ELGA VEOLIA

PURELAB Chorus | COMPLETE

PURELAB Chorus 2+

Operator Manual

MANU40932 VERSION 05 1/22

WATER PURIFICATION

ELGA VEOLIA

QUICK START GUIDE — ENGLISH

HEALTH AND SAFETY

Please follow the safety information detailed in this manual. Failure to observe these instructions could result in damage to the equipment, processes, associated equipment and injury or death to persons.

1: Ultraviolet Light

WARNING!
UNDER NO CIRCUMSTANCES SHOULD THE LAMP BE CONNECTED OR ACTIVATED WHEN OUTSIDE THE HOUSING. EXPOSURE COULD CAUSE SERIOUS INJURY TO EYES AND SKIN.

2: Residual Preservative

WARNING!
DURING THE COMMISSIONING CYCLE TRACE RESIDUAL PRESERVATIVE IS FLUSHED FROM THE SYSTEM. A MATERIAL SAFETY DATA SHEET IS AVAILABLE UPON REQUEST.

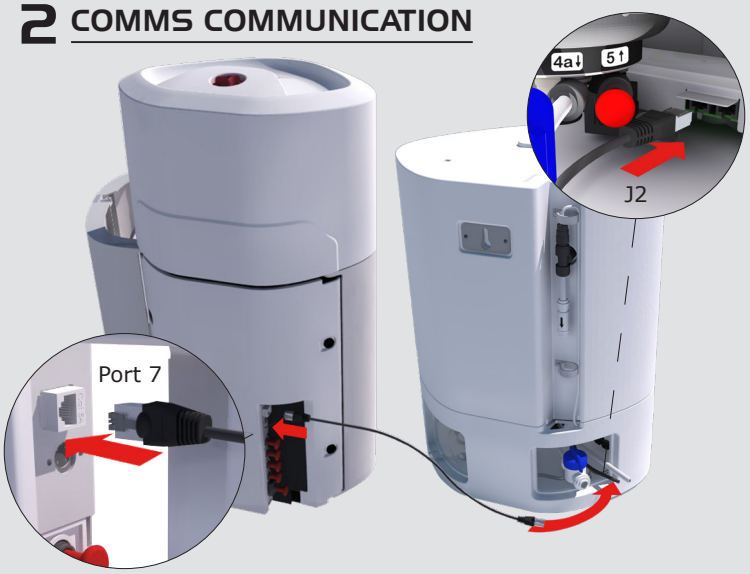
Control of Substances Hazardous to Health (COSHH)

Material safety data sheets are available upon request.

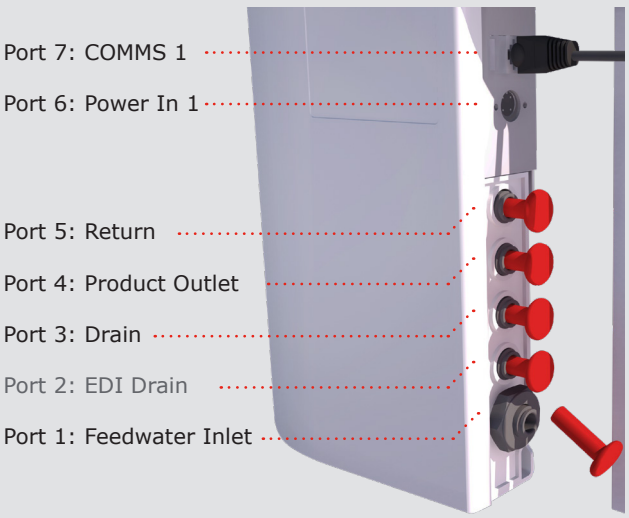
ELGA Labwater
Tel: +44 (0) 203 567 7300
Email: info@elgalabwater.com
Fax: +44 (0) 203 567 7205
Website: www.elgalabwater.com

CHORUS 2+ & I COMPLETE FEATURES

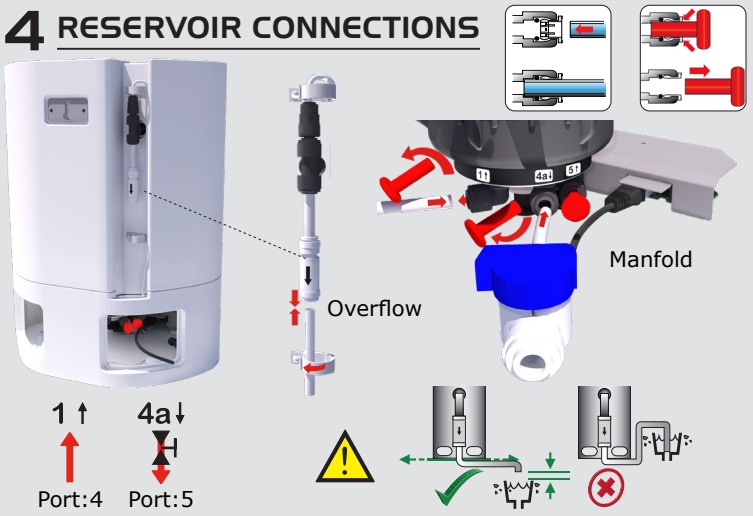
2 COMMS COMMUNICATION



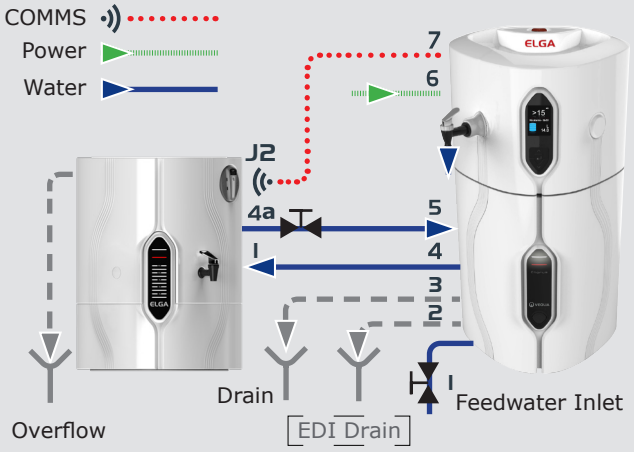
3 CONNECTIONS POSITIONS



4 RESERVOIR CONNECTIONS



5 SYSTEM CONFIGURATION



Tablet of contents

I. INTRODUCTION

1.1 Health & Safety

Please ensure you read the Health & Safety notes in Section 2.

1.2 Product Range

This Operator manual has been prepared for Chorus product model:

(Ultra Pure Water (Type I) Directly from potable water)
- PURELAB® Chorus 1 Complete PC110COXXM1
- PURELAB® Chorus 1 Complete PC110COBPM1
- PURELAB® Chorus 1 Complete PC120COXXM1
- PURELAB® Chorus 1 Complete PC120COBPM1

(Ultra Pure Water (Type 2+) Directly from potable water)
- PURELAB® Chorus 2+ PC210DUXXM1
- PURELAB® Chorus 2+ PC210DUBPM1
- PURELAB® Chorus 2+ PC220DUXXM1
- PURELAB® Chorus 2+ PC220DUBPM1
- PURELAB® Chorus 2+ PC210EUXXM1
- PURELAB® Chorus 2+ PC210EUBPM1
- PURELAB® Chorus 2+ PC220EUXXM1
- PURELAB® Chorus 2+ PC220EUBPM1

1.3 Use of this Manual

This manual guides you through the basic operation and maintenance of the PURELAB® Chorus allowing you to obtain a guaranteed supply of purified water to meet your requirements.

Quick Reference Guide shows you how to perform day to day functions in order to get the most from your PURELAB® Chorus without having to refer to the Operators Manual.

1.4 System Configuration

Maximum system size 1 X PURELAB® Chorus 1 Complete or PURELAB® Chorus 2+ and 15L, 30L, 60L or 100L Reservoir + 3 X Chorus Dispensers.
(See section 5 for Standard Configurations)

1.5 Commissioning

Chorus is supplied in a preset commissioning mode which must be completed before purified water can be dispensed.
(Section 5.5 - 5.6 Commissioning Procedures)

1.6 Customer Support

If you need help with your PURELAB® Chorus, please call your local ELGA® representative.
For the address of the nearest ELGA® LabWater Sales and Service office visit the country list on our website.

www.elgalabwater.com

Or contact ELGA® LabWater at;

E-mail: techsupport@elgalabwater.com
E-mail: info@elgalabwater.com

1.7 Free Product Registration

Benefits of registering your product:
- Ensure proper warranty benefits
- Product information updates
- Service and technical support

How to register

Please ensure that you register your guarantee as soon as possible. This can be done by:

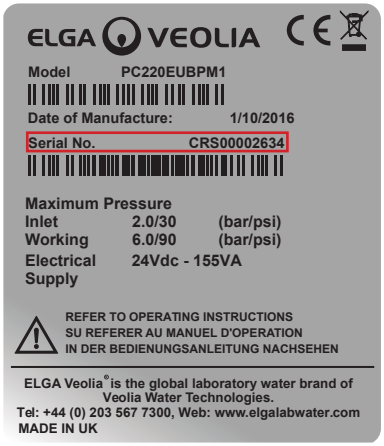
- Registering your machine at: https://www.elgalabwater.com/support/register-a-product
- Completing the enclosed guarantee card and returning it in the envelope provided.
- Or call ELGA® Veolia registration line on 0203 567 7300

Serial No.

Date of purchase: _____

Place of purchase: _____

Your serial number can be found on the back cover plate of you appliance on the ratings label.



2. IMPORTANT HEALTH AND SAFETY INSTRUCTIONS

WARNINGS!

WARNINGS ARE GIVEN WHERE FAILING TO OBSERVE THE INSTRUCTIONS COULD RESULT IN INJURY OR FATALITY.

Cautions!

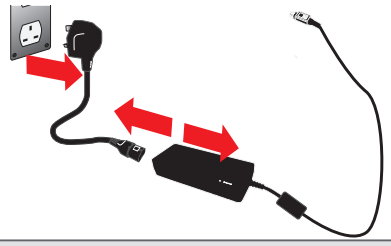
Cautions are given where failure to observe the instructions could result in damage to the equipment, associated equipment and processes.

2.1 Environment

The Chorus should be installed on a flat, level surface, in a clean, dry environment. following conditions:
• Indoor Use • Altitude up to 2000m • Temperature Range 5 - 35°C • Maximum Relative Humidity 80% at 31°C decreasing linearly to 50% at 40°C non-condensating The system is in Installation Category II, Pollution Degree 2, as per IEC1010-1. Failure to follow the environmental specification could result in damage. The PURELAB® Chorus is not designed for use in fume cupboards where chemicals could damage the system. The system can also be wall mounted against a vertical wall capable of supporting the weight, for this we recommend the use of the Wall Mounting Kit LA795. (Follow LA795 Instructions)

2.2 Electricity

The appliance coupler (mains lead) and power supply connected to the rear of the unit can be removed to isolate the power supply. If access to this is restricted then it is recommended that access to the supply socket is easily available. It is essential that the electrical supply to the Chorus is isolated before any items are changed or maintenance work performed.



WARNING!
THIS APPLIANCE MUST BE EARTHED.

WARNING!
ONLY USE THE APPLIANCE COUPLER (MAINS LEAD) AND POWER SUPPLY PROVIDED. THE USE OF THESE WILL ENSURE ADEQUATE EARTH PROTECTION IS PROVIDED. IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY ELGA®, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED. POSITION THE POWER SUPPLY SO THAT IT CANNOT COME INTO CONTACT WITH WATER.

2.3 Water

The mains water supply pressure should be isolated and residual pressure released prior to removal of any cartridges or carrying out work on the system. Switching off the electrical supply will isolate the source of pressure, but pressure trapped within the system should be released by opening the dispense tap until water flow stops.

2.4 Ultra-violet Light

The Chorus system is fitted with an ultra-violet lamp. The UV lamp is enclosed in a stainless steel chamber ensuring the operator will not be exposed to UV light.

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.

2.5 Residual Preservative

WARNING
DURING THE COMMISSIONING CYCLE TRACE RESIDUAL PRESERVATIVE IS FLUSHED FROM THE SYSTEM. MATERIAL SAFETY DATA SHEETS ARE AVAILABLE UPON REQUEST.

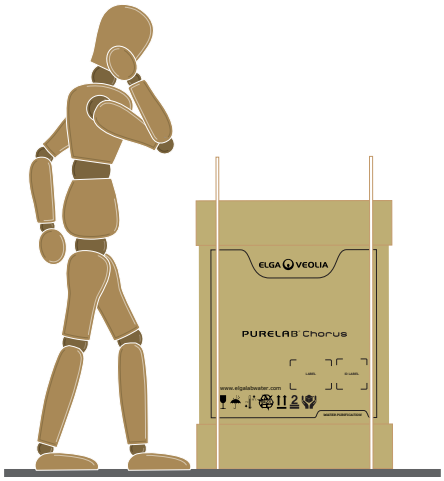
2.6 Control of Substances Hazardous to Health (COSHH)

Material safety data sheets covering various aspects of the product are available where applicable upon request. Contact your local supplier or distributor.
Purification Pack data is also available on request.

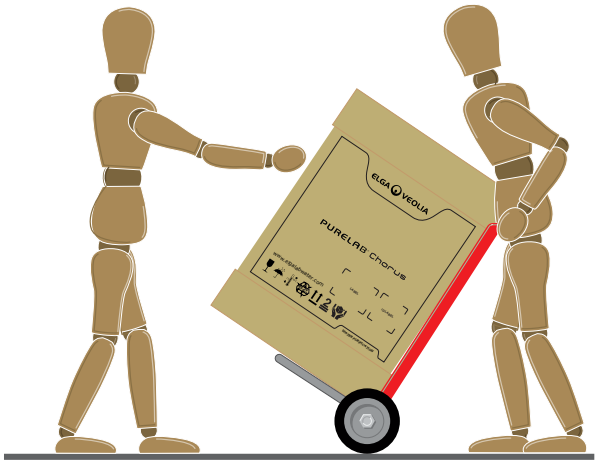
3. UNPACKING INSTRUCTIONS

3.1 Manual Handling and Removing Packaging

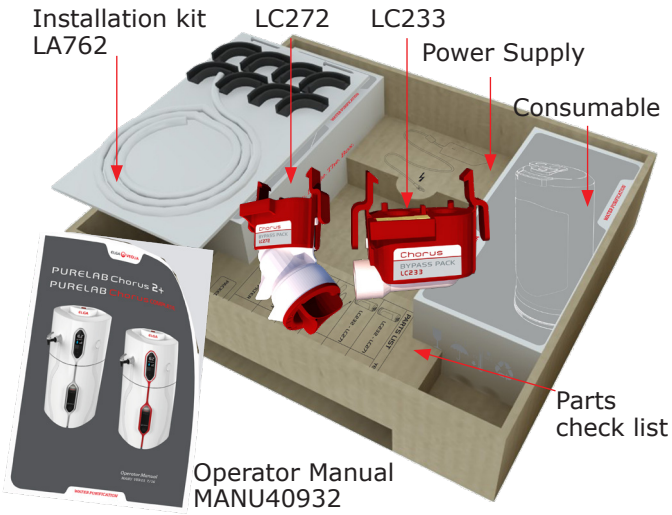
THINK BEFORE LIFTING / HANDLING. Plan the lift. Can handling aids be used ? Where is the load going to be placed ? Will help be needed with the load ? Remove obstructions such as discarded wrapping materials.



Even something as simple as a sack truck can help.



REMOVE the lid and LIFT out the foam insert.
PULL UP cardboard outer shirt.

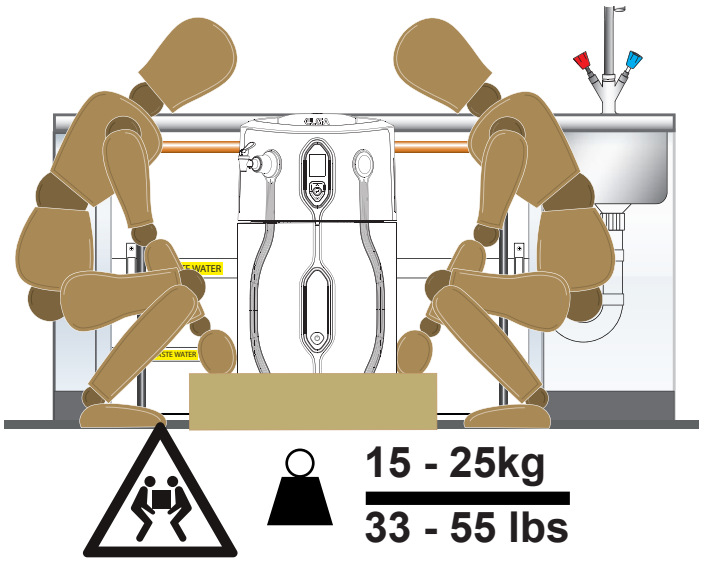


Supplied Items		
1	Chorus System	1X
2	Purification Cartridge Pack	1X
3	By Pass Block LC233 (EDI Only) (Pre-Installed)	1X
4	Operator Manual MANU40932	1X
5	Sanitization Block LC272 (Pre-Installed)	1X
6	24 Vdc Power Supply	1X
7	Basic Installation Kit LA762	1X
8	SP1177 Chorus Drain Kit (EDI Only)	1X

GET A GOOD HOLD. Where possible, the load should be hugged as close as possible to the body. This may be better than gripping it tightly with hands only.

