ELGA

CENTRA S200/R200 - US

Operator Manual

VEOLIA WATER
Solutions & Technologies

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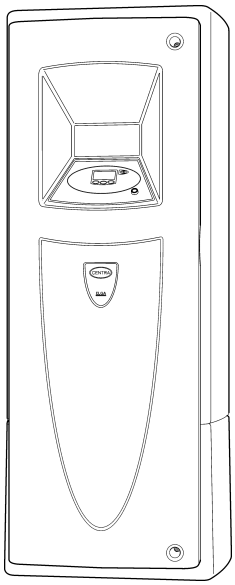
TABLE OF CONTENTS



CENTRA - S200/R200 US

1. INTRODUCTION

1.1 Product Range

This operator manual has been prepared for the product models:

CENTRA - S200 US	**115V ac 60Hz**
CENTRA - S200 US	**230V ac 50Hz**
CENTRA - S200HFV US	**230V ac 50Hz/60Hz**
CENTRA - S200HFR US	**230V ac 50Hz/60Hz**
CENTRA - R200 US	**115V ac 60Hz**
CENTRA - R200 US	**230V ac 50Hz**
CENTRA - R200HFV US	**230V ac 50Hz/60Hz**
CENTRA - R200HFR US	**230V ac 50Hz/60Hz**

Unless stated the products will be referred to in the following generic terms:

CENTRA - S200 US

CENTRA - R200 US

1.2 Use of this Manual

This manual contains full details on installation, commissioning and operation of the ***CENTRA*** 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

CENTRA 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.**

WARNING! **IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY ELGA, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.**

POSITION THE POWER SUPPLY SO THAT IT CANNOT COME INTO CONTACT WITH WATER

2.1 Electricity

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

The external isolator providing 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 which contain chemicals are available upon request. Contact your local ELGA LabWater distributor.

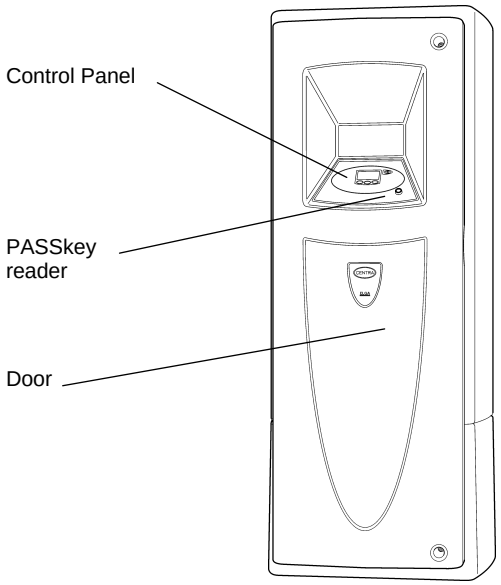
3. PRODUCT AND PROCESS DESCRIPTION

3.1 Product Description

The ***CENTRA*** range of water purification units has been specifically designed to produce, distribute and maintain purified water for laboratory, medical and industrial applications.

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 12. - Consumables and Accessories, for detail)*.



CENTRA - S200/R200 US

3.2 Process Description

CENTRA - S200/R200 US

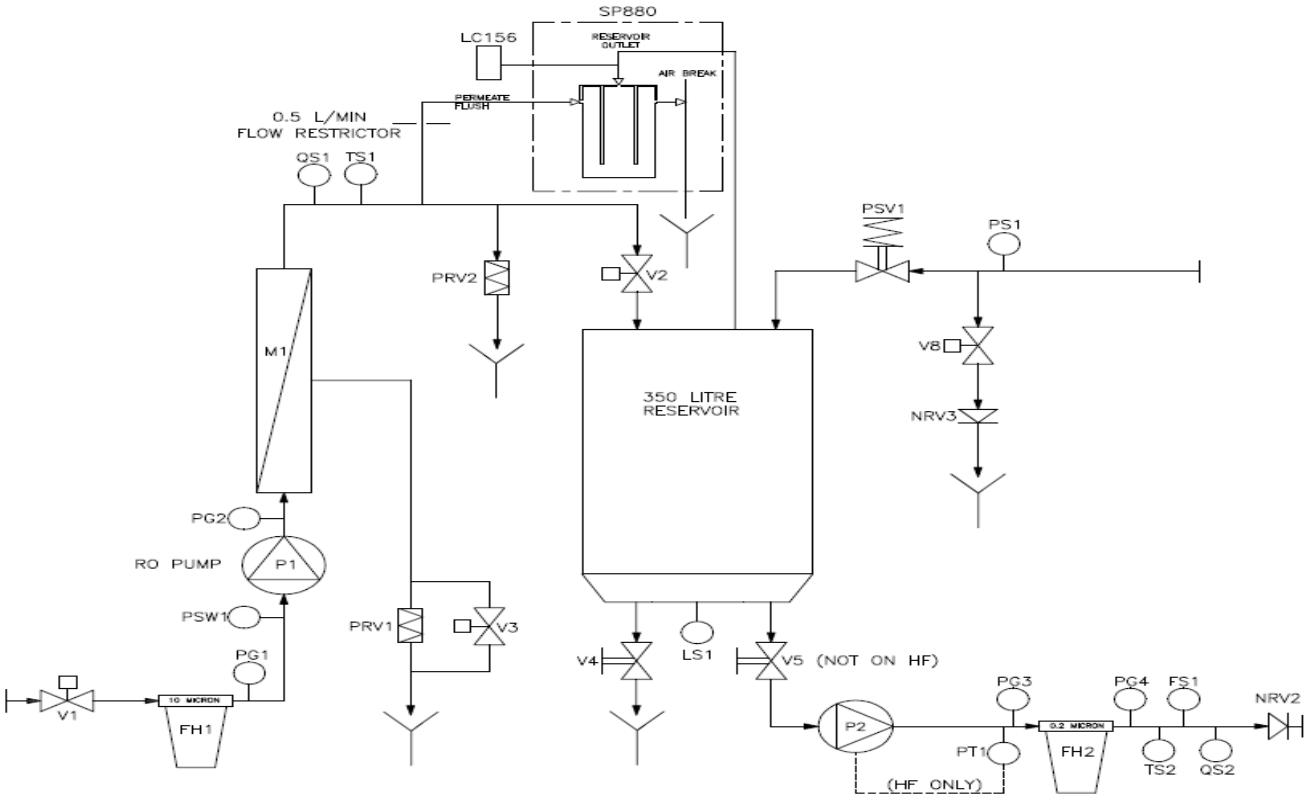
- Feed water enters through a control valve (V1), and through a particulate filter (FH1) into the inlet of the RO pump (P1). Pressure in the pipework of the pump inlet is monitored with a pressure switch (PSW1) to ensure that it cannot run without sufficient water.
- P1 provides sufficient pressure and flow to the RO membrane (M1). The RO concentrate flow is controlled through a pressure relief valve (PRV2) or concentrate flush valve (V3).
- Upon initial start-up the system completes a concentrate flush to remove scale and debris from the surface of the membrane surface to ensure good RO performance is maintained.
- RO permeate water passes through:
  - Temperature sensor (TS1), which provides accurate temperature measurement.
  - 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 without the permeate quality passing the alarm set point. This will result in an alarm condition that may be cleared automatically as the RO performance improves.
- 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.
- Upon reaching 350 liters the RO system performs a further concentrate flush to reduce the concentrate conductivity levels within the membrane housing and reduce the possibilities of precipitation on the membrane surface.
- 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) and monitored with a pressure sensor (PS1), before finally returning through a spray ball into the reservoir.
- Products fitted with a variable speed recirculation pump (P2) use feedback from a pressure transducer (PT1) to regulate the pump output to maintain a constant outlet pressure (typically 4 bar). This also reduces the outlet flow when water is not taken from the recirculation loop.

- Within the ***CENTRA – R200 US*** connections are available to link to externally positioned cylinders containing water purification media, to remove impurities and maintain water purity around the system. The media in the cylinders can be selected to meet specific requirements.

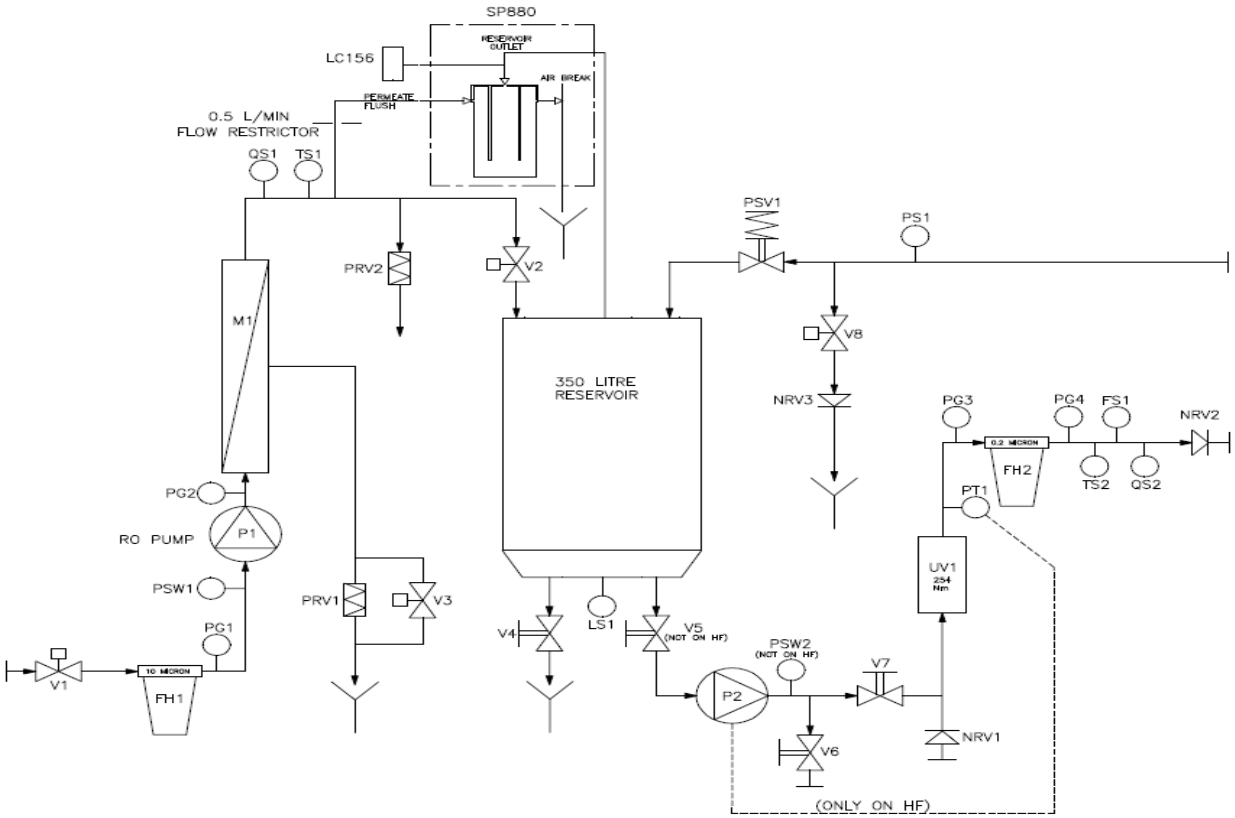
WARNING: Any cylinders or additional equipment installed (filters etc.) including ring-main pipework, must be rated to the operating pressure of the CENTRA system (6 bar maximum).

