ELGA

MEDICA-R200 - US

Operator Manual

VEOLIA WATER
Solutions & Technologies

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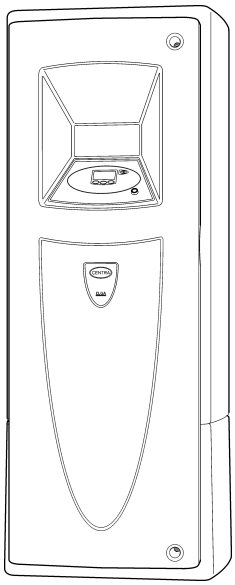


MEDICA - R200 US

1. INTRODUCTION

1.1 Product Range

This operator manual has been prepared for the product models:

MEDICA - R200 US	**115 V ac 60 Hz**
MEDICA - R200 US	**230 V ac 50 Hz**

1.2 Use of this Manual

This manual contains full details on installation, commissioning and operation of the ***MEDICA*** unit. If the instructions in this handbook are not followed then the performance of this product and/or the safety of the user may be compromised.

1.3 Customer Support

Service support and consumable items are available from your local supplier or distributor. Refer to customer service contact details shown at the end of this publication.

2. HEALTH AND SAFETY NOTES

MEDICA products have been designed to be intrinsically safe, however, it is important that personnel working on these units 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 INSTRUCTION COULD RESULT IN INJURY OR DEATH TO PERSONS.**

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

2.1 Electricity

It is essential that the electrical supply to the ***MEDICA*** is isolated before any items are changed or maintenance work performed.

The external isolator proving power to the unit should be positioned so that it is easily accessible by all users.

WARNING! **THIS APPLIANCE MUST BE EARTHED.**

2.2 Pressure

The main water supply should be isolated and residual pressure released prior to removal of any components or carrying out work on the unit.

Switch off the process and relieve pressure in the distribution loop by opening a point-of-use.

2.3 Sanitization Chemicals

During the sanitization cycle Minncare Cold Sterilant is used and relevant safety guidance is included in this handbook. Please refer to the manufacturer for material safety data sheets.

Minncare Cold Sterilant is EPA registered as a sterilant, high level disinfectant, and sanitizer.

Spent Minncare Cold Sterilant is acidic and requires normal neutralization as specified by your local state and local regulations.

1% of Minncare Cold Sterilant has a pH of 3.5.

2.4 Control of Substances Hazardous to Health (COSHH)

Material safety data sheets covering the various replaceable components are available upon request. Contact your local ELGA LabWater distributor.

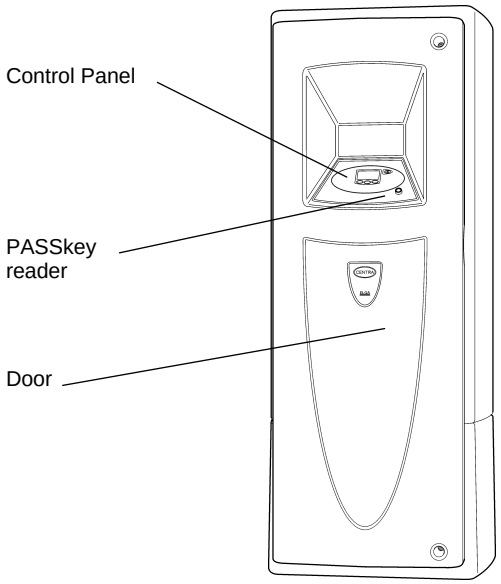
3. PRODUCT AND PROCESS DESCRIPTION

3.1 Product Description

The ***MEDICA*** range of water purification units has been specifically designed to distribute and maintain purified water for laboratory, medical and industrial applications. The supply of purified water is obtained from either an external source or internal technologies.

Purified water may be distributed around the installation under pressure to single or multiple points of use.

A range of accessories is available to complement the unit (*see Section 13. - Consumables and Accessories, for detail)*.



MEDICA - R200 US

3.2 Process Description

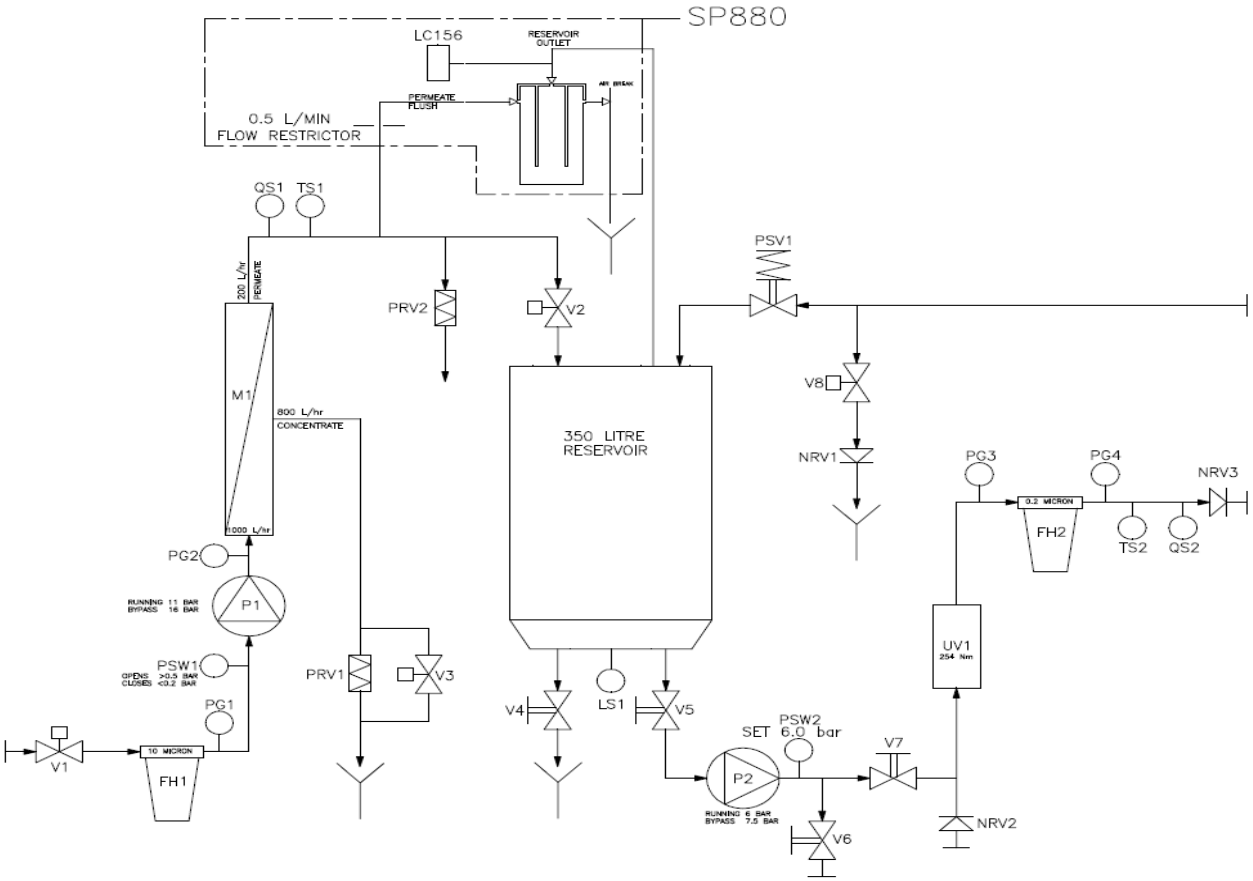
MEDICA - R200 US

- Feed water enters through a control valve (V1), and through a particulate filter (FH1) into the inlet of the RO pump (P1). Pressure in the pipework of the pump inlet is monitored with a pressure switch (PSW1) to ensure that the pump cannot run without sufficient water.
- P1 provides sufficient pressure and flow to the RO module (M1). The RO concentrate flow is controlled through a pressure relief valve (PRV2) or concentrate flush valve (V3).
- Upon initial start-up, the system carries out a concentrate flush to remove scale and debris from the membrane surface to ensure RO performance is maintained.
- RO permeate water passes through:
  - Temperature sensor (TS1).
  - Water quality sensor (QS1), which measures the conductivity of the water.
- RO permeate water is initially flushed to drain through the overflow device until one of the following conditions occurs:
  - Minimum flush time is completed.
  - Water quality is below set alarm point.
  - 4 minutes permeate flush has occurred. This will result in an alarm condition that may be cleared automatically as the RO performance improves.
- RO permeate water enters the reservoir through permeate control valve (V2) and fills the reservoir until full (350 liters). The RO system will only function if the level in the reservoir is sufficiently low, less than 240 liters.
- When the reservoir contains 350 liters, the RO system performs a further concentrate flush to reduce the concentrate levels within the membrane housing and reduce the possibilities of precipitation on the membrane surface before going into stand-by.
- Water from the reservoir is distributed around the installation at pressure (6 bar maximum) by the recirculation pump (P2), controlled via the pressure-sustaining valve (PSV1). An over-pressure switch (PSW2) on the outlet of the pump will shut the system down if operating pressures exceed 6 bar.
- Connections are available to incorporate a range of cylinders containing water purification media, which remove impurities and maintain water quality around the system. The media can be selected to meet specific requirements. Typically activated carbon and ion-exchange media are used.

WARNING! **Any cylinders or additional equipment installed (filters etc.) including ring-main pipework must be rated to the operating pressure of the *MEDICA* system (6 bar).**

- The purified water is then passed through the UV (UV1) chamber where it is exposed to intense UV radiation to provide continuous bacterial control and to promote the cleavage of organic molecules before passing through an absolute 0.2µm bacterial and particulate filter. The difference in pressure between PG3 and PG4 can be used to monitor the condition of the filter.
- Finally the purified water passes through a:
  - Temperature sensor (TS2).
  - Water quality sensor (QS2), which measures the resistivity of the water.
- Air is drawn into the reservoir when water is used. To maintain water purity in the reservoir and water recirculation/distribution system, it is necessary to filter the air. Water quality will be maintained within the recirculation system using a composite vent filter, which removes air-borne contaminants such as volatile organic compounds and carbon dioxide as well as air-borne particles and bacteria.
- The ***MEDICA - R200 US*** includes the ability to drain the reservoir completely via V4 and sanitize the installation semi-automatically via V8 to ensure that bacterial levels within the installation are controlled.

3.3 Flow diagram for *MEDICA - R200 US*



MEDICA - R200 US *flow diagram*

3.4 Technical Specification

The Technical Specifications for the ***MEDICA - R200 US*** are as follows:

Feedwater			
Source	Potable tap water as detailed below. *Note: It is essential that the feedwater be suitably conditioned. Please refer to the contaminants listed below and ensure that suitable pretreatment is included in the installation.* *If in doubt contact your local ELGA LabWater representative who will be able to provide guidance and support on the pretreatment requirements for specific water types.* *Failure to comply with the minimum feedwater pretreatment recommendations will affect the life and performance of key components within the **MEDICA**, which may invalidate the warranty.*		
Contaminant	**Measure**	**Range**	**Pretreatment**
Calcium	Ca ppm as $CaCO_3$	< 250	None *
		> 250	Softener or use very low RO recovery *
Total chlorine	Cl ppm	< 0.2	None
		0.1 to 0.5	20 inch carbon block
		> 0.5	Cylinder of carbon sized correctly to obtain <0.1ppm
Silica	SiO_2 ppm	< 30	None
		> 30	20 inch cartridge depth filter or use very low RO recovery **
Fouling Index	FI	< 10	None
		10 to 20	20 inch cartridge depth filter
		> 20	Backwashable media filter with a minimum flow rate of 20l/min
Iron/manganese	Fe/Mn ppm	< 0.05	None
		> 0.05	20 inch cartridge depth filter ***
		> 0.1	Back-washable Fe filter ***
Organics	TOC ppm C	< 2	None
		2 to 3	20 inch carbon block **
		> 3	Cylinder of carbon sized correctly for TOC demand **
TEMPERATURE	1 - 40ºC (Recommended 15 - 25ºC)		
FLOWRATE (maximum requirement)	20 l/min (5.3 GPM)		
Drain requirements (gravity fall with air gap). Maximum during sanitization.	45 l/min (12 GPM)		
Feedwater Pressure	4 bar (60 psi) maximum, 2 bar (30 psi) minimum.		

* Check LSI, increase frequency of acid cleaning.
** Increase frequency of alkaline cleaning.
*** Increase frequency of acid cleaning.

Note: For information on cleaning chemicals please contact your local ELGA LabWater representative.

Note: If feedwater purity is variable or values are close to the top of one of the ranges, provide pre-treatment for the higher range.

Dimensions	
Height	1820 mm (71.7")
Width	730 mm (28.75")
Depth	890 mm (35")
Supply weight	180 kg (396 lb)
Operational weight	530 kg (1,168 lb)
Installation	Floor

Connections	
Inlet	¾" bsp
Sanitization Drain	¾" bsp
Reservoir drain	¾" bsp
Ion-exchange cylinder inlet	¾" bsp
Ion-exchange cylinder outlet	¾" bsp
Ion-exchange cylinder connection pressure rating	6 bar

Electrical Requirements	
Mains input	230 V ac, 50 Hz 115V ac, 60 Hz
System control voltage (not including pumps and UV)	24 V dc
Power consumption (peak demand)	2000 VA
Electrical protection rating	20 amps
Noise level during recirculation	<70 dBA

User Interface		
Display	Continuous graphical quality display.	
	Graphical flow schematic on screen with mimic display.	
	Backlit display with Intuitive Icons.	
Adjustable settings	Date / time	Adjustable
	Display viewing Angle	Adjustable electronically
	RO permeate water quality alarm	Selectable Alarm setpoints
	Product water quality unit	Selectable (MΩ.cm or µS/cm)
	Product water quality alarm	Selectable Alarm setpoints
	Product water temperature alarm	Selectable Alarm setpoints
	Auto restart after power failure	Selectable (On/Off)
	Audible alarm	Selectable (On/Off)
	Night/Weekend service	Selectable (On/Off)
	Operational day selection	Selectable (Monday (1) to Sunday (7))
	Data output - manual	Selectable (On/Off)
	Data output - timed	Selectable (On/Off)
	Remote display configuration	Mode address selection
	Sanitization reminder	Selectable (On/Off)
Indicators	Pre-treatment feedwater quality	Conductivity
	Product water quality	Resistivity or conductivity
	Temperature	Degrees Centigrade
	UV lamp	Replacement date
	Particle filter	Replacement date
	0.2µm filter	Replacement date
	Sanitization	Sanitization date
Alarms-Audiovisual	RO Permeate water quality	Outside set point alarm
	Permeate water temperature	Outside maximum operating temperature
	Purified water purity	Outside set point alarm
	Purified water temperature	Outside set point alarm
	UV lamp	Change reminder
	Particle filter	Change reminder
	0.2µm filter	Change reminder
	Sanitization	Reminder
	Overflow	Leak detection or hydraulic failure
	Tank	Level controls disconnected
Outputs	RS232 Printer connection RS485 Remote display connection Remote process button (Optional) Volt free contact*	

Safety Features
Power fail safe
Water temperature alarm*.
Water purity alarm*.
Leak detection alarm.
Access restricted by PASSkey.
Miniature circuit breaker protection of incoming electrical supply (MCB).
Pump thermal overloads.
Low voltage control circuit – 24 V dc.
Visual alarms.
Audible alarms.
Remote process button (Optional).
Optional remote display.