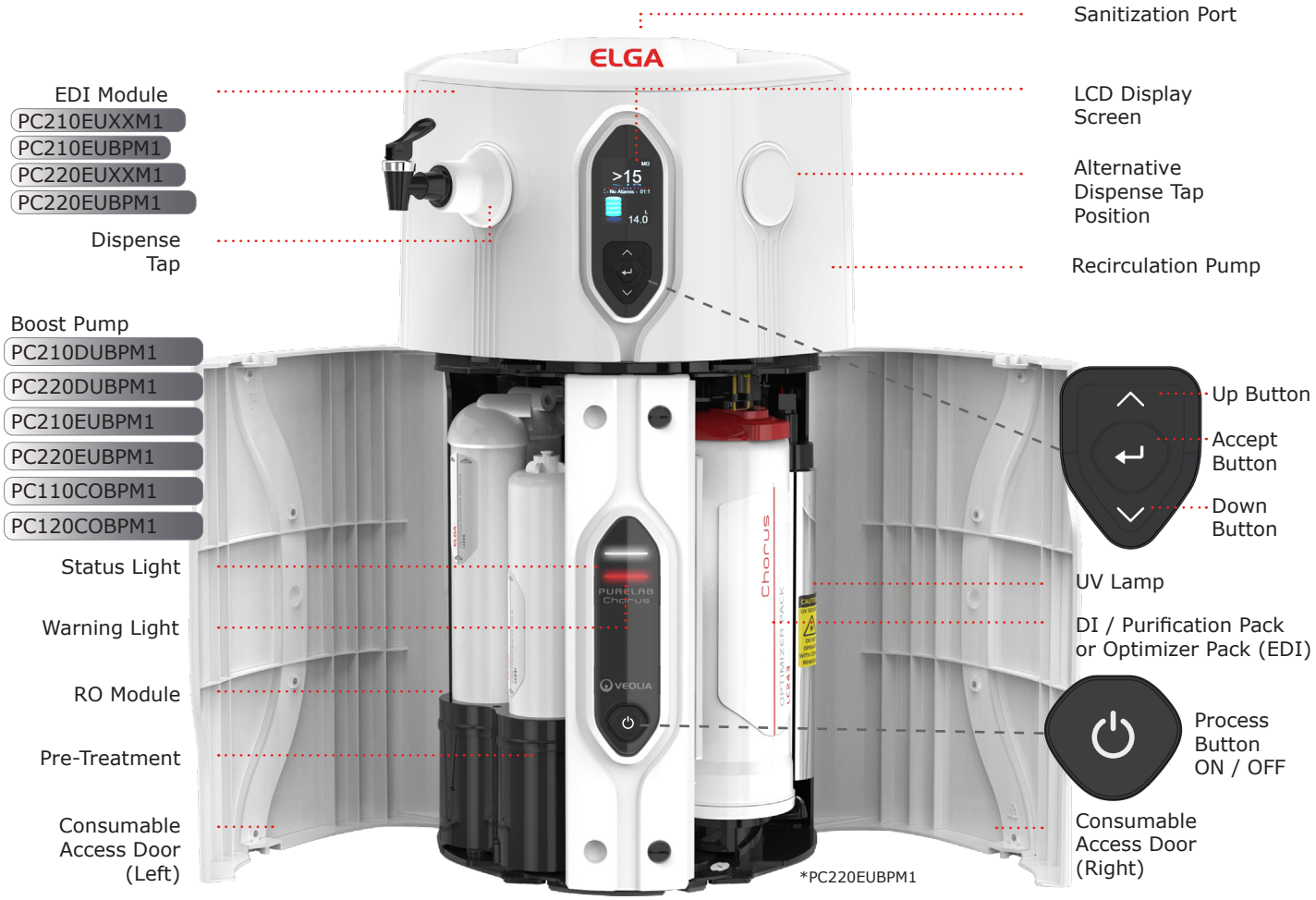
START IN A GOOD POSTURE. At the start of the lift, slight bending of the back , hips and knees is preferable to fully flexing the back (stooping) or fully flexing the hips and knees (squatting).

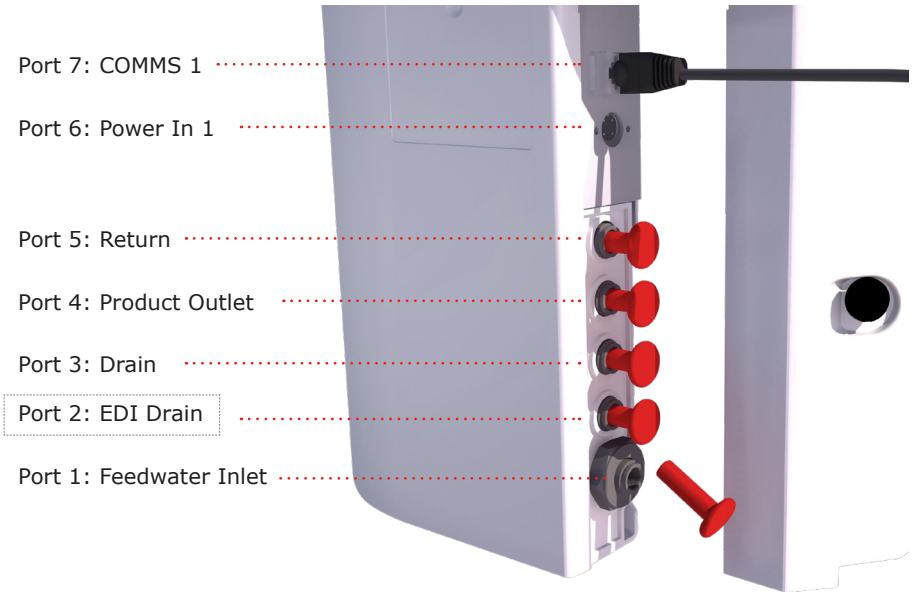
Health and Safety Executive, INDG143 (rev3), Open Government Licence.



4. GUIDE TO YOUR CHORUS

4.1 Product Description PURELAB® Chorus 1 Complete and PURELAB® Chorus 2+

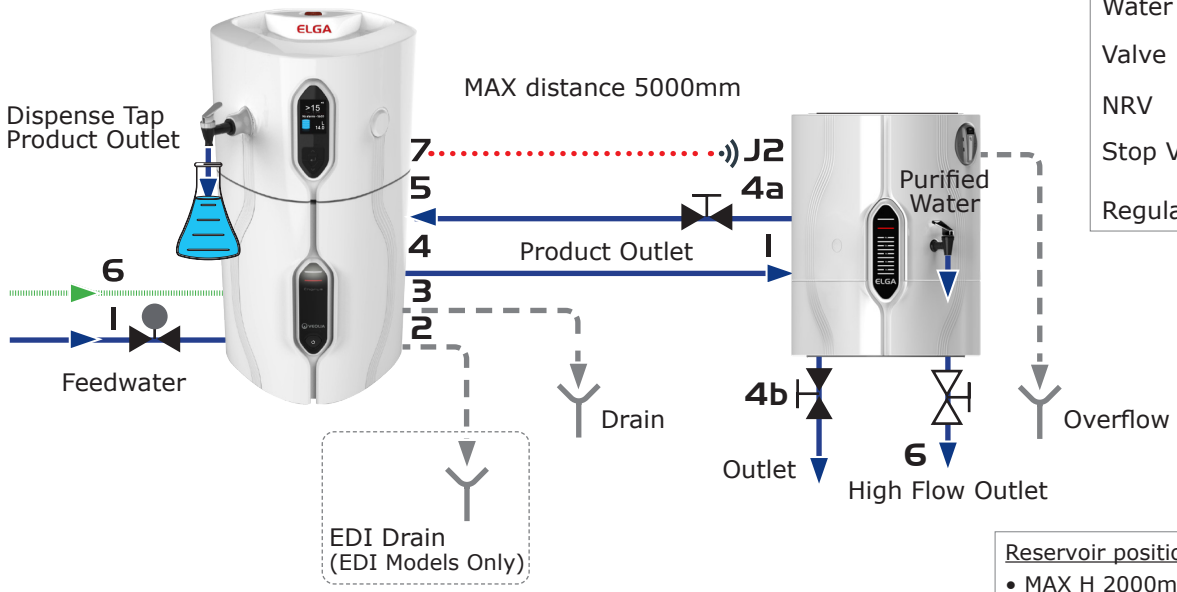




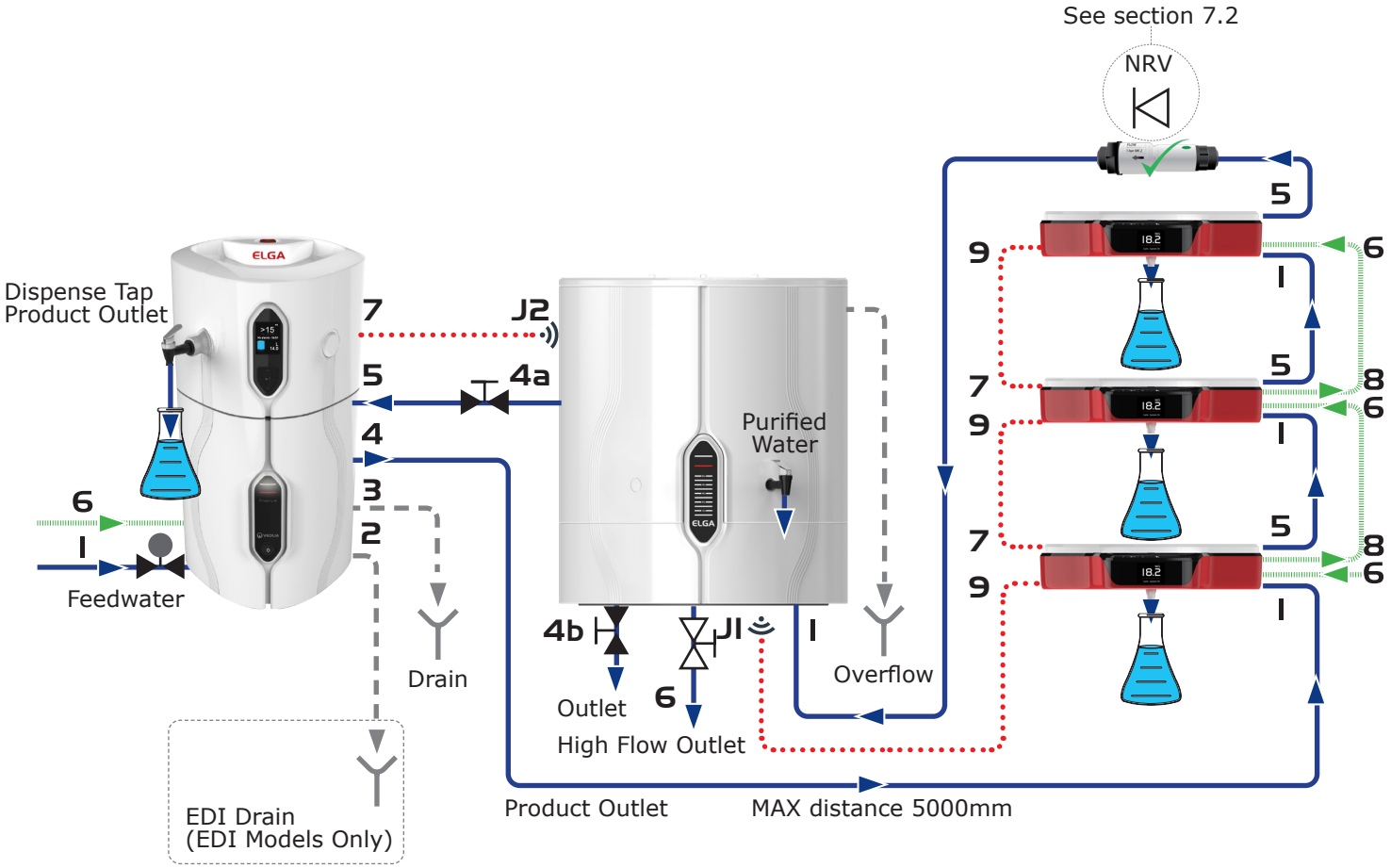
5. INSTALLATION - STANDARD CONFIGURATION

5.1 Stardard Configuration

Example one: 1 X PURELAB® Chorus 1 Complete or PURELAB® Chorus 2+
1 X 15L Reservoir



Example two: 1 X PURELAB® Chorus 1 Complete or PURELAB® Chorus 2+
3 X Halo Dispensers
1 X 60L or 100L Reservoir
(Removing and relocating the Non-Return-Valve, Refer to, section 7.2)



5. INSTALLATION - POSITIONING

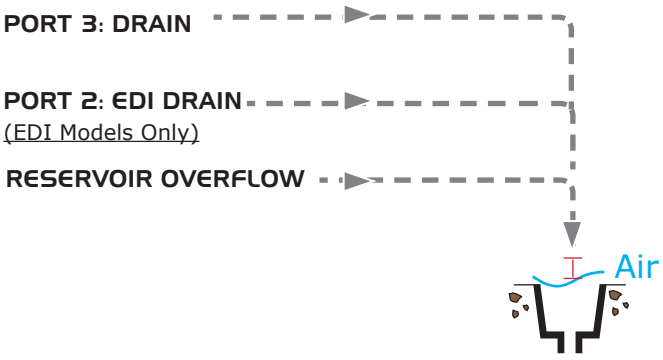
5.2 Positioning the PURELAB® Chorus 1 Complete or PURELAB® Chorus 2+

Before commencing with installation and operation of the Chorus system, please read and observe the following points.

Drain

A semi-rigid flexible connection to a sink or suitable drain capable of handling at least **1.5 l/min** is required.
The drain point should have a gravity fall below the level of the system and any connections directed to drain should have an air-break. (See section 5.3)

> Cautions!
>
> In common with other electro-deionization systems this system produces small amounts of hydrogen in the drain line. If this is allowed to build up in a restricted environment this could become a hazard. (EDI Models ONLY)



Potable Feed Water (drinking water)

The feed water should be of good quality and comply with specifications provided. This should enter the system via an 8mm O/D semi rigid tube, and should be in the temperature range 1 to 35°C.

> Cautions!
>
> Feed water temperatures outside the range 1 to 35°C will cause damage to the Chorus system.

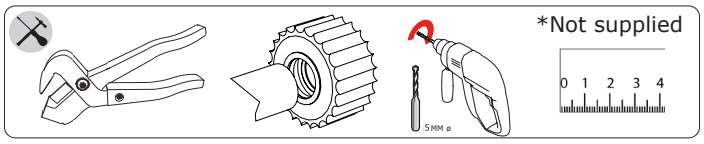
Pressurized feeds, for maximum inlet pressure please refer to , Section 12 Techincial Specifications.
Higher feedwater pressures must be reduced using a pressure reducing valve, See section 5.4.
Reservoir feeds to the Chorus system should be positioned at the same height or above the system to provide a positive flooded inlet pressure.

Refer to section 7 Options to move Dispense Tap.

Refer to section 7 Options to remove Non-return valve if required.

5. INSTALLATION - FEEDWATER RECOMMENDATIONS

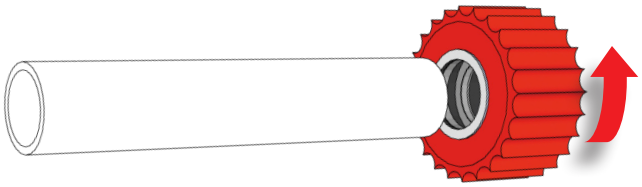
5.3 Feedwater Supply and Waste Water Drainage



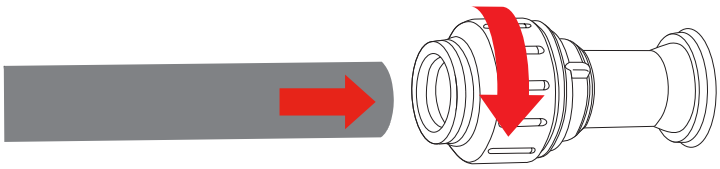
SUPPLY INSTALLED BY A COMPETENT PERSON ONLY.
SERVICE ENGINEER / PLUMBER / FACILITIES MANAGER.

Step 1 - Water Inlet Supply Connections

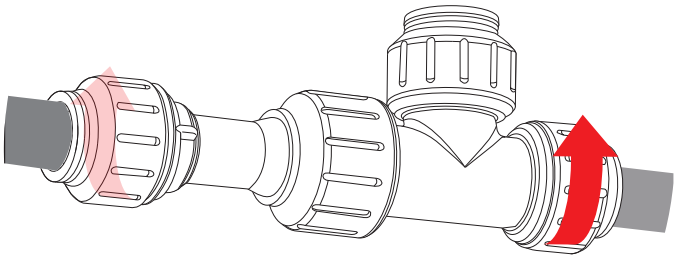
1. ISOLATE the water supply to the sink in your lab (Potable Water Supply).
2. Cut the 15mm copper or plastic inlet water pipe with a suitable 15mm tube cutters or plastic pipe cutter.
3. If the Inlet Water pipe is metal then use a pipe deburrer to REMOVE any burrs or sharp edges before attaching the slip Tee connector.



4. CONNECT a 15mm John Guest Slip Tee Connector to one end of the cut pipe plastic or metal pipe. To ensure its connected fully push until it stops.
5. LOCKING: Twist the screw cap until the cap meets the body of the Slip Tee Connector. PULL to check the connection is secure.