- ***CENTRA - R200 US*** units include a UV chamber (UV1) where purified water is exposed to intense UV radiation to provide continuous bacterial control and to promote the cleavage of organic molecules.
- Final filtering is provided by an absolute 0.2µm bacterial and particulate filter. The difference in delta P between PG1 and PG3 can be used to monitor the condition of the filter.
- Finally the purified water passes through a:
  - Temperature sensor (TS2), which provides accurate temperature measurement.
  - Water quality sensor (QS2), which measures the resistivity of the water.
  - Flow sensor (FS1) which electronically measures flow around the system.
- Air is drawn into the reservoir when water level falls. To maintain water purity, it is necessary to filter the air. Water quality is 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 ***CENTRA - S200/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 diagrams



CENTRA - S200 US *flow diagram*



CENTRA - R200 US *flow diagram*

3.4 Technical Specification

The Technical Specifications for the ***CENTRA - S200/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 additional 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 **CENTRA**, and may invalidate the warranty.*		
Contaminant	**Measure**	**Range**	**Pretreatment**
Calcium	Ca ppm as $CaCO_3$	< 250	None
		> 250	Softener and/or use very low RO recovery
Total chlorine	Cl ppm	< 0.1	None
		0.1 to 0.5	20 inch carbon
		> 0.5	Cylinder of carbon sized correctly to obtain <0.1ppm
Silica	SiO_2 ppm	< 30	None
		> 30	20 inch cartridge depth filter and/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 **
		> 3	Cylinder of carbon sized correctly for TOC demand **
TEMPERATURE	1 - 40ºC (Recommended 15 - 25ºC)		
FLOWRATE (maximum requirement)	20l/min (5.3USGPM)		
Drain requirements (gravity fall with air gap). Maximum during sanitization.	45l/min (12USGPM)		
Feedwater Pressure	4bar (60psi) maximum, 2bar (30psi) minimum.		

** Increase frequency of alkaline cleaning.

*** Increase frequency of acid cleaning.

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

Dimensions		
	CENTRA - S200 US	***CENTRA - R200 US***
Height	1820mm (71.7")	1820mm (71.7")
Width	730mm (28.75")	730mm (28.75")
Depth	890mm (35")	890mm (35")
Supply weight	180kg (396lb)	178kg (392lb)
Operational weight	530kg (1,168lb)	527kg (1,162lb)
Installation	Floor	Floor

Connections		
	CENTRA - S200 US	***CENTRA - R200 US***
Inlet	¾"bsp	¾"bsp
Sanitization Drain	¾"bsp	¾"bsp
Reservoir drain	¾"bsp	¾"bsp
Ion-exchange cylinder inlet	Install in Distribution Loop if required.	¾"bsp
Ion-exchange cylinder outlet		¾"bsp
Ion-exchange connection pressure rating	6 bar	6 bar

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

* Dependent upon pump variant

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-treated feedwater quality	Conductivity
	Product water quality	Resistivity or conductivity
	Temperature	Degrees Centigrade
	Recirculation Flow	L/min or USG/min
	System Pressure	Bar or psi
	UV lamp*	Replacement date
	Pre-treatment filter	Replacement date
	0.2µm in line 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
	Pre-treatment filter	Change reminder
	0.2µm in line 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 - 24V dc.
Visual alarms.
Audible alarms.
Remote process button (Optional).
Optional remote display.
Optional water temperature flush

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

Product Water Specification				
	Voltage/freq.	**R/S 200**	**R/S 200 HFV**	**R/S 200 HFR**
Flowrate (exit from unit) - l/min (USG/min)	230/50 115/60	16 (4.2) 18 (4.8)	30 (8) 38 (10)	30 (8) 38 (10)
Distribution Loop Pressure – typical (bar)		3	3	3
Distribution Loop Pressure – maximum (bar)		6	4	4
Daily usage - typical	Up to 5000L (1321USG)			
Daily usage - maximum	Up to 6000L (1585USG)			
	CENTRA - S200 US		***CENTRA - R200 US***	
Inorganic	RO Permeate*		Up to 18.2MΩ.cm***	
TOC ppb	<100*		<10****	
Bacteria	<5CFU/ml****		<5CFU/ml****	
Particles	0.2µm		0.2µm	

* Feedwater dependent.

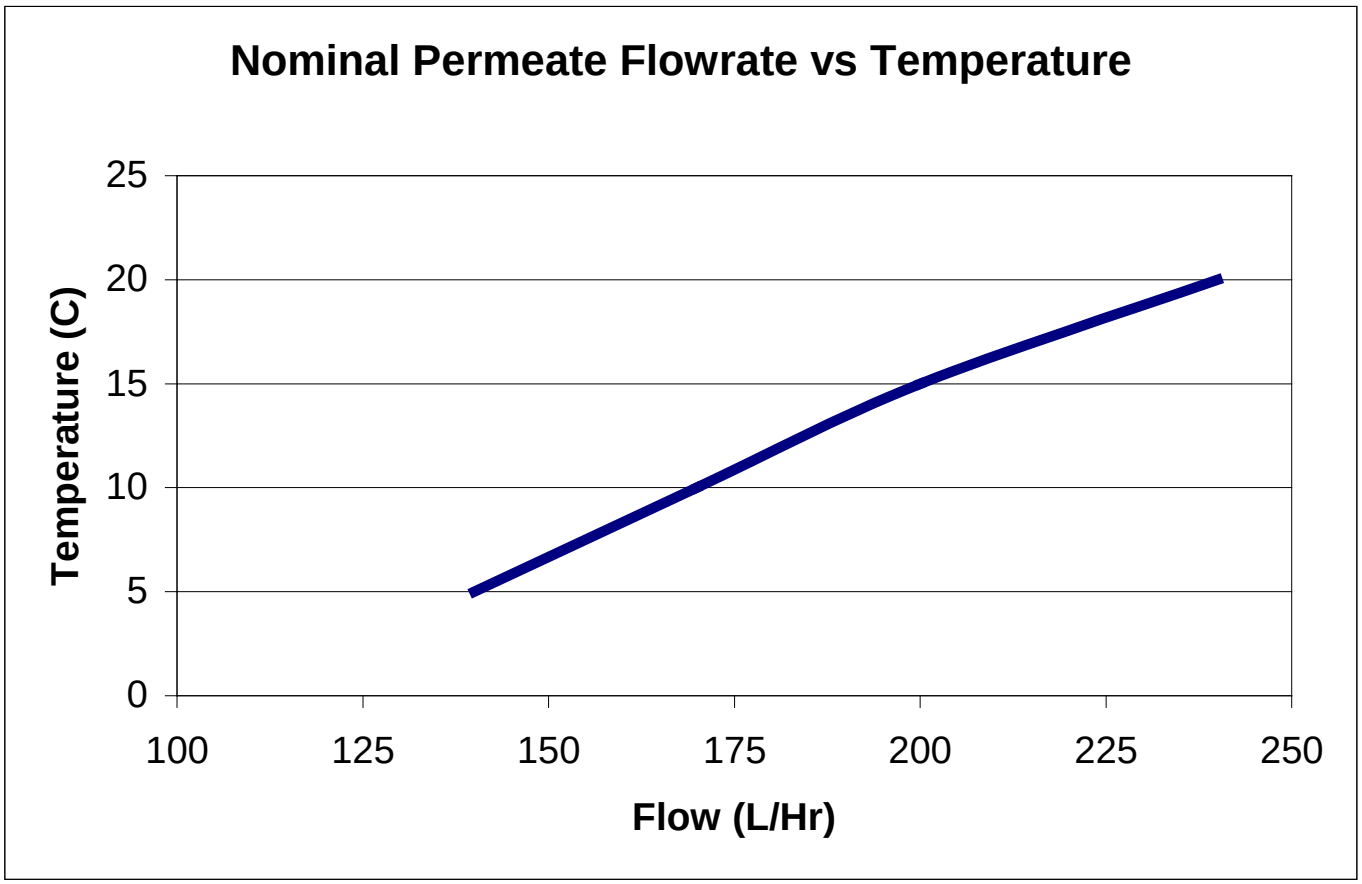
** Output to operate 24V dc relay.

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

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

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 *CENTRA*

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

1. Operator Manual.
2. Composite Vent Filter (LC156 or LC173).
3. Pre-treatment filter (LC159).
4. 0.2µm in line filter.
5. PASSkeys (SP772).
6. 2 x Filter spanners.
7. 2 x Sanitization tubes.

*Note: Ion-exchange cylinders and external pretreatment are not included with the **CENTRA**. Please contact your local ELGA LabWater representative to ensure that the correct water treatment technologies are selected for your application.*

4.2 Positioning the *CENTRA*

Before installation and operation of the ***CENTRA*** 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 *CENTRA - S200/R200 US*. 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 *CENTRA* IS EXTREMELY HEAVY AND MUST NOT BE MOVED. FAILURE TO OBSERVE THIS INSTRUCTION COULD RESULT IN SERIOUS INJURY.

Electrical

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

Were 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 and fig. 2).

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 ***CENTRA*** 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 *CENTRA*

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

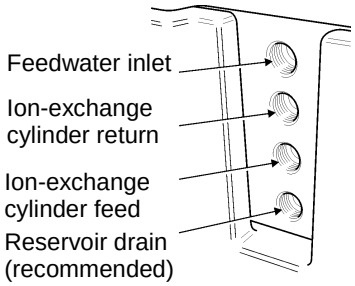
- Drain (sanitization).
- Drain (RO).
- Feed water inlet.
- Ion-exchange cylinder feed (R200 only).
- Ion-exchange cylinder return (R200 only).
- Recirculation loop out.
- Reservoir drain (recommended).
- Recirculation loop return.
- Overflow pipe to drain.

