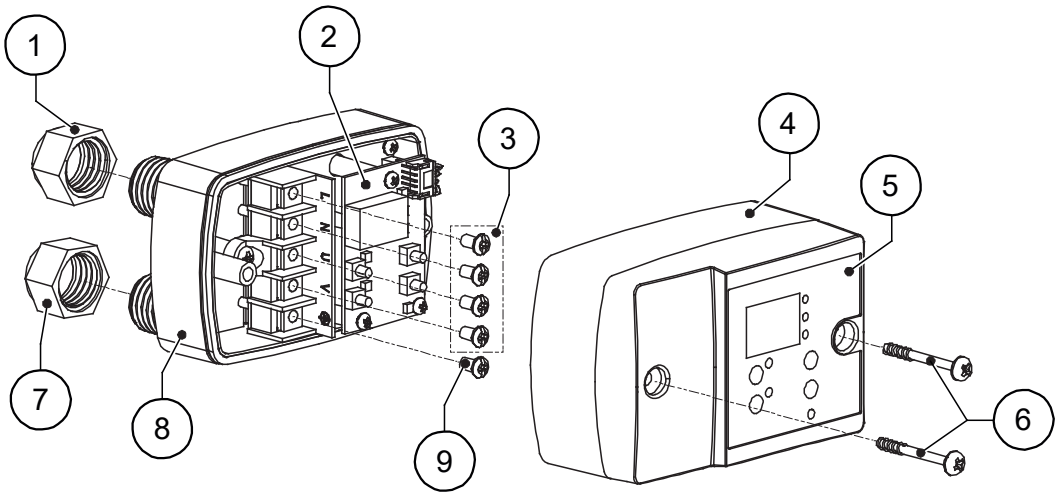
To aid the commissioning process, the connections for the volt-free contact and the external On/Off or level control are terminated inside a small IP65-rated junction box located at the base of the cabinet. This allows the installer to access and connect the necessary cables externally, without needing to remove the controller cover on the Mini Fix VF unit. Please refer to the information below for the cable colour coding, indicating how each is wired into the back of the controller and its corresponding function.

Colour	Description
Red	Volt free contact (closes on error status)
Blue	Volt free contact (closes on error status)
Gray	External On / Off or External level control
Yellow	External On / Off or External level control

For more information, please see the diagram in section **4.6.5 Mini Fix Tank VF Controller Wiring Diagram**

4.6.3 Removing the front cover.

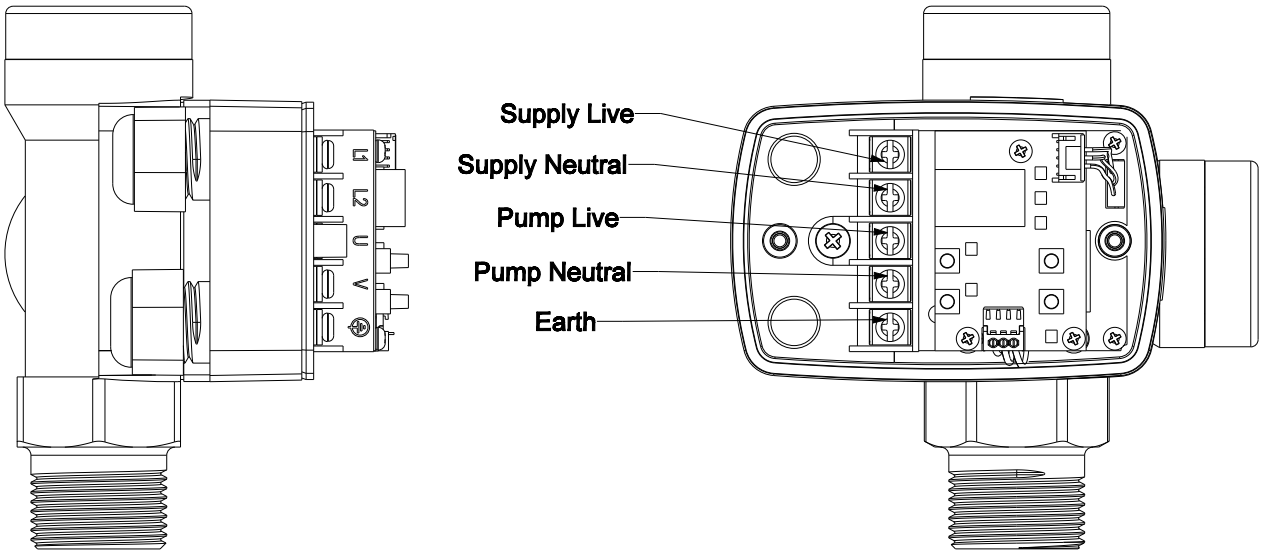
To detach the front cover from the controller, loosen and remove the 2 screws securing the front casing to the controller body housing, as illustrated in the diagram below.