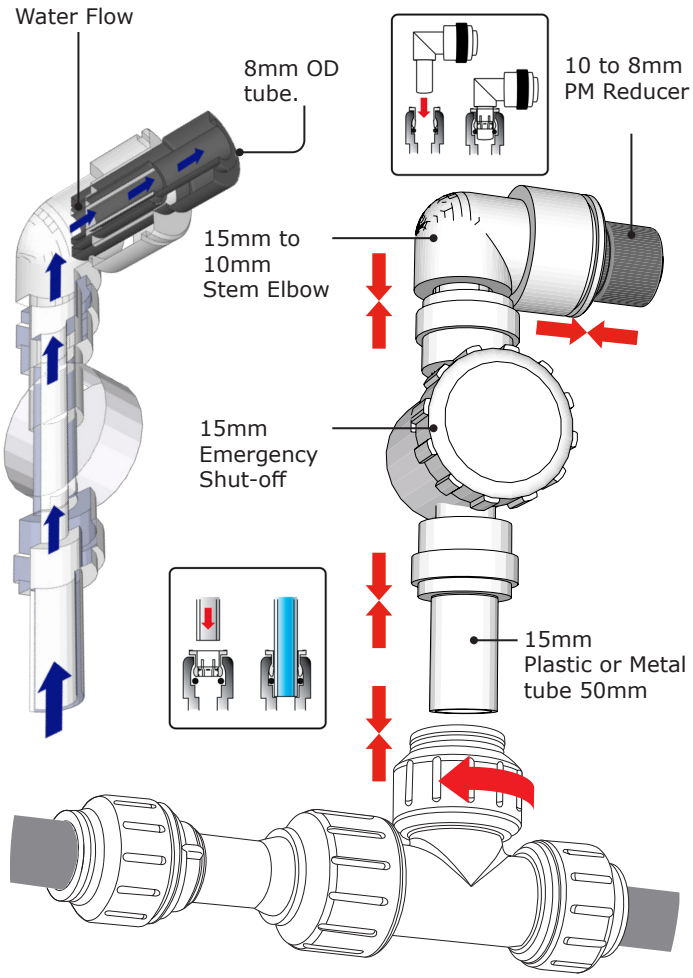


6. REPEAT the process for the other end of the Water Inlet pipe.



John Guest 15mm Slip Tee Connector.

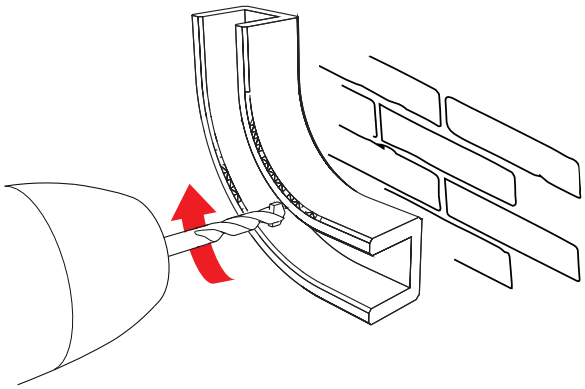
7. Assemble the below John Guest push fit parts. This will be Feedwater connection for Chorus Port: 1.



Step 2 - Water Drainage Outlet - Air Break Device

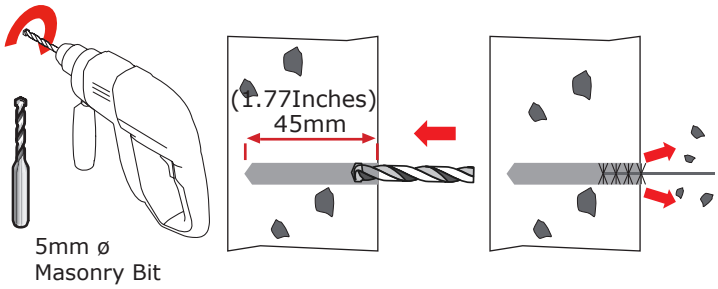
Drain capable of handling at least **1.5 l/min** is required.

1. To make an air break for 8mm tubes to the drain you will need 6 X flow bends from the basic installation kit LA762. 4 X 5mm wall plugs and 2 X No.8 screws. (Not Supplied)

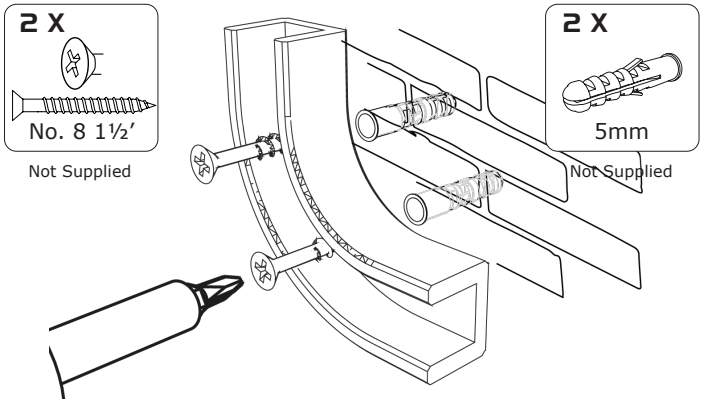


2. Use a 5mm drill, spot mark hole centres through the flow bend.

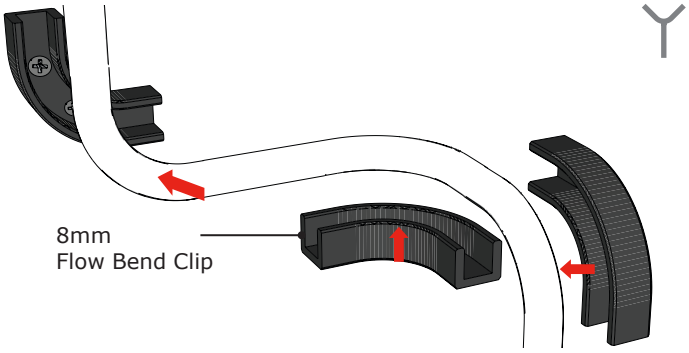
5. INSTALLATION - DRAIN RECOMMENDATIONS



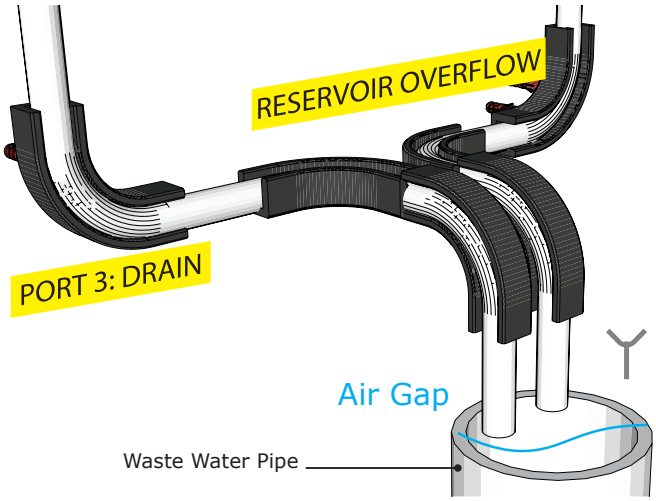
3. INSERT wall plugs into the pre-drilled holes. TIGHTEN screws to expand wall plugs and secure flow bend in place.



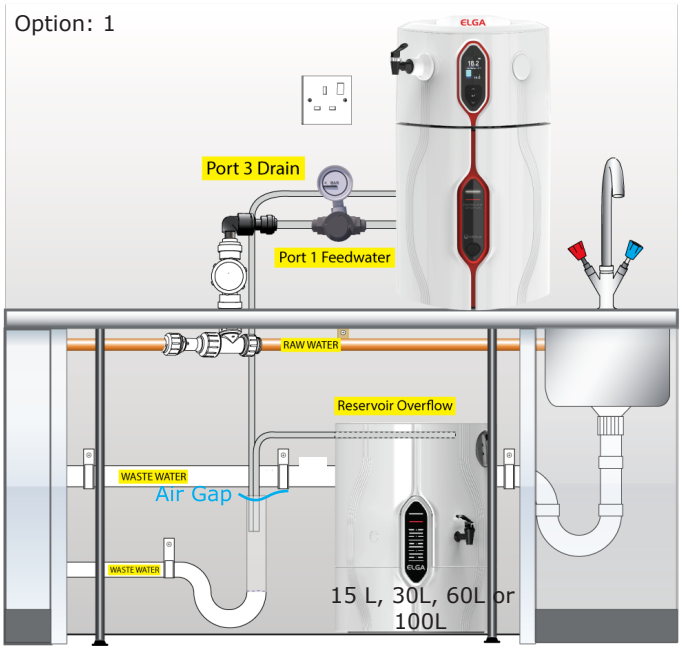
4. CLIP - IN Port 3: Drain tube as illustrated below. REPEAT the same process for the Reservoir Overflow and if you have a Chorus 2 + EDI model Port 2: EDI Drain.



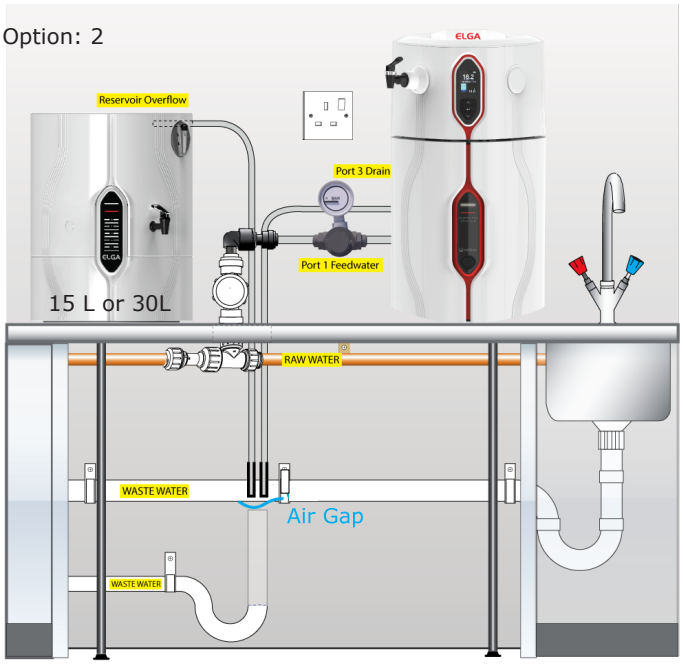
5. Completed under-counter drain line set-up with an air break between the 8mm tubes and the waste water pipe.



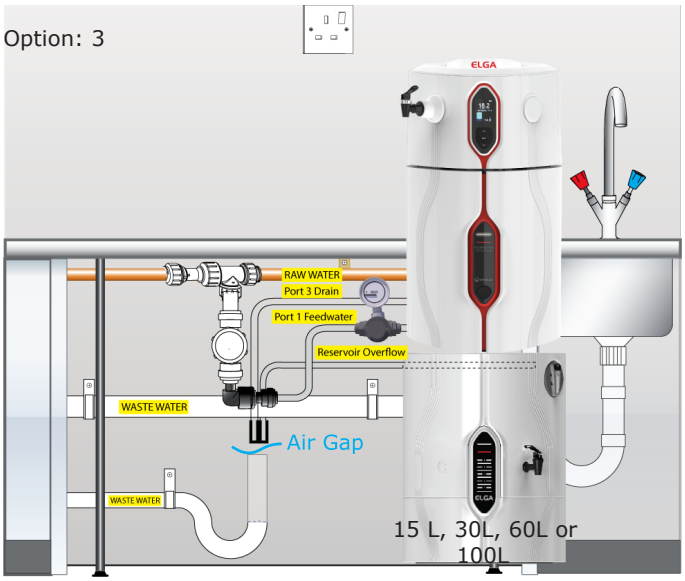
Option: 1



Option: 2

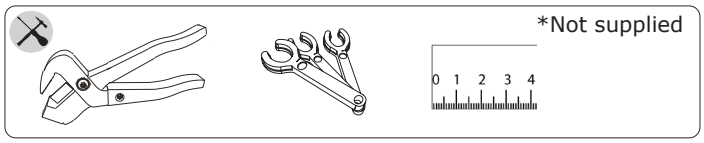


Option: 3



5. INSTALLATION - WATER AND ELETRICAL CONNECTIONS

5.4 Water, Power and COMMS Connections

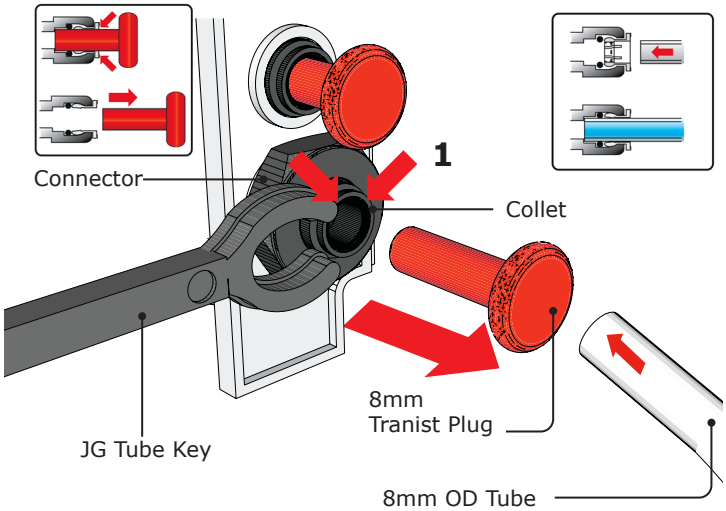


Once Chorus 1 Complete or Chorus 2+ system has been positioned either on a bench, wall or reservoir mounted it should be connected as follows:

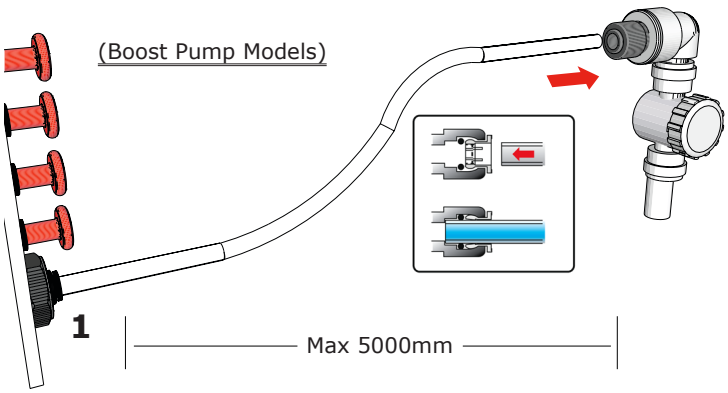
- **Feedwater Inlet** (Potable Water Supply)
- **EDI Drain** (EDI Models Only)
- **Drain**
- **Product Outlet to Reservoir**
- **Return from Reservoir** (Recirculation loop)
- **Reservoir High Flow Outlet** (Washer Feed)
- **COMMS Connections**

Step 1 - Water Connections - Feedwater

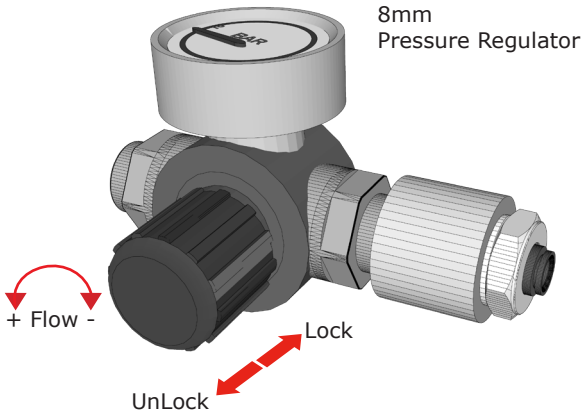
1. Port 1: Feedwater inlet, PUSH in collet on the connector.
2. PULL out transit plug.
3. CUT a clean square end on an 8mm OD semi rigid tube.
4. PUSH 8mm OD tube into connector.



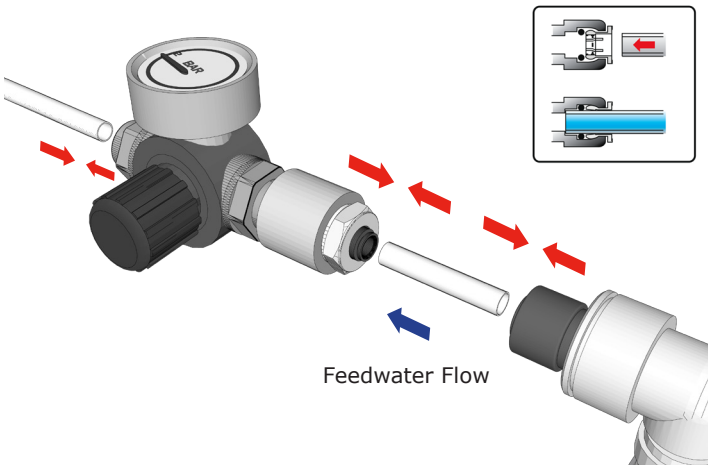
5. CONNECT 8mm OD semi rigid tube from Port 1: Feedwater into the 8mm flow Reducer.

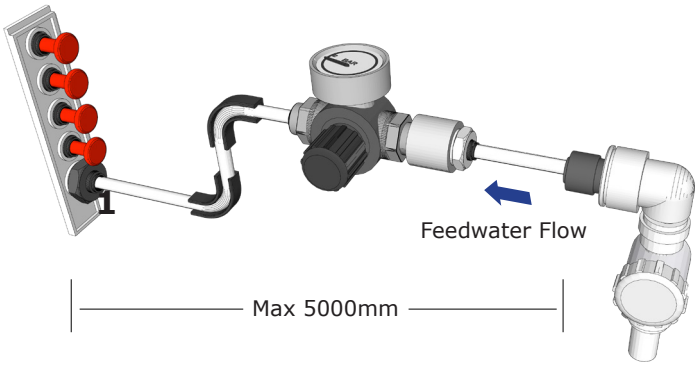


6. If the water supply is at a pressure greater than 2 bar (30 psi) fit a pressure regulator (LA512). Most commerical and domestic water supplies will be >2 bar, please follow below.
7. LA512 Pressure regulator.



