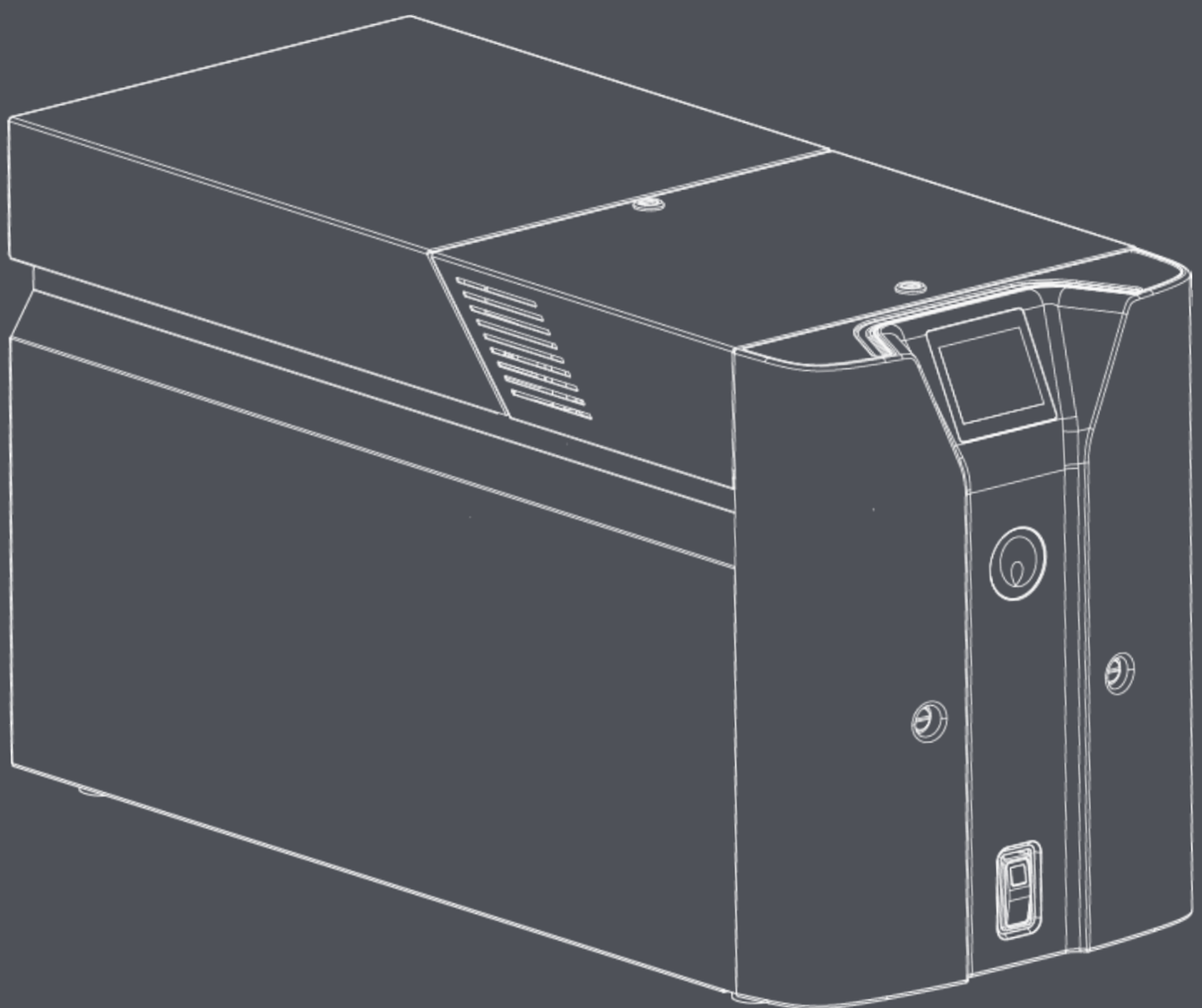
ELGA VEOLIA

MEDICA BIOX PARTICLE REMOVAL OPERATOR MANUAL



MANU41690

Version 2

WATER PURIFICATION

Copyright Note

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1.1 Use of this Manual

This manual contains full details on operation of the **MEDICA BIOX Particle Removal** system. If this system is used contrary to the instructions in this document, then the safety of the user may be compromised. The **MEDICA BIOX Particle Removal** is a compact, water treatment unit for clinical analyser systems with wastewater feeds of up to 30 L/hr. The **MEDICA BIOX Particle Removal** is designed to treat the concentrated effluent from clinical analysers - it may be necessary to separate the waste streams before connection. Further information should be sought from the clinical analyser Field Engineering Specialist.

1.2 Customer Support

Service support and consumable items are available from ELGA LabWater. Refer to customer service contact details shown at the end of this publication.

1.3 Product Range

This Operator Manual has been prepared for the **MEDICA BIOX Particle Removal** product, model number MBIOPRM1.

MEDICA BIOX Particle Removal products are designed to be safe, however, it is important that personnel working on these systems understand any potential dangers. All safety information detailed in this handbook is highlighted as **WARNING** and **CAUTION** instructions. These are used as follows:

WARNING! Warnings are given where failing to observe the instructions could result in injury or fatality.

CAUTION! Cautions are given where failure to observe the instructions could result in damage to the equipment, associated equipment and processes.

2.1 Environment

The system should be installed on a flat, level surface, in a clean, dry environment.
The system is designed to operate safely under the following conditions:

- Indoor use
- Attitude up to 2000m
- Temperature Range 5°C - 40°C
- Storage Conditions 2°C - 50°C
- Maximum Relative Humidity 80% @ 31°C decreasing linearly to 50% @ 40°C non-condensing
- The system is in installation Category II, Pollution Degree 2, as per IEC 61010-1.

CAUTION! Failure to follow the environmental specification could result in damage to the system.

WARNING! If critical alarms are activated, redirect analyser waste line to drain, isolate the unit from the mains electrical supply, and contact your service provider.