Step 1 - Hydraulic connections

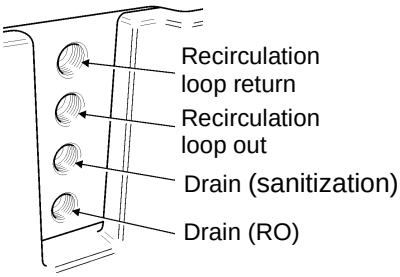
1. LOCATE all the hydraulic connections.
2. FOLLOW the manufacturer recommendations for the selected pipework systems and install suitable adapters into the connection manifolds of the ***CENTRA.***
3. Refer to 'Ringmain/Loop Installation Guide' available from ELGA LabWater Technical Support for examples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

*Note: The connection size on the **CENTRA** is ¾"bspp in all positions. The overflow connection (3/4" flexible hose) is located at the rear of the **CENTRA** unit and should be connected to a suitable drain.*

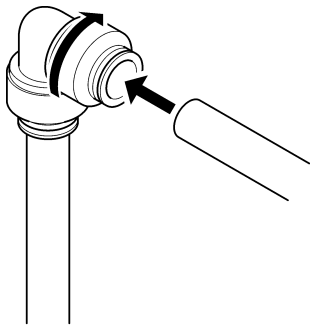
Left side

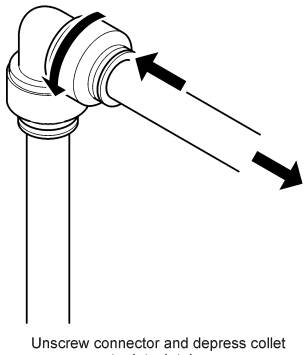


Right side



External hydraulic connections





Fitting tubes

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.

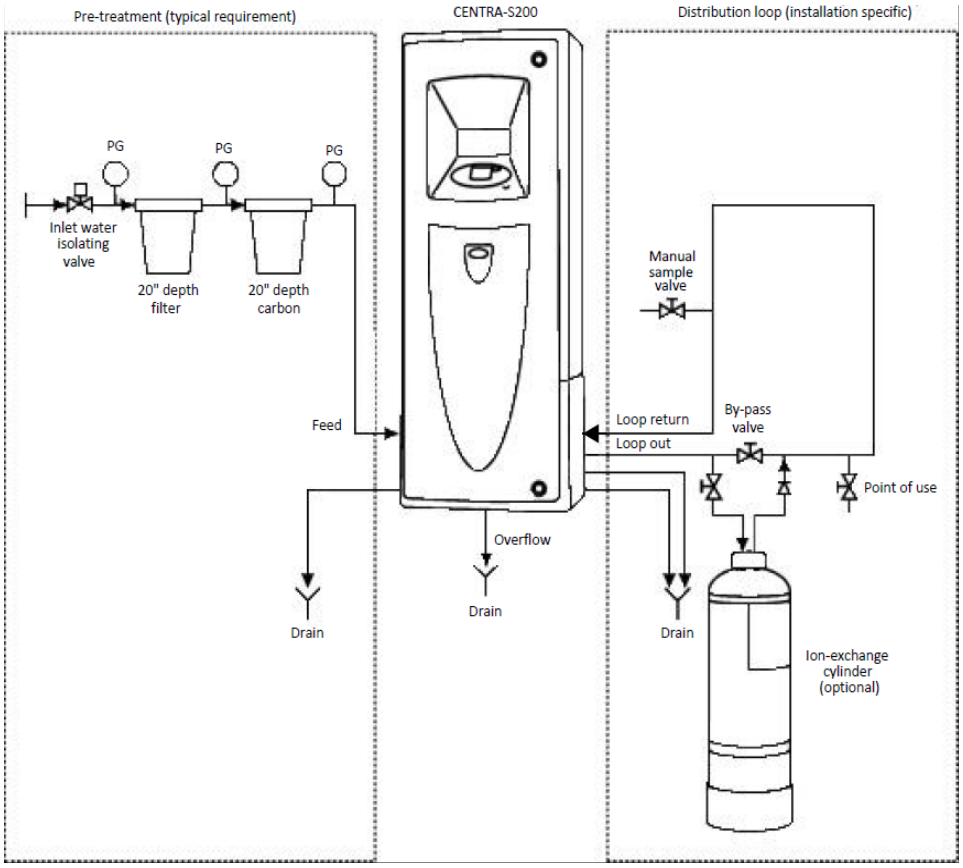


*Fig.1 - Schematic of typical **CENTRA - S200 US** installation*

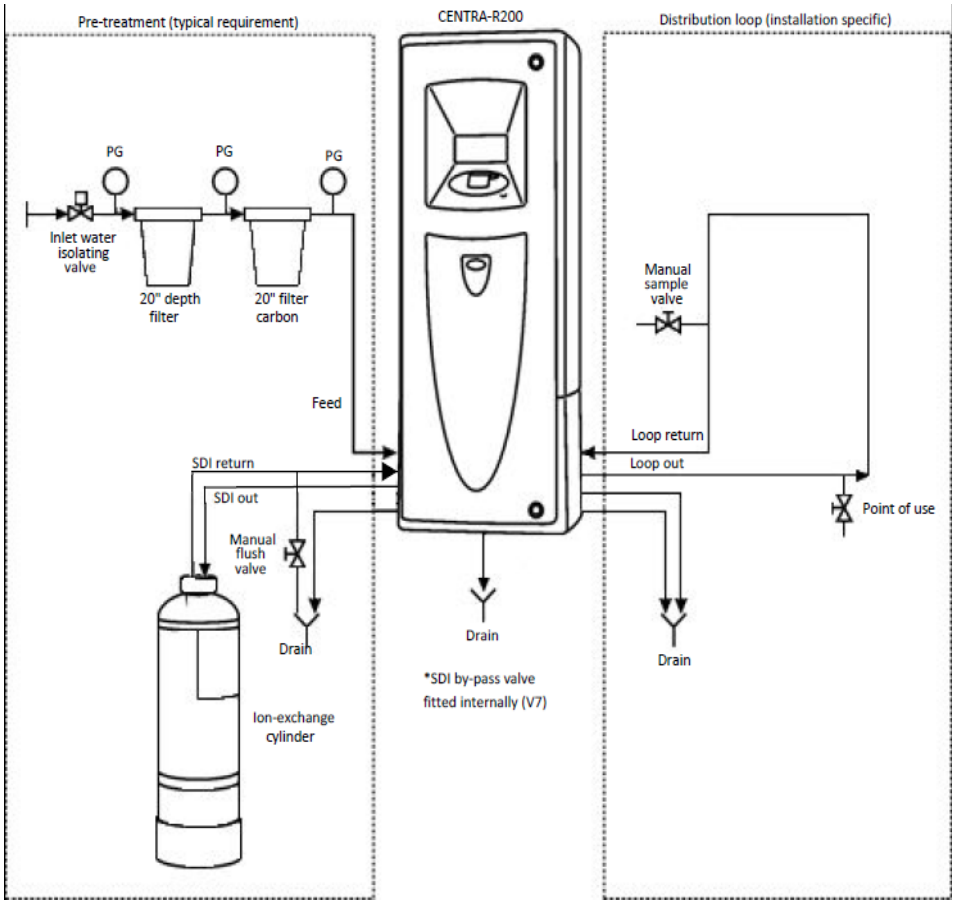


*Fig. 2 - Schematic of typical **CENTRA - R200 US** installation*

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 ***CENTRA*** to the electrical supply.

Note: It is recommended that the unit is connected to a local isolator with a single-phase industrial 20-amp plug/socket arrangement.

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

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

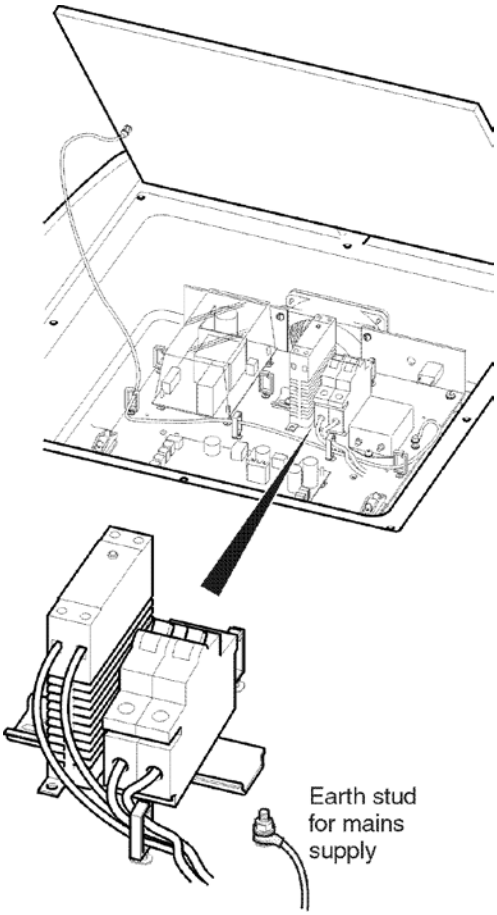
2. REMOVE the two screws that secure the right-hand edge of the door.
3. OPEN the door fully.
4. DIRECT the cable through the rear of the unit to the power socket.

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.



CENTRA *electrical connection*

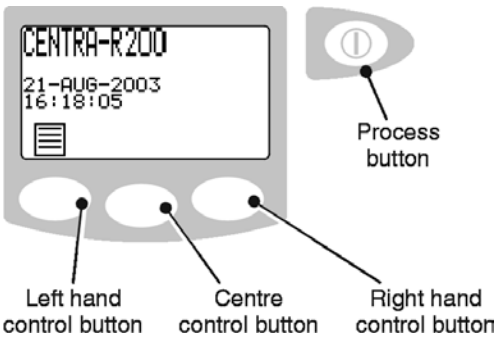
CAUTION! The termination of cables should comply with local wiring regulations. All earth connections should be made using ring tags that are attached to the cable using the correct crimping tool.