8. CONNECT 8mm OD semi rigid tube from Port 1: Feedwater into LA512 Pressure regulator.
9. CONNECT 8mm OD semi rigid tube from LA512 Pressure regulator into 8mm flow Reducer. (Potable Feedwater Supply)

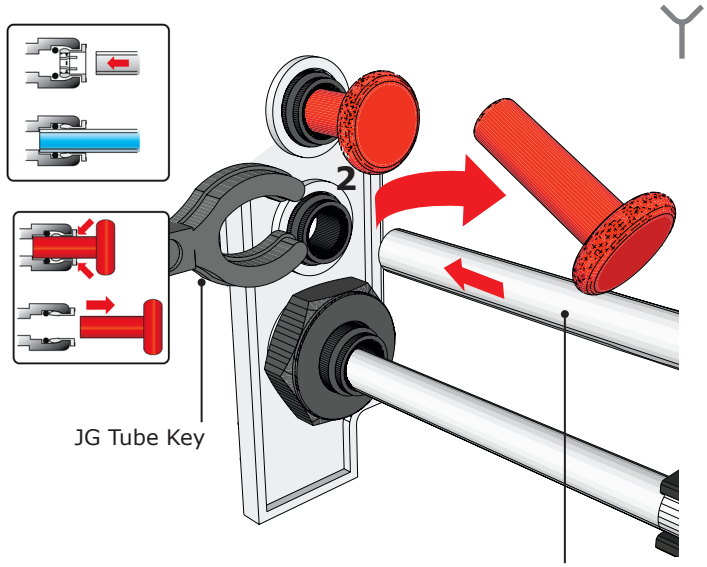




5. INSTALLATION - WATER AND ELETRICAL CONNECTIONS

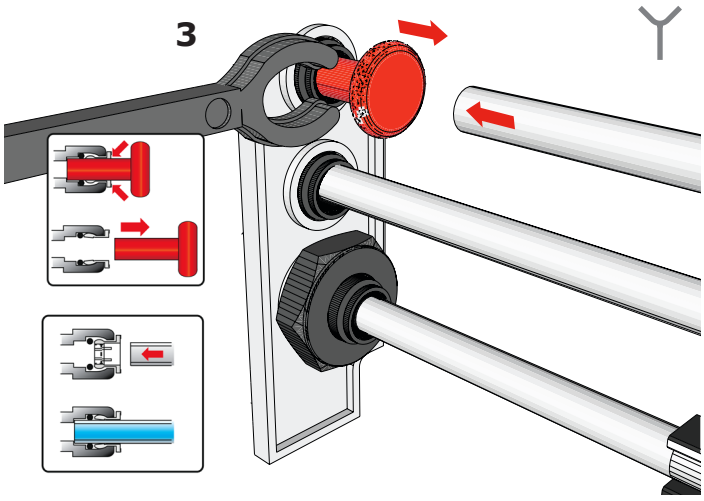
Step 2 - Water Connections - EDI Drain (EDI Models Only)

1. Port 2: EDI drain, PUSH in collet on the connector.
2. PULL out transit plug.
3. CUT a clean square end on an 8mm OD semi rigid drain tube, long enough to reach the waste water outlet pipe underneath the worktop.
4. PUSH 8mm OD tube into connector.
5. Follow 5.3 Step 2 - Water Drainage Outlet - Air Break Device to connect EDI drain to waste water outlet.



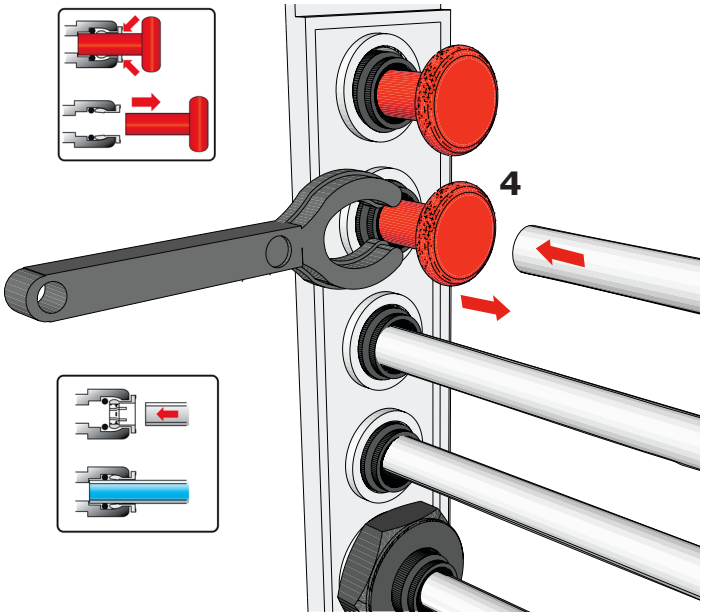
Step 3 - Water Connections - Drain

1. Port 3: Drain, PUSH in collet on the connector.
2. PULL out transit plug.
3. CUT a clean square end on an 8mm OD semi rigid drain tube, long enough to reach the waste water outlet pipe underneath the worktop.
4. PUSH 8mm OD tube into connector.
5. Follow 5.3 Step 2 - Water Drainage Outlet - Air Break Device to connect EDI drain to waste water outlet.

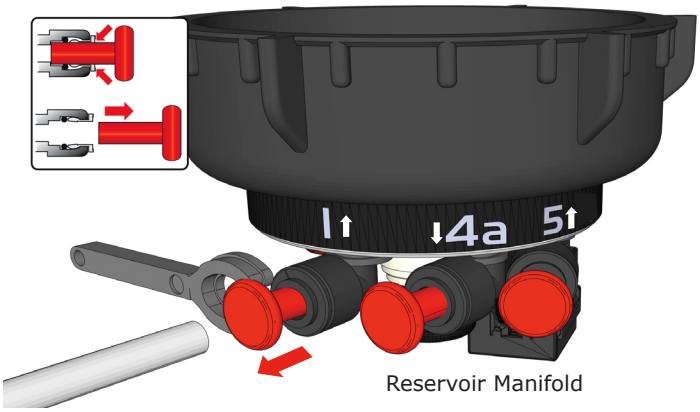


Step 4 - Product Outlet to reservoir

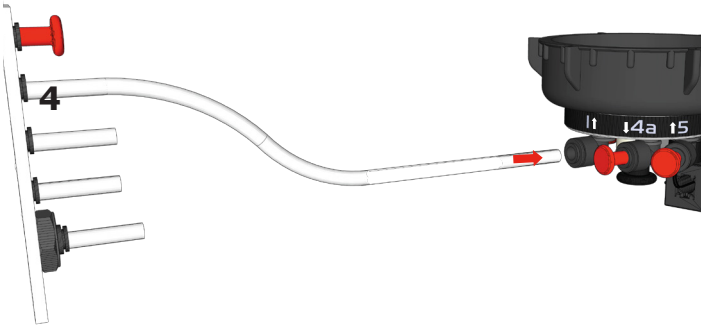
1. Port 4: Product Outlet, PUSH in collet on the connector.
2. PULL out transit plug.
3. CUT a clean square end on an 8mm OD semi rigid tube, long enough to reach the Reservoir Inlet port 1⬆.
4. PUSH 8mm OD tube into connector.



5. Port 1⬆: Reservoir Inlet, PUSH in collet on the connector. PULL out transit plug.



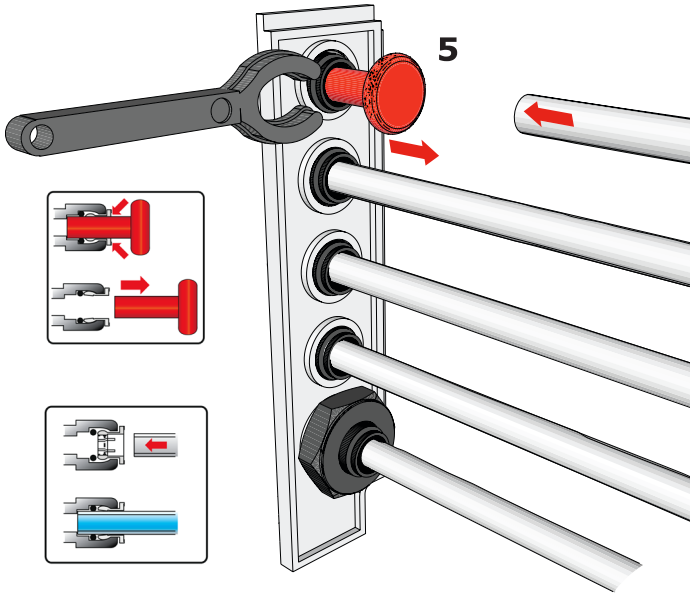
6. CONNECT 8mm OD tube. PUSH 8mm OD tube into Port 1: Reservoir Inlet connector.



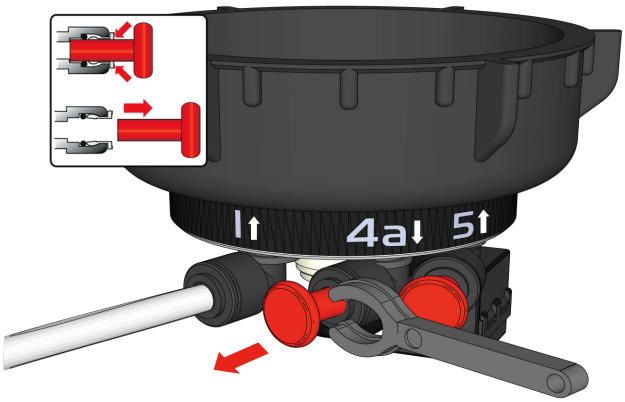
5. INSTALLATION - WATER AND ELETRICAL CONNECTIONS

Step 5 - Return / feed from Reservoir (Recirculation loop)

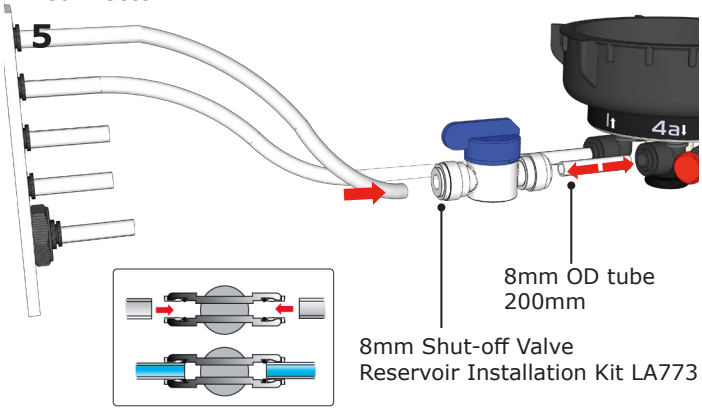
1. Port 5: Return Inlet, PUSH in collet on the connector.
2. PULL out transit plug.
3. CUT a clean square end on an 8mm OD semi rigid tube, long enough to reach the Reservoir Outlet port 4a⬇.
4. PUSH 8mm OD tube into connector.



5. Port 4a⬇: Reservoir Outlet, PUSH in collet on the connector. PULL out transit plug.



6. CONNECT 8mm OD tube into the shut-off valve. PUSH 8mm OD tube into Port 4a⬇: Reservoir Outlet connector.



Optional Section For 15mm Valve

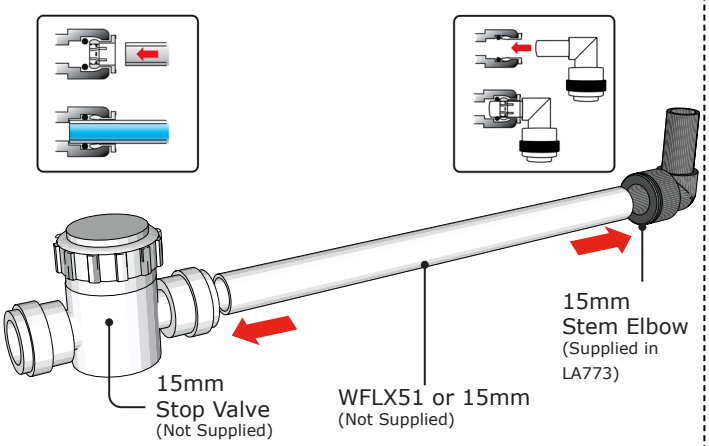
Step 6 - Reservoir High Flow Outlet

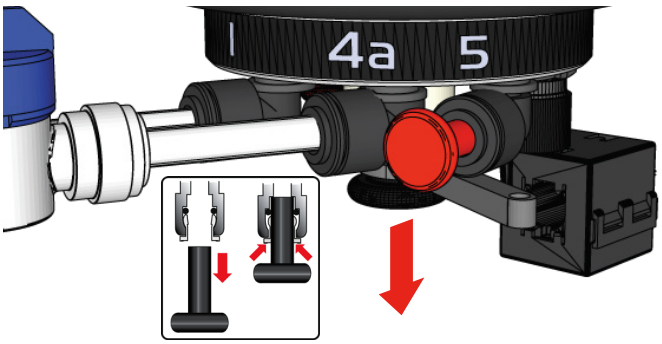
1. Reservoir Port 6: High Flow Outlet. PUSH in collet on the connector
2. PULL out the black 15mm transit plug.

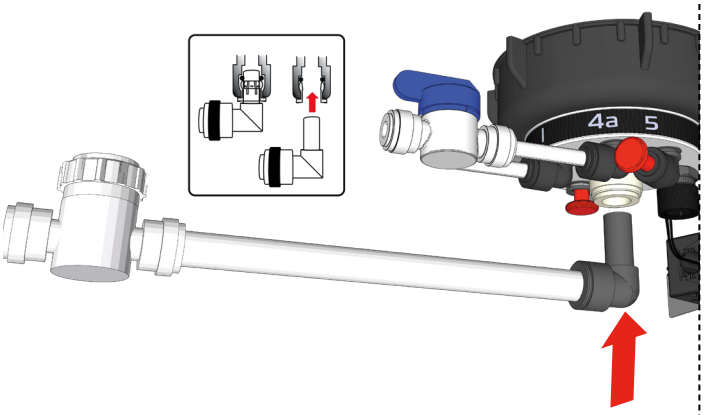
3a. CUT a clean square end on an 15mm OD semi rigid tube, long enough to reach the Reservoir High Flow Outlet port 6.

3b. OR use an Speedfit X plan stem WFLX51.

4. CONNECT to 15mm Stem Elbow and Tap.







5. INSTALLATION - WATER AND ELETRICAL CONNECTIONS

Step 7 - Power Connection

WARNING!

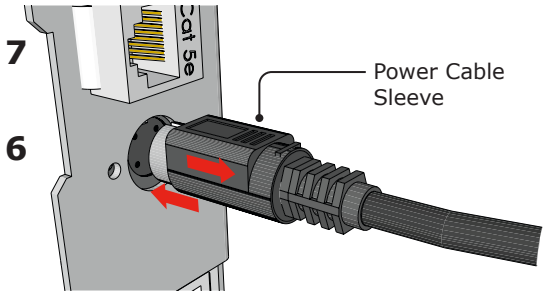
ONLY USE THE APPLIANCE COUPLER (MAINS LEAD) AND POWER SUPPLY PROVIDED. THE USE OF THESE WILL ENSURE ADEQUATE EARTH PROTECTION IS PROVIDED. IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY ELGA®, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED. POSITION THE POWER SUPPLY SO THAT IT CANNOT COME INTO CONTACT WITH WATER.

WARNING!

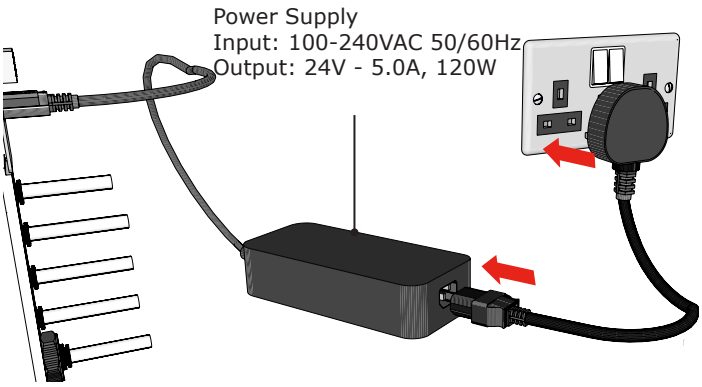
THIS APPLIANCE MUST BE EARTHED.