2.2 Electricity

It is essential that the electrical supply to the **MEDICA BIOX Particle Removal** system is isolated before any items are changed or maintenance work performed. The ON/OFF switch is located on the front face of the system. The mains power lead is located on the rear of the unit, to the right hand side.

The appliance coupler (mains lead) or power supply connected to the rear of the unit can be removed to isolate the power supply. If access to this is restricted then it is recommended that access to the supply socket is easily available to disconnect the electrical supply.

WARNING! Only use the appliance coupler (mains lead) and power supply provided. The use of these will ensure adequate earth protection is provided. If the equipment is used in a manner not specified by ELGA Veolia, the protection provided by the equipment may be impaired. Position the power supply so that it cannot come into contact with water.

WARNING! Always ensure that the electrical power supply is isolated before working inside the product.

2.3 Ultraviolet Light

WARNING! Under no circumstances should the lamp be connected and activated when outside the housing. Exposure could cause serious injury to eyes and skin. Ensure the UV lamp is disposed of in accordance with local regulations.

2.4 Control of Substances Hazardous to Health (COSHH)

CAUTION! The **MEDICA BIOX Particle Removal** system is designed to treat the effluent from clinical analysers, which is environmentally hazardous and potentially biohazardous. Appropriate consideration should be given to this when performing repairs or maintenance.

WARNING! Consumable tanks must be handled with care. Consumable tanks have a small potential of containing infectious waste, chemicals and medicines. Ensure the container and its contents are put into a yellow hazard bag for disposal.

Prior to any maintenance inlet wastewater supply will need to be stopped manually, by redirecting the analyser waste line to drain.

2.5 Tools and PPE Equipment (Items not supplied)

CAUTION! Contains infectious waste and must be operated and maintained with PPE as site and local regulations state!


EN388 & EN374


EN14126


Goggles

2.6 Infectious waste

WARNING! Contact with clinical analyser effluent or 'wetted' parts of the **MEDICA BIOX Particle Removal** system should be avoided. Follow procedures and wear appropriate PPE to avoid this.

CAUTION! If any potentially biohazardous material is spilled, wipe it up immediately and apply a disinfectant. If waste comes into contact with your skin, wash the affected area immediately with soap and water, and sanitise.

2.7 Manual Handling

WARNING! Unit weighs 35kg - DO NOT attempt to lift alone. Failing to follow proper lifting techniques could result in injury.

This unit is not to be lifted by 1 person. Please follow correct lifting techniques. The use of correct lifting equipment is recommended.

3.1 Unpacking the MEDICA BIOX Particle Removal

The following items should be supplied with your **MEDICA BIOX Particle Removal** System:

- **MEDICA BIOX Particle Removal**
- Instruction Sheet - INST42015
- Mains Lead
- 3 x FPADPC368747 Pipe Connector
- 3 x FTADAC0520 Reducer

Positioning the MEDICA BIOX Particle Removal

The unit can be placed a maximum distance of 10m away from the analyser, using the 8mm tubing provided. If a greater distance is required, or if the clinical outlet waste connection is lower than 400mm, the transfer pump kit (LA872) will be needed as standard.

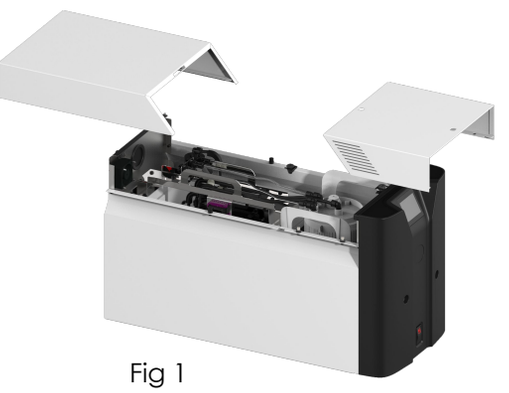


Fig 1

Adjusting the Feet of the Unit

1. Locate the feet found in each corner, underneath the unit
2. To RAISE the unit, twist the feet anti-clockwise until the desired height is found.
3. TO LOWER the unit, twist the feet clockwise until the foot is flush with the bottom of the unit

Installing the MEDICA BIOX Particle Removal

Once the **MEDICA BIOX Particle Removal** has been installed on a flat floor, it should be connected as follows:

Step 1. Accessing inside the **MEDICA BIOX Particle Removal**:

1. Remove the top covers to access the tubing connection points. To remove the covers, undo the 4 1/4 turn latches on the top and back of the unit, before lifting the front, then back covers up and away from the unit (Fig 1). Remove packaging from around the reservoir.

Step 2. Fitting tubes:
Connect the CPC fittings (Fig 2) as follows:

A. Clinical effluent tube to the inlet (from transfer pump)
B. Treated water outlet to drain
C. Overflow outlet to drain.

Ensure there is an air gap in connecting outlet tubes to drain, to avoid backflow.

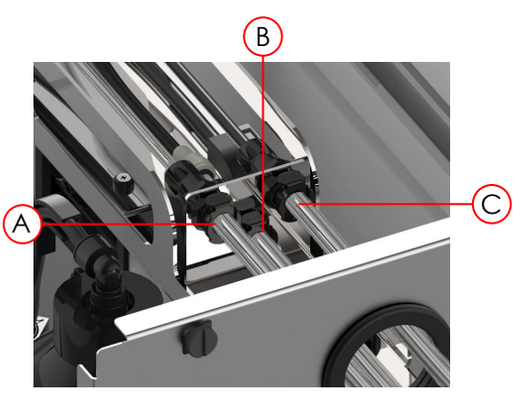


Fig 2

Step 3. Connect electrical supply:

1. PLUG mains lead into the socket on the right hand side of the back of the **MEDICA BIOX Particle Removal** System.
2. PLUG mains lead into mains socket.
3. Replace the top covers to seal the **MEDICA BIOX Particle Removal** system.