Position Number	Description	Position Number	Description
1	Cable gland	6	Front cover screws
2	Electronic circuit boards	7	Cable gland for the power supply
3	Terminal screws (power supply)	8	Base
4	Cover	9	Terminal screws (protective earth)
5	Fascia		

4.6.4 Terminals connections

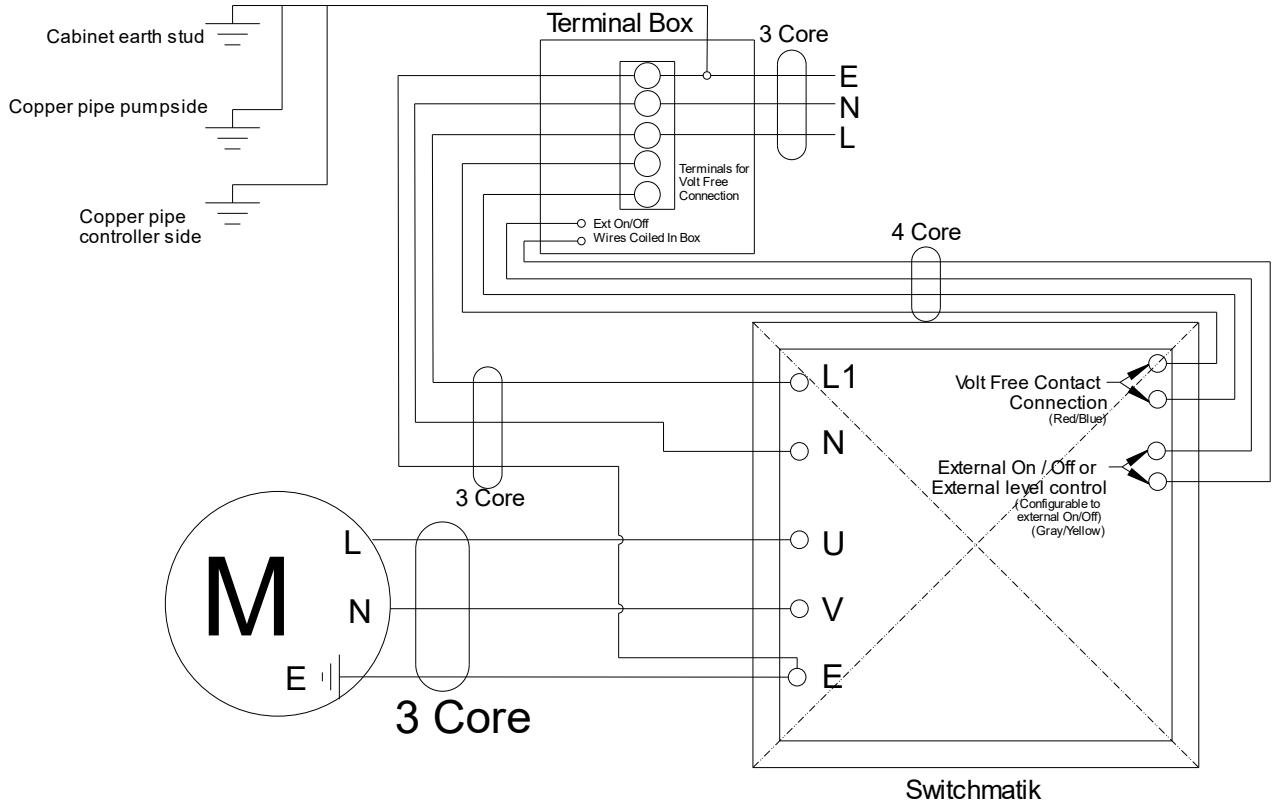
Below is the diagram showing the electrical terminals inside the controller. To access these terminals, the front cover will need to be removed. See section **4.6.1 Removing the front cover.**



Label	Pre-Wired	Description
Supply Live	Yes	Live connection from the incoming power supply. Marked as “L1” on the controller
Supply Neutral	Yes	Neutral connection from the incoming power supply. Marked as “L2” on the controller
Pump live	Yes	Live connection to the Pump. Marked as “U” on the controller

Pump Neutral	Yes	Neutral connection to the Pump. Marked as “V” on the controller
Earth	Yes	Earth Connection for both the incoming power supply and the Pump. Marked with the earth symbol (⏚)

4.6.5 Mini Fix Tank VF Controller Wiring Diagram



4.6.6 Supplying the Controller with Power

The Mini Fix Tank VF is supplied with a 1m of 3 core, 1mm^2 flex power supply cable.

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 duty plate.

4.6.7 Line Protection

Wiring a 3-pin plug directly into a domestic electrical wall outlet for the Mini Fix Tank VF is not recommended. Please consult your local electrical guidelines regarding supply protection. When determining the appropriate line protection, consider the Full Load Current of the Mini Fix Tank VF. It's crucial that any electrical work be performed by an experienced engineer or technician.