1. Port 6: Power Pack Connection.
   REMOVE the Power Pack from the consumables tray.

2. PULL back cable sleeve of the Power Pack cable.
3. INSERT Power cable, making sure the pins are aligned correctly.

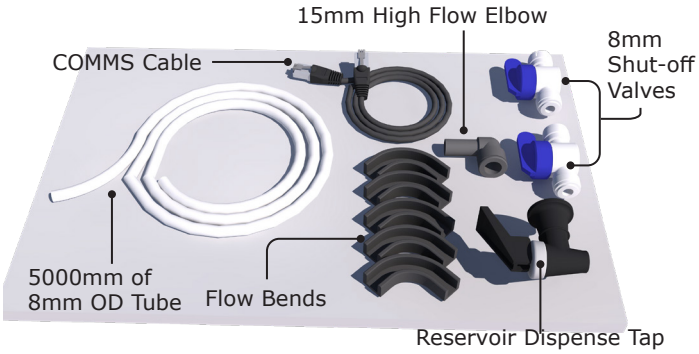


4. PLUG mains lead into the Chorus Power Pack.
5. PLUG mains AC lead into socket DO NOT TURN ON.

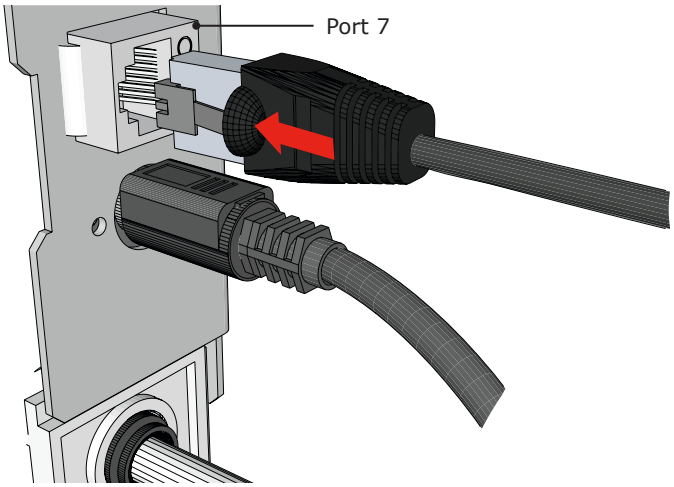


Step 8 - Communications Connections

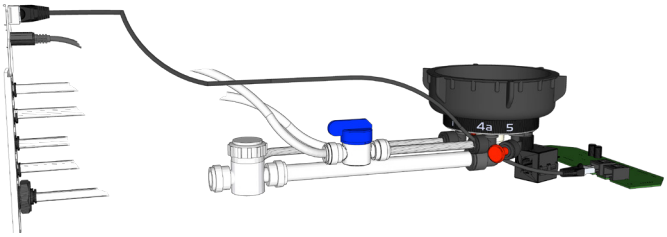
1. Reservoir Installation Kit LA773

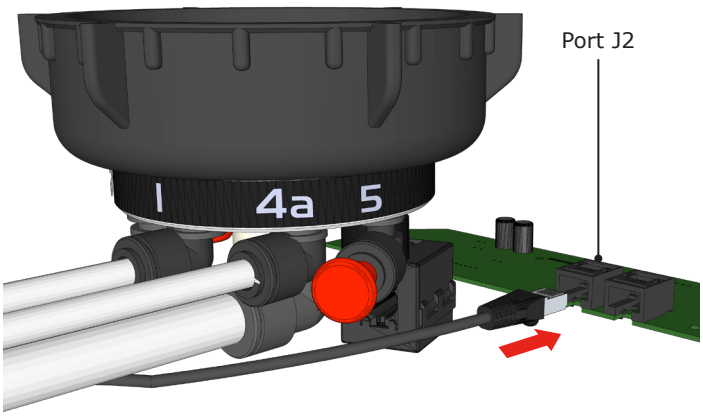


2. Port 7: Chorus to Reservoir comms.
   INSERT black COMMS cable, 'CLICK' to secure.



3. Port J2: Reservoir Comms to Chorus.
   INSERT black COMMS cable, 'CLICK' to secure.

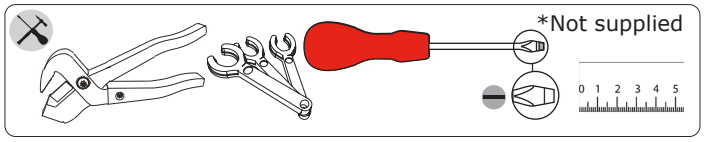




5. INSTALLATION - COMMISSIONING CHORUS I COMPLETE / 2+

CHECK YOUR OPTIONS NOW, BEFORE COMMISSIONING - See section 7 OPTIONS

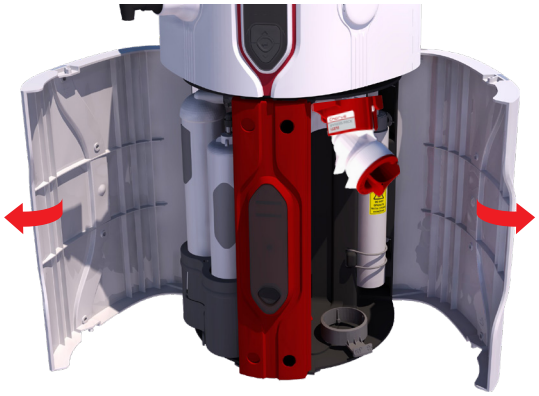
5.5 Commissioning Procedure (Non EDI Models)



STEP 1 - Start up Procedure

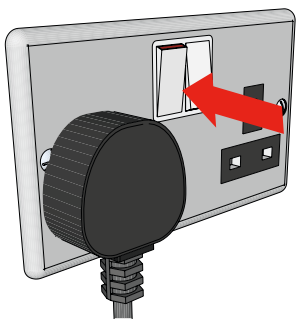
1. OPEN Chorus outer doors.

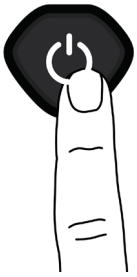
2. Bypass Pack LC272 should be pre-installed ready for commissioning procedure.



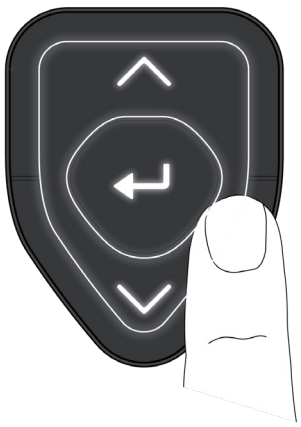
3. TURN ON the feedwater supply to the system. Regulate as required to ensure rated feedwater pressure is not exceeded. Please see Section 12 for guidance.

4. SWITCH ON Power socket, PRESS Process button (ON).



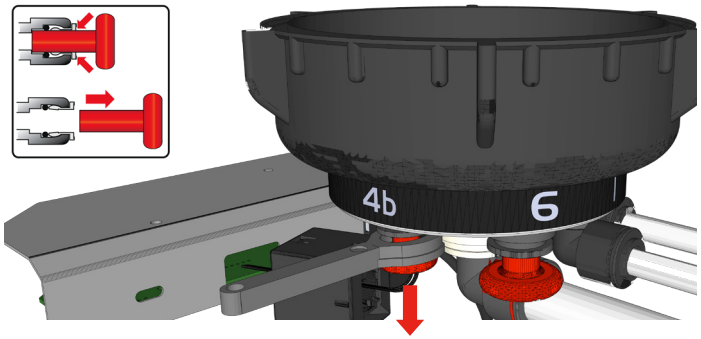


5. SELECT LANGUAGE drop down MENU options. UP and DOWN arrows and PRESS Accept to enter.

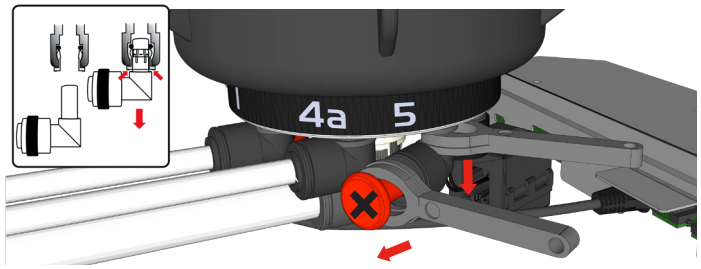


STEP 2 - Opening Reservoir Drain Valve.

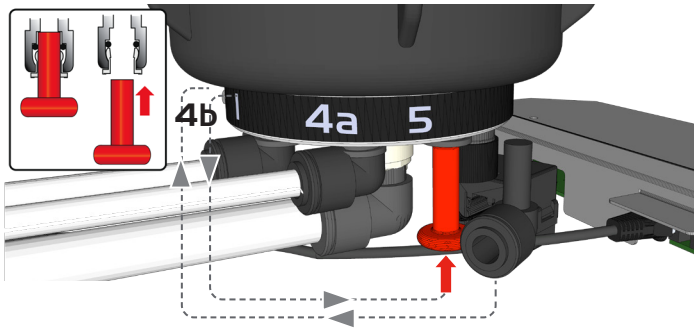
1. REMOVE and RETAIN Reservoir transit plug Port 4b⬇.



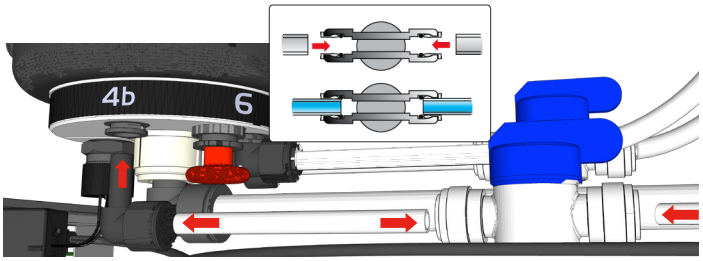
2. REMOVE Port 5 transit plug and Stem elbow. RE-USE Stem elbow in Port 4b⬇.



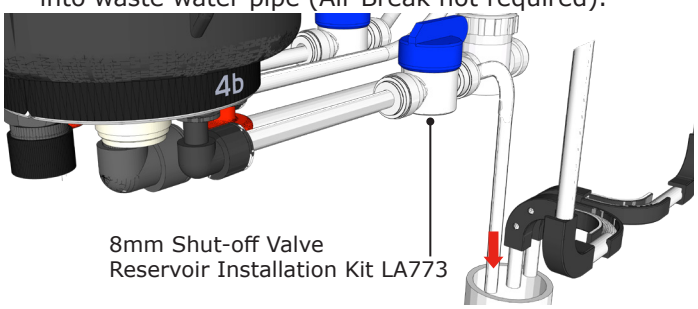
3. INSERT transit plug from Port 4b⬇ into Port 5.



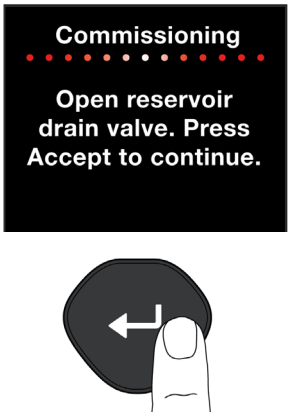
4. INSERT Stem elbow from Port 5 into 4b⬇and connect a Manual Valve from Reservoir Installtion Kit LA773 .

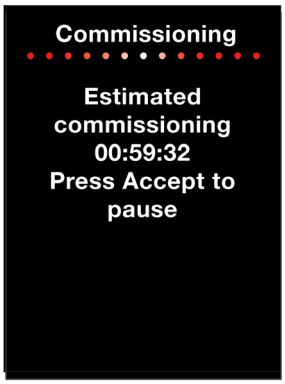


5. INSERT free end of the 8mm OD tubing directly into waste water pipe (Air Break not required).

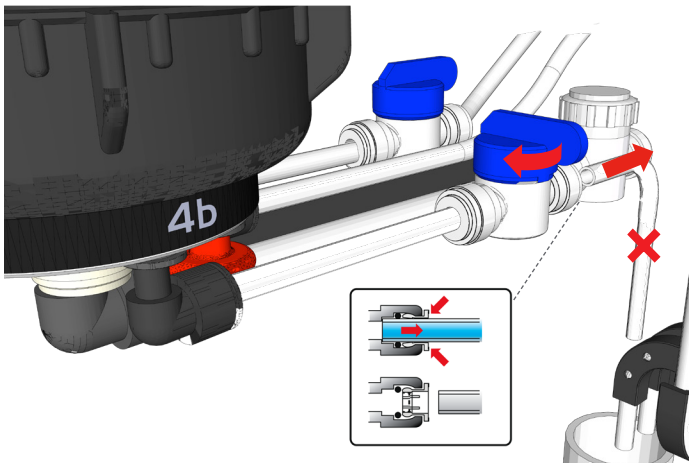


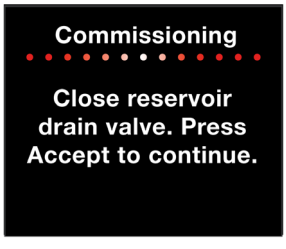
5. INSTALLATION - COMMISSIONING CHORUS I COMPLETE / 2+





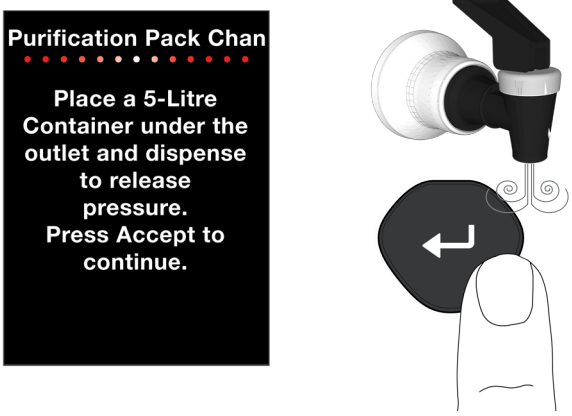
6. After 60 minutes commissioning cycle CLOSE (Manual Valve) Reservoir Outlet Port 4b⬇ and REMOVE drain tube from waste water pipe.





STEP 3 - Removing LC272 Bypass Block and Fitting a New Pack Purification Pack.

1. Follow on screen instructions.
Pressure / air is released through the Dispense Tap.



2. REMOVE LC272 Bypass Block from Position 1 inside Chorus. PUSH both clips inwards to release and PULL DOWN.

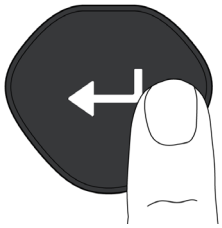
Purification Pack Holder

3. REMOVE transit tape (Purification Pack holder).

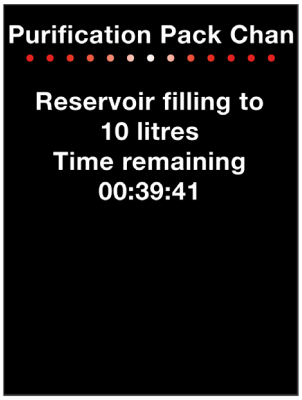
4. UNPACK New Purification Pack and REMOVE red transit plugs before installing into Position 1.

5. INSTALLATION - COMMISSIONING CHORUS I COMPLETE / 2+

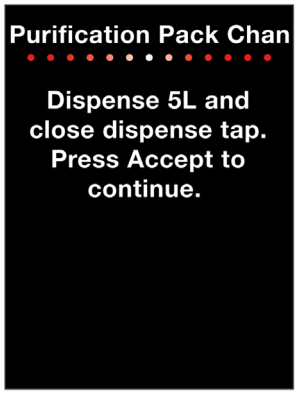
5. PRESS Accept to continue.

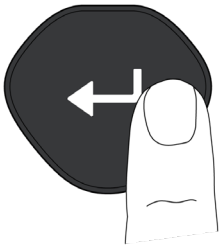


6. RESERVOIR will begin filling to 10 litres of RO water. Progress shown on the illuminated Reservoir display. Please wait.



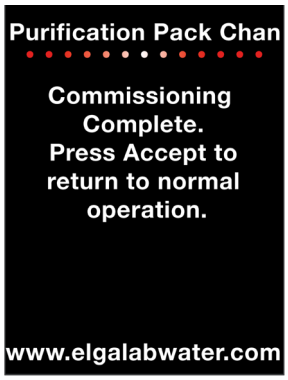
7. Dispense 5L and CLOSE Dispense Tap. PRESS Accept to continue.



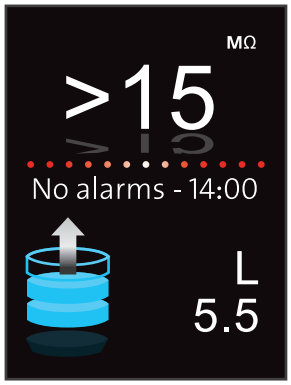


8. AFTER dispensing 5 litres of water and pressing the Accept button commissioning is completed.

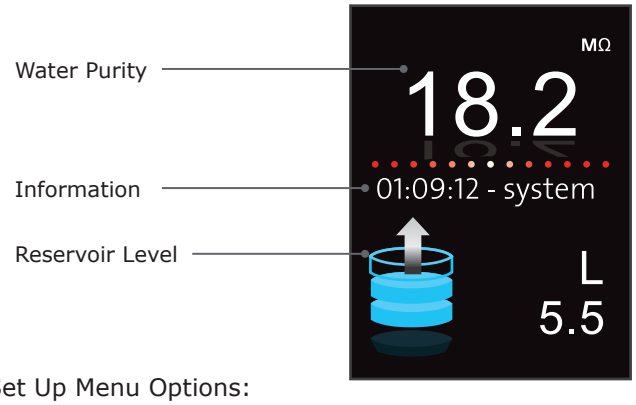
   Chorus will now being refilling the reservoir to 100%.



Chorus 2 +

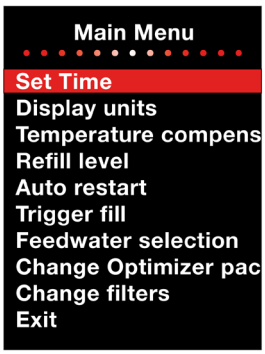


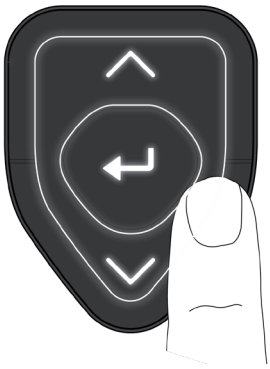
Chorus 1 Complete



Set Up Menu Options:

PRESS and HOLD Accept for 2 Seconds to enter Main Menu. Scroll UP and Down and PRESS Accept.