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

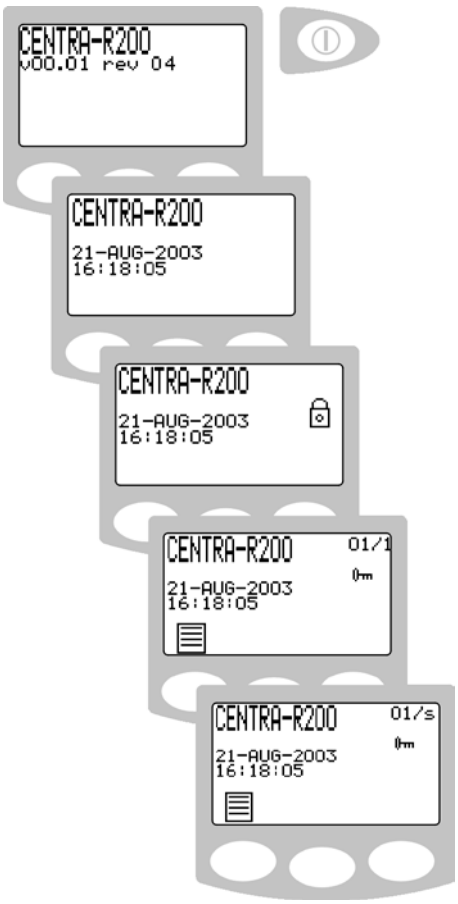
5. CONTROLS

The ***CENTRA*** 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 ***CENTRA*** control panel has a range of control icons. General operational icons are as follows. Further icons are described in the appropriate sections or a complete listing is included in Section 13.

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



Initialization screens

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 adjustable settings.

User PASSkeys only have access to customer preference screens.

Sanitization PASSkeys instigate the sanitization process and inhibit 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.

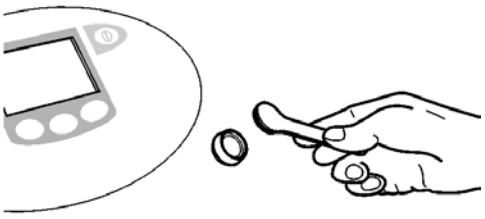
5.2 System Preferences

The ***CENTRA*** 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 ***CENTRA*** 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.



Present the PASSkey

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.

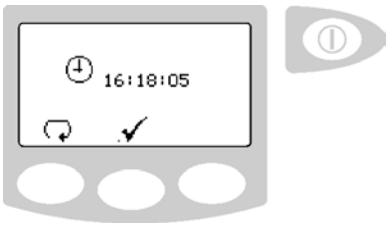
Note: The 'Master PASSkey' allows access to further settings (Section 5.2 - steps 21 and 22).

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 ■.

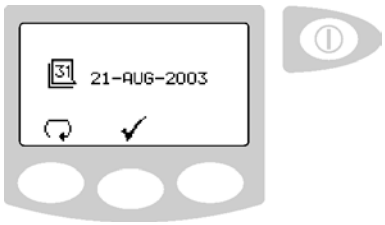


Clock screen

Step 2 - Clock

Set to display the current local time.

1. PRESS SCROLL ↻ to edit time
   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 ✓.



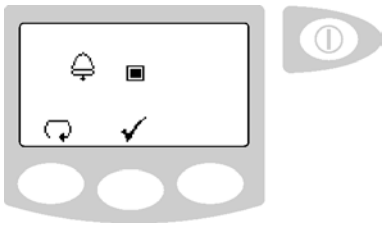
Date screen

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 ✓.

Step 4 - Audible alarm enabled/disabled

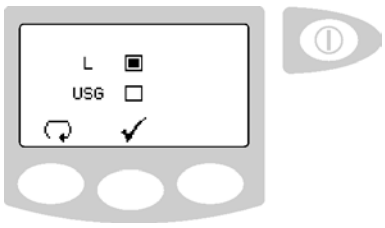


Audible alarm enable/disable screen

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.

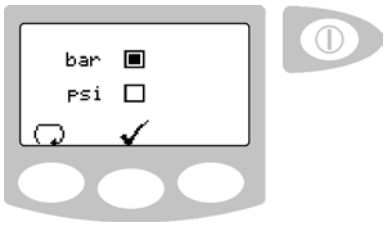


Volume/flow measurement screen

Step 5 - Volume/flow - displayed unit of measurement

The reservoir volume and recirculation flow can be displayed in either liters (L) or US Gallons (USG).

1. PRESS SCROLL to change mode (L or USG)
   OR
   PRESS TICK ✓ to proceed to step 6.
2. PRESS TICK ✓.

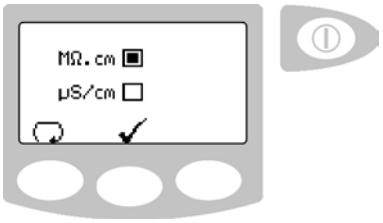


Pressure measurement screen

Step 6 - Pressure - displayed unit of measurement

The loop pressure can be displayed in either bar (bar) or pounds per square inch (psi).

1. PRESS SCROLL to change mode (bar or psi)
   OR
   PRESS TICK ✓ to proceed to step 7.
2. PRESS TICK ✓.

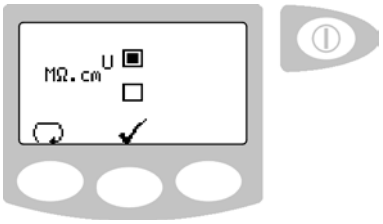


Water purity screen

Step 7 - 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 measurement in the recirculation loop.

1. PRESS SCROLL to change mode (MΩ.cm or µS/cm)
   OR
   PRESS TICK ✓ to proceed to step 8.
2. PRESS TICK ✓.



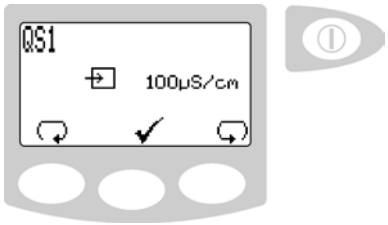
Uncompensated water quality screen

Step 8 - 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 9.
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.

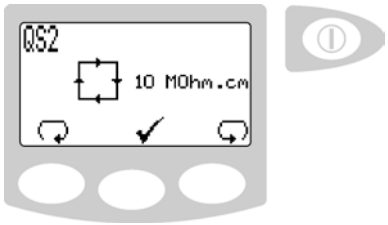


Alarm settings QS1 screen

Step 9 - 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 10.
2. PRESS TICK ✓.



Alarm settings QS2 screen

Step 10 - 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.

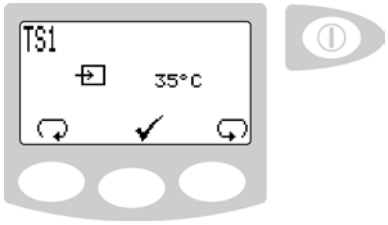
1. PRESS SCROLL to select alarm point (increments of 1, ranging from 1 to 17MΩ.cm - ***CENTRA - R200 US***
   OR
   increments of 10, ranging from 20 to 100µS/cm).

Note: The product water 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 11.

2. PRESS TICK ✓.

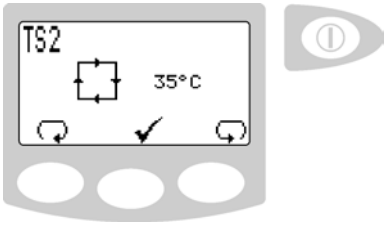


Alarm settings TS1 screen

Step 11 - 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 falls 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 12.
2. PRESS TICK ✓.



Alarm settings TS2 screen

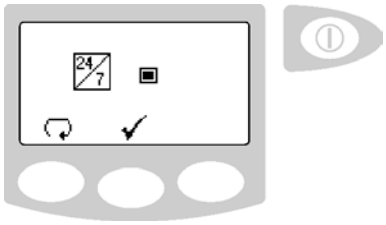
Step 12 - Product water temperature alarm settings TS2

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 falls 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 13.
2. PRESS TICK ✓.

Note: In addition to the alarm, 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 seconds and then reinstated.



Continuous operation screen

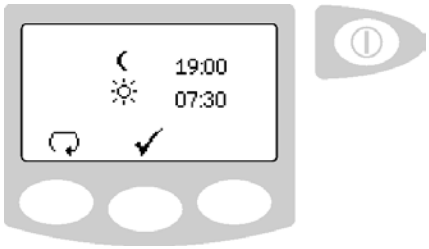
Step 13 - Continuous operation

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

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 14.

Note: Proceed to step 16 if continuous operation is selected (■ = ON).



Night service setting screen

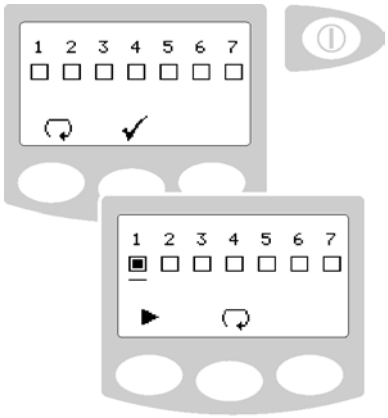
Step 14 - Periods of operation

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 time
   OR
   PRESS TICK ✓ to proceed to step 15.
2. PRESS UP ▲ to increase or DOWN ▼ decrease time in increments of 30 minutes.
3. PRESS SCROLL to step to night service end time.
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 15 - Operational day selection

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

Monday = 1 through to Sunday = 7

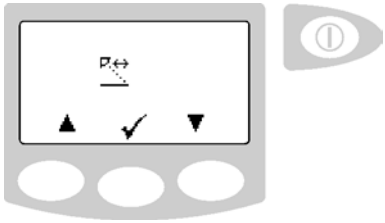
1. PRESS SCROLL to enter selection screen
   OR
   PRESS TICK ✓ to proceed to step 16.
2. PRESS SCROLL to highlight box 1
   (■ = Monday enabled)
   OR
   PRESS SHIFT ▶ to step to box (2).

Note: A highlighted box indicates that the unit will be operational on that day between the times set in step 14.

3. REPEAT, step 15 - 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.

Step 16 - Display viewing angle adjustment

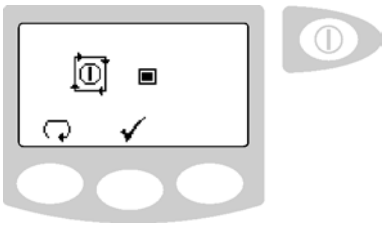


Viewing angle adjustment screen

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 17.
2. PRESS TICK ✓.

Step 17 - Auto-restart

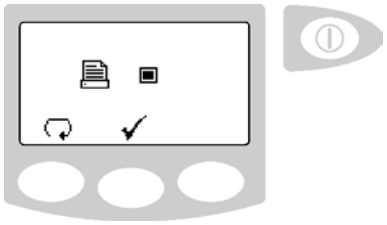


Auto-restart screen

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 18.
2. PRESS TICK ✓.

Step 18 - Data output (printer or PC)

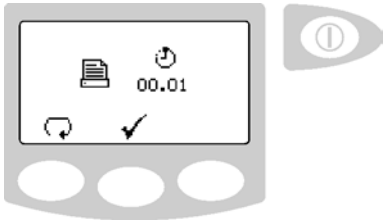


Data output screen

CENTRA can transmit operational data to a printer or PC via a RS232 lap-link communication cable from the main control display or any remote display, when the print icon is pressed during operation.