DANGER:
Make sure the correct line protection is sized correctly for the Mini Fix Tank VF

4.6.8 RCD (Residual Current Device)

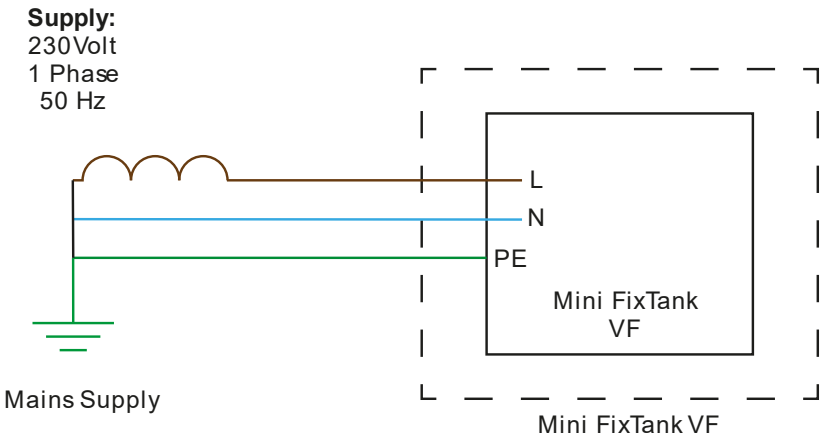
The Mini Fix Tank VF is not fitted with a residual current device. The user / installer will need to ensure that the power source to the Mini Fix Tank VF is fitted with an RCD.
The recommended RCD size is 30mA.

4.6.9 Earthing the Mini Fix Tank VF

DANGER
Failure to suitably earth the Mini Fix Tank VF could lead to serious injury or death in the event of an electrical fault.

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

The recommended earth installation type for the Mini Fix Tank VF is TN-S, where the earth connection is supplied by the authority. For more information on earthing systems, please refer to local wiring regulations for example: BS 7671:2018+A2:2022 Clause 2.4.3.

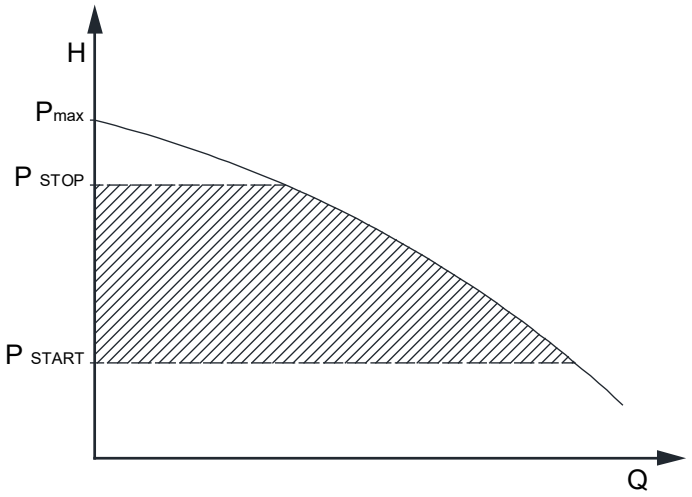


5 Use and Operation

5.1 Operation

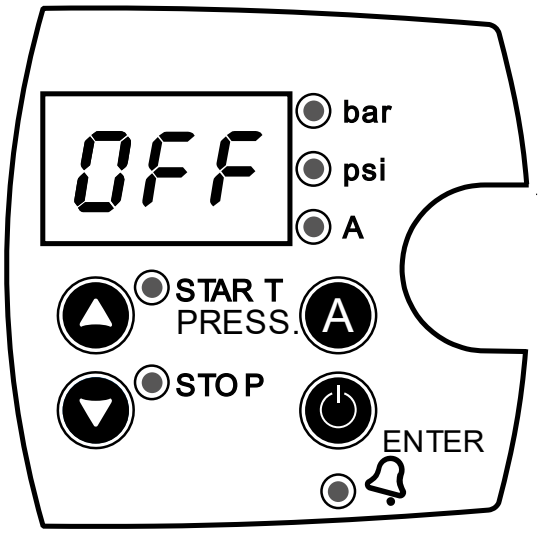
When a draw off point connected to the system is opened, the pressure will start to fall and the Pump will start to pressurise the system. The Pump will operate until the pressure reaches the designated stop pressure. Subsequently, the pressure will stabilize at or slightly above the stop pressure, remaining in a standby state until the outlet is reopened.

The diagram below shows the relation between Stop pressure (P Stop) and Start Pressure (P Start)



5.2 Mini Fix Tank VF Controller

5.2.1 HMI / Interacting with the controller.



5.2.2 Push button on the controller

Label	Label	Description
▲	Navigate “UP”	Button to navigate Up on the Controller / Increase value / adjust the starting pressure
▼	Navigate “Down”	Button to navigate Down on the HMI / Decrease value / adjust the stop pressure
⏻	Enter / On	Button to accept / Toggle parameter
A	Current / “Amps” button	Button to view the current / adjust the current protection

5.2.3 LED indicators on the controller

Label	Label	State	Description
STOP	Stop LED	Solid	Indicates Stop pressure is being shown on the display
		Flashing	Indicates Stop pressure is being modified
START	Start LED	Solid	Indicates Start pressure is being shown on the display
		Flashing	Indicates Start pressure is being modified
bar	Bar Pressure LED	Solid	Indicates pressure (in bar) is being shown on the LED display / unit is switched on and in standby
		Flashing	Indicates Pump is running when bar is the preferred pressure measurement
psi	PSI LED	Solid	Indicates pressure (in PSI) is being shown on the LED display
		Flashing	Indicates Pump is running, when PSI is the preferred pressure measurement
A	Current / “Amps”	Solid	Indicates current (in Amps) is being shown on the LED display
	Alarm Led	Solid	Indicates the controller is in Alarm / Error condition

5.2.4 Status Screen

To view system information on the Mini Fix Tank VF Controller while the unit is running, please see the below.