Operational Features
Restart on power interrupt
Optional printer kit for record of operating parameters
Optional remote display

Product Water Specification		
	Frequency	
	50 Hz	60 Hz
Flowrate	18 l/min @ 3 bar (4.8 USGPM @ 45 psi)	21 l/min @ 3 bar (5.6 USGPM @ 45 psi)
Distribution Loop Pressure – typical	3 bar	
Distribution Loop Pressure – maximum	6 bar	
Daily usage - typical	Up to 5000 L (1321 USG)	
Daily usage - maximum	Up to 6000 L (1585 USG)	
Inorganic	>10 MΩ.cm**	
TOC ppb	<10**	
Bacteria	<5 CFU/ml***	
Particles	0.2 µm	

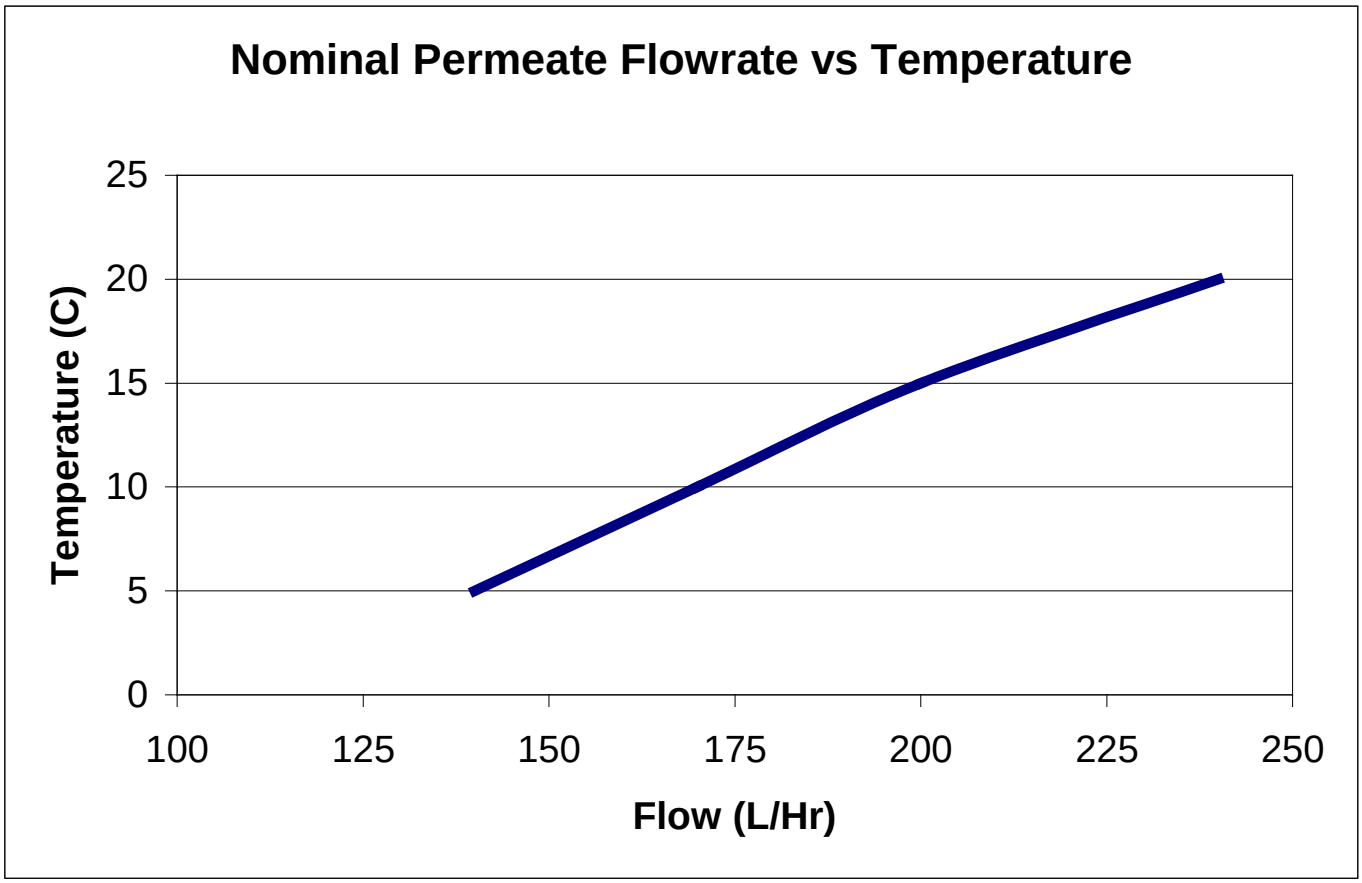
* Output to operate 24 V dc relay.

** Ion-exchange cylinder installed (Nuclear or Hypex grade).

*** System to be regularly sanitized and installed following ELGA LabWater installation design guidelines.

As part of our policy of continual improvement we reserve the right to alter the specifications given in this document.

3.5 RO Permeate Flowrate vs. Temperature



4. INSTALLATION INSTRUCTIONS

WARNING! THIS UNIT IS HEAVY. NEVER ATTEMPT TO MOVE WITHOUT USING THE CORRECT LIFTING EQUIPMENT.

4.1 Unpacking the *MEDICA*

The following items should be supplied with your ***MEDICA***:

1. ***MEDICA - R200 US***.
2. Operator Manual.
3. Composite Vent Filter (LC156).
4. 10µm 10" particle filter (LC159).
5. 0.2µm 10" micro filter (LC160).
6. PASSkeys (SP772).
7. 2 x Filter spanners.
8. 2 x Sanitization tubes.

*Note: Ion-exchange cylinders external pipe work and pre-treatment are not included with the **MEDICA**.*

Please contact your local ELGA LabWater representative to ensure that the correct water treatment technologies are selected for your application.

4.2 Positioning the *MEDICA*

Before installation and operation of the ***MEDICA*** unit, please read and observe the following points.

Environment

The unit should be installed on a flat, level floor, in a clean, dry environment.

WARNING! ENSURE THAT THE UNIT IS POSITIONED ON A FLOOR CAPABLE OF SUPPORTING THE MAXIMUM WORKING LOAD OF THE UNIT.

WARNING! ADDITIONAL EQUIPMENT SHOULD NOT BE MOUNTED ON TOP OF THE *MEDICA - R200*. FAILURE TO OBSERVE THIS INSTRUCTION COULD RESULT IN SERIOUS INJURY.

Note: Refer to Specifications for unit weights and footprint size (Section 3.4 - Technical Specification).

The unit is designed to operate safely under the following conditions:

- Indoor Use.
- Altitude up to 2000m.
- Temperature Range 5 - 40°C.
- Maximum Relative Humidity 80% @ 31°C decreasing linearly to 50% @ 40°C, non-condensating.

The unit is in Installation Category II, Pollution Degree 2, as per IEC1010-1.

Service Access

It is recommended that sufficient allowance be made for accessing components on the rear of the product, which may require servicing or replacement during its life in the field.

WARNING! **ONCE COMMISSIONED AND IN OPERATION THE *MEDICA* IS EXTREMELY HEAVY AND MUST NOT BE MOVED. FAILURE TO OBSERVE THIS INSTRUCTION COULD RESULT IN SERIOUS INJURY.**

Electrical

MEDICA must be properly earthed and protected with the correctly rated fuse or MCB.

Where possible, components are operated at low DC voltage to reduce risk of electric shock.

Some components operate at mains supply voltage and are suitably protected within the unit.

Power should be switched off and isolated before commencing maintenance work.

WARNING! **FAILURE TO ISOLATE THE INCOMING ELECTRICITY SUPPLY BEFORE REMOVING COVERS OR COMMENCING MAINTENANCE WORK COULD RESULT IN DEATH.**

Pipework and Pipework Installation

The precise details of each installation will vary according to the individual customer requirements.

Note: Refer to Typical installation and layout diagram (Section 4.3 - fig. 1).

If existing pipework installations are being utilized it is recommended that Technical Support are contacted to ensure suitability in terms of material and pressure drop, and that correct installation and sanitization procedures are adopted during system commissioning.

All connections to the unit are ¾"bspp female threads and should be sealed with either PTFE tape or ‘o’ring fittings.

CAUTION! **The use of pipe sealant is not recommended and may cause degradation and failure of plastic components.**

All pipework should be suitable for the quality of water being distributed and installed to manufacturer guidelines.

CAUTION! All pipework should have a pressure rating exceeding the maximum operating pressure of the installation and suitably de-rated for the maximum water temperature.

Remote Display RS485 Network

The ***MEDICA*** has the ability to communicate to a number of remote displays allowing operating and alarm parameters to be changed and monitored throughout the installation.

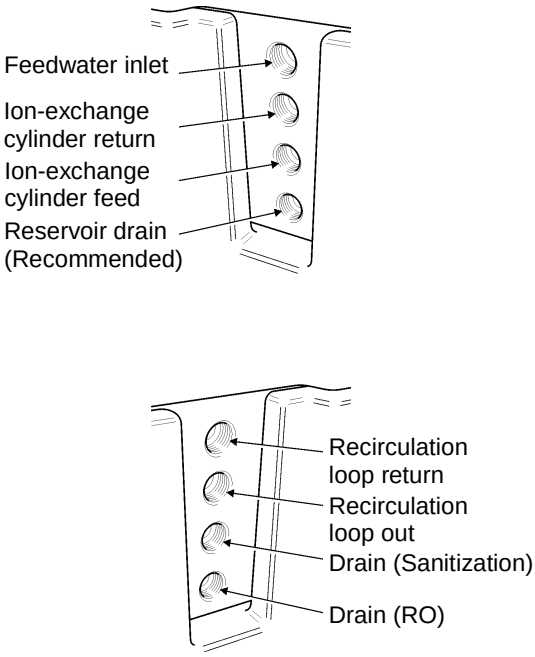
System constraints must be observed during installation to ensure satisfactory network performance.

Further details are available from Technical Support.

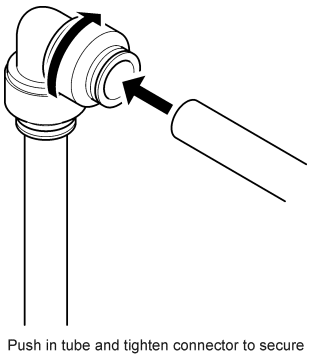
4.3 Connecting the *MEDICA*

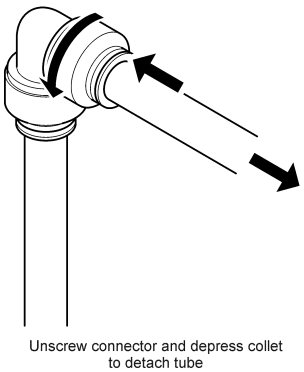
Once the ***MEDICA*** has been positioned the following hydraulic connections should be made:

- Drain
- Concentrate drain
- Feed water inlet
- Ion-exchange cylinder feed
- Ion-exchange cylinder return
- Recirculation loop out
- Recirculation loop return
- Reservoir drain (Recommended)
- Overflow pipe to drain



External hydraulic connections





Fitting tubes

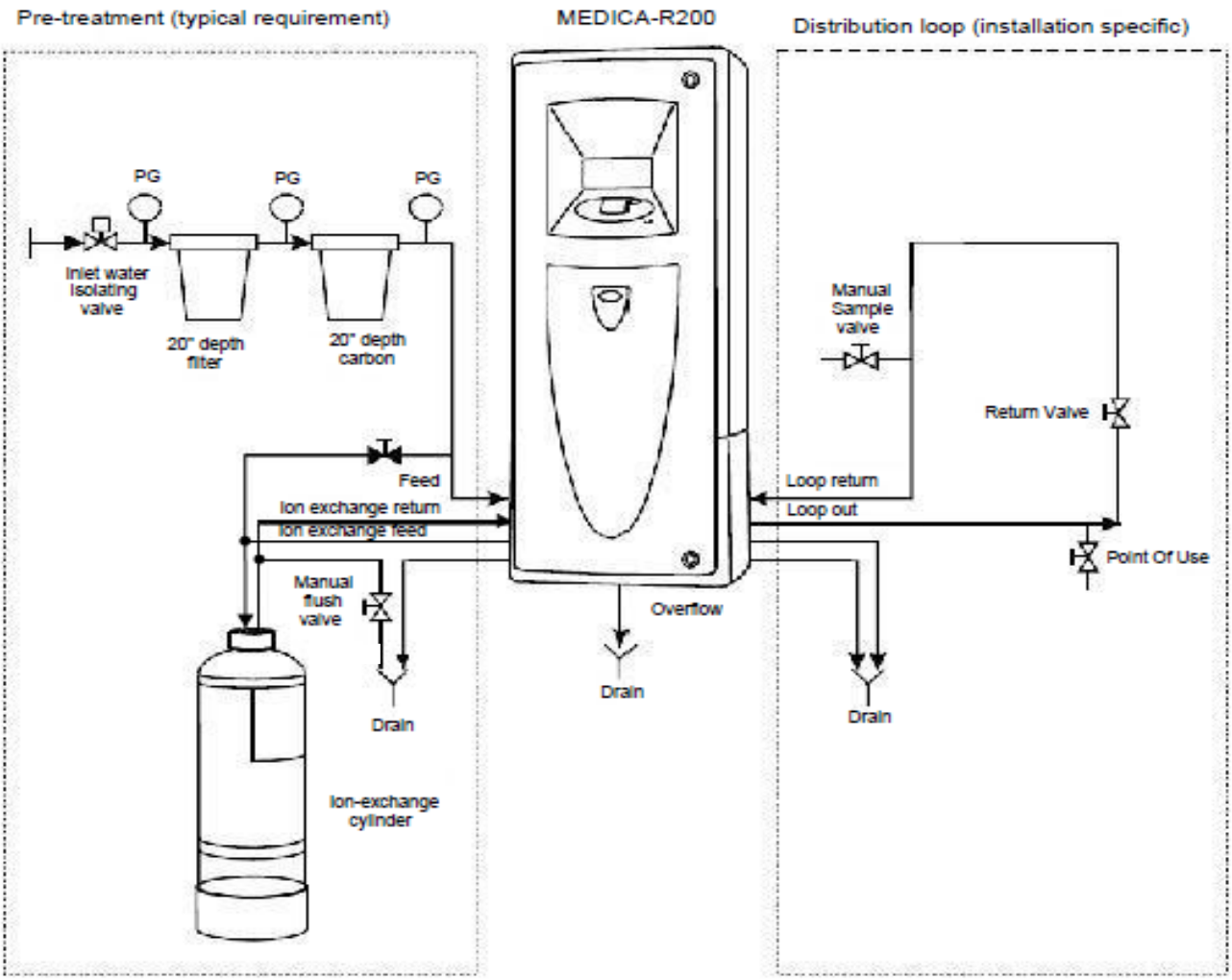
Step 1 - Hydraulic connections

1. LOCATE all the hydraulic connections.
2. FOLLOW the manufacturer recommendations for the selected pipework systems and install suitable adapters into the connection manifolds of the ***MEDICA***.
3. Refer to 'Ringmain/Loop Installation Guide' available from ELGA LabWater Technical Support for examples of preferred pipework construction and assembly.