- Set Alarms: - Water Purity Alarm

Chorus 1 Complete: 1 - 15 Megaohms in 1 Megaohm increments.

Chorus 2 +: 1 - 10 Megaohms in 1 Megaohm increments.

(Chorus 1 Complete default alarm point 10.0MΩ.cm)
(Chorus 2+ RO/DI default alarm point 10.0MΩ.cm)

- Water Temp Alarm Select to either 30°C, 35°C or 40°C. (Default 35°C).

- Set Time: Manual adjustment time and date.
- Display Units:
  Mega Ohms MΩ.cm or Micro Siemens µS.

5. INSTALLATION - COMMISSIONING CHORUS 2+ EDI

CHECK YOUR OPTIONS NOW, BEFORE COMMISSIONING - See section 7 OPTIONS

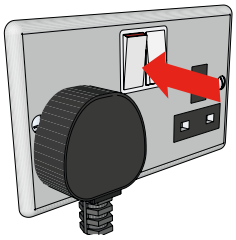
5.6 Commissioning Procedure EDI Models

1. REMOVE LC233 Bypass Block from Position 1 inside Chorus. PUSH both clips inwards to release and PULL DOWN.

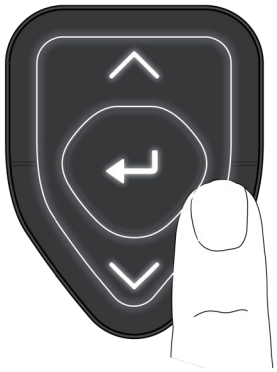
Optimizer Pack Holder

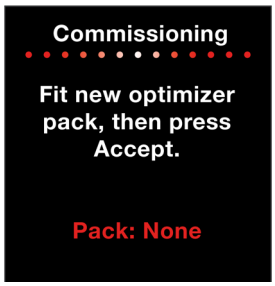
2. TURN ON the feedwater supply to the system. Regulate as required to ensure rated feedwater pressure is not exceeded. Please see Section 12 for guidance

3. SWITCH ON Power socket, PRESS Process button ON to start the system.



4. SELECT LANGUAGE drop down MENU options. UP and DOWN arrows and PRESS Accept to enter.





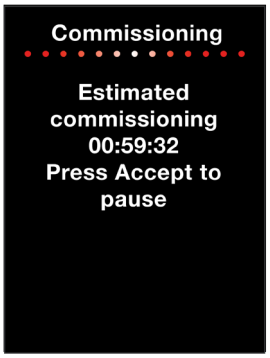
5. REMOVE retaining clip (Optimizer Pack Holder).

6. UNPACK New Optimizer Pack LC243 and REMOVE red transit plugs before installing into Position 1.

7. PRESS Accept and the system will start a 60 minute flush sequence, where water will be directed to drain through a flush valve (V2).

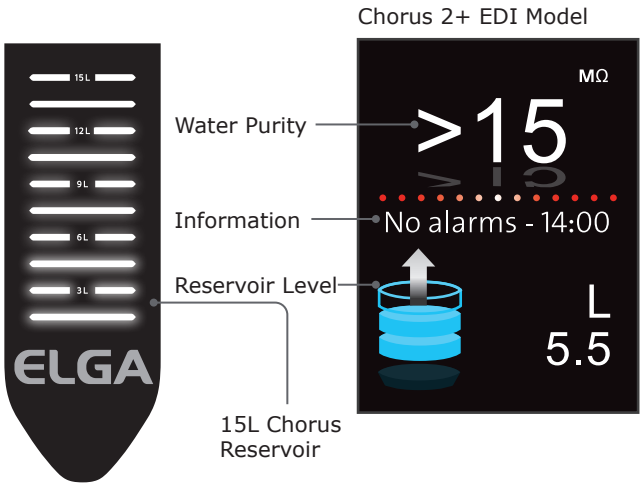
8. LEAVE the system to run until this process has completed. During this period, the bacteriostatic solution will be rinsed from the system.

Commissioning and rinse cycle on the Optimizer Pack. (Approx 120 mins)



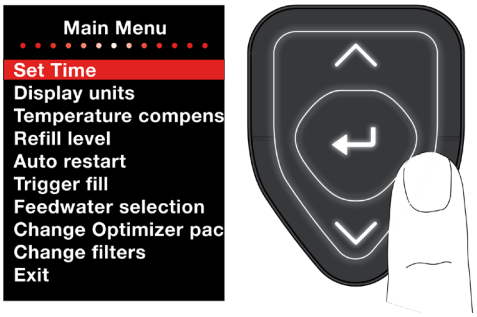
5. INSTALLATION - COMMISSIONING CHORUS 2+ EDI

9. The system has now been rinsed and will automatically start filling the reservoir.



Set Up Menu Options:

PRESS and HOLD Accept for 2 Seconds to enter Main Menu. Scroll UP and Down and PRESS Accept.



- Set Alarms: - Water Purity Alarm

Chorus 2 + EDI: 1 - 10 Megaohms in 1 Megaohm increments.

(Chorus 2+ RO/EDI/UV Default alarm 10.0MΩ.cm)

- Water Temp Alarm Select to either 30°C, 35°C or 40°C (Default 35°C).

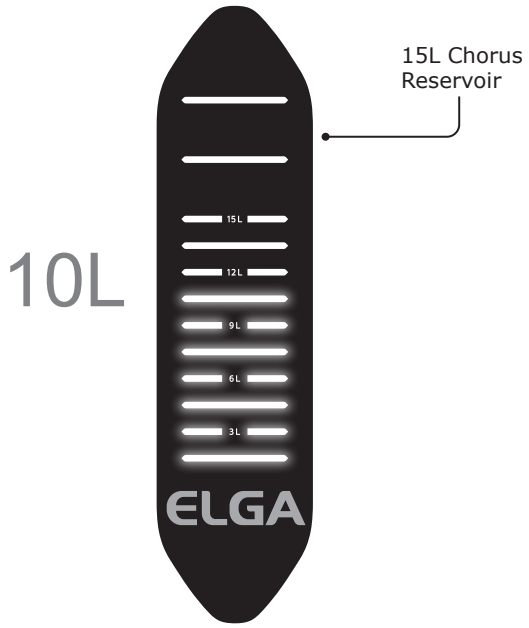
- Set Time: Manual adjustment time and date.
- Display Units:
  Mega Ohms MΩ.cm or Micro Siemens µS.

- Set Feedwater for EDI Models
  SOFT <150ppm $CaCO_3$
  MEDIUM <150ppm - 250ppm $CaCO_3$
  HARD <250ppm - 350ppm $CaCO_3$ (Default)
  HARD >350ppm $CaCO_3$ (Refer to local representative)

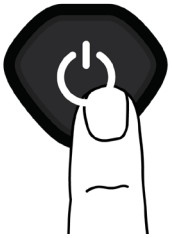
<u>Bleeding Chorus System Before Use.</u>
SP1177 Drain Kit Chorus (<u>EDI Models Only</u>)

1. AFTER completing the standard commissioning procedure it is advised to bleed some water and air from the unit.

2. LET the Reservoir fill to 10L.
   Progress shown on the illuminated Reservoir display.



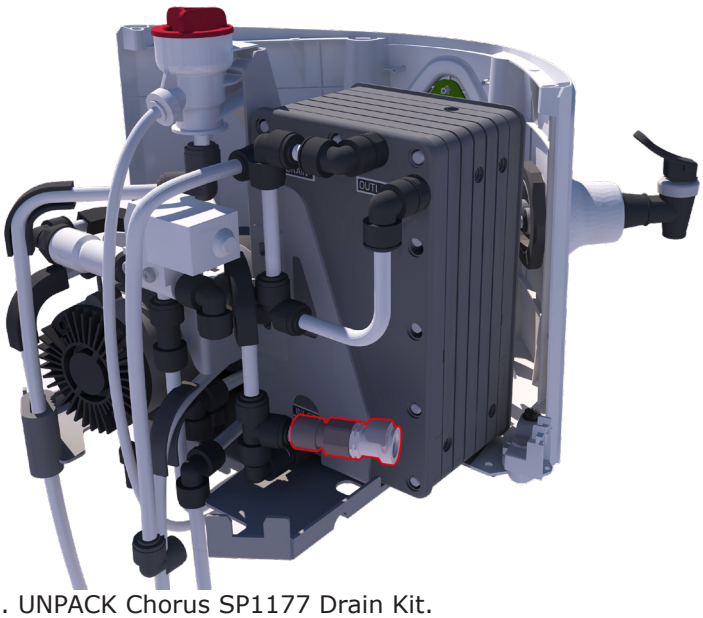
3. STOP Chorus system. PRESS Process button ONCE.



4. LIFT and REMOVE the lid. Ensure the lid is placed on a flat level surface to avoid damage.

5. INSTALLATION - COMMISSIONING CHORUS 2+ EDI

5. LOCATE CPC connection highlighted in red. (EDI Model only)

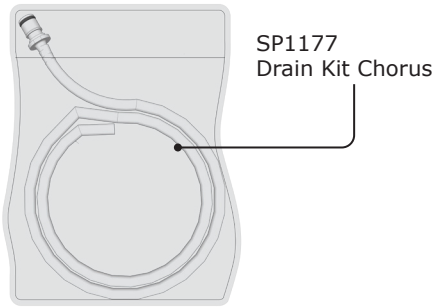


6. UNPACK Chorus SP1177 Drain Kit.

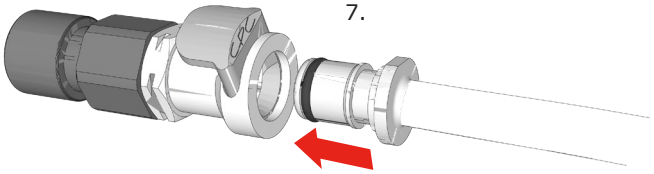
7. INSERT Male connector into the female CPC connection on the Chorus unit .

8. PLACE the free end of the tube into a container.

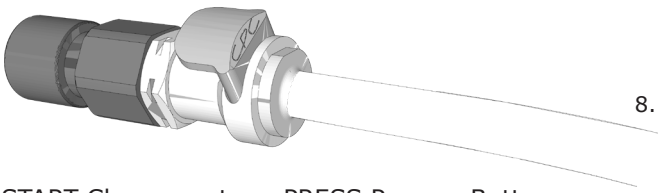
6.



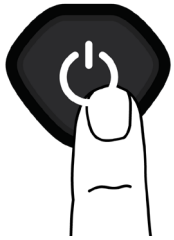
7.



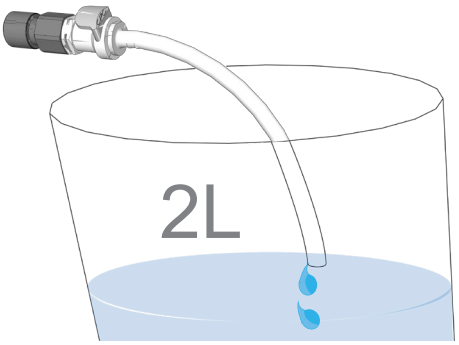
8.



9. START Chorus system. PRESS Process Button.

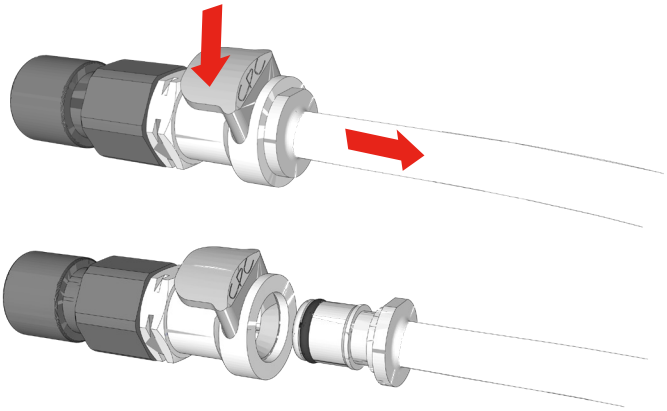


10. COLLECT 2 Litres of water into a container.



11. STOP Chorus system. PRESS Process Button ONCE.

12. DISCONNECT SP1177 Drain Kit and store for future use . PUSH DOWN on the grey button to release.



13. REFIT the Lid, HAND tighten the quarter turns.

14. START Chorus system. PRESS Process Button ONCE.

15. Return to normal operation.

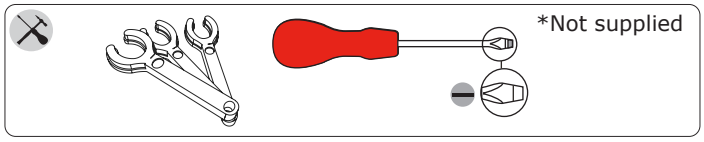
6. CONSUMABLES AND ACCESSORIES

System Type	PURELAB® Chorus 1 Complete	PURELAB® Chorus 2+ RO/DI/UV	PURELAB® Chorus 2+ RO/EDI/UV
Models	**PC110COBPM1** (10 l/hr with boost pump) **PC110COXXM1** (10 l/hr) **PC120COBPM1** (20 l/hr with boost pump) **PC120COXXM1** (20 l/hr)	**PC210DUBPM1** (10 l/hr with boost pump) **PC210DUXXM1** (10 l/hr) **PC220DUBPM1** (20 l/hr with boost pump) **PC220DUXXM1** (20 l/hr)	**PC210EUBPM1** (10 l/hr with boost pump) **PC210EUXXM1** (10 l/hr) **PC220EUBPM1** (20 l/hr with boost pump) **PC220EUXXM1** (20 l/hr)
Pre-treatment Max Service Life: 6 mths Max. Shelf Life: 2 Yrs	LC241	LC241	LC241
RO Module Max Service Life: 2 Yrs Max. Shelf Life: 2 Yrs	LC240	LC240	LC240
Optimizer Pack Max Service Life: 6 mths Max. Shelf Life: 2 Yrs	None	None	LC243
Purification Pack Max Service Life: 6 mths Max. Shelf Life: 2 Yrs	LC275	LC274	None
Bypass or Sanitisation Block	LC272	LC272	LC233
Point of Use Filter (Optional) Service Life: 3 mths	LC197 (Biofilter) or LC145 (0.2 µm)	LC197 (Biofilter) or LC145 (0.2 µm)	LC197 (Biofilter) or LC145 (0.2 µm)
Degasser (Optional) Service Life: 2-3 Yrs	LC181	LC181	LC181
Composite Vent Filter Max Service Life: 6 mths	LC216	LC216	LC216
UV Lamp Max Service Life: 12 mths	LC210	LC285	LC285
Chorus Wall Mounting	LA795	LA795	LA795
Sanitization Chemicals	Chlorine Tablets: ELGA® CT1 or *Effersan™ (*See below)	Chlorine Tablets: ELGA® CT1 or *Effersan™ (*See below)	Chlorine Tablets: ELGA® CT1 or *Effersan™ (*See below)
Sanitization Duration	0.5 hours	1 hours	2 hours

*Effersan is an EPA approved sanitant for use in the USA.

7. OPTIONS

7.1 Dispense Tap Positioning



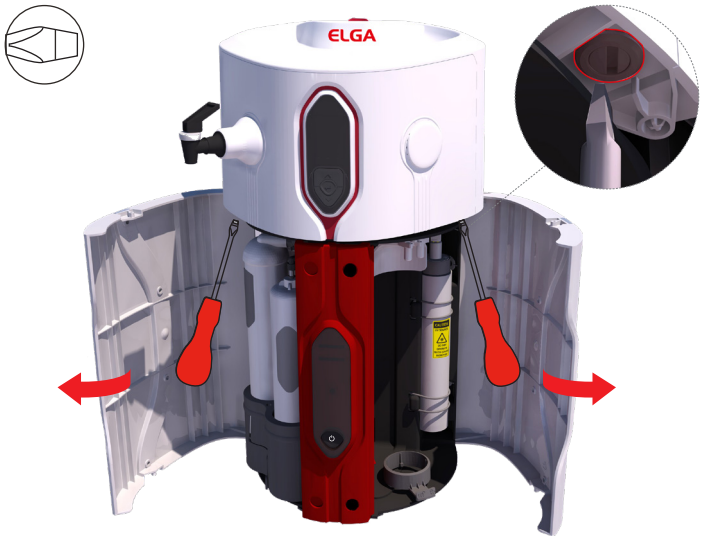
Step 1 - Disconnect Electrical and Water supply

WARNING!

CHECK THAT THE MAINS ELECTRICAL POWER AND FEED WATER SUPPLIES ARE SWITCHED OFF BEFORE INTERNAL MAINTENANCE WORK IS PERFORMED.

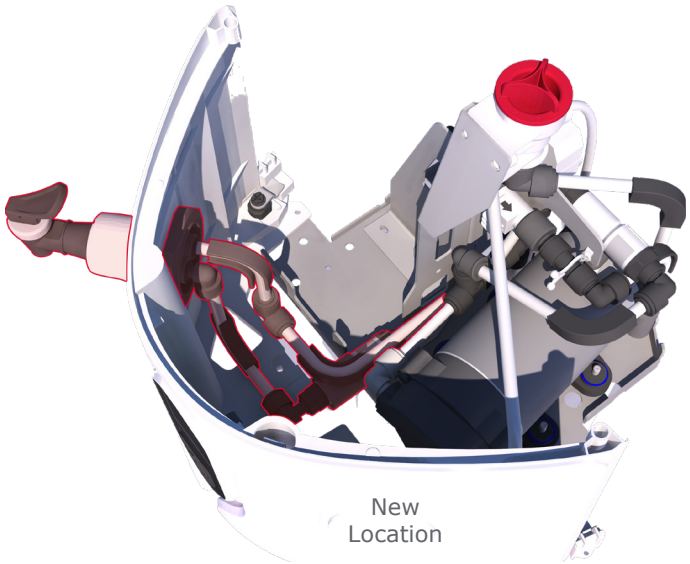
Step 2 - Disconnecting the Dispense Tap

1. OPEN the outer doors on the Chorus.
2. UNSCREW both quarter turns to release the lid from the chassis. Use a flat headed screw driver.