1. PRESS SCROLL ↻ to change mode (■ = ON)
   OR
   PRESS TICK ✓ to proceed to step 19.
2. PRESS TICK ✓.

Step 19 - Data transmit

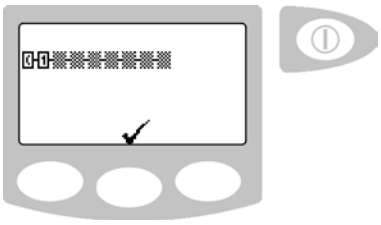


Data transmit screen

The frequency at which data is automatically transmitted 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 20.
2. PRESS TICK ✓.

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



Remote control station selection screen

Step 20 - Remote control station selection (node addressing)

You can add up to seven remote control stations connected to the ***CENTRA***; they must each be registered for its commands to be recognised.

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 5.4, Step 16.

1. PRESS TICK ✓ to complete settings (User PASSkey)

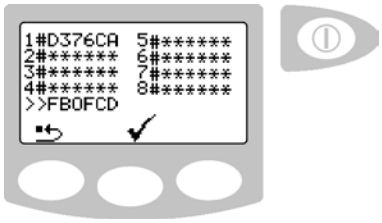
   OR

   PRESS TICK ✓ to proceed to step 21 (Master PASSkey only).

*Note: At this stage the **CENTRA** screen may timeout before each remote display is 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 20 to check the registration of the remote displays.



Programming of user PASSkeys screen

Step 21 - Programming of user PASSkeys

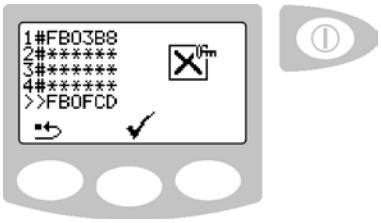
During the operational life of the ***CENTRA*** it may be necessary to delete or add User PASSkeys to prevent or allow access to user preferences. This feature is only available to the Master PASSkey holder.

CAUTION! Do not press reset unless all user 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.



Programming of sanitization PASSkeys screen

Step 22 - 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 or sanitization.

1. PRESENT master PASSkey.
2. PRESS TICK ✓ until the sanitization PASSkey programming screen appears.
3. PRESS RESET ⮌ to delete all sanitization PASSkeys

   OR

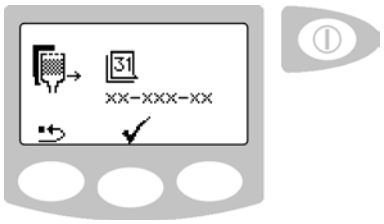
   PRESENT the new sanitization PASSkey to the reader.
4. PRESS SETPOINT ⮌ to load new sanitization PASSkey identification.
5. REPEAT instruction 2 and 3 until all sanitization PASSkeys are registered (maximum of 8 users).
6. PRESS TICK ✓ to complete settings.

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 shown.
2. PRESENT the Master PASSkey.
3. PRESS 31 to enter replacement timers.

Step 2 - CVF replacement date (if fitted)



CVP replacement date screen

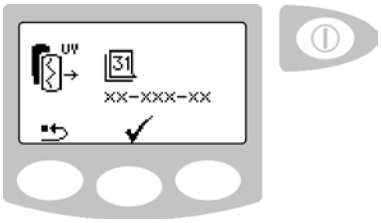
1. PRESS RESET button to reset CVF Filter Replacement Date

   OR

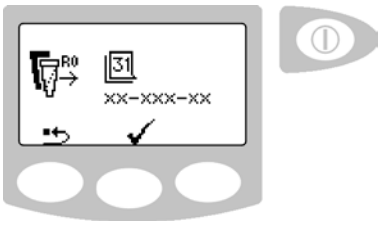
   PRESS TICK ✓ to accept Replacement Date and proceed to UV lamp Reminder.
2. PRESS TICK ✓ confirm that resetting is required

   OR

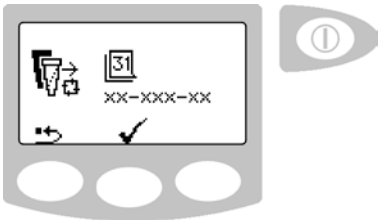
   PRESS CROSS χ to abort reset.
3. PRESS TICK ✓.



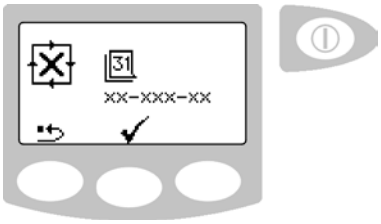
UV lamp replacement date screen



RO particle filter replacement date screen



0.2µm filter replacement date screen



Sanitization reminder 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 ✓.

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 ✓.

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 ✓.

Step 6 - Sanitization reminder

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

   OR

   PRESS TICK ✓ to accept Replacement Date and complete settings.
5. PRESS TICK ✓ confirm that resetting is required

   OR

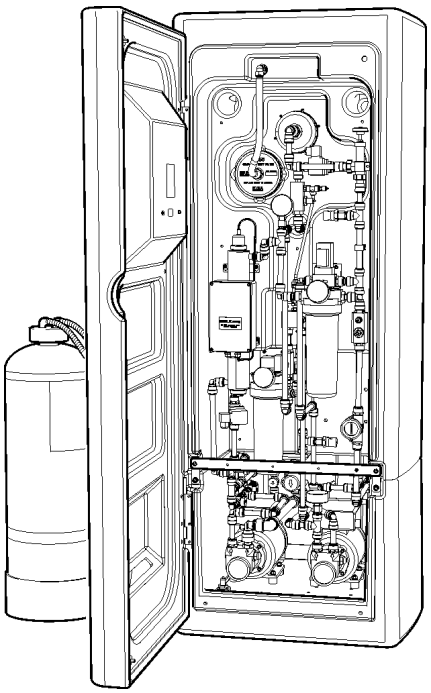
   PRESS CROSS χ to abort reset.
6. PRESS TICK ✓.

Note: Two dates are displayed in the sanitization screen:

Last sanitization.

Next sanitization required.

7. EXIT.



General view
CENTRA - R200

6. COMMISSIONING

6.1 Initial Start Up

Step 1 – Pre-treatment filter (LC159)

1. Install the pre-treatment filter as described in Section 9.2 - Replacing pre-treatment filter.

Step 2 - Ion-exchange cylinders

1. ENSURE that any **Ion-exchange** cylinders are ISOLATED from the recirculation loop using valve V6 and V7. See flow diagram 3.3 page 6 (***R200 US*** only).

Step 3 - Electrical supply

1. The electrical supply to the ***CENTRA*** 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

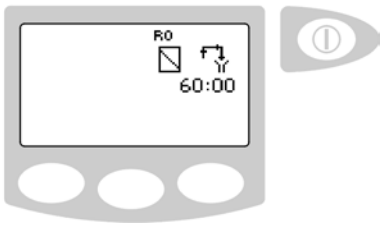
1. The water supply to the ***CENTRA*** should be installed correctly as described in Section 4.3, Step 1.
2. TURN on the feedwater supply to the unit.

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

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

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 *CENTRA* that may ultimately cause damage to pumps and valves.



Initial rinse screen

Step 5 - Initial rinse

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

WARNING! THE *CENTRA* 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.

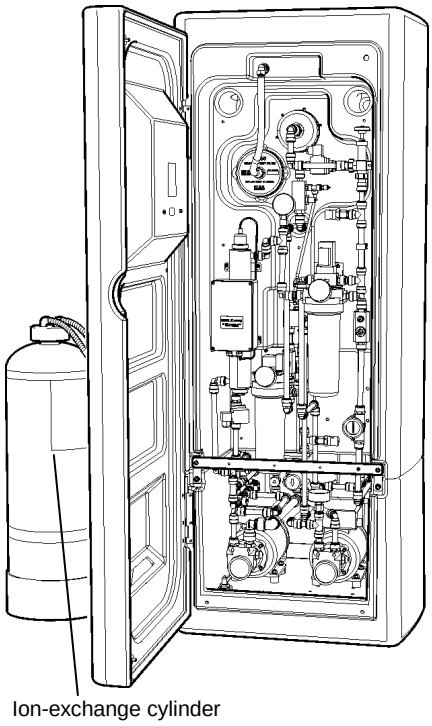
WARNING! MAKE SURE THE DISTRIBUTION LOOP IS COMPLETE AND ALL VALVES FITTED ARE CLOSED AS THE UNIT WILL AUTOMATICALLY START RECIRCULATION. DO NOT LEAVE THE SYSTEM UNATTENDED DURING THIS PERIOD.

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 to 80 liters. 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.



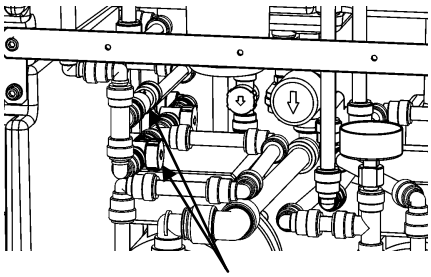
Location of ion-exchange cylinder
CENTRA - R200

Step 6 - Installation of ion-exchange cylinders (optional with *CENTRA - R200 US*)

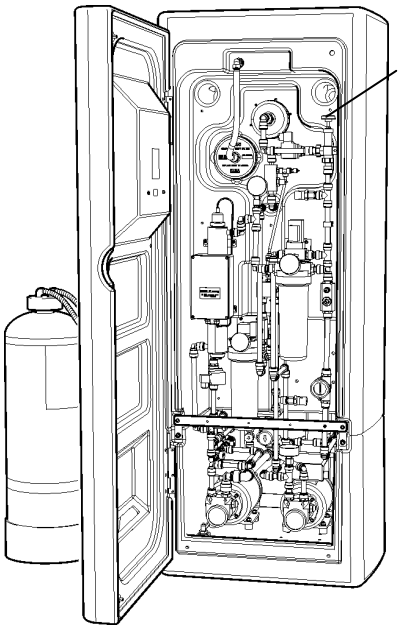
*Note: **Ion-exchange** cylinders should be flushed to drain locally if possible before installing them in the distribution loop.*

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 internal isolating valve (V6) and close internal bypass valve (V7). See flow diagram 3.3 in Section 3.
4. CLOSE point of use.