3.5 Pre-Start Up

1. Power on the **MEDICA BIOX Particle Removal** using the Power Switch on the front of the unit (Fig 3).
2. PRESS the green Process On button on screen to put the unit into process standby.
3. DIRECT analyser waste line to **MEDICA BIOX Particle Removal** to begin providing water for treatment.

Installation is now complete and the system is preparing to operate when sufficient wastewater is available for processing.

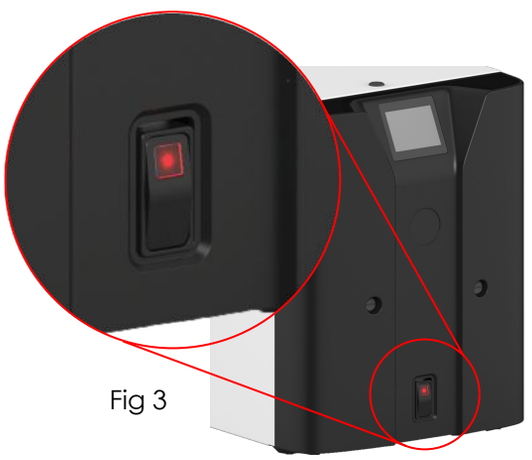
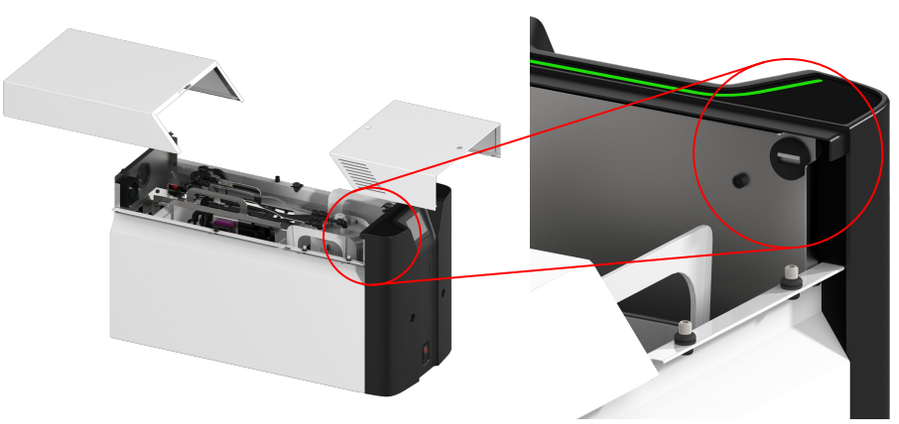


Fig 3

USB port - Service only (Unpowered USB Flash Drives only)

USB located behind the front facia, underneath the top covers, as shown below;



4. CONSUMABLES AND ACCESSORIES

*Service Life is an estimate only, and will depend on the application and wastewater quality. Care should be taken to order the correct consumable items.

CONSUMABLES		
Part No.	Description	Typical Service Life*
LC318	Reservoir	6 months

ACCESSORIES	
Part No.	Description
LA872	Transfer Pump
LA867	Installation Kit

5. Maintenance

5.1 Replacing the Reservoir

CAUTION! The **MEDICA BIOX Particle Removal** system is designed to treat the effluent from clinical analysers, which may be bio-hazardous. The process concentrates micro and nanoplastics, and biohazards into the consumable tank, which presents hazards to health and the environment. Precautions should be taken in line with laboratory instructions before any maintenance is performed.

Preparation

1. ENSURE the use of all required Personal Protection Equipment (PPE - see section 2.5, page 7). This can include nitrile gloves, lab coats and safety goggles.

Decommissioning

1. STOP flow to the unit via redirecting the analyser waste line to drain or start the manual drain function if the reservoir has liquid waste contained.
   a. To start the manual drain function, switch the unit OFF by pressing the red power symbol on screen.
   b. Allow time (5 minutes) for any particles to settle out of the membrane pores.
   c. Use the settings button to open the menu and navigate to the Service Prep icon using the arrow keys.
   d. The unit will start to drain, and the top LED will turn yellow, indicating that the unit is now in Service Prep mode.
   e. Once the tank is empty, or the system is unable to drain any more waste, deactivate the manual drain mode.
2. SWITCH OFF the unit, using the switch located on the front of the unit
3. REMOVE the front half of the top cover by unlocking the 2 quarter turn latches located on the top of the unit, and pulling the top upwards and away from the unit.
4. UNSCREW the securing collar of the consumable reservoir without disengaging the tubing.
5. LIFT the tubing, top cap and collar away from the reservoir and gasket. Absorbent tissue with disinfectant is recommended to clean wastewater after removing the top cap.

CAUTION! Avoid allowing liquid of any kind coming into contact with the metallic or electronic parts!

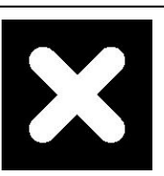
6. INSTALL a blanking cap onto the reservoir and screw a securing collar onto the reservoir. Remove the reservoir from the unit.
7. REPLACE with a new reservoir and gasket and reattach the top cap and collar, ensuring a tight seal on the gasket.

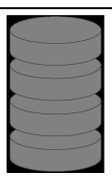
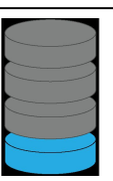
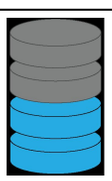
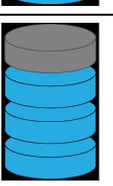
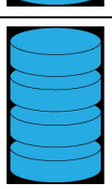
Note: The collected waste and reservoir can be transported for incineration. This should be sealed in a yellow clinical waste bag marked as bio-hazardous, accompanied by the appropriate caution document.