Description	Button combination	Unit	Range
System Pressure	Shown on the display, while the Pump is running	Bar / PSI	0.0 - 10 bar / 0.0 – 145 PSI
Start Pressure (P Start)	Press ▲ once, while the Pump is running	Bar / PSI	0.5 - 7 bar
Stop Pressure (P Stop)	Press ▼ once, while the Pump is running	Bar / PSI	1 - 8 bar
Current drawn	Press A once, while the Pump is running	Ampere	0 – 16 Amps

5.2.5 Standard Menu

- The standard Menu can be accessed by pressing and holding the ▲ and ▼ buttons for 5 second while the Pump is switched off and not running.
- Values can be altered using ▲ and ▼ buttons.
- Press ⏻ to advance to the next parameter in the sequence.

Description / Reference	Minimum / Maximum Value	Default Value	Description
Unit of measurement for pressure	bar to PSI	bar	Allows the installer to choose the pressure units displayed on the controller, either in bar or psi.
Protection of maximum number of starts of the motor	Rc0 to Rc2	Rc2	Enable the Fast-cycling alarm to mitigate excessively frequent Pump runs, particularly in the event of pressure vessel failure. Select "**rc0**" to disable the fast-cycling alarm. Select "**rc1**" to activate the fast-cycling alarm. In case of water hammer detection, the controller introduces a delay before starting to safeguard the Pump. Select "**rc2**" to activate the fast-cycling alarm. If water hammer is detected, the Pump is halted upon activation of the alarm.
Time delay between 3 consecutive starts	r.01 to r99	R3	If the fast-cycling alarm has been activated in the previous step (selecting “**rc1”** or “**rc2”**), the installer has the option to choose the maximum time period between three consecutive starts that

			will be recognized as fast cycling. The selectable range for this period is from 1 second to 99 seconds.
Display on standby	Sb0 to Sb1	Sb0	For energy-saving purposes, when parameter Sb1 is configured and there is no button activity for 10 seconds, the display will go blank.

5.2.6 Advanced Menu

- The Advanced Menu can be accessed by pressing and holding the ▲, ▼ and ⏻ buttons for 5 second while the Pump is switched off and not running.
- Values can be altered using ▲ and ▼ buttons.
- Press ⏻ to advance to the next parameter in the sequence.

Description	**Minimum / Maximum Value**	**Default Value**	**Description**
Type of electric contact for motor control	nc to no	nc	Select the operation mode as a conventional pressure switch. Options are: Select "**nc**" for normally closed Select "**no**" for normally open **It is recommended not to alter these values.**
Operation with single Pump unit or with Booster Set	E00 to E01/02 d.05 to d.1	n/a	Not in use for the Mini Fix Tank VF. **It is recommended not to alter these values**.
Delay time before start of the Pump unit	ct0 to ct9	ct0	Sets a time delay between 0 and 9 seconds to the start once pressure has dropped below "P Start" value
Delay time before stopping of the Pump unit	dt0 to dt9	dt0	Sets a time delay between 0 and 9 seconds to the stop once pressure has risen above "P Stop" value
Configuration the software Dry run alarm activated by current draw	AE0 to AE2	AE0	Select **AE0** to disable dry run alarm by current consumption. To have a dry run protection, the minimum pressure value must be set. Select **AE1** to activate the dry run alarm with auto-learning mode. In this setting, controller will autonomously learn the actual consumption of the Pump. Select **AE2** to activate the dry run alarm without auto-learning mode. In this scenario, the dry run alarm will trigger if the Pump consumes 40% less than the rated current value set.
Enabling The ART function	Ar0 to Ar1	Ar0	Activation of the automatic restore system. Options are: Select "**Ar1**" to Enable Art Select "**Ar0**" to Disable Art For more information see section **5.6 ART function (Automatic Reset Test)**
A11 minimum pressure threshold	P0.0 to Px.x	0 bar	Allows the installer to set a minimum operating pressure under which the device would determine dry-running operation. This alarm is shown as A11

Delay time till triggering of A11	t05 to t99	20	Set the delay period, ranging from 5 to 99 seconds, during which the Pump must operate below the minimum operating pressure to be identified as a dry running operation.
A02 overcurrent alarm	c10 to c30	c20	Percentage of overload of the current absorbed by the motor for triggering the overcurrent alarm
Low Water / External On Configuration	tE0 to Te1	tE0	Allows the user to configure the external inputs of the in-out auxiliary circuit. Options are: Select "**tE0**" to disable the external input Select "**tE1**" to activate external float switch low-level control, triggering alarm A21 in case of low water Select "**tE2**" to enable external on/off input. Enabling this option allows the user to switch the device On/Off using an external contact, such as a timer. If "tE2" is enabled and the external contact deactivates the equipment, the display will indicate "EL-
Float switch contact	c01 to co0	co1	Only in case of tE1 activated in the above parameter Select "**co1**" for nc (normally closed contact). Select "**co0**" for no (normally open contact)
Flood protection mode / Run time limit	H00 to H99	H00	When enabled, the controller ceases Pump operation after a specified duration of continuous running. Choose from the following time options (Minutes): Disabled (**H00**), 1 minute (**H01**) ... 99 minutes (**H99**).
Factory Rest	rs0 to rs1	rs0	Enable the installer to reset the controller to factory settings by switching from **rS0** to **rS1** and pressing ⏻ to restore the default values.