*Note: The connection size on the **MEDICA** is ¾"bspp in all positions. The overflow connection (¾" flexible hose) is located at the rear of the **MEDICA** unit and should be connected to a suitable drain.*

CAUTION! The use of pipe sealant is not recommended and may cause degradation and failure of plastic components.

CAUTION! The drain installation should allow a gravity fall to drain with no restrictions.



*Schematic of typical **MEDICA - R200 US** distribution loop*

Removal of securing screws

Step 2 - Electrical supply connection

WARNING! **FAILURE TO CORRECTLY INSTALL THE ELECTRICAL SUPPLY COULD RESULT IN DEATH.**

IF IN DOUBT CONTACT A QUALIFIED ELECTRICAN.

1. ENSURE a suitable cable is available to connect the ***MEDICA*** to the electrical supply.

Note: It is recommended that the unit is connected to a local isolator with a single phase industrial 32 amp plug.

WARNING! **FAILURE TO USE THE CORRECTLY RATED CABLE COULD RESULT IN FIRE AND DEATH.**

IF IN DOUBT CONTACT A QUALIFIED ELECTRICAN. CHECK OUT LOCAL REGULATIONS, A LICENCED ELECTRICIAN MAY BE REQUIRED TO MAKE THIS CONNECTION.

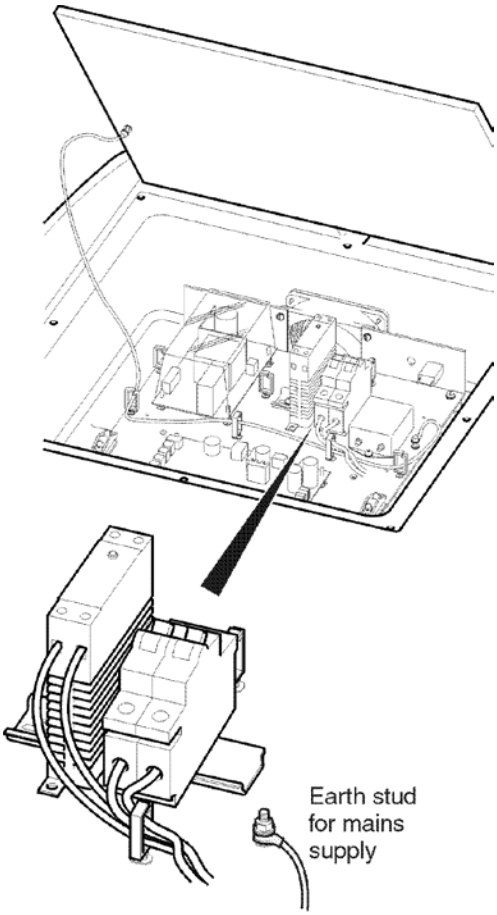
2. REMOVE the two screws that secure the right-hand edge of the door.
3. OPEN the door fully.
4. DIRECT the cable through the rear of the unit to the power socket.

Note: The power cable should be routed avoiding signal cables and sensitive circuitry.

5. LOCATE the electrical cover on the top of the unit and REMOVE the eight securing screws and store in a safe place.
6. CAREFULLY remove the cover and locate the earthing point on the electrical back plate.
7. REMOVE the nut and washers securing the earthing cable and store in a safe place.

Note: The electrical cover can now be completely removed and stored safely.

8. LOCATE the cable restraint on the right of the electrical back plate.
9. DIRECT the cable into the electrical section via the cable tunnels.
10. UNSCREW the cable clamp and INSERT the supply cable ensuring sufficient cable to reach the MCB and earth point.
11. RETIGHTEN the screws.
12. PULL the cable firmly and ENSURE that the cable is properly retained.
13. CONNECT the supply cable to the MCB ensuring correct termination and polarization.



MEDICA - R200 *electrical connection*

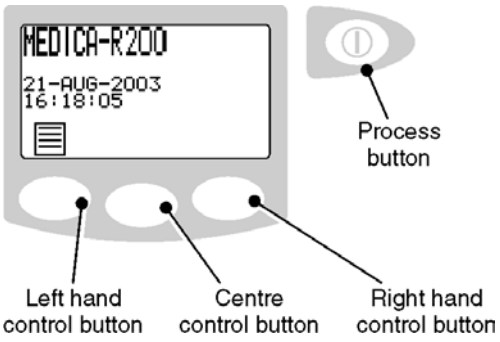
CAUTION! **The termination of cables should comply with local wiring regulations. All earth connections should be made using ring tags that are attached to the cable using the correct crimping tool.**

14. CONNECT the supply earth to the central earthing point on the electrical back plate along with the earth wire from the electrical cover.
15. REPLACE the earthing nut and washers and TIGHTEN.

WARNING! **THIS APPLIANCE MUST BE PROPERLY EARTHED. ENSURE THE EARTH STUD, LOCATED NEXT TO THE MCB, IS USED TO EARTH THE INCOMING MAINS SUPPLY**

16. ENSURE that an earth continuity test is completed before applying power to the unit.
17. REPLACE the electrical cover and screws and ensure an effective seal from water ingress.

Note: Until the unit has been fully commissioned it is recommended that the front door remain unsecured.



Control panel

5. CONTROLS

The ***MEDICA*** operates with a tactile membrane control panel, which has a graphics display window and four-programmable function control buttons.

Details of how to use the controls will be given in the appropriate sections.

The ***MEDICA*** control panel has a range of control icons. General operational icons are as follows. Further icons are described in the appropriate sections and a complete listing is included in Section 14.

BUTTON	ICON	Function
PROCESS		Turns the process on/off
LEFT		Menu
		Scroll
		Shift
		Up
CENTRE	✓	Accept
		Replacement dates
RIGHT		Mute Alarm
		Printer
		Down

5.1 PASSkeys

Each unit is supplied with the following PASSkeys:

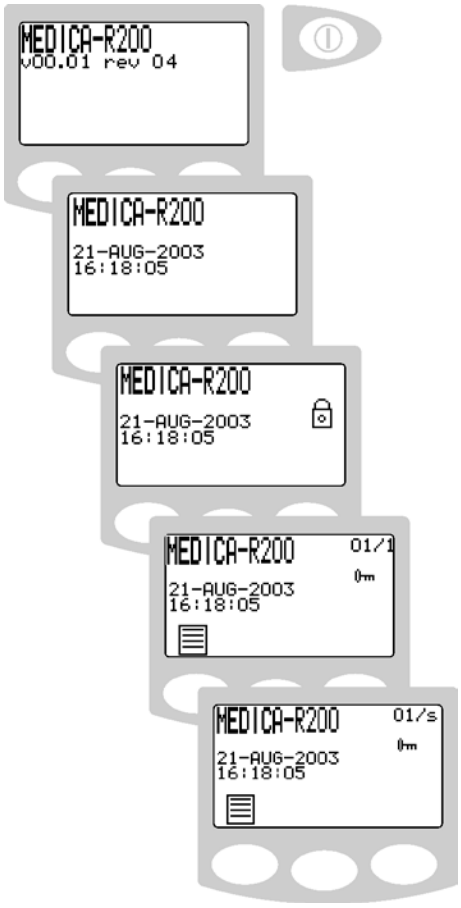
Master PASSkey	(Black)	1off
User PASSkey	(Blue)	4off
Sanitization PASSkey	(Green)	2off

The Master PASSkey should be stored in a safe place. The Master PASSkey controls the access level of the other PASSkeys and has access to all customer preferences.

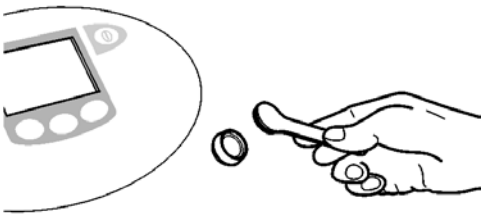
User PASSkeys only have access to customer preference screens.

Sanitization PASSkeys instigate the sanitization process and inhibits the general user from accidentally entering sanitization.

CAUTION! **If the Master PASSkey is lost a new PASSkey can only be programmed by trained ELGA Service Engineers.**



Initialization screens



Present the PASSkey

5.2 System Preferences

The ***MEDICA*** control panel is fitted with four control buttons. These are:

1. The PROCESS button, which switches the process ON and OFF.
2. Three software controlled touch pad buttons that are used to control set-up and process control functions.

When the ***MEDICA*** unit is started for the first time after installation the following steps should be carried out to set up system preferences:

Note: System preferences can be changed and implemented during normal operation. It is not necessary to stop the process.

Step 1 - System access (ELGA PASSkey)

The ELGA Passkey prevents unauthorized access to specific operator settings ensuring consistent system performance and operation.

Note: The ELGA PASSkey does not prevent access to the PROCESS function in case of emergency.

1. SWITCH on the main electrical supply to initialize the controller set-up sequence. This takes several seconds.
2. PRESENT the 'Master PASSkey' (black) or the 'User PASSkey' (blue) to the reader ensuring clean contact of both metallic components.

Note: The 'Master PASSkey' allows access to further settings (Section 5.2 - steps 19 and 20).

3. The display will present a padlock followed shortly by a key .
4. REMOVE the 'PASSkey' from the reader.
5. PRESS the menu button.

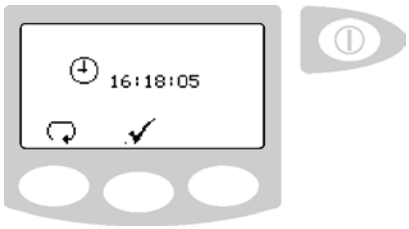
Note: The system remains unlocked providing button presses are made within a fixed time period (5 seconds).

A series of set-up screens will now be displayed. Various control icons are used to allow you to step through the set-up instruction process. These icons include:

A "scroll" icon indicated by an arrow ↻.

An "accept" button indicated by a tick ✓.

A "selection" icon indicated by a ■.

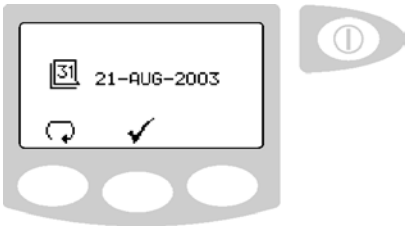


Clock screen

Step 2 - Clock

Set to display the current local time.

1. PRESS SCROLL ↻ to edit time to
   OR
   PRESS TICK ✓ to proceed to step 3.
2. PRESS and HOLD UP ▲ to increase or DOWN ▼ to decrease hour.
3. PRESS SHIFT ▶ to step cursor onto minute.
4. PRESS UP ▲ to increase or DOWN ▼ to decrease minute.
5. PRESS SHIFT ▶ to accept the minute setting and set the seconds to 00.
6. PRESS TICK ✓.

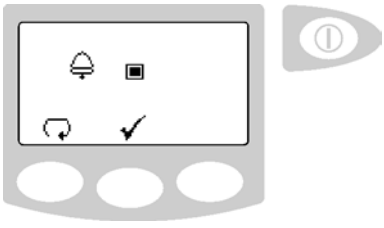


Date screen

Step 3 - Date

Used to instigate change reminders, it will appear on printed records.

1. PRESS SCROLL ↻ to edit date
   OR
   PRESS TICK ✓ to proceed to step 4.
2. PRESS and HOLD UP ▲ to increase or DOWN ▼ to decrease day.
3. PRESS SHIFT ▶ to step cursor onto month.
4. PRESS UP ▲ to increase or DOWN ▼ to decrease month.
5. PRESS SHIFT ▶ to step cursor onto year.
6. PRESS UP ▲ to increase or DOWN ▼ to decrease year.
7. PRESS TICK ✓.



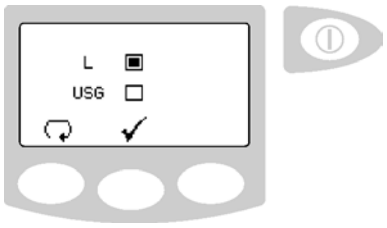
Audible alarm enable screen

Step 4 - Audible alarm enabled/disabled

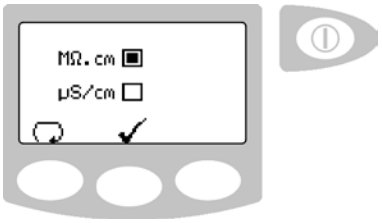
This screen provides the option of either enabling the audible alarm, causing it to sound (whilst the alarm icon flashes) or disabling the audible alarm causing it to remain muted.

1. PRESS SCROLL ↻ to change mode (■ = ON)
   OR
   PRESS TICK ✓ to proceed to step 5.
2. PRESS TICK ✓.

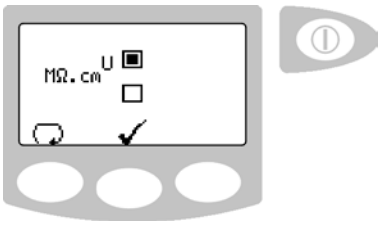
Note: The visual alarm cannot be disabled.



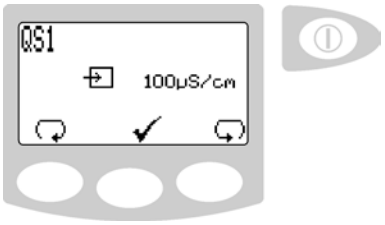
This screen will appear on the ***MEDICA - R*** *unit*



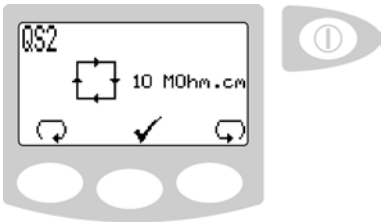
Water purity screen



Uncompensated water quality screen



Alarm settings QS1 screen



Alarm settings QS2 screen

Step 5 - Water purity unit setting

This screen allows preferred displayed units of water purity to be set, to either, **MΩ.cm** or **µS/cm**. This only affects the quality measurement in the recirculation loop.