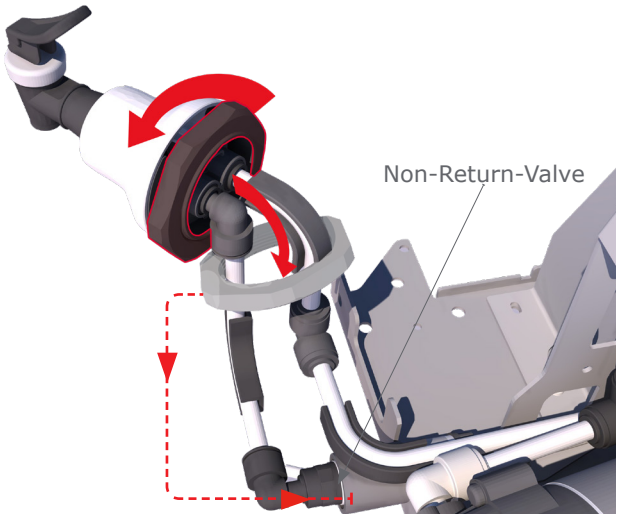


3. LIFT and REMOVE the lid. Ensure the lid is placed on a flat level surface to avoid damage.

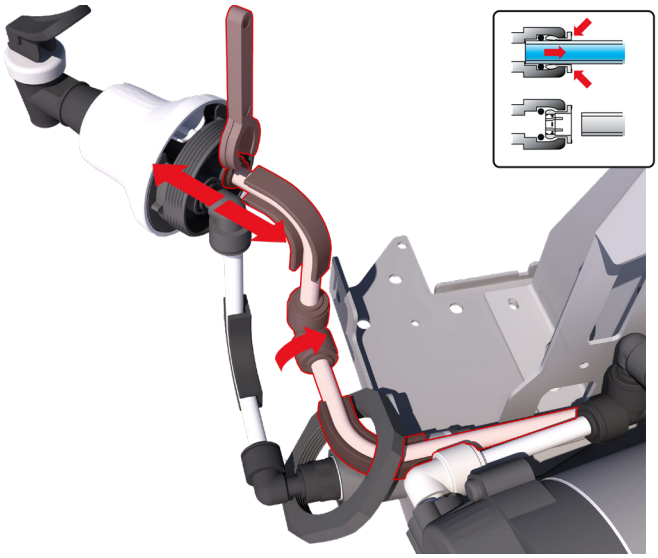
4. LOCATE the Dispense Tap tubing.
   See the below illustration highlighting the tubing.



5. UNSCREW the locking nut (Counter clockwise) to loosen the Dispenser Tap from it's current position. SLIDE the locking nut down to the Non-Return-Value.

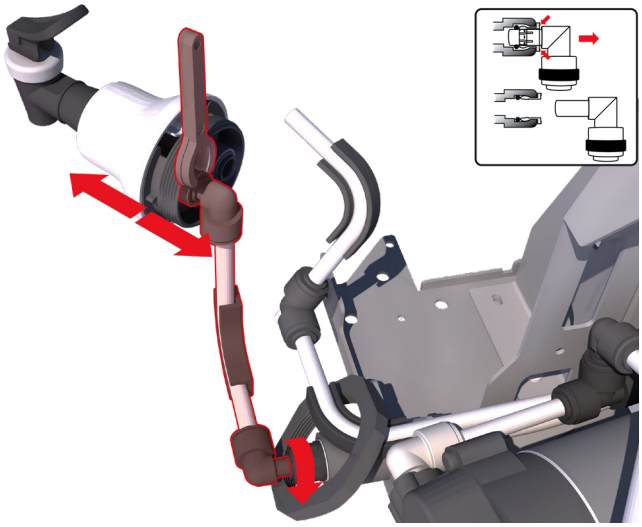


6. DISCONNECT tubing with the flow bend first before unplugging the stem elbow connection.
   ROTATE the disconnected tubing away for clearance.



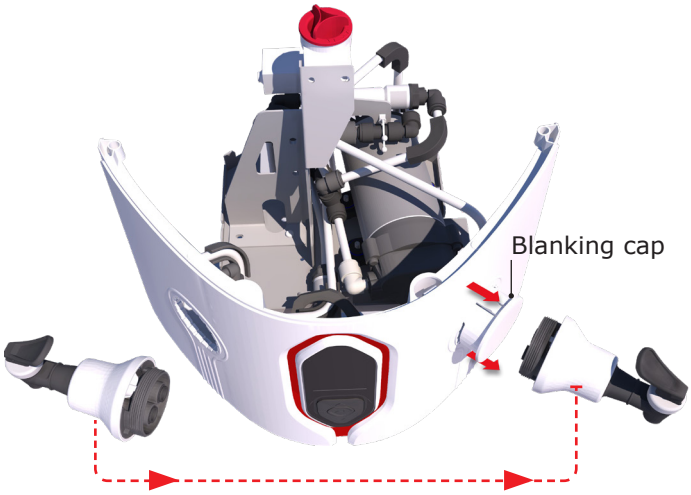
7. OPTIONS

7. DISCONNECT the stem elbow from the Dispense Tap.

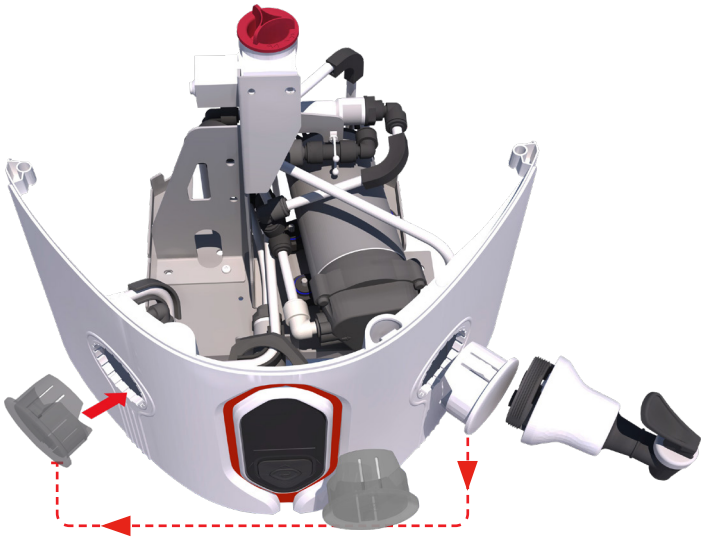


Step 3 - Connecting the Dispense Tap

1. MOVE the Dispense Tap from the LEFT side to its new dispense location on the RIGHT side.
   REMOVE the white blanking cap by PULLING firmly to release the clips.

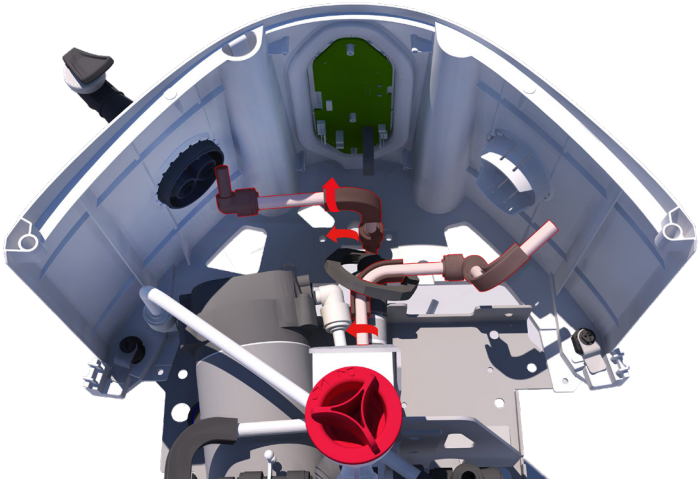


2. MOVE and INSERT the white blanking cap into LEFT Dispense Tap hole. PUSH firmly to secure into place.

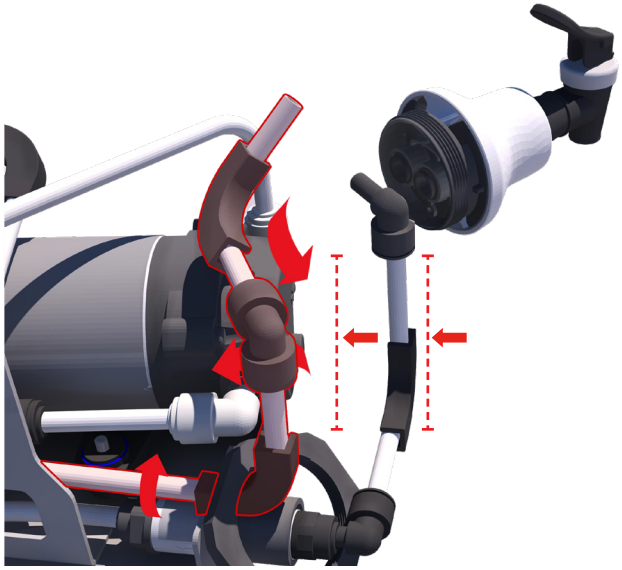


3. INSERT the Dispense Tap through the RIGHT side.

4. ROTATE the Dispense tubing over to the Dispense Tap on the RIGHT hand side.



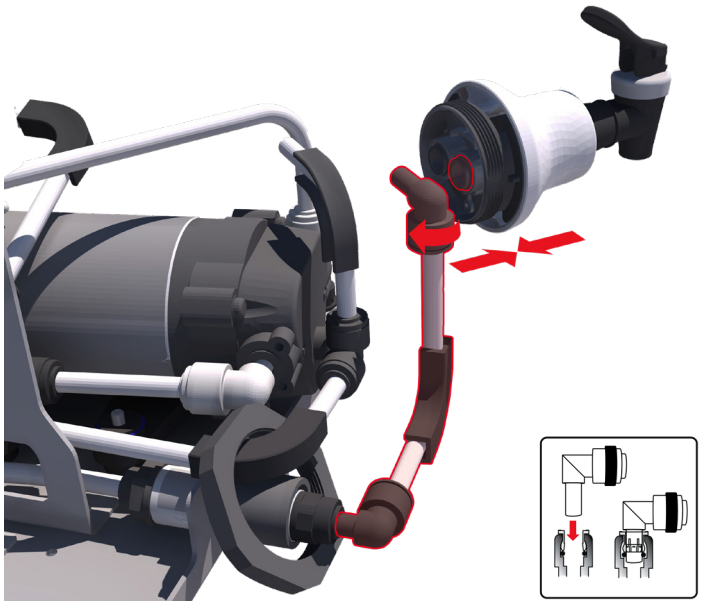
5. ADJUST and ROTATE the Dispenser tubing so they sit parallel to each other.



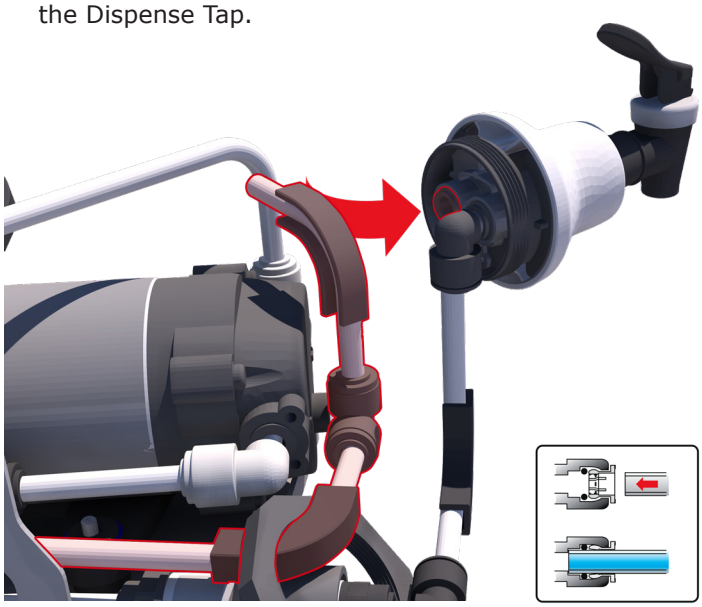
7. OPTIONS

6. CONNECT tubing with the stem elbow connection before connecting the flow bend tubing.

   If Dispense Tap ports are oriented in a vertical position then it would be the bottom port.

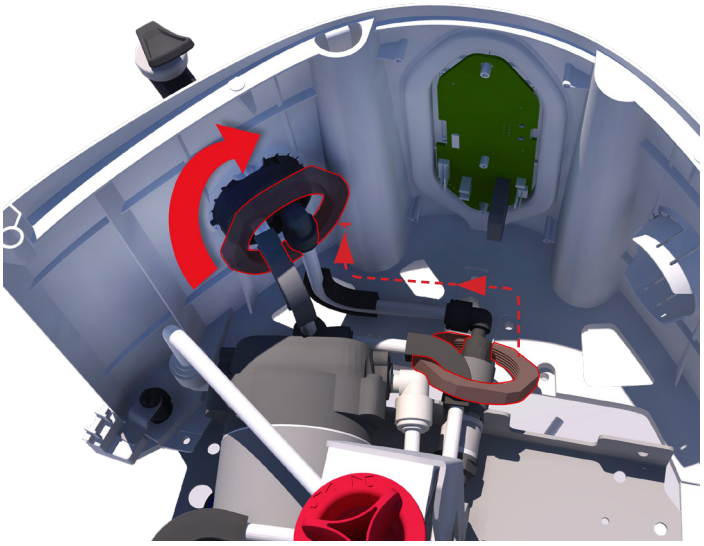


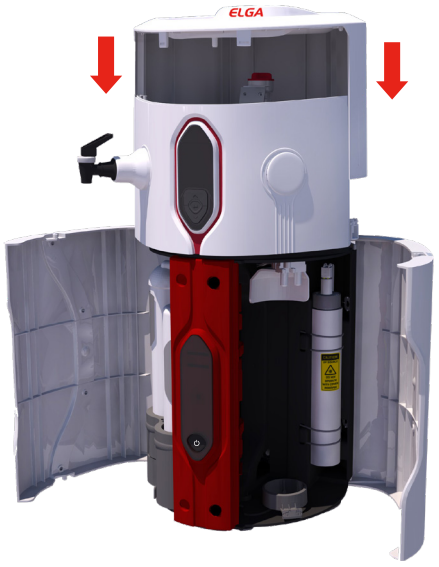
7. INSERT the tube with the Flow Bend connector into the Dispense Tap.



8. COMPLETED Dispense Tap water connections.

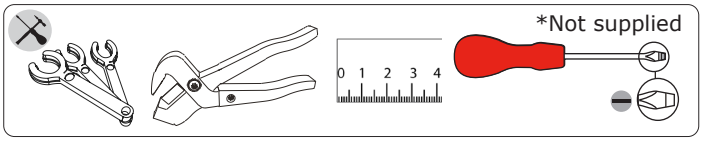
9. MOVE locking nut along the tubing and onto the thread of the Dispense Tap. TIGHTEN the Locking nut (hand tight ONLY) to secure the Dispense Tap.





7. OPTIONS

7.2 Repositioning of non-return valve if operating with one or more halo dispensers (see system configuration example 2)

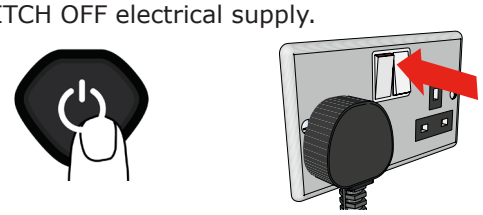


Step 1 - Disconnect Electrical and Water supply

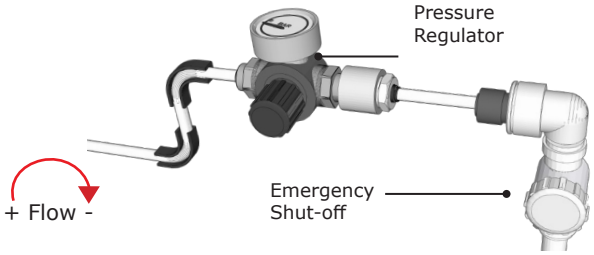
WARNING!

CHECK THAT THE MAINS ELECTRICAL POWER AND FEED WATER SUPPLIES ARE ISOLATED BEFORE INTERNAL MAINTENANCE WORK IS PERFORMED.

1. STOP Chorus system. PRESS Process button ONCE.
2. SWITCH OFF electrical supply.



3. ISOLATE / CLOSE feedwater supply at the Emergency Shut-off Valve. REDUCE pressure on the Pressure Regulator TURN the dial anticlockwise to 0 BAR.