*Note: If an ion-exchange cylinder is installed into the recirculation loop of a **CENTRA - S200 US** the quality monitoring will require resetting. Contact technical support or your local ELGA LabWater representative.*



Location of valves



Regulating valve location

Step 7 - Distribution loop pressure adjustment (*R/S200 and R/S200HF* only)

1. LOCATE the pressure adjustment 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 **CENTRA**.*

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

WARNING! Pressure in the distribution loop may increase, due to filters blocking etc. which may lead to increased distribution pressure (6 bar maximum). The CENTRA unit is fitted with sensors to detect high pressure situations and will shut the unit off if >6 bar is detected. 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 – Distribution loop pressure adjustment (*R/S200 US HFV/HFR* only)

The pressure within the distribution loop is automatically controlled by the unit and is set at a factory default of 3 bar (typically) at the end of the distribution loop.

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.

The sustaining valve ensures that during periods of high demand all water is diverted to the point of use. During recirculation the valve should be adjusted to maintain a flow of between 5-10l/min.

1. LOCATE sustaining valve.
2. ADJUST the recirculation flow in the distribution loop by turning the knob (clockwise to increase flow, anti-clockwise to decrease flow).

CAUTION! Adjustment of the sustaining valve in the *R/S200 US HFV/HFR* does not increase the pressure available in the loop and incorrect adjustment may result in reduced performance.

Step 9 - Sanitization

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

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

Step 10 - Fit 0.2µm in line filter (LC160) or FILT50105 for HF.

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

7. OPERATION

CENTRA 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 14 and 15.

CENTRA 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 controlling possible problems caused by water temperature rises.

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

It is possible to override this mode by PRESSING the PROCESS button. ***CENTRA*** 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 13.

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, >50l/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	✓	

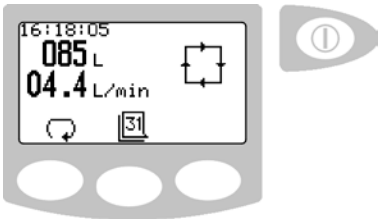
8.2 RO fill and recirculation

Displayed value	Auto scroll	Manual scroll
Product quality	✓	✓
Product temperature	✓	✓
Flowrate from outlet	✓	✓
Pressure at end of distribution loop	✓	✓
Reservoir water volume	✓	✓
Permeate quality		✓
Permeate temperature		✓

8.3 Recirculation

Displayed value	Auto scroll	Manual scroll
Product quality	✓	✓
Product temperature	✓	✓
Flowrate from outlet	✓	✓
Pressure at end of distribution loop	✓	✓
Reservoir volume	✓	✓

8.4 Consumable dates



Consumable dates screen

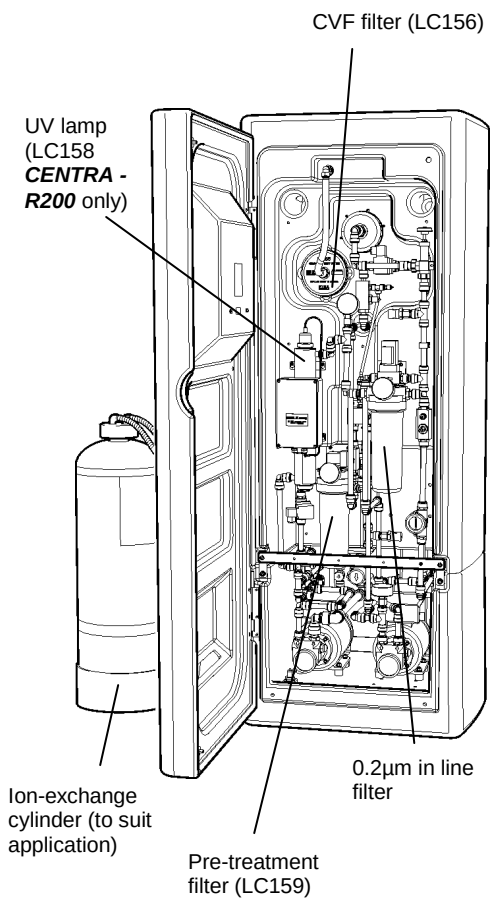
The consumable dates and periods of reminder are adjustable to meet specific applications by a qualified ELGA LabWater service engineer.

Step 1 - View consumable dates

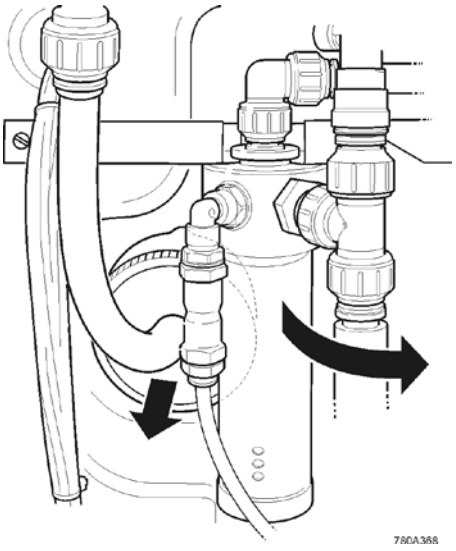
1. ENSURE unit is in normal operation.
2. PRESS 31 to view consumable dates.
3. PRESS SCROLL to view all reminder

OR

ALLOW auto scroll.



General view



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:

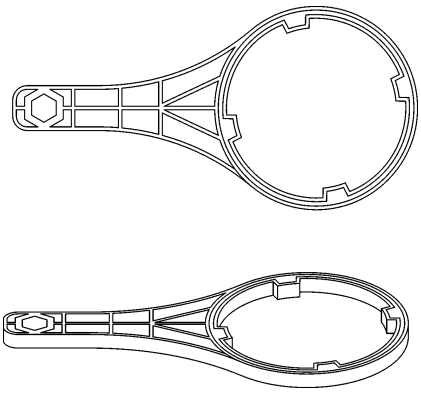
- Six months after initial installation.
- Reservoir overflow - indicated by incorrect reservoir volume.
- Quality tests indicate replacement is required.

Step 1 - Replacement of CVF filter LC156/LC173

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 the nut by hand and pulling the 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 pre-treatment filter LC159

The pre-treatment 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.

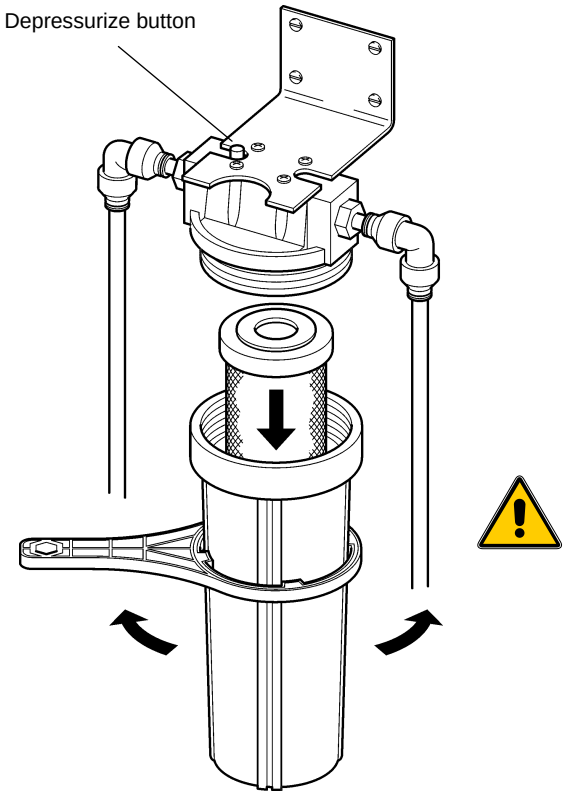
- When indicated by the consumable alarm or after a maximum of six months.
- Water purity in the installation starts to deteriorate.
- Low-pressure alarms occur due to filter blockage.
- The filter change will be due shortly and coincides with a sanitization of the installation.

Step 1 - Replacement of pre-treatment filter

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

Note: Some water may be spilt.

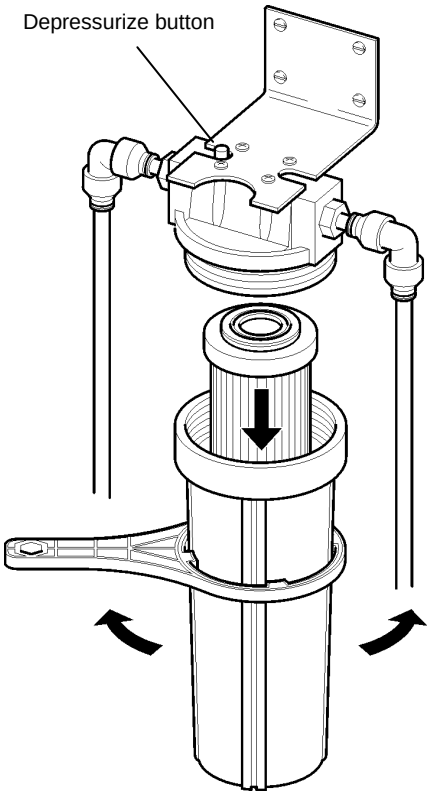
3. OPEN front of unit by removing securing screws.
4. LOCATE filter spanner found inside of front panel/door.
5. LOCATE the blue filter (bottom left hand side).
6. PRESS the red knob on the top of the filter housing to reduce pressure.
7. REMOVE the filter bowl using spanner, rotate in a clockwise direction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



LC159 pre-treatment 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 only.
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
0.2µm in line filter

9.3 Replacing 0.2µm in line filter LC160 or CFYCZD1460 (HF only).

An absolute filter is essential on installations where a bacterial and particulate specification is required.

The 0.2µm in line 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 0.2µm in line filter

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

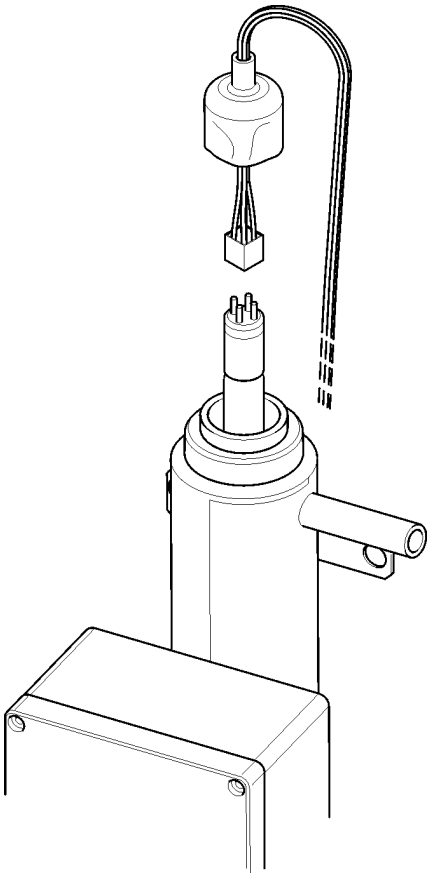
   OR

   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 only.
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 (*CENTRA - R200 US* only)

The UV lamp should be replaced in the following circumstances:

- When indicated by the consumable alarm.
- After a maximum of twelve months.
- Microbiological contamination in the product water deteriorates even after sanitization of the loop.