1. PRESS SCROLL to change mode (MΩ.cm or µS/cm)

   OR

   PRESS TICK ✓ to proceed to step 6.
2. PRESS TICK ✓.

Step 6 - Uncompensated water quality

A U will indicate uncompensated readings (recirculation loop only) in the normal process screen.

1. PRESS SCROLL to change mode
   (■ = Uncompensated water quality ON)

   OR

   PRESS TICK ✓ to proceed to step 7.
2. PRESS TICK ✓.

Note: The on-going display of uncompensated values is generally not recommended as it can lead to confusion among users and increase the possibilities of using water of inadequate purity.

Step 7 - RO permeate quality alarm settings QS1

This screen is used for setting the value at which the RO permeate quality alarm will activate. This alarm does not stop RO production but can extend or instigate flush routines.

1. PRESS SCROLL to select alarm point.
   (Increments of 10, ranging from 20 to 100µS/cm).
   If '0' is selected the alarm will be tuned 'OFF'.

   OR

   PRESS TICK ✓ to proceed to step 8.
2. PRESS TICK ✓.

Step 8 - Product water purity alarm settings QS2

This screen is used for selecting the value at which the product water purity alarm will activate. The alarm does not stop the process and will automatically reset if the purity level recovers.

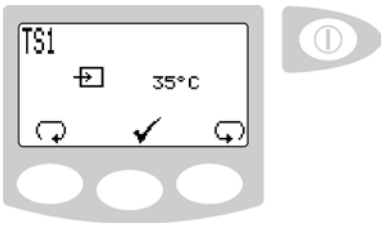
1. PRESS SCROLL to select alarm point
   (increments of 1, ranging from 1 to 17MΩ).

Note: The alarm points are only displayed in MΩ.cm and do not change to µS/cm regardless of the water purity unit displayed setting.

OR

TICK ✓ to proceed to step 9.

2. PRESS TICK ✓.



Alarm settings TS1 screen

Step 9 - RO permeate temperature alarm settings TS1

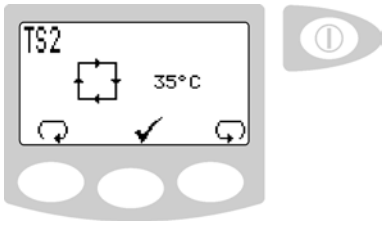
This screen is used for selecting the value at which the RO permeate temperature alarm will activate. The alarm does not stop the process and will automatically reset if the temperature returns below the set point.

1. PRESS SCROLL to select alarm point (increments of 1, ranging from 20 to 50°C)

OR

PRESS TICK ✓ to proceed to step 10.

2. PRESS TICK ✓.



Alarm settings TS2 screen

Step 10 - Product water temperature alarm settings TS2

This screen is used for selecting the value at which the product water temperature alarm will activate. The alarm does not stop the process and will automatically reset if the temperature returns below the set point.

1. PRESS SCROLL to select alarm point (increments of 1, ranging from 20 to 50°C)

OR

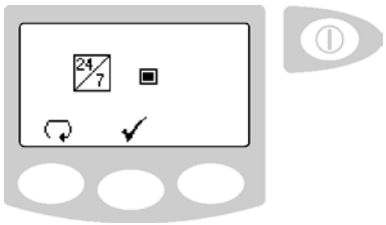
PRESS TICK ✓ to proceed to step 11.

2. PRESS TICK ✓.

Note: If the water temperature rises above 55°C in the system the unit will alarm, stop and await operator intervention - alarm will be reset once power is removed for 5 sec's and then reinstated.

Step 11 - Continuous operation

Continuous operation may be required in particular circumstances or when demand for water fluctuates.



Continuous operation screen

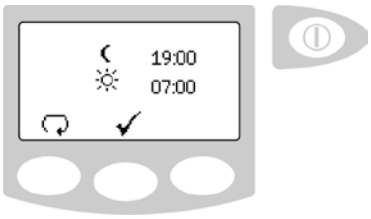
CAUTION! During long periods of recirculation and low usage the water temperature will rise. It is therefore recommended that this function be only enabled when water usage is on average >50 liters/hr and water is used every day.

1. PRESS SCROLL to change mode (■ = ON)

OR

PRESS TICK ✓ to proceed to step 12.

Note: Proceed to step 14 if continuous operation is selected (■ = ON).



Night service setting screen

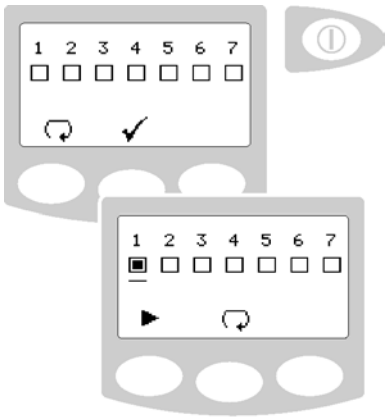
Step 12 - Periods of operation

To maximize efficiency and reduce the likelihood of heat build up the normal operational hours for the installation can be selected.

During 'OFF' periods the unit will automatically enter recirculation for a period of 10 minutes every two hours to maintain water purity within the distribution loop.

1. PRESS SCROLL to edit night service start
   OR
   PRESS TICK ✓ to proceed to step 13.
2. PRESS UP ▲ to increase or DOWN ▼ decrease time in increments of 30 minutes.
3. PRESS SCROLL to step to night service end.
4. PRESS UP ▲ to increase or DOWN ▼ decrease time in increments of 30 minutes.
5. PRESS SCROLL to enter times.
6. PRESS TICK ✓.

Note: Night service will only be operational if Continuous Operation is not enabled.



Day selection screens

Step 13 - Operational day selection

Select days that the ***MEDICA*** is required to operate by highlighting the appropriate box.

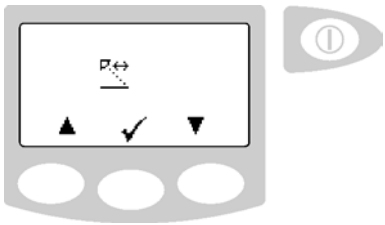
Monday = 1 through to Sunday = 7

1. PRESS SCROLL to enter selection screen
   OR
   PRESS TICK ✓ to proceed to step 14.
2. PRESS SCROLL to highlight box 1
   (■ = Monday enabled)
   OR
   PRESS SHIFT ▶ to step to box (2).

Note: A highlighted box indicates that the unit will be operational on that day between the times set in step 12.

3. REPEAT, step 13 - item 2, to select further operating days or PRESS SHIFT ▶ until the TICK ✓ appears.
4. PRESS TICK ✓.

Note: During selected off periods the unit can be reactivated by pressing PROCESS. A few minutes operation should be allowed before use.

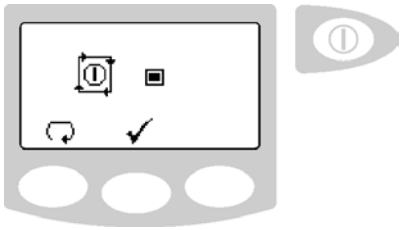


Viewing angle adjustment screen

Step 14 - Display viewing angle adjustment

The angle of the display can be electronically adjusted up and down to optimize the display graphics visibility.

1. PRESS and HOLD UP ▲ or DOWN ▼ to adjust viewing angle
   OR
   PRESS TICK ✓ to proceed to step 15.
2. PRESS TICK ✓.

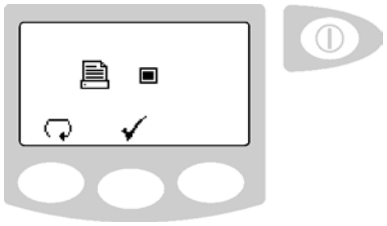


Auto-restart screen

Step 15 - Auto-restart

This allows the selection of the AUTO/MANUAL restart option. If auto restart is selected the unit will automatically restart after a power failure. In manual mode the unit will remain in standby.

1. PRESS SCROLL ↻ to change mode (■ = ON)
   OR
   PRESS TICK ✓ to proceed to step 16.
2. PRESS TICK ✓.

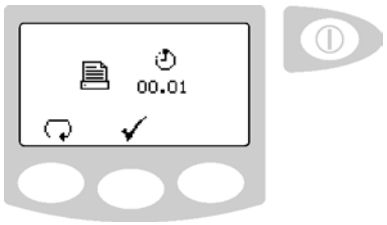


Data output screen

Step 16 - Data output (printer or PC)

MEDICA can transmit operational data to a printer or PC via a RS232 lap-link communication cable.

1. PRESS SCROLL ↻ to change mode (■ = ON)
   OR
   PRESS TICK ✓ to proceed to step 17.
2. PRESS TICK ✓.



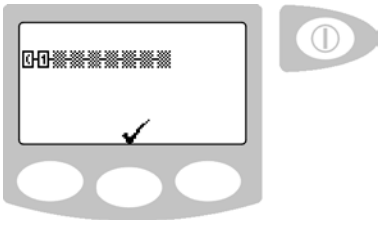
Data transmit screen

Step 17 - Data transmit

The frequency of the data transmittal to the printer or PC is selectable.

1. PRESS SCROLL ↻ to change transmit intervals (1, 5, 15, 30min / 1,6 hour)
   OR
   PRESS TICK ✓ to proceed to step 18.
2. PRESS TICK ✓.

Note: PRESS PRINT during normal operation and data will be transmitted to the recording device.



Remote control station selection screen

Step 18 - Remote control station selection (node addressing)

Each remote control station connected to the ***MEDICA*** must be registered for its commands to be recognized.

Once registered the remote control station can be used to adjust functionality and monitor alarms locally.

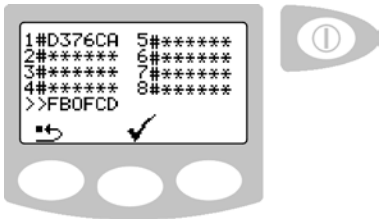
The viewing angle of each remote control station is specific to its mounting position and should be adjusted as described in Section 5.2, Step 14.

1. PRESS TICK ✓ to complete settings (User PASSkey)
   OR
   PRESS TICK ✓ to proceed to step 19 (Master PASSkey only).

*Note: At this stage the **MEDICA** screen may timeout before each remote display are registered. This does not affect registration of the remote display.*

2. ENSURE the RS485 network is correctly installed and terminated as described in 'ELGA LabWater Installation Guide - RS485 Local area Network design considerations and installation guide' (Available from ELGA LabWater Technical Support).
3. POWER ON remote control stations.
4. PRESENT user PASSkey (any colour) at each remote display in the order that you wish them to be registered.

Note: Re-enter the user menu and return to step 18 to check the registration of the remote displays.



Programming of user PASSkeys screen

Step 19 - Programming of user PASSkeys

During the operational life of the ***MEDICA*** it may be necessary to delete or add User PASSkeys to prevent or allow access to user preferences. This feature is only available to the Master PASSkey holder.

CAUTION! Do not press reset unless all users PASSkeys are present for reprogramming.

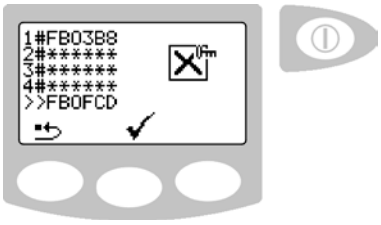
1. PRESS RESET ⮌ to delete all User Passkeys
   OR
   PRESENT the new User PASSkey to the reader (proceed to instruction 3).
2. PRESENT the new User PASSkey to the reader.
3. PRESS SETPOINT ⮕ to load new User PASSkey identification.
4. REPEAT instruction 2 and 3 until all User PASSkeys are registered (maximum of 8 users).
5. PRESS TICK ✓ to complete settings.

Step 20 - Programming of sanitization PASSkeys

Sanitization PASSkeys are required to implement sanitization. These keys can be deleted or added.

Note: PASSkeys can only be registered for one use i.e. User of Sanitization.

1. PRESENT Master PASSkey.
2. PRESS TICK ✓ until the sanitization PASSkey programming screen appears.
3. PRESS RESET ⮌ to delete all Sanitization PASSkeys
   OR
   PRESENT the new Sanitization PASSkey to the reader (proceed to instruction 5).
4. PRESENT the new User Sanitization PASSkey to the reader.
5. PRESS SETPOINT ⮌ to load new Sanitization PASSkey identification.
6. REPEAT instruction 2 and 3 until all Sanitization PASSkeys are registered (maximum of 8 users).
7. PRESS TICK ✓ to complete settings.

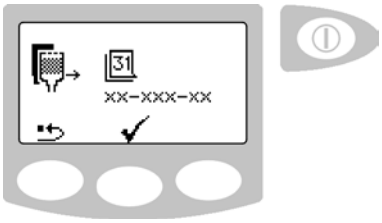


Programming of sanitization PASSkeys screen

5.3 Setting Up Replacement Timers / Reminders

Step 1 - Enter consumable replacement timer set-up

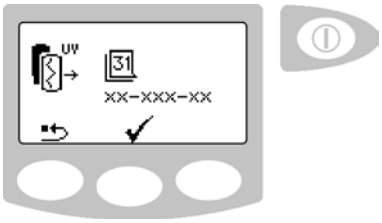
1. ENSURE process is off and the initiation screen is showing.
2. PRESENT the Master PASSkey.
3. PRESS 31 to enter the replacement timers.



CVF replacement date screen

Step 2 - CVF replacement date (if fitted)

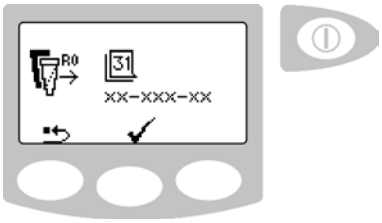
1. PRESS RESET button to reset CVF Filter Replacement Date
   OR
   PRESS TICK ✓ to accept Replacement Date and proceed to UV lamp Reminder.
2. PRESS TICK ✓ to confirm that resetting is required
   OR
   PRESS CROSS χ to abort reset.
3. PRESS TICK ✓.



UV lamp replacement date screen

Step 3 - UV lamp replacement date

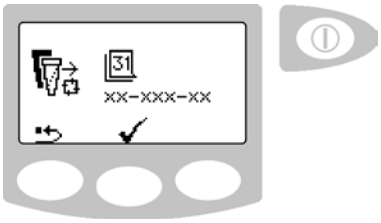
1. PRESS RESET button to reset UV Replacement Date
   OR
   PRESS TICK ✓ to accept Replacement Date and proceed to RO Particle Filter Replacement.
2. PRESS TICK ✓ confirm that resetting is required
   OR
   PRESS CROSS χ to abort reset.
3. PRESS TICK ✓.