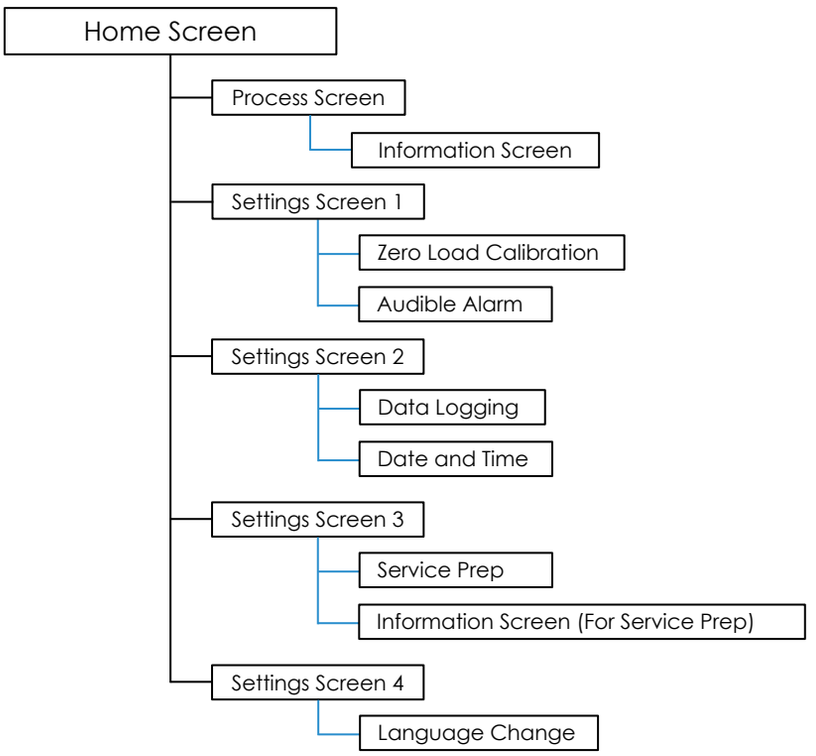
8. REINSTALL the front half of the top cover
9. TURN ON the unit. Press the "Zero Scales" button (see section 8.5, page 16) and return the unit to standby mode.
10. REDIRECT the analyser waste line to the unit.

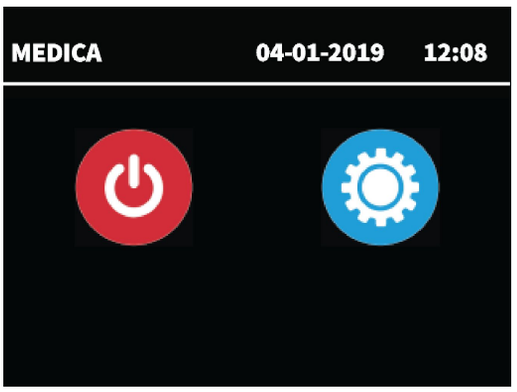
5.2 General Cleaning

When cleaning the units exterior surfaces, a clean damp cloth should be used to remove any dust or other particles.

ICON	DESCRIPTION	ICON	DESCRIPTION
	Process ON		Process OFF
	Settings Button		Information Button
	Return Button		System Okay
	Confirm Button		Cancel Button
	Next		Previous
	Date and Time		Date
	Time		Language Select
	Service Prep		

ICON	DESCRIPTION	ICON	DESCRIPTION
	Alarm 113		Alarm 114
	Alarm 115		Alarm 116
	Audible Alarm		Mute
	Data Logging		Zero Scale
	Tank Empty		Tank >10% Full
	Tank >50% Full		Tank >75% Full
	Tank Full		Tank Over-full

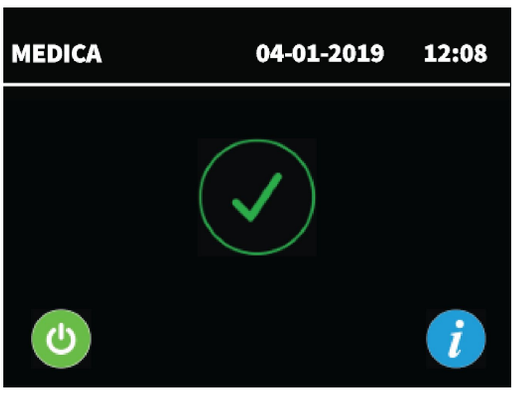

Home Screen
Process Screen
Information Screen
Settings Screen 1
Zero Load Calibration
Audible Alarm
Settings Screen 2
Data Logging
Date and Time
Settings Screen 3
Service Prep
Information Screen (For Service Prep)
Settings Screen 4
Language Change



8.1 Initial Start Up - Home Screen

The **MEDICA BIOX Particle Removal System** control panel is fitted with two control
buttons. These are:

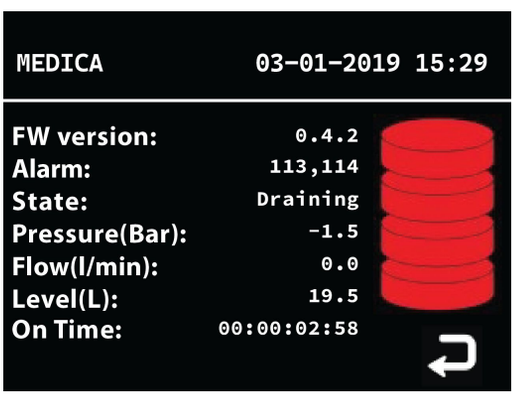
1. The **PROCESS** button, which switches the process ON.
2. The **SETTINGS** button, which is only accessible in the Process OFF state.



8.2 Process Screen

This screen displays the following functions:

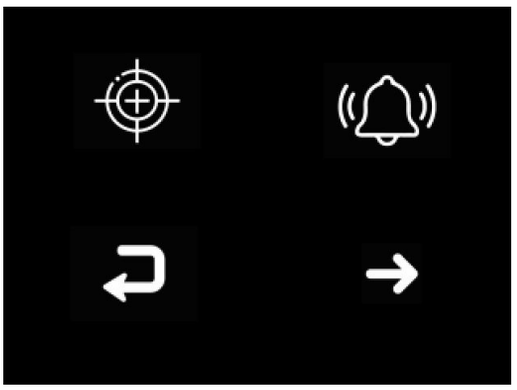
- Process Button - to switch the process off
- Information Button - to access the Information screen
- Status of the system
- Green tick (in a circle) if the system has no active alarms
- Alarm indication for any active alarms



8.3 Information Screen

The data shown in the information screen will be updated every 1 second.