5.3 Counter / Alarm Logs

- The Counter / Alarm Menu can be accessed by pressing and holding the ▲ , ▼ and ⏻ buttons for 5 second while the Pump is switched off and not running.
- Press ⏻ to advance to the next counter in the sequence.

To view the list of alarms displayed on the Mini Fix Tank VF, please see section **6.2 Mini Fix Tank VF Controller Alarms**

Relating to Alarm Ref:	**Display message**	**Description**
n/a	HF XXX	Number of hours the controller has been running (power on).
n/a	HP XXX	Number of times the electric Pump has been turned on and off.
n/a		Number of times the Mini Fix Tank VF has been turned on
A01	A01 XXX	Total number of times the Dry running alarm has been triggered
A02	A02 XXX	Total number of times the Overload alarm has been triggered
A04	A04 XXX	Total number of times the Fast-Cycling alarm has been triggered.
A05	A05 XXX	Total number of times the Damaged pressure transducer alarm has been triggered.
A11	A11 XXX	Total number of times the Dry running (Minimum threshold) alarm has been triggered.
n/a	APM XXX	Total number of times the over pressure alarm has been triggered.
n/a	rPM X.X	Maximum Registered pressure

Please note: The above table the XXX value used in the display message column denotes the value.

5.4 ART function (Automatic Reset Test)

If the alarms A01 and/or A11 are triggered, an attempt is automatically made to restart the Pump unit:

- After 5 minutes
- If the alarms persist, every 30 minutes over the next 24 hours.

If the alarms continue to persist, the Pump unit remains off with the on.

Note: the alarms can be reset at any time by pressing the button

5.5 Volt Free Contacts – Pump Fault

On the right side of the Mini Fix Tank VF controller, a normally open volt free contact which can indicate if the Pump is in fault is available. See appropriate drawing for volt free contact wiring configurations.

- Rating: 1A, 230 Volts maximum.
- Recommended cable size 0.2mm to 1.5mm
- Solid core or terminated with a bootlace ferrule.

5.6 Low Water / External On

On the right side of the Mini Fix Tank VF controller, there is a set of terminals designed for use as either a float switch or an external on/off input. The controller's response can be customized based on the application within the advanced menu.

- Rating: 24 Volts maximum.
- Recommended cable size 0.2mm to 1.5mm
- Solid core or terminated with a bootlace ferrule.

Message on controller display	**Action**	**Description**
tE0	Disable	Disables functionality of the set of terminals
tE1	Float switch input	Enables the use of terminals with a float switch. If triggered, the controller will enter an alarm state, displaying the error code “A21”
tE2	External On / Off	Allows the activation or deactivation of the Mini Fix Tank VF through an external contact, such as a timer or local Building Management System (BMS). If tE2 is enabled, and the external contact deactivates the equipment, the controller display will show 'EL-.'"

If TE1 is enabled the following parameter will appear

Message on controller display	**Action**	**Description**
co1	Normally Closed	The float switch is wired to normally closed. Opening the circuit will cause the controller to enter “A21” alarm state
co0	Normally Open	The float switch is wired to normally open. Closing the circuit will cause the controller to enter “A21” alarm state

Please note:
Before activating the low water protection parameter, check the wiring of the float switch to ensure the correct commissioning of the controller. Failure to set the parameter correctly could lead to dry running and premature failure of the Pump.

5.7 Commissioning

DANGER
Commissioning of the Mini Fix Tank VF must be carried out by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

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

5.7.1 Pre commission checks:

It is recommended that the below steps are carried out in the below order.

1. Ensure that the unit is installed on a level and secure floor.
2. That there is no damage to the tank or components
3. Ensure the water tank is clean.
4. With the power supply off. Open the water supply to the Mini Fix Tank VF water tank and fill with water until the ball valve closes and stops further filling.
5. Check the water level is correct and all joints are sound.
6. Check the charge in the Pressure Vessel has been set to 0.5 bar under the P-Start Pressure.
7. Check that the cabling to the Pump and Mini Fix Tank VF controller is complete and that the unit is electrically sound. Please see section **4.6 Electrical Connections**

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 and starting the controller.

5.7.2 Controller Pre-commissioned during manufacturing.

To facilitate the initial commissioning of the Mini Fix Tank VF, specific parameters have been configured during the manufacturing and testing phases. Consequently, the Mini Fix Tank VF can be initiated as soon as power is supplied to the unit.