RO particle filter replacement date screen

Step 4 - RO particle filter replacement date

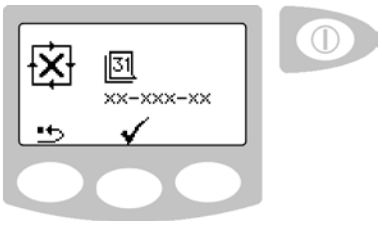
1. PRESS RESET button to reset RO Particle Filter Replacement Date
   OR
   PRESS TICK ✓ to accept Replacement Date and proceed to 0.2µm Filter Replacement.
2. PRESS TICK ✓ confirm that resetting is required
   OR
   PRESS CROSS χ to abort reset.
3. PRESS TICK ✓.



0.2µm filter replacement date screen

Step 5 - 0.2µm filter replacement date

1. PRESS RESET button to reset 0.2µm Filter Replacement Date
   OR
   PRESS TICK ✓ to accept Replacement Date and proceed to Sanitization Reminder.
2. PRESS TICK ✓ confirm that resetting is required
   OR
   PRESS CROSS χ to abort reset.
3. PRESS TICK ✓.



Sanitization reminder screen

Step 6 - Sanitization reminder

1. PRESS RESET button to reset 0.2µm Filter Replacement Date

   OR

   PRESS TICK ✓ to accept Replacement Date and complete settings.

2. PRESS TICK ✓ confirm that resetting is required

   OR

   PRESS CROSS χ to abort reset.

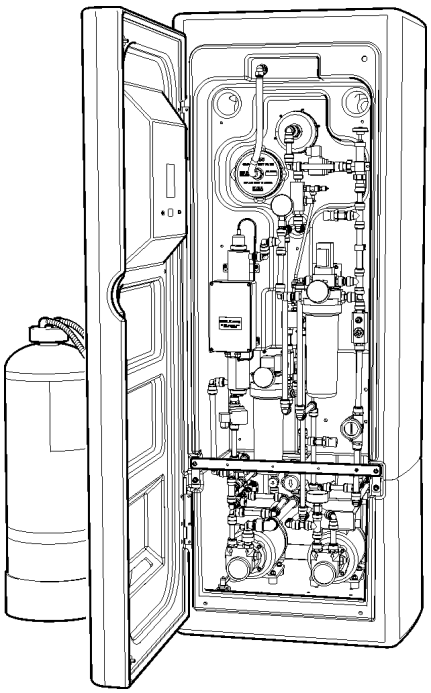
3. PRESS TICK ✓.

Note: Two dates are displayed in the sanitization screen:

Last sanitization.

Next sanitization required.

4. EXIT.



General view
MEDICA - R200 US

6. COMMISSIONING

6.1 Initial Start Up

Step 1 - RO particle filter

1. Install the RO particle filter as described in Section 9.2 - Replacing RO particulate filter.

Step 2 - Ion-exchange cylinders

1. ENSURE that all **Ion-exchange/purification media** cylinders are ISOLATED from the recirculation loop using valves V6 (closed) and V7 (open). See flow diagram 3.3 page 5.

Step 3 - Electrical supply

1. The electrical supply to the ***MEDICA*** should be installed correctly as described in Section 4.3, Step 2.
2. SWITCH on the power at the supply. The unit will perform a processor initiation and the display will illuminate. The initiation is complete when the display shows three lines of text.
3. CONFIRM that the display states the correct unit type. If incorrect contact your local ELGA LabWater representative.

Step 4 - Water supply

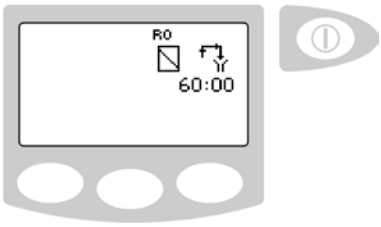
1. The water supply to the ***MEDICA*** should be installed correctly as described in Section 4.3, Step 1.
2. TURN on the feedwater supply to the unit.

WARNING! **ENSURE THAT ALL PRE-TREATMENT EQUIPMENT IS INSTALLED AND FLUSHED TO DRAIN BEFORE COMMENCING *MEDICA* COMMISSIONING.**

FAILURE TO INSTALL SUFFICIENT PRE-TREATMENT MAY RESULT IN POOR PERFORMANCE AND DAMAGE TO THE *MEDICA*.

3. Check all hydraulic connections are watertight and there are no leaks.

CAUTION! **Failure to properly flush the installation may result in debris from pipework being deposited into the *MEDICA* that may ultimately cause damage to pumps and valves.**



Initial rinse screen

Step 5 - Initial rinse

1. PRESS PROCESS. ***MEDICA*** will attempt to start the RO system.

WARNING! **THE *MEDICA* WILL AUTOMATICALLY GO INTO A RINSE PROCEDURE TO RINSE BACTERIOSTATIC AGENTS FROM THE UNIT. THIS RINSE MUST BE COMPLETED; THE PROCESS FUNCTION WILL BE INHIBITED UNTIL THE RINSE IS COMPLETE.**

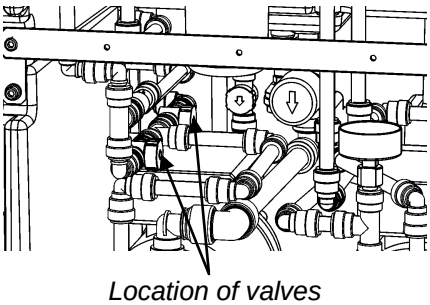
WARNING! **MAKE SURE THE DISTRIBUTION LOOP IS COMPLETE AND ALL VALVES FITTED ARE CLOSED AS THE UNIT WILL AUTOMATICALLY START RECIRCULATION. IT IS RECOMMENDED NOT TO LEAVE THE SYSTEM UNATTENDED DURING THIS PERIOD.**

Note: Due to air in the pre-filters the unit may alarm upon initial start - low-pressure alarm.

To clear alarm, press the mute button .

PRESS the process button twice to restart the RO.

2. Water will be flushed from the RO to drain for approximately 1 hour before starting to fill the reservoir.
3. ALLOW reservoir to fill, when the reservoir fills to 80 litres, the recirculation system will start automatically.
4. ALLOW system to run and manually bleed air from filters installed in the recirculation loop.
5. CHECK for leaks around the installation.

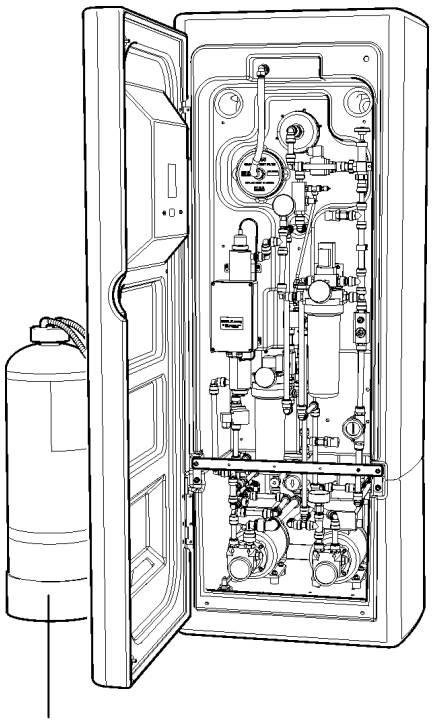


Location of valves

Step 6 - Installation of ion-exchange cylinders

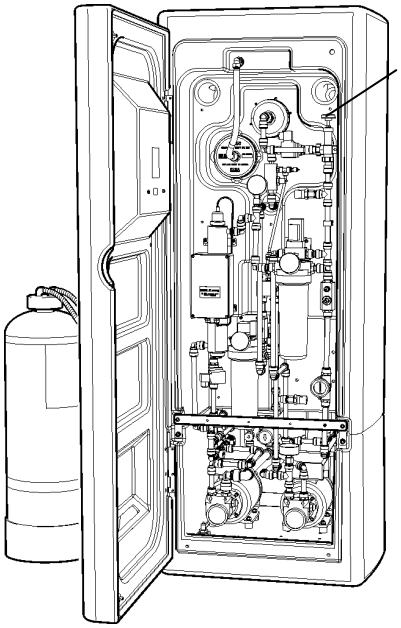
*Note: It is highly recommended that the **ion-exchange** cylinder be flushed to drain locally before being installed in the distribution loop.*

1. ENSURE the **ion-exchange** cylinders are installed as described in section 9.5 – Installation/ replacement of ion-exchange cylinders.
2. OPEN point of use in distribution loop and direct full flow to drain to flush cylinder (recommended flush is three bed volume or as appropriate for the application).
3. OPEN isolating valve (V6) and then close bypass valve (V7).
4. CLOSE point of use.



Ion-exchange cylinder

Location of ion-exchange cylinder



Regulating valve location

Step 7 - Distribution loop pressure adjustment

1. LOCATE the pressure regulating valve.
2. ADJUST the pressure in the distribution loop by TURNING the knob ANTI-CLOCKWISE to decrease pressure and then use the lock nut to stop it moving.

*Note: If the valve starts to make a high pitch noises at the required settings adjust the valve slightly and the noise will stop. The noise is caused by the matching of the natural harmonics of the spring within the valve and is not a malfunction of the **MEDICA**.*

CAUTION! **The *MEDICA* pressure regulator is factory set to maintain a pressure of 3bar (typically) at the end of the distribution loop.**

WARNING! **Pressure in the distribution loop may increase, due to filter blocking etc. which may lead to increased distribution pressure (6 bar maximum). The *MEDICA* unit is fitted with a sensor to detect high pressure situations and will shut the unit off if >6 bar is detected. If this occurs the unit will alarm and display a level sensor alarm condition. See section 14.1 alarm conditions.**

Any equipment installed within the distribution loop should be rated to 6 bar to ensure the equipment remains within safe operating limits.

To adjust the pressure in the distribution loop requires specialist equipment and it is recommended that changes are made by an ELGA LabWater service Engineer.

Step 8 - Sanitization

1. SANITIZE the system as described in Section 10 - Sanitization Procedures.

Note: It is recognized as good practice to sanitize new installations during commissioning.

Step 9 - Fit 0.2µm filter

1. Fit new or existing filter at the end of sanitization as described in Section 9.3 - Replacing bacterial and particulate filter.

7. OPERATION

MEDICA has the following modes of operation:

- Continuous Recirculation (24/7).
- Night service/Operational day.
- Sanitization Cycle (See Section 10 - Sanitization Procedures).

7.1 Night service/Operational day

Refer to Section 5 - Step 12 and 13.

MEDICA can be programmed to operate on specific days between selected times. This feature is designed to optimize the efficiency of the product as well as minimising rise in water temperature.

During the 'sleep' period the unit will display the STANDBY icon.

It is possible to override this mode by PRESSING the PROCESS button. ***MEDICA*** will continue to operate until the next 'sleep' period is reached.

During the 'sleep' period the unit will run in intermittent recirculation (15 minutes every two hours) to maintain water purity around the distribution loop.

The sleep period will be entered once the following conditions have been met:-

RO has filled reservoir to 350l

or

RO is off with a level >240l

or

RO has finished filling the reservoir after the sleep period started and 15 minutes of recirculation is completed.

7.2 Continuous Recirculation (24/7)

Refer to Section 5 - Step 11.

If the unit is set to continuous recirculation, it will constantly recirculate the water and fill the reservoir as required.

It is recommended that the system be run in continuous mode only when the demand for water is sporadic and overall usage is high, >50 l/hr.

During the recirculation the water temperature will rise slowly. The rate of rise will depend on the length of the ringmain and local factors.

To control the rise in water temperature it is recommended that the system be operated in Night service/operational day mode which will stop recirculation occurring during periods, such as overnight or at weekends when water may not be required.

8. MONITORING

Key operating parameters are displayed during operational modes.

8.1 RO fill

Displayed value	Auto scroll	Manual scroll
Permeate quality	✓	
Permeate temperature	✓	

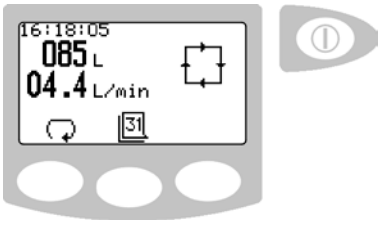
8.2 RO fill and recirculation

Displayed value	Auto scroll	Manual scroll
Product quality	✓	✓
Product temperature	✓	✓
Reservoir water volume	✓	✓
Permeate quality		✓
Permeate temperature		✓

8.3 Recirculation

Displayed value	Auto scroll	Manual scroll
Product quality	✓	✓
Product temperature	✓	✓
Reservoir volume	✓	✓

8.4 Consumable dates

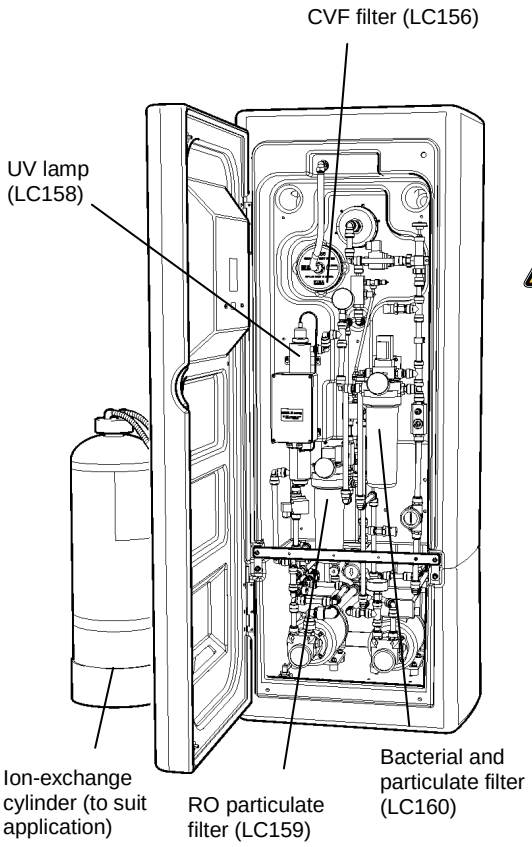


Consumable dates screen

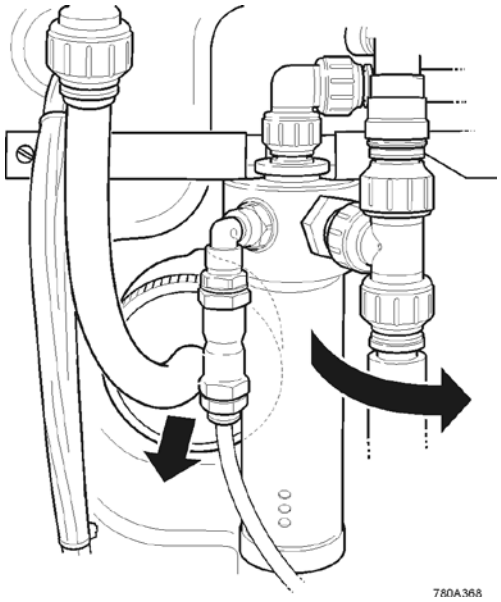
The consumable dates and periods of reminder are adjustable to meet specific applications by a trained ELGA LabWater Service Engineer.