- Name of Product
- Date (in dd-mm-yyyy)
- Time (in hh:mm (24-hour clock))
- Software Version
- Active Alarm(s)
- System Current State:
  - Standby
  - Rinsing
  - Processing
  - Settling
  - Draining
  - Backflushing
  - Service Prep (only available in Service Prep Information Screen)
- Pressure: in Bar (1 decimal place)
- Flow: in L/min (1 decimal place)
- Reservoir Level: in L (1 decimal place) with load response time of 4 secs)
- System On Time: mm:dd:hh:mm
  - Is updated every minute
- Return Button - to return to the Process-off Screen



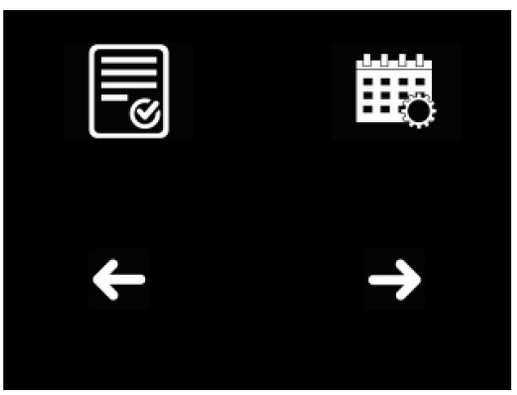
Settings Screen 1

8.4 Settings Screens

These screens (shown below) present the following options;

Settings Screen 1:

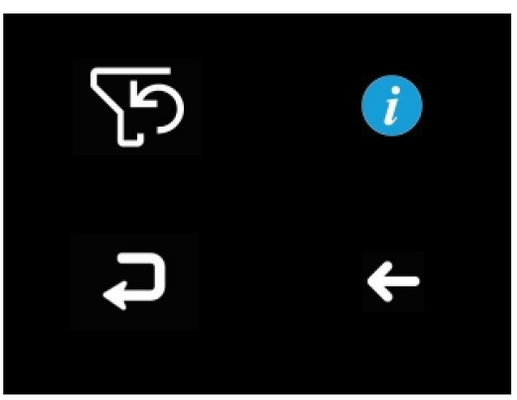
- Zero Scale calibration - to reset the level sensor zero point
- Set Audible Alarms - Enable/Disable (with an option to mute the alarm)
- Return and Next buttons - to navigate between screens



Settings Screen 2

Settings Screen 2:

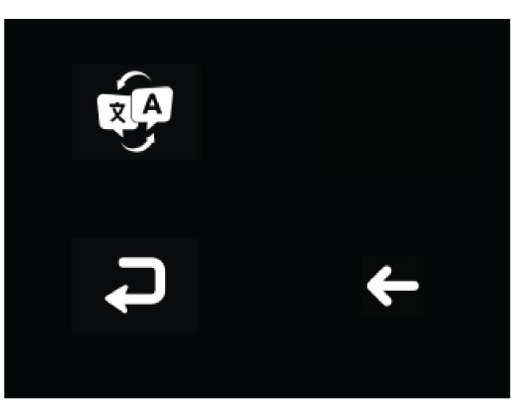
- Data Logging (with options for log intervals)
- Set Date & Time
- Previous and Next buttons - to navigate between screens



Settings Screen 3

Settings Screen 3:

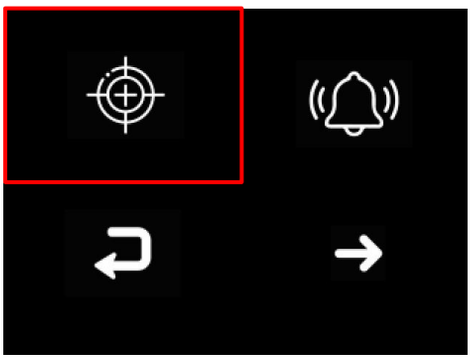
- Service Prep - to initiate Service Prep mode
- Information screen - to access information when Service Prep is active
- Return and Next buttons - to navigate between screens

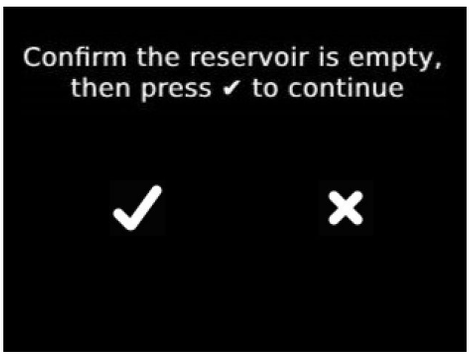


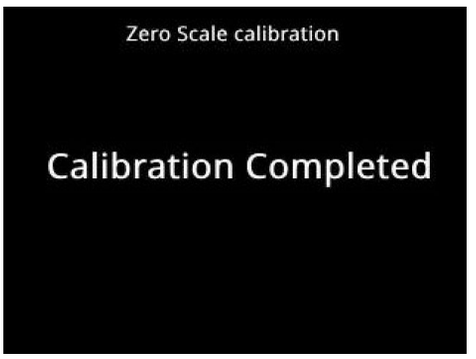
Settings Screen 4

Settings Screen 4:

- Language Change - to change the language displayed on the screen
- Return and Previous buttons - to navigate between screens







8.5 Settings Screen 1 - Zero Scales Calibration

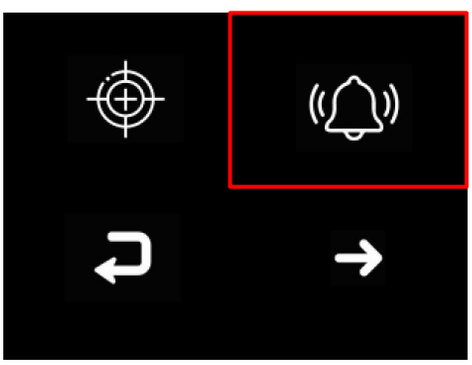
When the 'Zero-scale' button is selected, the system will prompt the user to ensure that the reservoir is empty.