Parameter	Description	Pre-set value
n/a	Start Pressure (P Start)	1.5 bar
n/a	Stop Pressure (P Stop)	3.5 bar
n/a	Current	2.5 Amps
P*.*	Minimum Pressure for activating Dry Run Alarm (A11)	P0.2 – 2m head (Pressure)
T**	Time delay before activating Dry Run Alarm (A11)	T10 – 10 seconds

5.7.3 Set the Pump Full load current value.

1. Press A for 3 seconds.
2. The current value is displayed on screen, LED A lights up and display is flashing.
3. Using the ▲ and ▼ buttons, adjust the rated current value to the value shown on the motor name plate.
4. Press ⏻ to confirm.

5.7.4 Set the Start Pressure (P Start):

1. Press ▲ for 3 seconds.
2. The start pressure value is displayed on screen, LED START lights up and display is flashing.
3. Using the ▲ and ▼ buttons adjust the start pressure.
4. Press ⏻ to confirm.

5.7.5 Set the Stop Pressure (P Stop):

1. Press ▼ for 3 seconds.
2. The stop pressure value is displayed on screen, LED STOP up and display is flashing.
3. Using the ▲ and ▼ buttons adjust the stop pressure.
4. Press ⏻ to confirm.

5.7.6 Setting the dry run alarm:

1. Press ▲ and ▼ for 5 seconds to enter the advanced menu.

2. Cycle through the parameters using the to navigate forwards.
3. When the screen shows “P0.0” use the button to increase the value to show “P0.2”. This refers to 0.2 bar of a pressure as a “minimum pressure”.
4. Press once more to navigate forwards.
5. When the screen shows “T20” use the button to decrease the value to show “T10”. This refers to 10 seconds run time at 0.2 bar or lower before the dry run alarm is activated.
6. Press to confirm.

5.7.7 Removing trapped air before starting up

Running the Pump while air is trapped within the unit could cause damage and premature failure of the unit. Before starting the unit for the first time, its recommended to follow the below steps.

1. Check that the Pump has been fully evacuated of all air by removing the bleed screw from the Pump. Allow water to escape until no air is present and then replace the bleed screw.
2. Open the discharge valve, supply power to the product, and press on the controller. The Pump should start running and push all air out of the discharge port. When free of air, close the discharge valve, and the controller will detect the rise in pressure, stopping the Pump once the "P Stop" is achieved.

6. Troubleshooting

6.1 General fault-finding guide

Fault	Possible Cause	Remedy
Pump fails to start / No power to Controller	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
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 in- take tank.	Check the float and the tank.

6.2 Mini Fix Tank VF Controller Alarms

Error Codes:			
Name / Code	**Alarm LED**	**Cause**	**Solution**
A1 Dry Running	Solid	• Lack of water • Pump unit stopped	1. Check the flow of water. 2. Reset the alarm. If the alarm is triggered during initial start-up: 1. Reset the alarm. 2. Close the valves. 3. Repeat the start procedure. 4. Check that the Pump unit stops
	Slow Flashing	• Lack of water • ART function activated	
A02 Over Current	Solid	• The absorbed current of the motor exceeds the value of parameter 12	The controller is supplying current to the electric motor above the set rated value. The A02 will protect the motor against current overload. Solutions: 1. Check the condition of the windings of the electric motor. 2. Check the power consumption of the electric motor. 3. 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. 4. Check configuration of the rated current parameter. Please see section 5.4.3 5. The value of the controllers 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%.
	Slow Flashing	• The absorbed current of the motor exceeds the value of parameter 12 and the ART function is activated	
A04 - Fast Cycling	Fast Flashing	• The motor starts up too frequently • Three consecutive start-ups in a set period of time less than that in “Time delay between 3 consecutive starts” parameter Note: • If parameter 2 = **rc1**, starting of the Pump unit is delayed by 5 s • If parameter 2 = **rc2**, the Pump unit stops	1. Replace the diaphragm tank. 2. Check calibration of loading the diaphragm tank 3. Edit the P START and/or P STOP pressure values. 4. If the Booster Set is configured, edit the difference in pressure between P START and P STOP
A05 – Pressure Sensor Faulty	Steady	Defective pressure sensor	Contact Xylem or the Authorised distributor

A11 Dry Running (Minimum Pressure)	Solid	Displayed during normal operation if the pressure is below the minimum pressure (Px.x) - previously set - during a period (txx)	Check the setting on parameter. (Px.x) previously set – And during a period (txx)
	Slow Flashing	Pressure below the minimum threshold	
		ART function activated	
		No flow of water	No water on the intake side of the Pump: check the level within the Break Tank
		Incorrect priming, there are air bubbles in the suction pipe or in the Pump unit	Repeat the priming procedure. See section **5.8.6 Removing trapped air before start up**
		Discharge pipe leaking	The pipe on the delivery side of the Pump is broken
		Incorrect working curve, flow rate greater than the maximum permitted flow rate	Decrease / limit the flow rate
		Pump unit faulty	The Pump (impeller or diffuser) is damaged. Contact the technical assistance service.
		Motor (coil) faulty	Repair or replace the motor
A21 Dry Running (By External float switch)	Solid	Displayed during normal operation if the pressure is below the minimum pressure (Px.x) - previously set - during a period (txx)	• No water on the intake side of the Pump: check the level of the water within the tank • Check to see if the float switch is free to move and has not become tangled. .