Step 1 - View consumable dates

1. ENSURE unit is in normal operation.
2. PRESS 31 to view consumable dates.
3. PRESS SCROLL to view all reminder
   OR
   ALLOW auto scroll.



General view
MEDICA - R200 US



CVF filter connection

9. MAINTENANCE

An approved supplier or distributor should carry out any maintenance work not detailed in this handbook. If further information is required on any aspect of maintenance please contact Customer Service.

WARNING! ALWAYS CHECK THAT THE MAINS ELECTRICAL POWER AND FEED WATER SUPPLIES ARE SWITCHED OFF BEFORE ATTEMPTING TO CHANGE A CONSUMABLE ITEM.

9.1 Replacing the Composite Vent Filter / Air Filter

Air is drawn into the reservoir when water is used. To maintain water purity it is necessary to filter the air. Air-borne particles and bacteria are removed by an air-filter. Alternatively an improved level of water quality will be maintained within the recirculation system using a composite vent filter, which removes air-borne contaminants such as volatile organic compounds and carbon dioxide.

The Composite Vent Filter / Air filter should be replaced in the following circumstances:

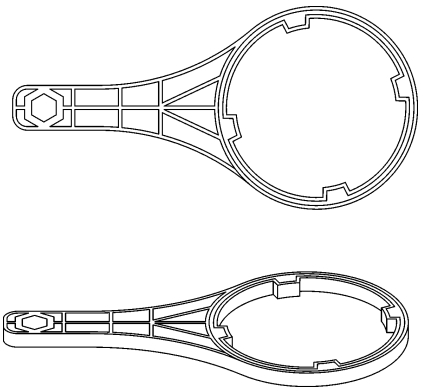
- Six months after initial installation.
- Reservoir overflow - indicated by incorrect reservoir volume.
- Quality tests indicate replacement is required.

Step 1 - Replacement of CVF filter (LC156)

1. ENSURE the process is OFF.
2. OPEN the front of the unit by removing securing screws.
3. LOCATE the overflow device.
4. SLIDE the overflow device off its location bracket enabling access to the Bacterial Vent Filter.
5. LOCATE the CVF.
6. REMOVE the hose connection to the filter by unscrewing nut by hand and pulling hose towards you.
7. REMOVE the filter from it location by PULLING toward you.
8. DISCARD the filter.
9. UNPACK the new filter.
10. INSTALL the filter into its location.
11. RECONNECT the hose.
12. WRITE the installation date on the label of the filter for future reference.
13. RETURN the overflow device to its bracket.

Note: During operation, small amounts of condensate may form in the filter.

14. RESET the consumable reminder as described in Section 5.3, Step 2.



Filter spanner

9.2 Replacing RO particulate filter LC159

The RO particle filter protects the system against particles in the feed water and released from pre-treatment media and installation debris.

The replacement of this filter is recommended in the following circumstances.

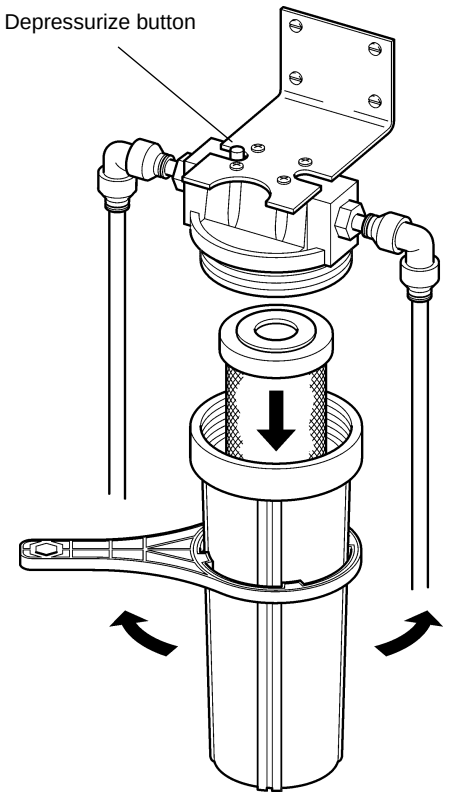
- When indicated by the consumable alarm or after a maximum of six months.
- Water purity in the installation starts to deteriorate.
- Low-pressure alarms occur due to filter blockage.
- The filter change is due and coincides with a sanitization of the installation.

Step 1 - Replacement of RO particulate filter

1. ENSURE the process is OFF and ISOLATE power.
2. DEPRESSURIZE the distribution loop by opening a convenient point of use.

Note: Some water may be spilt.

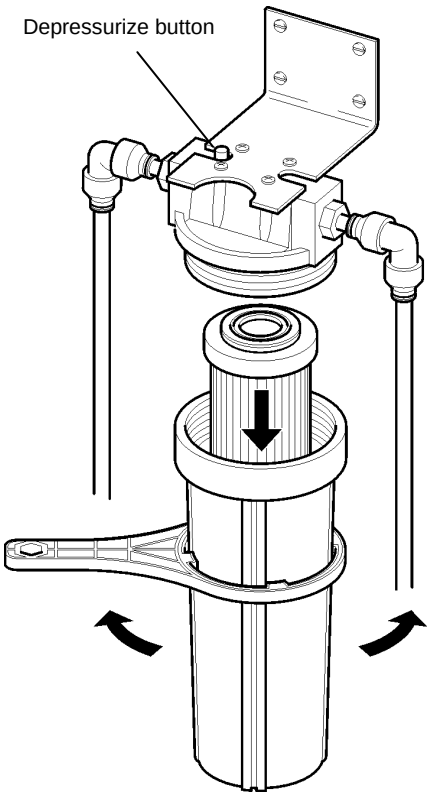
3. OPEN front of unit by removing securing screws.
4. LOCATE filter spanner found inside of front panel/door.
5. LOCATE the blue filter.
6. PRESS the red knob on the top of the filter housing.
7. REMOVE the filter bowl using spanner, rotate in a clockwise direction towards left-hand side of unit.
8. DISCARD the old filter.
9. UNPACK the new filter and INSTALL into the filter bowl.



Bacterial and particulate filter

CAUTION! To prevent contamination it is recommended that gloves be worn during the replacement of filters.

10. ENSURE ‘O’ ring is located in the top of the filter housing, then refit bowl in an anti-clockwise direction until hand tight.
11. SWITCH on power.
12. PRESS PROCESS button and allow unit to enter recirculation.
13. CHECK filter housing for leaks.
14. REPLACE spanner in door and secure door closed.
15. RESET the consumable reminder as described in Section 5.3, Step 4.



LC160 bacterial and particulate filter

9.3 Replacing bacterial and particulate filter LC160

The bacterial and particulate filter should be replaced in the following circumstances:

- When indicated by the consumable alarm or after a maximum of six months.
- Water purity in the installation starts to deteriorate.
- Changes in the ringmain performance (low flow, lower distribution loop pressure).
- After operating the system without a functioning UV.
- The replacement of this filter is recommended to coincide with a sanitization of the installation.

Step 1 - Replacement of bacterial and particulate filter

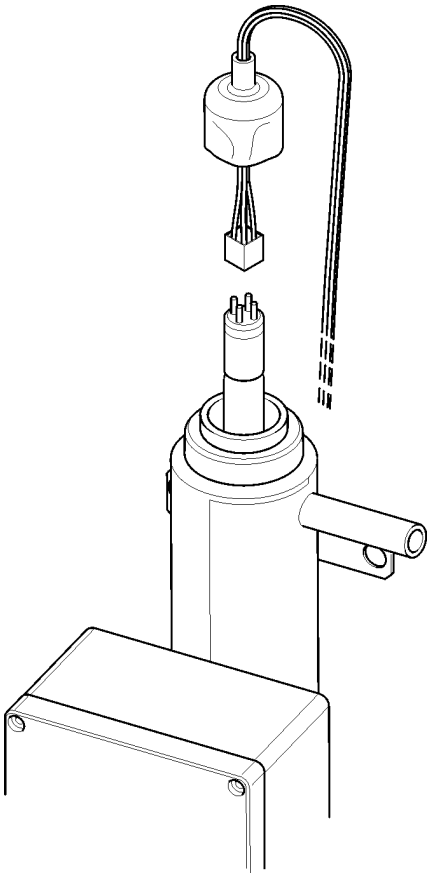
1. ENSURE the process is OFF and ISOLATE power.
2. DEPRESSURIZE the distribution loop by opening a convenient point of use
   OR
   PRESSING the red knob on the top of the filter housing.

Note: Some water may be spilt.

3. OPEN front of unit by removing securing screws.
4. LOCATE filter spanner found inside of front panel/door.
5. LOCATE the blue filter.
6. REMOVE the filter bowl using spanner, rotate in a clockwise direction towards left-hand side of unit.
7. DISCARD the old filter.
8. UNPACK the new filter and INSTALL into the filter bowl.

CAUTION! **To prevent contamination it is recommended that gloves be worn during the replacement of filters.**

9. ENSURE ‘O’ ring is located in the top of the filter housing, then refit bowl in an anti-clockwise direction until hand tight.
10. SWITCH on power.
11. PRESS PROCESS button and allow unit to enter recirculation.
12. CHECK filter housing for leaks.
13. REPLACE spanner in door and secure door closed.
14. RESET the consumable reminder as described in Section 5.3, Step 5.



UV lamp connection

9.4 Replacement of UV lamp LC158

The UV lamp should be replaced in the following circumstances:

- When indicated by the consumable alarm.
- After a maximum of six months use.
- Water purity in the installation starts to deteriorate.

Step 1 - Replacement of UV lamp

1. ENSURE process is OFF and ISOLATE power.
2. OPEN front of unit by removing securing screws.
3. LOCATE UV assembly on left-hand side of unit.
4. PULL the electrical flex entering top of UV assembly and withdraw lamp.

WARNING! **IT IS RECOMMENDED THAT DURING THE HANDLING OF THE LAMP CUT-RESISTANT GLOVES BE WORN.**

5. HOLD lamp in gloved hand and PULL firmly on electrical connector to remove.
6. DISCARD lamp.

CAUTION! **Dispose of lamp in accordance with local authority regulations.**

7. REMOVE new lamp from packaging and follow the instructions included for cleaning.
8. REFIT into UV assembly.
9. RECONNECT to electrical connector ENSURING correct orientation.

WARNING! **UV-C LIGHT IS EXTREMELY HARMFUL TO THE EYES AND SKIN! UV LAMPS SHOULD ONLY BE USED IN THE REACTION CHAMBER AND SUITABLE PROTECTION CAPS FITTED. PERSONS SHOULD NEVER BE EXPOSED TO UV-C LIGHT.**

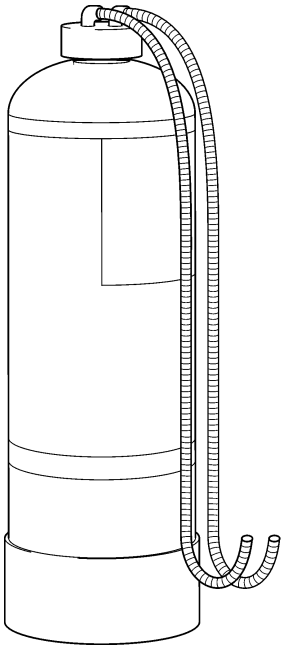
10. REFIT rubber boot to stop UV light from being radiated from top of the assembly.
11. RESET the consumable reminder as described in Section 5.3, Step 3.

9.5 Installation / replacement of ion-exchange cylinder

CAUTION! **The *MEDICA* system can produce pressures up to 6 bar within the DI distribution loop.**

Ensure DI cylinders are rated for <u>at least</u> 6 bar operating pressure.

If in doubt contact ELGA LabWater technical Support.



Ion-exchange cylinder

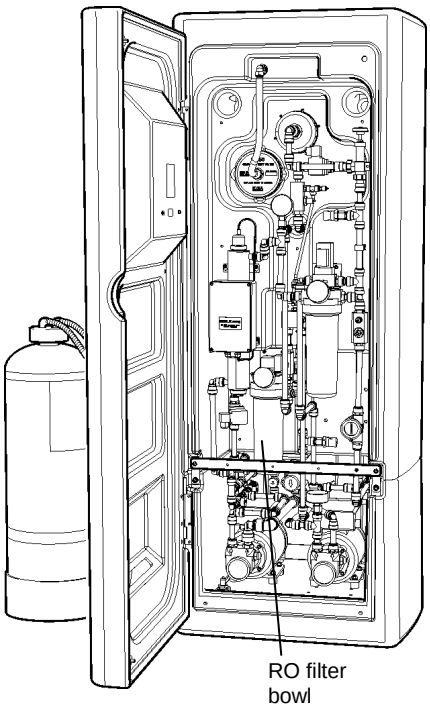
The ion-exchange cylinder should be replaced in the following circumstances:

- Water purity in the installation starts to deteriorate
- After six months use.

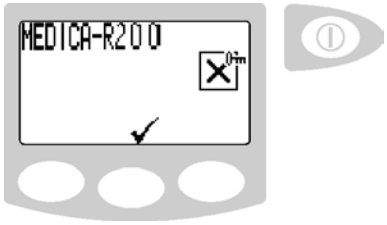
Step 1 - Installation / replacement of ion-exchange cylinder

1. ENSURE process is OFF and ISOLATE power.
2. DEPRESSURIZE the distribution loop by OPENING a point of use
   OR
   by PRESSING the red knob on the top of the filter housing, some water may be spilt.
3. ISOLATE cylinder from loop by closing isolation valve (V6).
4. OPEN bypass valve (V7).
5. REMOVE connections to ion-exchange cylinder making a note of the connection orientation.
6. REMOVE cylinder and contact you local ELGA LabWater representative to arrange for replacement.
7. INSTALL new cylinder ensuring correct connection orientation.
8. RINSE cylinder ensuring all air is bled from the system.
9. OPEN isolating valve (V6).
10. CLOSE the bypass valve (V7).
11. PRESS process button.
12. OPEN point of use in distribution loop and direct full flow to drain to flush cylinder (recommended flush is a minimum of three bed volumes or as appropriate for the application).
13. CLOSE the point of use.
14. Allow unit to rinse up to quality in recirculation loop.