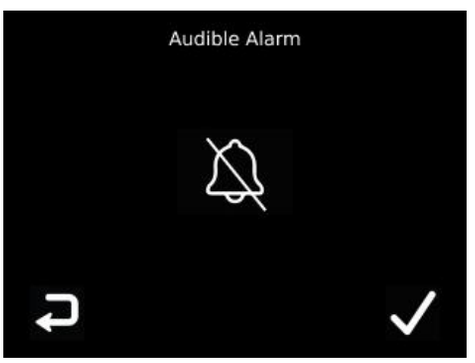
"*Confirm the reservoir is empty, then press ✔ to continue*". The screen then displays 2 buttons;

- Confirm
- Cancel

If Confirm is selected, the system calibrates the load cell, states "calibration completed" when successful, and returns to the Settings screen.

If Cancel is selected, the system exits calibration and returns to the Settings screen.



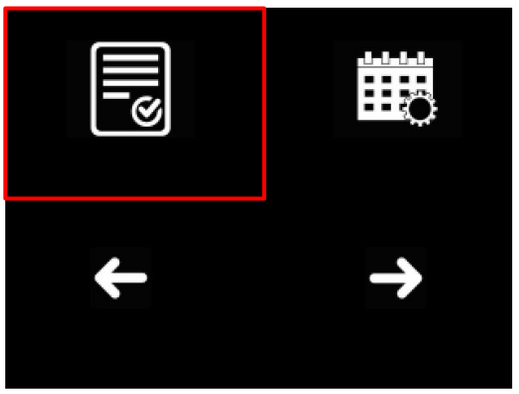


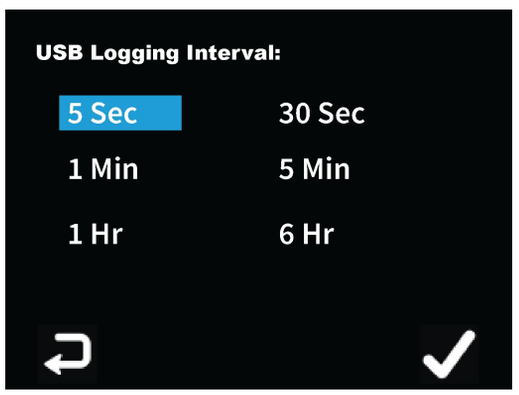
8.6 Settings Screen 1 - Audible Alarm

Users can enable/disable the audible alarm setting. The middle icon shows whether the audible alarm setting is enabled of disabled.

This can be changed by pressing the icon. To confirm the selection, click the tick icon. Users can exit the menu without saving changes, with the Return button.

If the audible alarm is enabled, then the buzzer will be ON. If the audible alarm is disabled, the buzzer will be OFF. Alarms can be muted with the mute button in the Process-on screen.





8.7 Settings Screen 2 - Data Logging

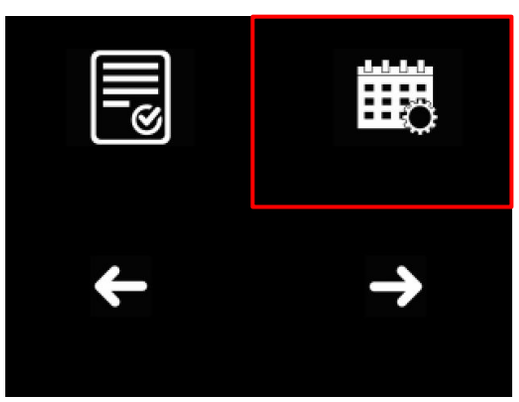
The system will have the ability to save the system log onto a USB drive.

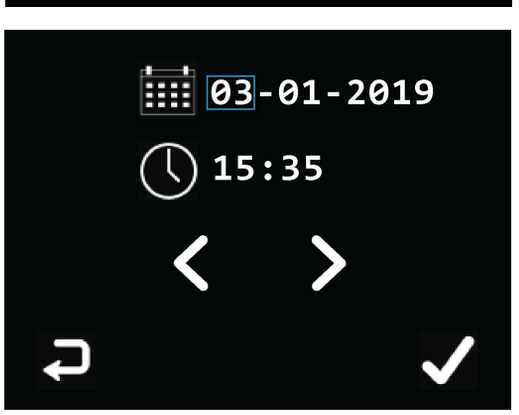
USB Logging

- Log intervals (shown on screen)
  - 5 seconds
  - 30 seconds
  - 1 minute
  - 5 minutes
  - 1 hour
  - 6 hours

To activate select 'Data Logging'. The system will display the intervals (including 'Return' as an option to exit the data logging menu). Select an interval and the system will return to the process off-screen, then insert USB into USB port (shown in section 3.6) that is formatted to FAT32 to begin logging.

A new log file is generated for each calendar day. In addition to the user-selected interval, the system will log data if any alarm is triggered or cleared.



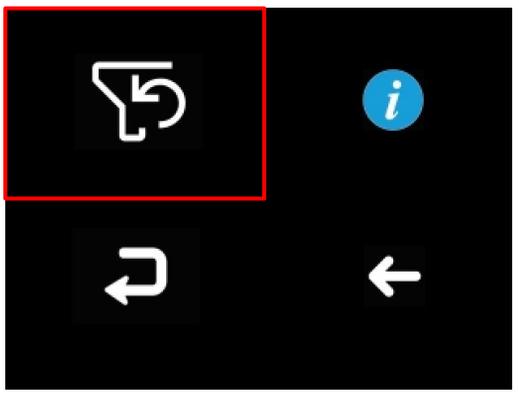


8.8 Settings Screen 2 - Date and Time

'Date and Time' is a feature to show the real-time clock. It allows users to set and store time using a standard 24-hour clock format (hh:mm) and date(dd:mm:yyyy).
To change this, select the 'Date and Time' option. The screen will display the intervals. These can be changed by selecting each interval (e.g. day, month, hour etc) and using the arrows to change the selected interval.