7. Maintenance

DANGER
Maintenance of the Mini Fix Tank VF must be carried out by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

DANGER
Before starting work, check that the unit is isolated/disconnected from the power and that Mini Fix Tank VF unit cannot restart, even unintentionally.

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 Pump removal / Replacement

1. Isolate power supply feeding Pump set. Isolate water inlet feeding Pump set.
2. Open an outlet to release system pressure.
3. Isolate the valve located on each flexible connector and remove the flexible from the Pump suction and discharge ports, the Pump can now be un-bolted from the base and pulled forward.
4. The electrical cable can now be removed from the Pump terminal box. The new Pump can now be fitted reversing the above procedure.

7.3 Long Periods of inactivity

Pump must be rinsed with fresh water.

1. Disconnect the tank from the inlet.
2. Empty the unit and pipework of water.
3. Ensure that there is water sitting at the bottom of the tank.
4. Take the unit out of service.

Before starting the unit

1. Ensure the inside of the tank is clean.
2. Reconnect the inlet and fill the tank with fresh clean water.

7.4 Spare parts

Spare parts for the Mini Fix Tank VF 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/**)

7.5 Checking ground continuity after servicing the machine.

After servicing the Mini Fix VF, it is essential to verify ground continuity. Use an installation tester with a minimum test current of 200 mA, in accordance with machinery safety standard EN 60204-1.

8. Technical Information

8.1 Operating / Installation Environment

The Mini Fix Tank VF has an IP rating of IP55 and should not be installed in an environment where the unit exposed to direct sunlight and/or near heat sources.

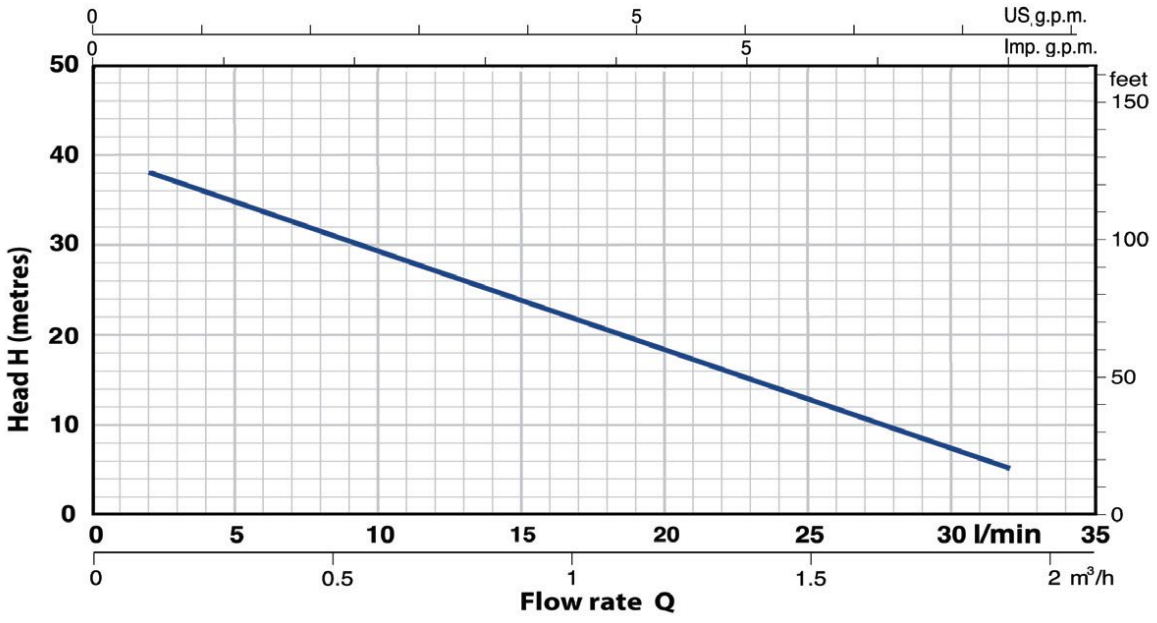
IP protection	55
Ambient temperature	4–40°C (39–122°F)
Elevation	≤1000m above sea level
Cooling	Forced Air (Pump only)