Note: The flow rate round the distribution loop will be affected by the size and type of ion-exchange cylinder installed. Contact Technical Support if further information is required.



General view door open



Sanitization selection screen

10. SANITIZATION PROCEDURES

The unit is sanitized to destroy the bacteria within the pipework, and reservoir. Please read this entire section to become familiar with the procedure before you start. RO sanitization is recommended once a month to maintain low bacterial counts. Additionally, recirculation sanitization is recommended every 12 months. It should also be carried out:

- If the unit has not been used for a prolonged period of time.
- If the unit is to be operated under adverse conditions e.g. high temperature.
- If the bacteria counts are outside of the specification.

RO sanitization can be performed in two ways:

- Process off – recommended method that offers a greater deal of protection from chemical entering the recirculation loop

Or

- Process on – Method to allow sanitization of the RO whilst retaining the ability to supply the final application.

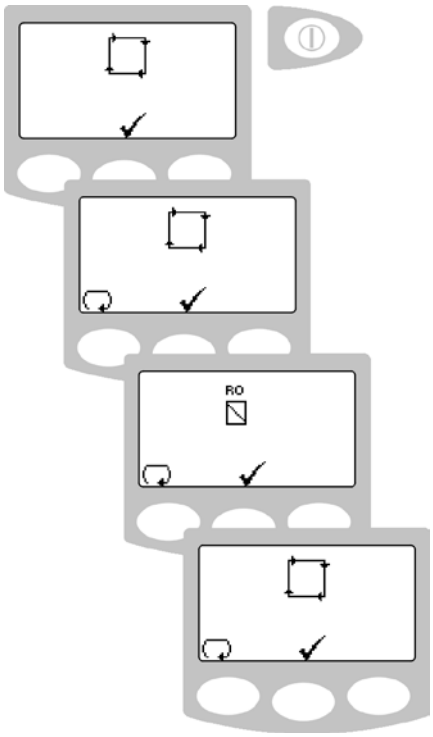
Refer to the correct section before performing the RO sanitization required.

WARNING! ALWAYS WEAR RUBBER GLOVES, APRON AND FACEMASK. DO NOT BREATHE FUMES OR ALLOW TO COME IN CONTACT WITH SKIN OR EYES. ALWAYS FOLLOW RECOMMENDATIONS FOUND IN THE MANUFACTURERS MATERIAL SAFETY DATA SHEET AND ANY APPLICABLE OSHA STANDARDS FOR THE CHEMICAL BEING USED.

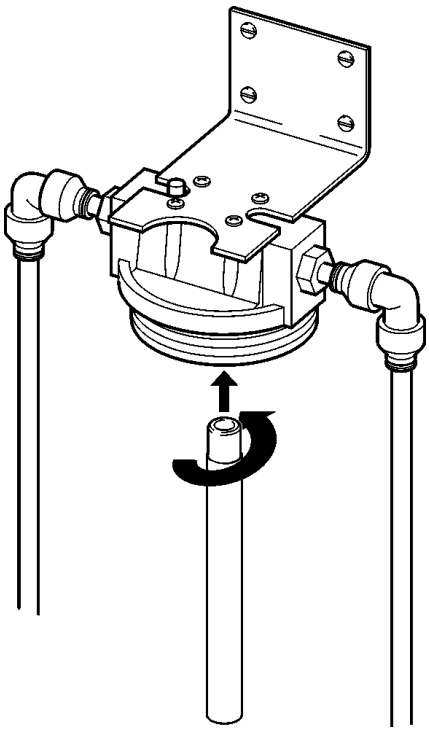
WARNING! LABEL THE MACHINE WITH APPROPRIATE WARNING SIGNS SUCH AS "DO NOT USE/ CONTAINS STERILANT" (NOT PROVIDED)

Minncare Cold Sterilant is a Peracetic and Hydrogen Peroxide based solution.

Refer to the Minncare label for additional information and follow all applicable directions for use on the manufacturer's label in conjunction with the following instructions.



RO sanitization screens



Chemical tube installation

10.1 Sanitization selection (Process off)

1. ENSURE the unit is in the process off mode.
2. PRESENT sanitization PASSkey.
3. PRESS TICK ✓.
4. PRESS SCROLL ↻ to type of sanitization required.
5. PRESS TICK ✓.

10.2 RO sanitization (Process off)

1. SELECT RO sanitization - 'insert sanitant' icon will appear

   OR

   PRESS CROSS ✗ to escape.
2. REMOVE RO particle filter bowl (FH1) using filter spanner.
3. REMOVE filter (LC159) and discard if blocked or >6 months old.
4. EMPTY remaining water out of filter bowl.
5. ATTACH chemical tube (TUBE37548) to underside of filter housing.
6. POUR 150ml of Minncare into filter bowl and refit.
7. TIGHTEN with filter spanner.

WARNING: **ALWAYS ENSURE SAFETY GLASSES AND PROTECTIVE GLOVES ARE WORN WHEN HANDLING THE SANITANT.**

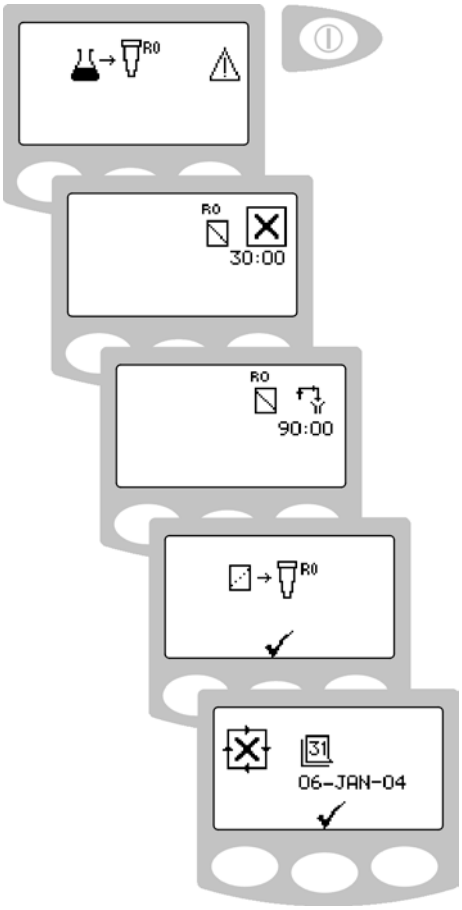
8. PRESENT sanitization PASSkey to confirm sanitant has been inserted.

Note: The unit will automatically enter the sanitization mode. If the sanitization mode is stopped through alarms or manual intervention then the system will reiniate from the beginning of the sanitization/ flush cycle.

9. RO SANITIZATION takes approximately 1 hour.

Note: Once initated the unit will run for 45secs and then enter a soak period of 45mins.

The final stage comprises a 15min. rinse.

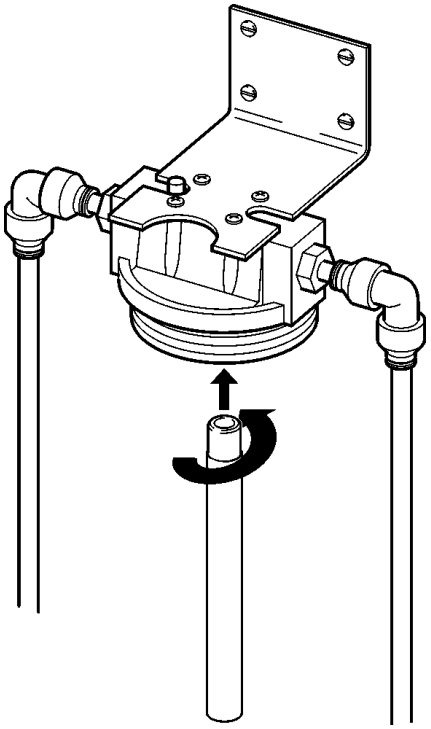


Sanitization screens

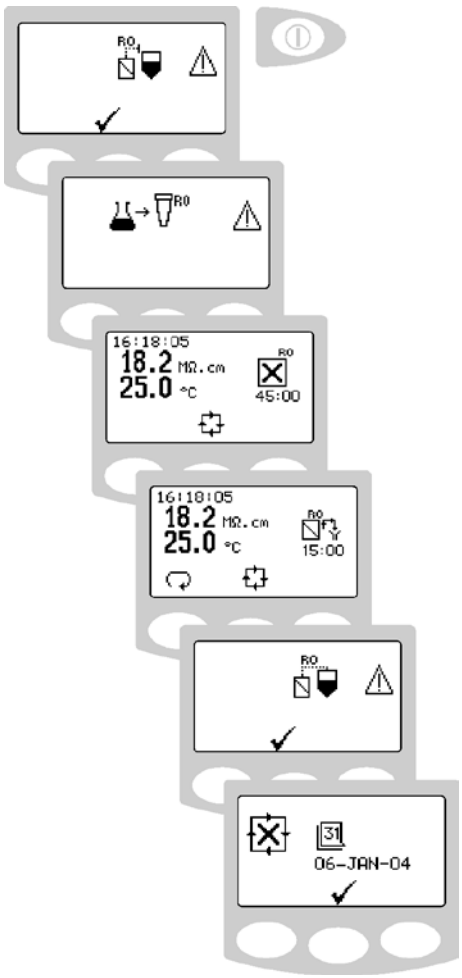
10. Once complete an alarm will sound (4 seconds).
11. REMOVE filter bowl.
12. Remove chemical tube (TUBE37548).
13. INSTALL new filter (FILT50011).
14. REFIT filter bowl (tighten with filter spanner).
15. PRESS TICK ✓.
16. PRESS TICK ✓ to accept next sanitization reminder

    OR

    PRESS SCROLL to delete reminder.



Chemical tube installation



Sanitization screens

10.3 RO sanitization (Process on)

Note: To enter this mode of sanitization the level in the reservoir must be >240litres. If sufficient water is not available the unit will not allow access the relevant menu.

If the recirculation loop is stopped due to an alarm or manual intervention it is not possible to restart the loop without completing the RO sanitization. This is to ensure that the possibilities of getting chemical into the loop through incorrect operation are minimized.

1. ENSURE the unit is in the process on mode.
2. PRESENT sanitization PASSkey.
3. PRESS TICK ✓.

Note: The display will confirm that the RO make-up is now being isolated from the reservoir. If the complete reservoir is used the system will stop recircualtion until the RO is back in commission.

4. PRESENT sanitization PASSkey.
5. Remove RO particle filter bowl (FH1) using filter spanner.
6. Remove filter (LC159) and discard if blocked or >6 months old.
7. Empty remaining water out of filter bowl.
8. Attach chemical tube (TUBE37548) to underside of filter housing.
9. Pour 150ml of Minncare into filter bowl and refit.
10. TIGHTEN with filter spanner.

WARNING: ALWAYS ENSURE SAFETY GLASSES AND PROTECTIVE GLOVES ARE WORN WHEN HANDLING THE SANITANT.

11. PRESENT sanitization PASSkey to confirm sanitant has been inserted.

Note: The unit will automatically enter the sanitization mode. If the sanitization mode is stopped through alarms or manual intervention then the system will reiniate from the beginning of the sanitization/ flush cycle.

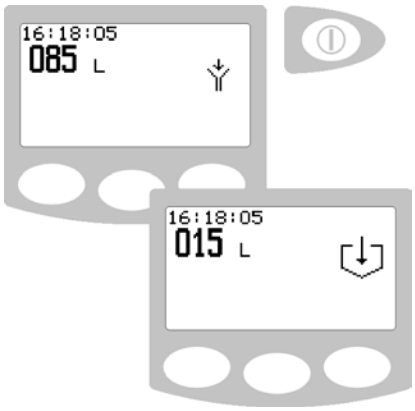
12. RO SANITIZATION takes approximately 1 hour.

Note: Once initated the unit will run for 45secs and then enter a soak period of 45mins.

The final stage comprises a 15min. rinse.

During RO sanitization the key measured values relating to the recirculation loop will be displayed.

13. Once complete an alarm will sound (4 seconds).
14. REMOVE filter bowl.
15. Remove chemical tube (TUBE37548).
16. INSTALL new filter (FILT50011).
17. REFIT filter bowl (tighten with filter spanner).



Recirculation sanitization initialization screens

18. PRESS TICK ✓.
19. PRESS TICK ✓ to accept next sanitization reminder

OR

PRESS SCROLL to delete reminder.

10.4 Recirculation sanitization

1. SELECT recirculation sanitization.
2. AUTOMATIC level adjustment in the reservoir will occur (start point between 60 - 90 liters).
3. The display will tell you if reservoir needs to be filled or drained, PRESS process.
4. When directed ENSURE that ion-exchange cylinder is isolated by closing isolating valve (V6) and opening bypass valve (V7).
5. REMOVE filter bowl (FH2) using the filter spanner.
6. REMOVE filter (FILT50158).
7. EMPTY remaining water from bowl.

WARNING: ALWAYS ENSURE SAFETY GLASSES AND PROTECTIVE GLOVES ARE WORN WHEN HANDLING THE SANITANT.

8. ATTACH chemical tube (TUBE37548) to underside of the filter housing.
9. POUR 900ml of sanitant into filter bowl and refit.
10. TIGHTEN with filter spanner.
11. PRESENT sanitization PASSkey to confirm.
12. PRESS PROCESS button.

Note: The unit will now recirculate the sanitant and then start one of twenty rinse cycles. The progress can be monitored on the display e.g. 01/20.

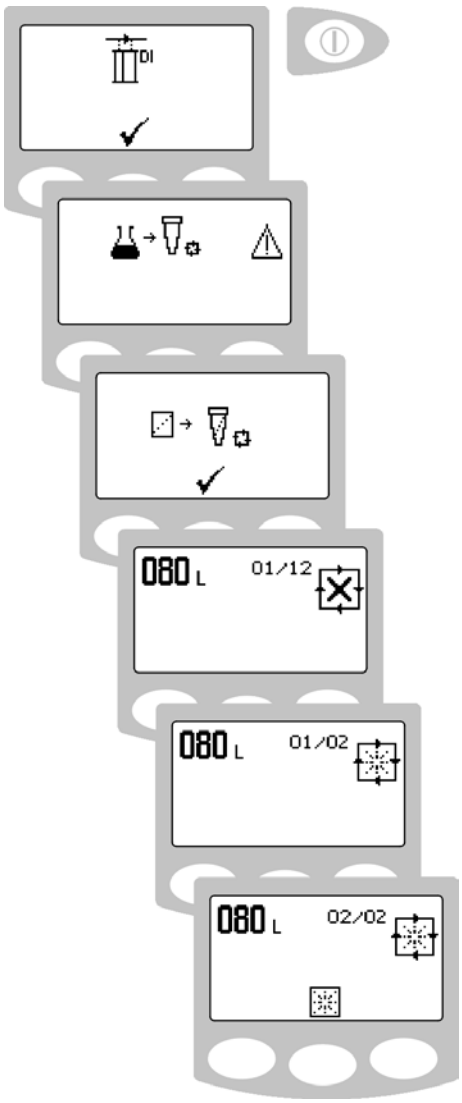
13. On the final cycle the unit will fill to 200 liters and stop, displaying the recirculation and extra flush icons.