Both buttons have dual functionality;

- Single press (on all intervals) - the selected interval will be increased or decreased by 1.
- Press and hold (Year, Hour, Minute) - the selected interval will be increased or decreased by 10.



8.9 Settings Screen 3 - Service Prep

The Service Prep mode can be activated while the system is in the process-off mode. To activate, press the “Service Prep” in the Setting screen. When the “Service Prep” mode is active, the system will display a countdown timer under the “Service Prep” icon. The active mode is indicated with a yellow LED strip on the unit. “Service Prep” is completed when timer has elapsed. If the tank is empty before the 28 minute timer has ended, stop the Service Prep to avoid running the pump dry for extended periods. Leaving Screen 3 will stop the Service Prep mode. To access the Information Screen, press the information button and see Section 8.3 for further details.

8.10 Settings Screen 4 - Set Language

The system will support operations in various languages. Once the ‘Language’ option is selected, the screen will display the list of Language options with the current setting highlighted;

- English
- French
- German
- Italian
- Portuguese
- Spanish

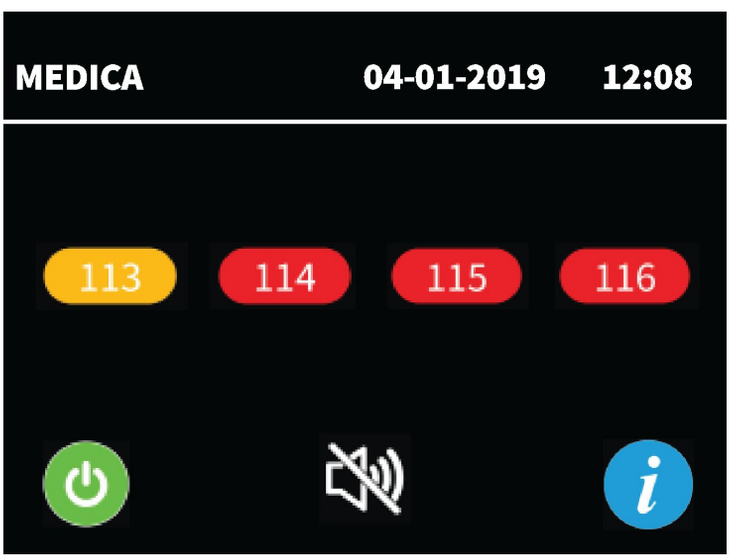
When the language is chosen, save the change by pressing the accept button and return to the Process OFF screen

9.1 User Alarm Definitions

All the alarms (displayed on the following page) are only visible when the unit is in Process ON mode, located along the middle of the screen, coloured to match the alarm's classification (as shown below). The key below shows what classification each alarm can be, as well as the definition.

CLASSIFICATION	DEFINITION
Critical	The system is unable to process waste water and is inoperable and requires immediate repairs. The user should seek an authorised service provider if required.
Non-Critical / Warning	The system has detected a fault that is not yet affecting the water treatment capabilities. However, the unit will need service/repairs quickly, otherwise the water treatment may be affected and may result in final application problems.

The image below shows how multiple alarms will be displayed on the unit screen. The mute icon can be pressed to turn off the audio alarm noise. Once pressed the mute button will disappear, but the alarm icons will remain.



From Standby mode, the **MEDICA BIOX Particle Removal** will function automatically and signal alarm conditions to ensure efficient system management and corrective action.

Note: To ensure activity is maintained it is important to leave the system in standby mode.

Processing in the **MEDICA BIOX Particle Removal** unit is intermittent to maintain efficient performance, hence the unit will cycle through "Rinsing", "Processing" and "Settling" modes when in action. When the unit is not in use, it will stay in Standby mode until there is sufficient water in the tank to begin processing.

9.2 User Alarm Codes

The **MEDICA BIOX Particle Removal** System alarm codes are as follows:

ALARM CODE	ALARM DESCRIPTIONS	DESCRIPTION	ACTION
113	Overfill Alarm	If the overfill alarm is active, the system will still attempt to process the waste. If the system can still process the waste, the alarm will deactivate when the tank level reduces sufficiently.	Redirect analyser waste line to drain until overfill deactivated.
114	Pressure Sensor Fault	Pressure Sensor missing or damaged	Check if connected or replace as per service manual.
115	High-Pressure Alarm	If the high pressure alarm is active, the system will revert to “Process Off” mode. The unit will not operate until the “Process On” mode is reactivated.	Attempt once to turn the process back on, to see if a blockage has been shifted. If unsuccessful, redirect analyser waste line to drain. If system continues with alarm, seek local service provider for repairs.
116	Leak Detection Alarm	Indicates detection of leak in the unit	Identify and fix/clear the leak, turn unit to process off, then process on. Alarm will auto clear.

9.3 Auto Restart

The **MEDICA BIOX Particle Removal** unit is set by default to auto restart in the event of a power failure. If the unit is on the Process Screen when the power is lost and then restored, the unit will return to the same Screen. If in Process Off, the unit will remain in this state. If at any point, a critical alarm is triggered, the unit will return to Process Off and Auto Restart will be off.

The table describes what the unit is doing during each state and what action should be taken accordingly.

SCREEN	UNIT STATE	DESCRIPTION	ACTION
Home Screen	Process Off	While in Process Off state, the unit is not processing wastewater/is not preparing to process wastewater.	System set to Process Off, awaiting human intervention to restart.
Process Screen	Process Off	While in Process Off state, the unit is not processing wastewater/is not preparing to process wastewater.	System will return to the Process screen (standby mode); no human intervention is required.
	Process On	While in Process On mode, the unit is processing/preparing to process wastewater.	