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! LIGHT FROM THE UV LAMP IS EXTREMELY HARMFUL TO THE EYES AND SKIN! UV LAMPS SHOULD ONLY BE USED IN THE REACTION CHAMBER WITH SUITABLE PROTECTION CAPS FITTED. PERSONS SHOULD NEVER BE EXPOSED TO LIGHT FROM THE LAMP.

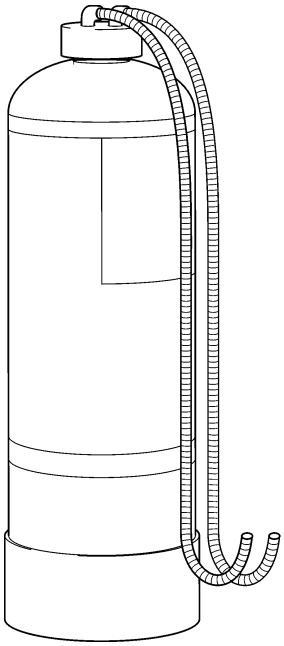
10. REFIT rubber boot to stop UV light from being radiated from top of the assembly.
11. RESET the consumable reminder as described in Section 5.3, Step 3.

9.5 Installation / replacement of ion-exchange cylinder

CAUTION! **The CENTRA 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 pressure.

If in doubt contact Technical Support.



Ion-exchange cylinder

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

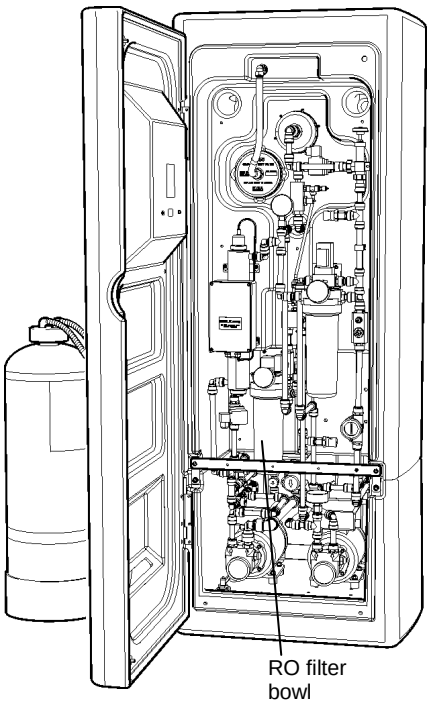
- Water purity (usually resistivity) in the installation starts to deteriorate.
- After 6 months use.

Step 1 - Installation / replacement of ion-exchange cylinder

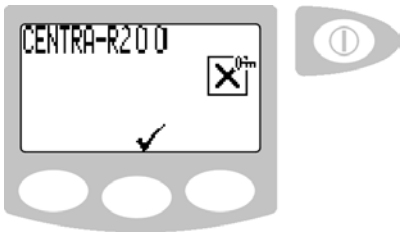
1. ENSURE process is OFF and ISOLATE power.
2. DEPRESSURIZE the distribution loop by opening a convenient point of use
   OR
   PRESSING the red knob on the top of the filter housing, some water may be spilt.
3. ISOLATE cylinder from loop by closing isolation valve (V6). See flow diagram 3.3 in Section 3.
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. OPEN point of use in distribution loop and direct full flow to drain to flush cylinder (recommended flush is three bed volume or more as appropriate for the application).
12. PRESS process button.
13. CLOSE the point of use.

Note: ***CENTRA - S200 US*** *systems with ion-exchange cylinder included in the recirculation loop may be replaced in a similar manner. If unsure contact your local ELGA LabWater representative.*

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 being operated under adverse conditions e.g. high temperature.
- If the bacteria counts are outside of requirements.

RO sanitization can be performed in two ways:

- Process off – recommended method that offers greater 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.

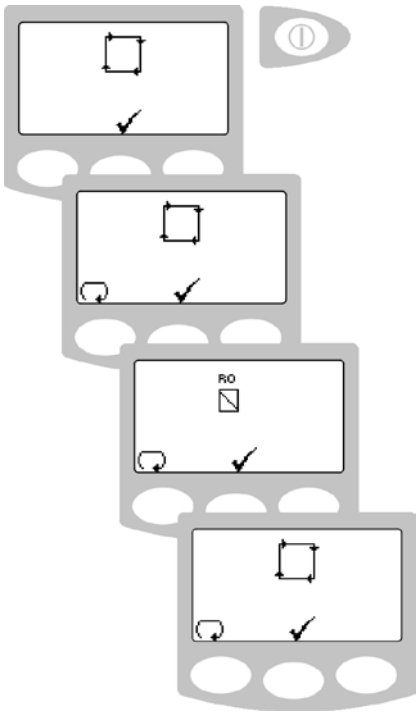
Refer to the correct section before performing the RO sanitization required.

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.

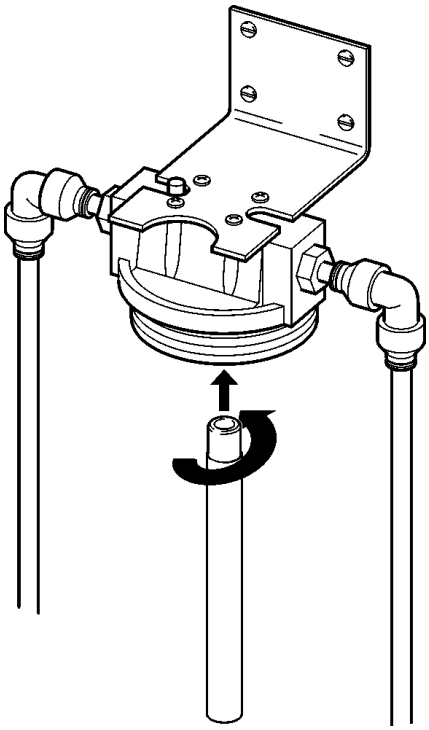
WARNING! LABEL THE MACHINE WITH APPROPRIATE WARNING SIGNS SUCH AS "DO NOT USE/ CONTAINS STERILANT" (NOT PROVIDED)

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

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 pre-filter from filter the bowl (FH1) using filter spanner.
3. REMOVE filter (LC159) and discard if blocked or about 6 months old.
4. EMPTY remaining water out of filter bowl.
5. ATTACH chemical tube (TUBE37548) to underside of filter housing.

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

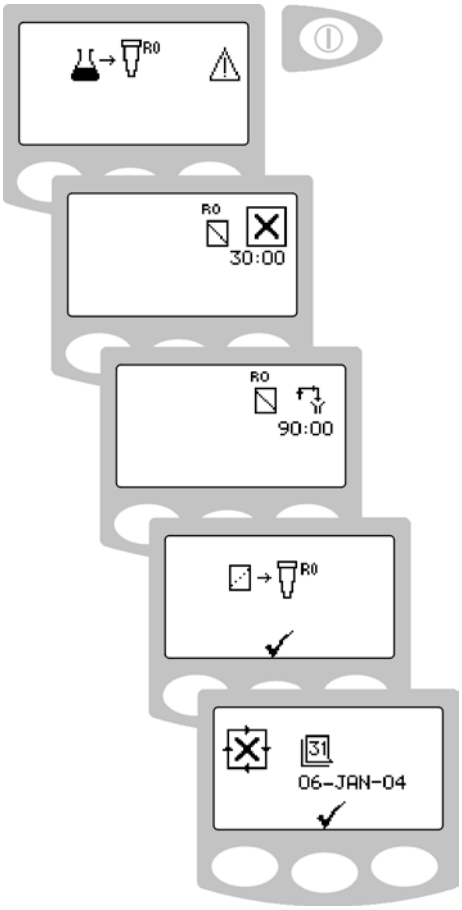
6. POUR 150ml of Minncare into filter bowl and refit.
7. TIGHTEN with filter spanner.
8. PRESENT sanitization PASSkey to confirm sanitant has been inserted.

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.

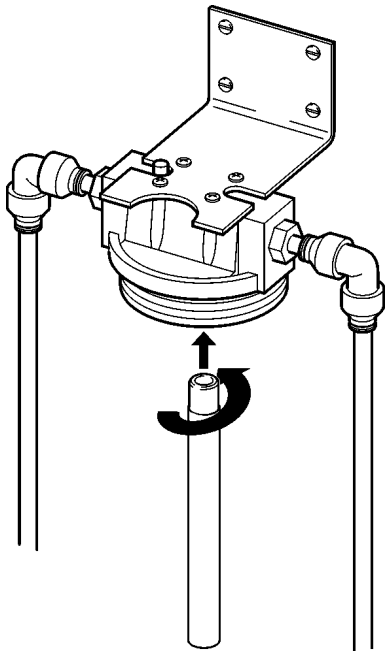


Sanitization screens

10. Once complete an alarm will sound (4 seconds).
11. REMOVE filter bowl.
12. Remove chemical tube (TUBE37548).
13. INSTALL new filter (LC159) or refit existing filter.
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

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 to 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 recirculation 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.

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

9. Pour 150ml of Minncare into filter bowl and refit.
10. TIGHTEN with filter spanner.
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.

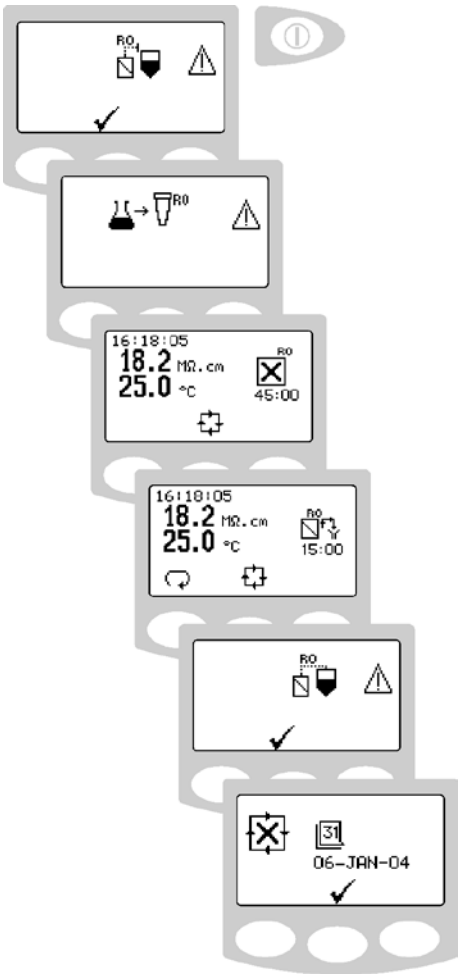
12. RO SANITIZATION takes approximately 1 hour.