8.2 Materials in contact with the water

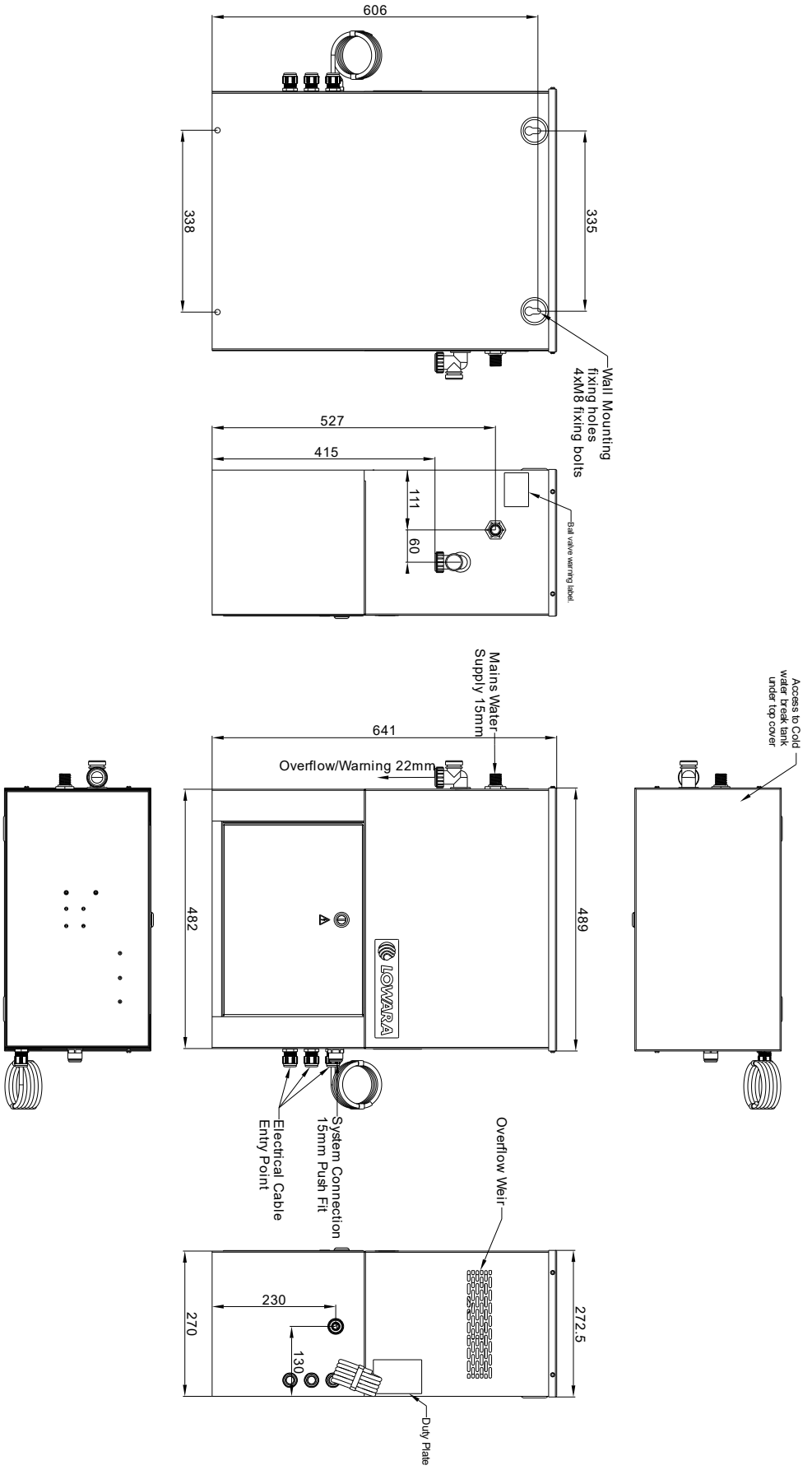
Description	Material
Tap Connector 15mm to ½”	Plastic
18 Litre Break Tank	Plastic
½” Ball valve	Plastic
½” Elbow	Plastic
Elbow 1” x 22mm Compression	Brass
Switchmatic Controller	Plastic
1” Running Nipple	Brass
15mm Push fit Tank connector	Plastic
PABLRM15 Pump	Brass impeller
Reducer	Copper
Bulkhead fitting	Plastic
Copper Pipework	Copper
Reducing bush	Brass
Brass Elbow	Brass
0.16 Litre pressure vessel	EPDM (Vessel membrane)
Coupling	Brass
Flexible connector	EPDM
Compression elbow	Brass

8.3 Performance / Pump Curves

Model: PABLRM15
Part Number: UKM10245



8.4 Dimensions of the Mini Fix Tank VF



8.5 Weight of the Mini Fix Tank VF Unit

Model	Pump Used	Part Number	Weight
Mini Fix Tank VF	PABLRM15	135A01002	35kg

8.6 Electrical specification

Model	Pump Used	Part Number	Electrical Supply	Motor size (kW)	Full Load Current (amps)
Mini Fix Tank VF	PABLRM15	135A01002	230/1/50	0.37kW	2.5A

8.7 Sound output

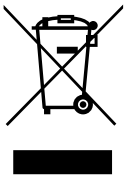
Noise Emissions Less than 70 dB (A).

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.

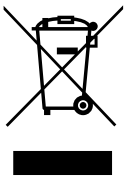
9.2 WEEE (EU/EEA)



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.

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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

xylem
Let's Solve Water

Xylem Water Solutions UK Ltd.
Millwey Rise Industrial Estate
Axminster, Devon EX13 5HU
Tel 01297 630 230
Email lowaraukenquiries@xylem.com

Xylem Water Solutions Ireland Ltd.
50 Broomhill Close, Airton Road,
Tallaght, Dublin 24 D24 APP8
Tel (+353) 01 4524 444
Email flygtIRL@xylem.com