9.4 Auto Clear

The **MEDICA BIOX Particle Removal** unit is set by default to Auto Clear alarms. The alarm conditions must be resolved for the unit to resume normal operation.

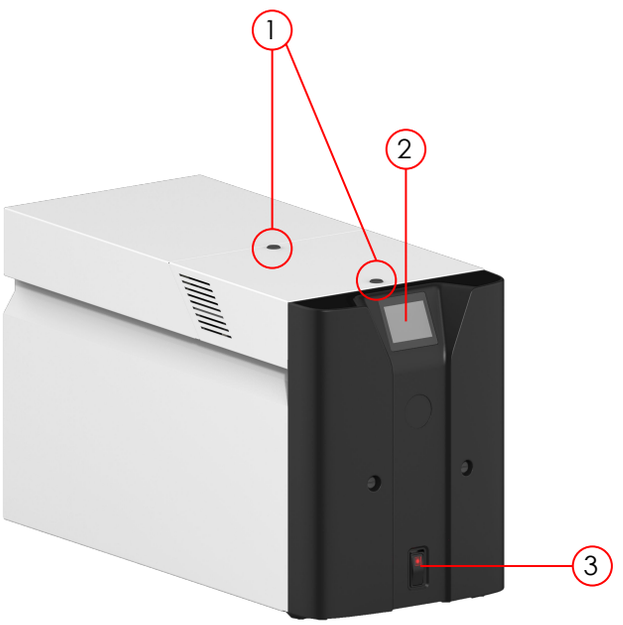
The table below describes what the state the unit is in during each alarm. For further information on the alarms, see page 21.

ALARM	DESCRIPTION	UNIT STATE
Alarm 113	Overfill Alarm - the system will auto clear and enter standby mode. If the system remains over-full when restart occurs, it will enter Over-full mode and begin processing wastewater. The 113 Alarm will continue to be displayed on screen.	System will resume normal operation; no human intervention is required.
Alarm 114	Pressure Sensor Fault - the system will not auto clear and will enter Process Off state. The 114 Alarm will continue to be displayed on the Process and Information Screen.	System set to Process OFF, awaiting human intervention to restart.
Alarm 115	High Pressure Alarm - the system will not auto clear and will enter Process Off state. The 115 Alarm will continue to be displayed on the Process and Information Screen.	System set to Process Off, awaiting human intervention to restart.
Alarm 116	Leak Detection Alarm - the unit will not auto clear and will remain in the Process Off state. The 116 Alarm will continue to be displayed on the Process and Information Screen.	System set to Process OFF, awaiting human intervention to restart.

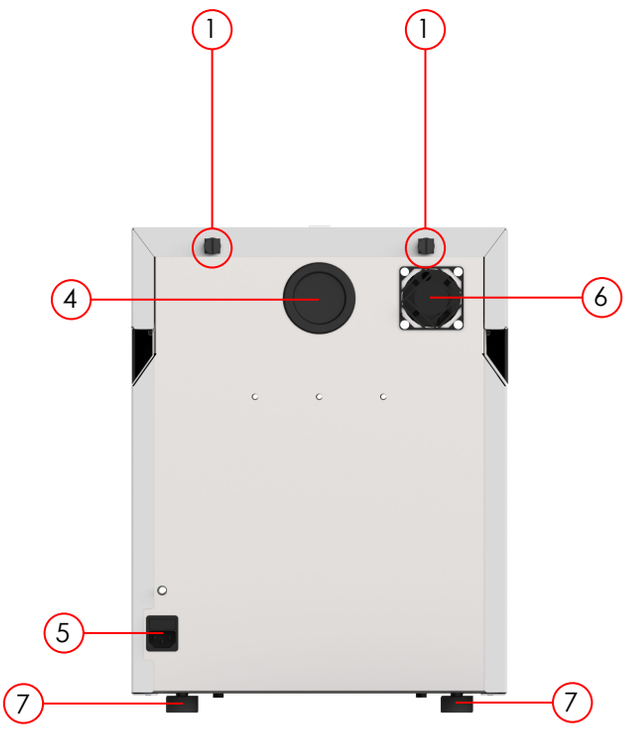
PRODUCT FEEDWATER (Effluent from clinical analyser)	
Feedwater	Clinical analyser effluents (concentrated)
Temperature	5 - 40 °C (Recommended 15 - 25 °C)
Inlet Requirements	Max 0.15 bar (Gravity feed or max 2.5 L/min Pump Feed)
Flow Rate (maximum continuous flow)	30 L/hr
PRODUCT OUTLET (Treated Effluent from clinical analyser)	
Flow Rate (outlet)	30 L/hr (continuous) 60 L/hr (non-continuous)
Output condition to the drain (leave a space in the open air)	Max Height 900mm (Ground to pipe) If the drain is at more than 150mm from the ground, provide a lift pump for the overflow. (leave a space in the open air)
Outlet Quality	Particles > 95 % removal (>= 60 nm) Bacteria: Log 6 removal Viruses: Log 4 removal
CONNECTIONS	
Effluent Inlet	8mm OD x 5.4mm ID Tube
Treated Water Outlet to Drain	8mm OD x 5.4mm ID Tube
Overflow Outlet	8mm OD x 5.4mm ID Tube
ELECTRICAL REQUIREMENTS	
Mains Input (Earthed/Grounded)	100-230Vac (+/-10%) 50/60Hz 150VA
System control voltage (not including UV)	24 Vdc
Power consumption (peak demand)	118W
NOISE	
Normal Operation	55 dBa

DIMENSIONS AND PARAMETERS	
Dimensions	796mm x 352mm x 453mm (L x W x H)
Operational Weight	45kg (35kg without water)
Installation	Ground

9.5 Exterior Features



1. ¼ Turn Latch
2. Touch Screen
3. Power Switch
4. Inlet, Outlet and Overflow



5. Mains Power Socket
6. Fan
7. Adjustable Feet

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The Labwater Specialists

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