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

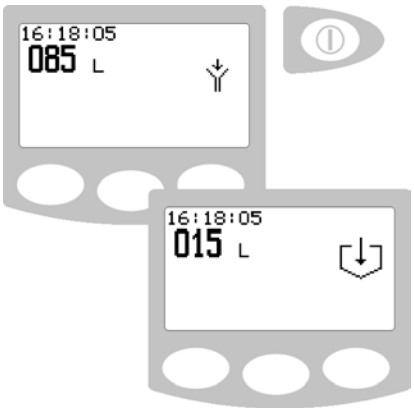
The final stage comprises a 15min. rinse.

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).



Sanitization screens



Recirculation sanitization initialization screens

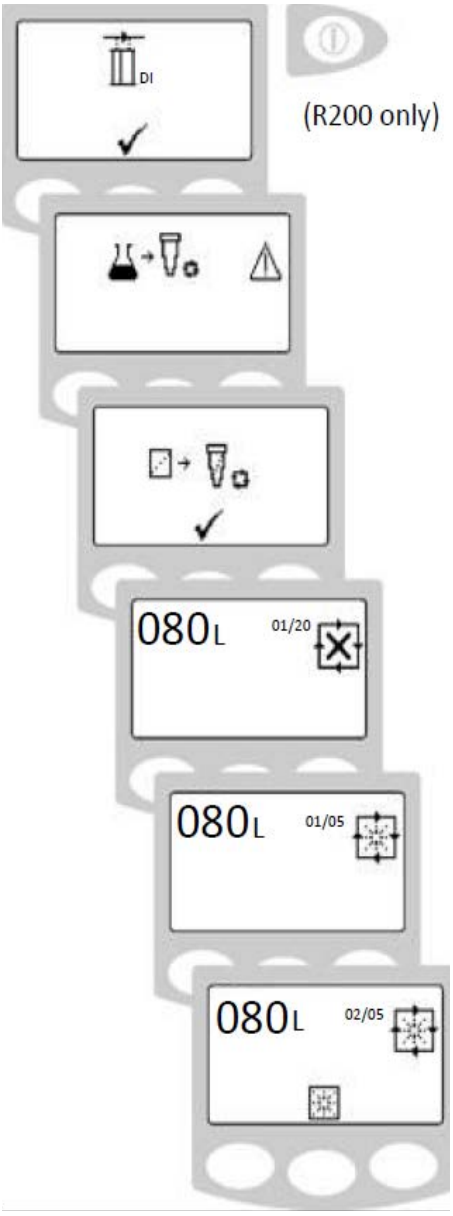
16. INSTALL new filter (LC159) or refit existing filter.
17. REFIT filter bowl (tighten with filter spanner).
18. PRESS TICK ✓.
19. PRESS TICK ✓ to accept next sanitization reminder

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) (***R200*** only).
5. REMOVE filter bowl (FH2) using the filter spanner.
6. REMOVE filter (LC160).
7. EMPTY remaining water from bowl.
8.



Sanitization screens

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

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

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

14. On the final cycle the unit will fill to 200 liters.
15. PRESS RECIRCULATE to operate recirculation pump for 10 minutes to allow sampling

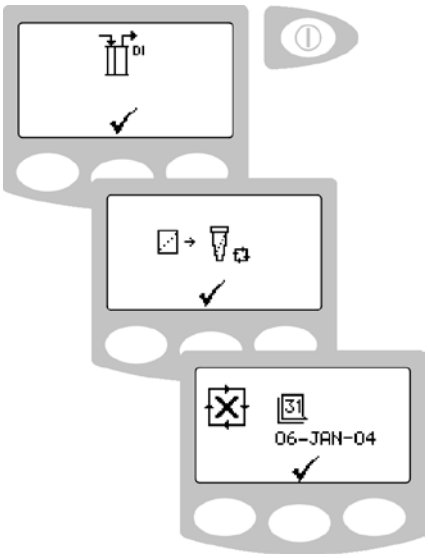
OR

16. PRESS FLUSH to flush the system for a further 5 cycles.
17. Take sample and CONFIRM sanitant is rinsed to satisfactory level using test strips (LC165).
18. REPEAT instructions 14, 15 and 16 as necessary.
19. PRESENT Sanitization PASSkey to acknowledge completion.

20. RECOMMISSION or replace cylinder - See section 9.5 - Installation/replacement of ion-exchange cylinder (***R200*** only).
21. REPLACE (LC160)/FILT50105 0.2µm in line filter - See section 9.3 - Replacing 0.2µm in line filter.
22. STORE sanitization tube (TUBE37548) in safe place.
23. PRESS TICK ✓ to complete process.
24. PRESS TICK ✓ to accept next sanitization reminder

    OR

    PRESS SCROLL and PRESS TICK ✓ to inhibit reminder.



Sanitization screens

11. TROUBLE SHOOTING

This section highlights the problems that could occur with ***CENTRA*** 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 15.0 - Useful Contact Details).*

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 LEDs on main processor board. If LEDs are lit check display cable connections. If problem persists call Customer Services.
Alarm and flashing Resistivity 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 step10 - 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.
Pre-treatment filter change reminder alarm.	Mute Alarm. Replace filter. See section 9.2 - Replacing the pre-treatment filter.
0.2µm in line filter change reminder alarm.	Mute Alarm. Replace filter. See section 9.3 - Replacing the 0.2µm in line filter. If problem persists call Customer Services.

Problems	Action
UV change reminder.	Mute alarm. Replace UV lamp. See Section 9.4 - Replacing UV Lamp. If problem persists call Customer Services.
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 affected 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. If problem persists call Customer Services.
Reduced flow from distribution loop.	Check pressure drop across 0.2µm in line 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 (***CENTRA - R200 US*** only).	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. 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. 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.

12. CONSUMABLES AND ACCESSORIES

Cat No	Consumable	Max. Service Life*	Max. Shelf Life
LC156	Composite vent filter	6 months	2 years
LC173	Composite vent filter (***HFV*** and ***HFR***)	6 months	2 years
LC158 (***CENTRA - R200*** only)	UV lamp 254nm (42 watt)	1 years	2 years
LC159	Pre-treatment filter	6 months	2 years
LC160	0.2µm in line filter (**NOT HF)**	6 months	2 years
CFYCZD1460	0.2µm filter 20" (***HFV*** and ***HFR***)	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.

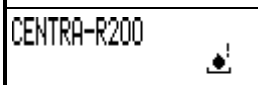
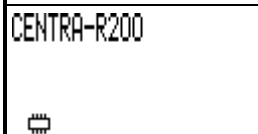
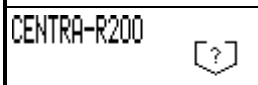
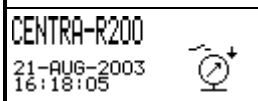
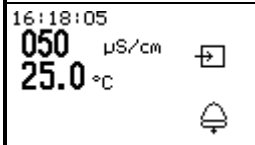
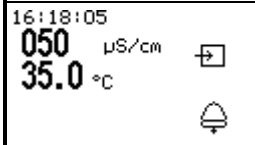
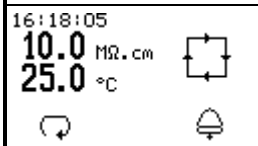
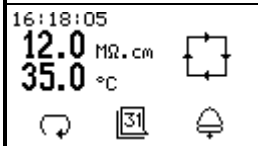
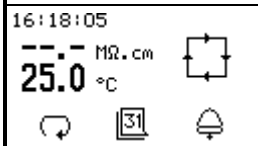
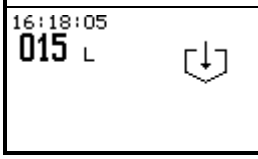
Cat No	Accessory
LA665	***CENTRA*** remote display
LA666	Dot matrix printer
LA667	Customer PASSkey (Blue)
LA668	Sanitization PASSkey (Green)
LA676	Single SDI cylinder connection kit
LA677	Multiple SDI cylinder connection kit
LA678	Remote process button
LA679	High recovery RO kit

13. KEY TO CONTROL PANEL

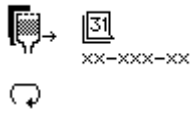
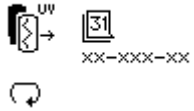
ICON	DESCRIPTION	ICON	DESCRIPTION
	Accept		PASSkey
	Auto restart		Leak detection
	Scroll back		Locked
	Step back		Level sensor disconnect
	Bell (Audible alarm)		Menu
	Standby		Mute alarm
	Bypass DI		Night
	Calibration point		Node
	Cancel sample		Option OFF
	Cancel		Option ON
	Rinse		Output
	Clock		Pause
	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
	Reservoir 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
	High pressure		Viewing angle
	Recirc		

13.1 Alarm Conditions

Screen	Fault	Possible cause
	High pressure (icon flashing) Recirculation Pump Pressure >6 bar	Distribution loop pressure too high – adjust pressure sustaining valve to <6bar. Adjust distribution loop pressure and/or pump by-pass. **WARNING!** This operation should only be completed by an ELGA LabWater service engineer.
	Leak detection (icon flashing)	Internal leak within enclosure – find leak and drain water from base.
	Load	Factory default reset – contact ELGA LabWater.
	Level sensor disconnected (icon flashing)	Level sensor lead disconnected or cable cut – check connection and lead.
	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.

13.2 Replacement Timers

Screen	Replacement	Reference
	Vent filter replacement	See section 5.3 - step 2.
	Pre-treatment filter replacement	See section 5.3 - step 4.
	0.2µm in line 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.

14. 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.

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 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 product or 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 products.

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.

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 systems appearing in VWS (UK) Ltd 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 authorised and, if given, should not be relied upon.

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.

Products or components manufactured by companies other than VWS (UK) Ltd or its affiliates ("Non-VWS (UK) Ltd products") are covered by the warranty, if any, extended by the Product manufacturer. VWS (UK) Ltd hereby assigns to the purchaser any such warranty; however, VWS (UK) LTD EXPRESSLY DISCLAIMS ANY WARRANTY WHETHER EXPRESSED OR IMPLIED, THAT THE NON - VWS (UK) LTD PRODUCTS ARE MERCHANTABLE OR FIT FOR A PARTICULAR PURPOSE.

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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.

15. USEFUL CONTACT DETAILS

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http://www.elgalabwater.com

or contact ELGA at the number above.