    Note : The icons will be displayed 30 seconds before the unit actually stops, DO NOT press the icon buttons during this 30 second period, wait until unit stops.

14. PRESS RECIRCULATE to operate recirculation pump for 10 minutes to allow sampling

OR

15. PRESS FLUSH to flush the system for a further five cycles.
16. REPEAT instructions 13, 14 and 15 if necessary.
17. CONFIRM sanitiant is rinsed to satisfactory level using test strips (LC165).
18. PRESENT Sanitization PASSkey to acknowledge completion.

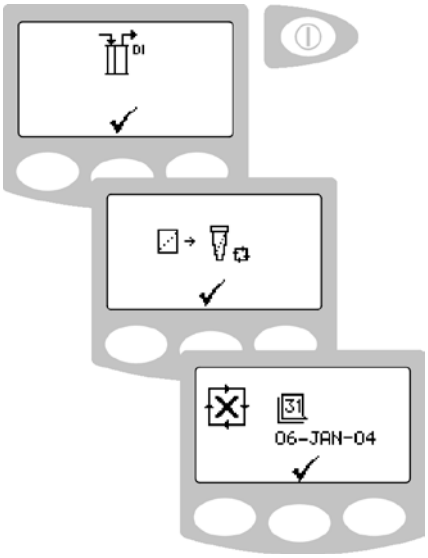


Sanitization screens

19. RECOMMISION cylinder - See section 9.5 - Installation/replacement of ion-exchange cylinder.
20. REFIT (LC160) 0.2µm filter - See section 9.3 - Replacing bacterial and particulate filter.
21. STORE sanitization tube (TUBE37548) in safe place.
22. PRESS TICK ✓ to complete process.
23. PRESS TICK ✓ to accept next sanitization reminder

    OR

    PRESS SCROLL and PRESS TICK ✓ to inhibit reminder.



Sanitization screens

11. EMERGENCY BY-PASS

In the event of a system breakdown it is possible to maintain a purified water supply to critical applications.

Operation of the emergency by-pass is only recommended under extreme circumstances (e.g. electrical supply failure, product breakdown, etc).

The life of consumables will be greatly reduced and it is recommended that the ion-exchange cylinder and bacterial and particulate filter be replaced before and after use of the emergency by-pass.

Step 1 - Repair

1. CONTACT your local distributor or service department to arrange the repair of your ***MEDICA - R200 US***.
2. CHECK that you have adequate stock of consumables to continue the production of purified water for a sufficient period.

Step 2 - Commissioning the emergency by-pass

1. SWITCH OFF the electrical supply to the ***MEDICA - R200 US***.
2. CLOSE the return valve in the recirculation loop.
3. OPEN the emergency by-pass valve installed in the feed to the ion-exchange cylinder.
4. ENSURE the feed pressure into the ion-exchange cylinder is below 6bar and the maximum rated pressure for the cylinder.

WARNING! FAILURE TO CORRECTLY SET THE OPERATING PRESSURE COULD RESULT IN PERMANENT DAMAGE TO THE SYSTEM AND CONNECTED EQUIPMENT.

5. CHECK that the final pressure at point-of-use is not above the recommended pressure for the connected equipment.
6. MONITOR the water purity using a suitable instrument.

WARNING! THE FINAL USER MUST MONITOR WATER PURITY AS ALL ALARMS ARE DISABLED DURING THIS PROCEDURE.

Step 3 - Re-establish supply from *MEDICA*

1. CLOSE emergency by-pass valve.
2. OPEN return valve in recirculation loop.
3. Replace ion-exchange cylinder (refer to section 9.5).
4. REPLACE bacterial and particulate filter (LC160 - refer to section 9.3).
5. SANITIZE the complete system before re-establishing the supply to the point-of-use (refer to section 10 - Sanitization procedures).

12. TROUBLE SHOOTING

This section highlights the problems that could occur with ***MEDICA*** and how to rectify them. If a problem occurs the unit will normally sound an alarm and the respective icons will flash. The audible alarm can be silenced by pressing the mute button. If the unit cannot be repaired using this manual, please call your local ELGA LabWater representative *(See Section 16.0 - Useful addresses).*

WARNING! ALWAYS ENSURE THAT THE MAINS POWER SUPPLY IS ISOLATED BEFORE TRYING TROUBLE SHOOTING.

Problems	Action
No display message.	Check mains supply and lead. Check that the mains power is switched on. Check miniature circuit breaker in electrical enclosure has not tripped. Check illumination of LED on main processor board. If LED is lit check display cable connections. If problem persists call Customer Services.
Alarm and Flashing Quality value.	Mute alarm. Check alarm set value is correct. See Section 5.2 - System preferences. Check cylinder is in line and not isolated from the distribution loop. Replace ion-exchange cylinder. See section 5 - step 9 and step 10 - Installation /replacement of ion-exchange cylinder. If problem persists call Customer Services.
=== MΩ.cm	Feature out of measurement range. Allow unit to recirculate. Check quality sensor is connected. Replace ion-exchange cylinder. See section 9.5 - Installation /replacement of ion-exchange cylinder. If problem persists call Customer Services.
High Water Temperature alarm.	Check correct alarm point is set. See section 5 - step 9 and 10 - Alarm Settings. Check feedwater temperature has not risen suddenly. Dispense some water from the distribution loop to allow cold water to be drawn into the unit. Check feedwater temperature. If problem persists call Customer Services.
RO particle filter change reminder alarm.	Mute Alarm. Replace filter. See section 9.2 - Replacing the RO particle filter.
0.2µm filter change reminder alarm.	Mute Alarm. Replace filter. See section 9.3 - Replacing the 0.2µm filter. If problem persists call Customer Services.
UV change reminder.	Mute alarm. Replace UV lamp. See Section 9.4 - Replacing UV Lamp. If problem persists call Customer Services.

Problems	Action
Sanitization reminder alarm.	Mute alarm. Initiate Sanitization Procedure. See Section 10 - Sanitization Procedure. If problem persists call Customer Services.
Reservoir Low level alarm.	Check RO system is running. RO production is effected by water temperature - See RO performance. See section 3.4 Flowrate vs. temperature. Check demand matches water production. If problem persists call Customer Services.
Reservoir level disconnect fault alarm.	Mute alarm. Ensure control lead from reservoir is properly connected. Faulty level sensor – replace. Check recirculation pressure has not exceeded 6 bar. The pressure cut out switch (PWS2) is connected into the level sensor circuit and will be displayed as a disconnected level sensor alarm. Check loop pressure is <6 bar. If problem persists call Customer Services.
Reduced flow from distribution loop.	Check pressure drop across 0.2µm filter. Replace if higher than 0.5bar. Pump worn, call Customer Services.
Unit noise level greater than specified.	Open front door and secure pipework to stop vibration. Check air is not being drawn into the recirculation loop. If problem persists call Customer Services.
PASSkey not recognized	PASSkey not valid. Request registration with Master PASSkey holder. If problem persists call Customer Services.
Master PASSkey not recognized	Contact ELGA LabWater If problem persists call Customer Services.
Pumps not running but power on.	Check thermal overloads in electrical enclosure. Reset by pressing. If problem persists call Customer Services.
UV lamp not lit.	Check electrical connection to the lamp is correctly orientated and engaged. Check lamp filaments are intact, replace lamp if necessary - See section 9.4 - Replacement of UV lamp. **Do not attempt to test lamp outside housing.** If problem persists call Customer Services.
Unit will not operate.	Insufficient feed flow/pressure causing low feed pressure alarm - check pre-treatment filters. Unit in sanitization mode and awaiting presence of PASSkey. Present sanitization PASSkey if appropriate. Leak detector alarm activated. If problem persists call Customer Services.
Low feed pressure alarm.	MUTE alarm and check feed pressure into the unit. Ensure greater than 2 bar @ 20l/min. Press ⮌ to restart the RO. If problem persists call Customer Services.

13. CONSUMABLES AND ACCESSORIES

Cat No	Consumable	Max. Service Life*	Max. Shelf Life
LC156	Composite vent filter	6 months	2 years
LC157	Bacterial vent filter	6 months	2 years
LC158	UV lamp 254nm (42 watt)	1 years	2 years
LC159	RO particle pre-treatment filter	6 months	2 years
LC160	0.2µm filter	6 months	2 years

- Service Life is an estimate only, and will depend on the application and feed water quality. Care should be taken to order the correct consumable items in advance.

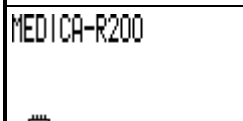
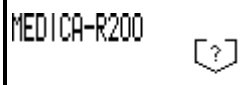
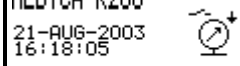
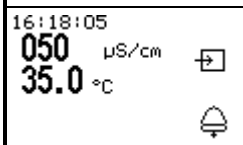
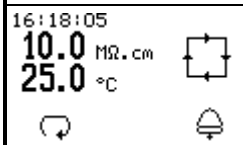
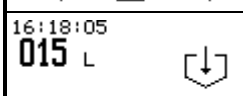
Cat No	Accessory
LA665	***MEDICA*** remote display
LA667	Customer PASSkey (Blue)
LA668	Sanitization PASSkey (Green)
LA676	Single SDI cylinder connection kit
LA677	Multiple SDI cylinder connection kit
LA678	Remote process button
LA679	High recovery RO kit

14. KEY TO CONTROL PANEL

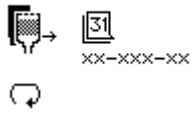
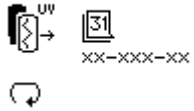
ICON	DESCRIPTION	ICON	DESCRIPTION
	Accept		PASSkey
	Auto restart		Leak detection
	Scroll back		Locked
	Step back		Level sensor disconnect
	Bell		Menu
	Standby		Mute alarm
	Bypass DI		Night
	Calibration point		Node
	Cancel sample		Option OFF
	Cancel		Option ON
	Rinse		Output
	Clock		Pause
	Connect DI		Print
	Date		Overfill
	Day		Recirculate
	Down		Replace CVF
	Drain		Replace RO filter
	Save data		Replace Recirc. filter
	Hazard		Replace UV lamp

ICON	DESCRIPTION	ICON	DESCRIPTION
	Fast timer		Reset
	Feed		Right
	Fill		Sample
	Filter		Sanitization PASSkey
	Insert filter RO		Sanitization reminder
	Filter recirc. loop		Sanitization rinse
	Add chemical		Scroll
	Low pressure switch		Transport mode
	Pressure		UP
	Recirc		Viewing angle

14.1 Alarm Conditions

Screen	Fault	Possible cause
	Leak detection (icon flashing)	Internal leak with enclosure – find leak and drain water from base.
	Load	Factory default reset – contact ELGA LabWater.
	Level sensor disconnected (icon flashing) High pressure in distribution loop >6 bar. Note: Models built from early 2011 onwards are fitted with over pressure switch PSW2 which is linked into the level sensor circuit).	Level sensor lead disconnected or cable cut – check connection and lead. High pressure on recirculation pump outlet caused by blocked filters / DI cylinders or incorrectly set distribution loop pressure regulating valve – (PSV1) see Section 6 step 7. Poorly set pump by-pass. **Warning! Adjustment of the pump by-pass should only be made by ELGA trained service engineers.**
	Low feed pressure (icon flashing)	Inlet pressure to RO pump low – check pre-treatment filter are not blocked and water supply is on. Ensure sufficient feed pressure.
	Reservoir feed quality alarm (measurement flashing)	RO operating above quality alarm setting – allow time to rinse up, check quality alarm setting and feed quality.
	Reservoir feed temperature alarm (measurement flashing)	Feed water temperature above alarm setting – check feed temperature and run water to drain.
	Outlet quality alarm (measurement flashing)	Outlet quality above alarm setting – check quality setting / replace ion-exchange cylinder.
	Outlet temperature alarm (measurement flashing)	Outlet temperature above alarm setting – check temperature setting /run water to drain.
	Output quality overrange (--.- flashing)	Quality sensor disconnected or broken – check connection / replace.
	Low level (icon flashing)	Low level in reservoir – insufficient supply, check demand and RO performance.

14.2 Replacement Timers

Screen	Replacement	Reference
	Vent filter replacement	See section 5.3 - step 2.
	RO particle filter replacement	See section 5.3 - step 4.
	0.2µm filter replacement	See section 5.3 - step 5.
	UV lamp replacement	See section 5.3 - step 3.
	Sanitization reminder	See section 5.3 - step 6.

15. WARRANTY/CONDITIONS OF SALE

ELGA Labwater is a trading name of VWS (UK) Ltd.

General Limited Warranty

VWS (UK) Ltd warrants the products manufactured by it against defects in materials and workmanship when used in accordance with applicable instructions for a period of one year from the date of shipment for the products. VWS (UK) LTD MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The warranty provided herein and the data, specifications and descriptions of the VWS (UK) Ltd products appearing in VWS (UK) Ltd's published catalogues and product literature may not be altered except by express written agreement signed by an officer of VWS (UK) Ltd. Representations, oral or written, which are inconsistent with this warranty or such publications are not authorized and, if given, should not be relied upon.

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Water System Limited Warranty

VWS (UK) Ltd warrants the water systems manufactured by it, BUT EXCLUDING MEMBRANES AND PURIFICATION PACKS, against defects in materials and workmanship when used in accordance with the applicable instructions and within the operating conditions specified for the systems for a period of one year from the earlier of:

a) the date of installation, or
b) the 120th day following the date of shipment.

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In the event of a breach of the foregoing warranty, VWS (UK) Ltd sole obligation shall be to repair or replace, at its option, any product or part thereof that proves to be defective in materials or workmanship within the warranty period, provided the customer notifies VWS (UK) Ltd promptly of any such defect. The cost of labor for the first ninety (90) days of the above warranty period is included in the warranty; thereafter, labor cost shall be at the customer's expense. The exclusive remedy provided herein shall not be deemed to have failed of its essential purpose so long as VWS (UK) Ltd is willing and able to repair or replace any nonconforming VWS (UK) Ltd system or component part. VWS (UK) Ltd shall not be liable for consequential, incidental, special or any other indirect damages resulting from economic loss or property damage sustained by any customer from the use of its process systems.

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VWS (UK) Ltd warrants its products against defects in materials and workmanship as described in the Warranty statement on the preceding pages.

16. USEFUL CONTACT DETAILS

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