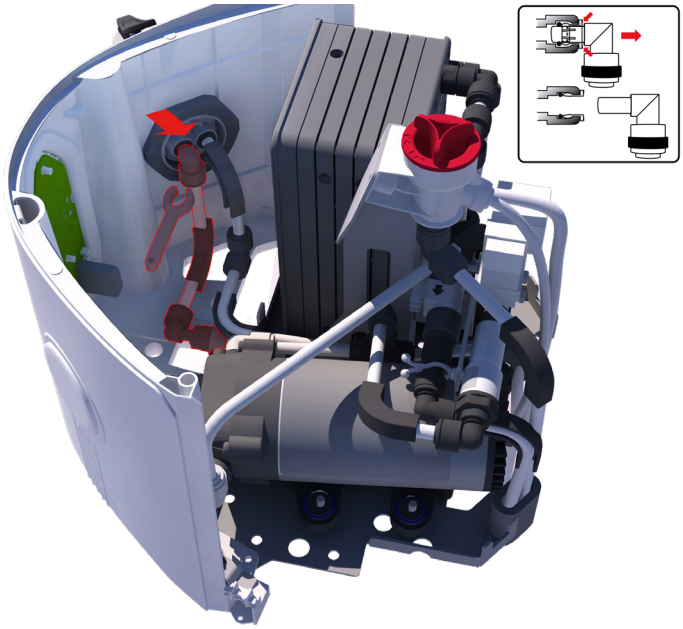
4. RELIEVE any residual pressure from the system by openning the dispenser tap.

Step 2 - Removing Non Return Valve

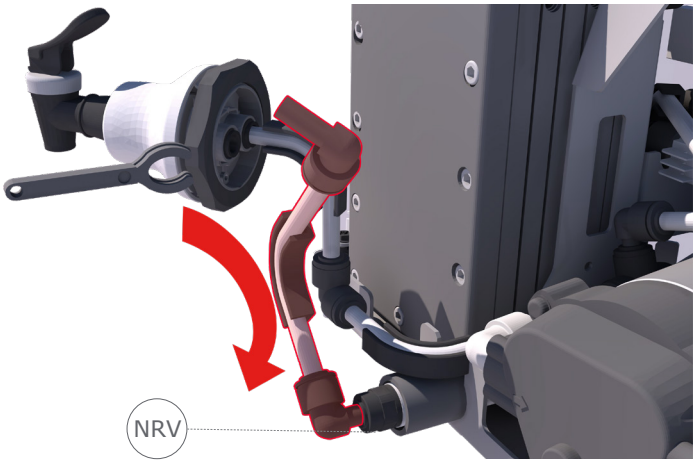
1. OPEN the outer doors. UNSCREW both quarter turns to release the lid from the chassis.

2. REMOVE the lid and place on a flat level surface.

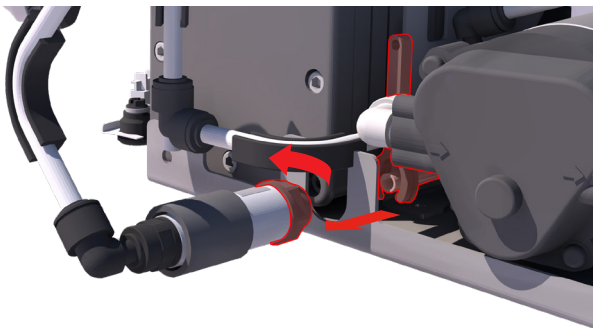
3. Disconnect stem elbow from the dispenser tap.



4. ROTATE NRV tubing clockwise.



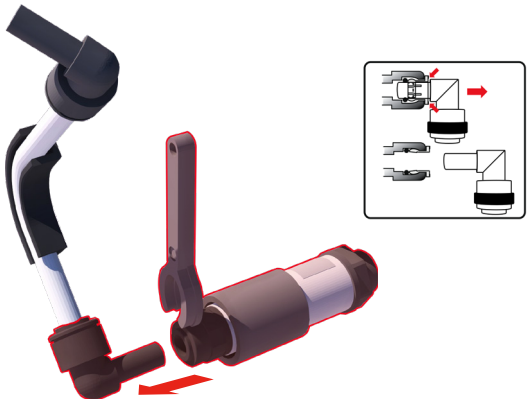
5. USE the tubing key to disconnect the NRV from the 8mm tubing.



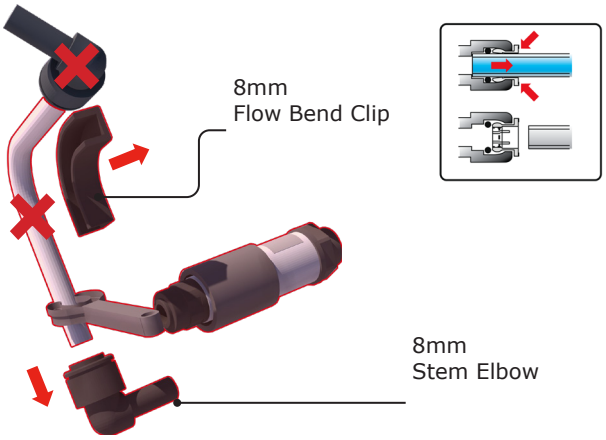
7. OPTIONS

Step 3 - DISMANTLE the Non-Return Valve tubing

1. REMOVE the stem elbow from the NRV.

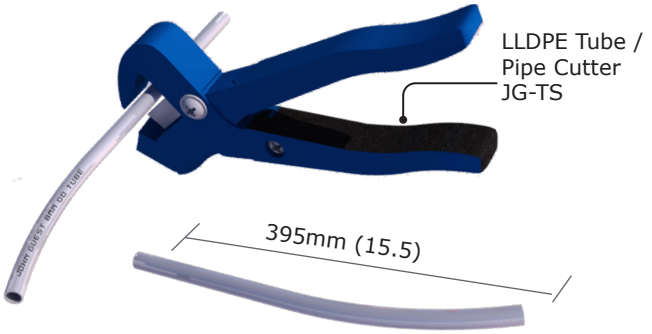


2. REMOVE the stem elbow and flow bend from the tubing. DISPOSE of the stem elbow and small section of tubing marked with a cross.

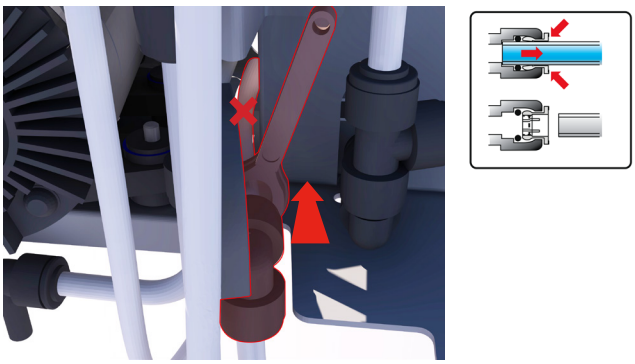


Step 4 - Inserting a new section of tubing.

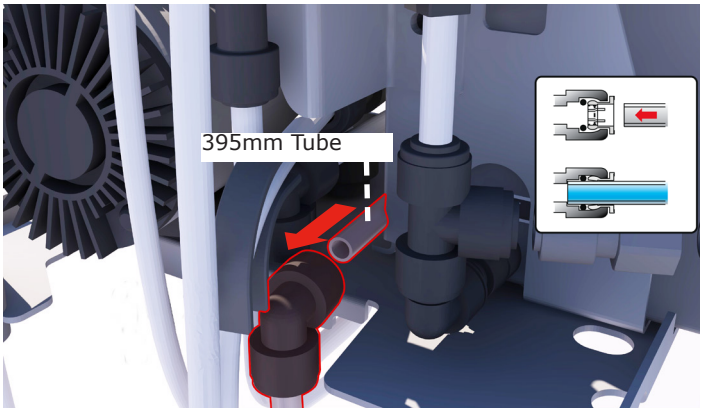
1. CUT a piece of 8mm OD tube 395mm in length.



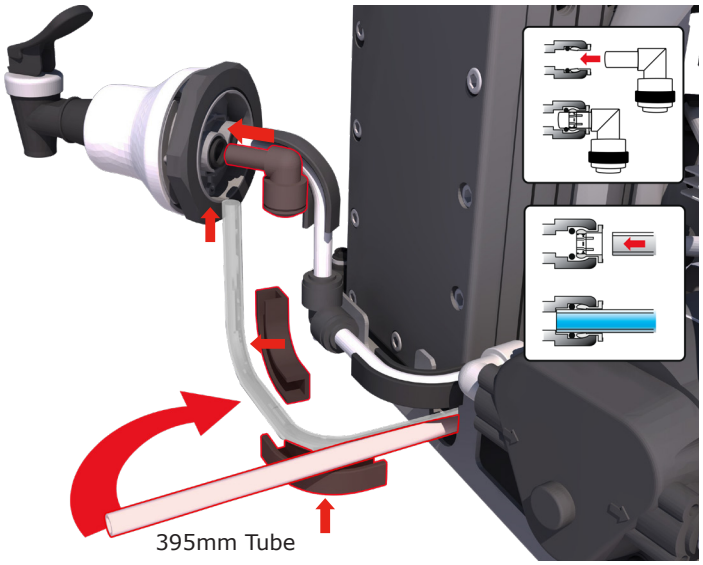
2. REMOVE the old section of 8mm tubing from the back. DISPOSE of tubing marked with a red cross.



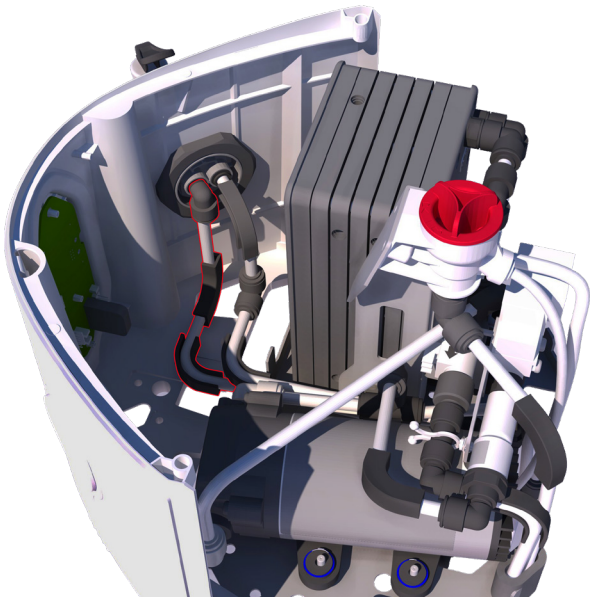
3. INSERT new 395mm long section of tube into the equal elbow that was connected to the NRV.



4. USE the removed flow bend and one from Basic Installation kit LA762 to bend the tube into shape. See below.



5. COMPLETED Non-Return-Valve removal as below.



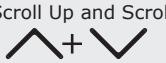
6. Refer to Section 5.1 for use of Non-Return-Valve. (Example 2)

8. TROUBLE SHOOTING - SELF HELP GUIDELINES

Trouble Shooting	
Problems	Action
No display message	• Check mains supply and lead. • Check the power lead is fitted correctly into Port 6, 'CLICK' to secure. • Check that the mains power is switched on.
Reservoir low level alarm 	• The reservoir will automatically refill. If not activate 'Trigger Refill' via Main Menu. • Check that display is showing reservoir filling. • Check feedwater supply. Check connections to reservoir.
UV lamp failure alarm	• Check that all electrical connections have been secured. • Follow UV lamp replacement procedure when applicable. see section 9.5 - Replacing the Ultraviolet Lamp.
Ion-exchange cartridge replacement alarm	• Replace DI Purification pack, (See section 9.2 - Replacing the DI Purification Pack.)
Pre-treatment cartridge and CVF replacement alarm	• Replace Pre-treatment and CVF filters (See section 9.4 - Replacing Filters LC241 Pre-treatment cartridge, LC240 RO Module and CVF LC216.)
Water purity alarm	• Check alarm set value is correct via Main Menu - Water Purity. • Allow unit to recirculate. If alarm persists replace DI Purification Pack or Optimizer Pack. (See section 9.2 or 9.3 - Replacing the DI Purification Pack). • If problem persists beyond that expected from normal operating conditions, contact your local distributor.
Reservoir level disconnect alarm fault	• Check that the level sensor is correctly connected. • If problem persists contact your local distributor.
Output flow below specification	• Check supply pressure (See section 5.2 - Positioning Chorus 2+ and Complete). • Check the inlet strainer - (See section 9.1 - Cleaning Inlet Strainer / Cleaning Recirculation Strainer.) • Check the inlet strainer on the pressure regulator. • Contact service technician to fit or replace booster pump. • No flow from the dispense tap, recirculation pump needs replacing. Contact a service technician. • 0.2µm filter fouled, replace filter.
UV replacement alarm	• Replace UV lamp, (See section 9.5 - Replacing the ultraviolet lamp.)
Unit noisy	• Open front doors and remove the top cover, secure pipework to stop vibration.

Display Lights		
Constant	White	Signifying water purity, unit is operating correctly
Blinking	White	Consumables are nearing the end of useful life (Reminder)
Constant	Red	Alarm .System needs immediate attention
Blinking	Red	Warning. System in clean cycle (Commissioning)
Constant	Red / White	Diagnostics. Module Identify active.
Blinking (Alternating)	Red / White	software / Firmware update in progress.

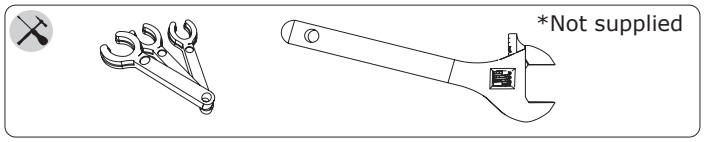
8. TROUBLE SHOOTING - SELF HELP GUIDELINES

Controls Buttons Features		
Button (Or combination)	Function	Operation
Scroll Up 	Scrolls up in a Main Menu or increment increase in feature.	PRESS, or PRESS and HOLD to auto scroll
Accept 	Acknowledges and input or enters into a menu.	PRESS to enter/Accept. PRESS and HOLD for 3 seconds to enter Main Menu.
Scroll Down 	Scroll down In a menu or increment decrease in feature.	PRESS, or PRESS and HOLD to scroll
Process Button 	A method for instigating /stopping normal process operation. ON / OFF	PRESS (At any time)
Process Button	To enter or exit the commissioning procedure.	PRESS and HOLD for 10 seconds (At any time)
Process on with USB flash device in (firmware file)	Update firmware from USB menu using Flash device. PRESS and HOLD for 10 seconds (At any time)	USB flash device with the UPDATE.ENC is added to system. USB Menu automatically appears. SELECT Software update. PRESS Accept button to START.
Scroll Up and Scroll Down 	Sets the system into snooze mode.	PRESS and HOLD for 3 seconds (will not go into snooze if Reservoir is calling to be filled)

Display Symbols		
Water Purity MΩ - 1 to 18.2 MΩ Chorus Complete (flashes red when the water Purity Alarm is active Default: 10.0 MΩ)	Chorus Complete 1 	Chorus 2+ 
Water Purity MΩ - 1 to 15.0 MΩ Chorus 2+ (flashes red when the water Purity Alarm is active Default: 10.0 MΩ)		
Water Purity µS/cm - 0.05 µS/cm (Optional set-up)		
Alarms and information displayed on an scroll bar.		
Reservoir level and fill status shown on the display. (Reservoir symbol flashes empty to red. This indicates the level in the reservoir is low)		
Processing Symbol		
Continuous Recirculation		

9. MAINTENANCE

9.1 Cleaning Inlet Strainer Assembly



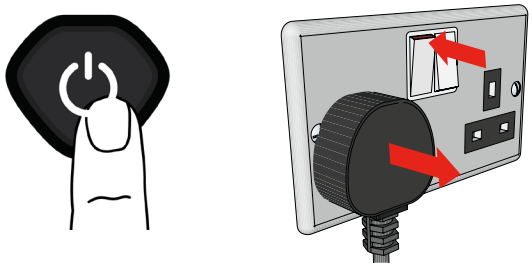
The feedwater Inlet Strainer should be checked and cleaned every six months to ensure that the strainer does not become clogged.

WARNING!

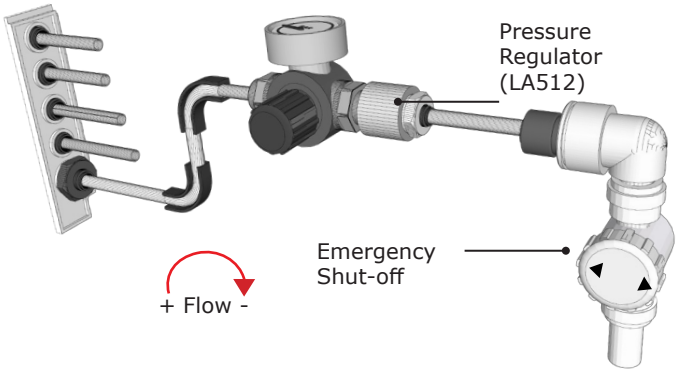
ALWAYS CHECK THAT THE MAINS ELECTRICAL POWER AND FEED WATER SUPPLIES ARE SWITCHED OFF BEFORE CLEANING INLET STRAINER.

Step 1 - Disconnect Electrical and Water supply

1. STOP Chorus system. PRESS Process button ONCE.
2. SWITCH OFF electrical supply.

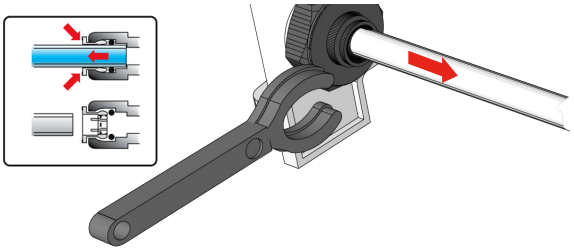


3. ISOLATE / CLOSE feedwater supply at the Emergency Shut-off Valve. REDUCE pressure on Pressure Regulator TURN the dial anticlockwise to - 0 bar.



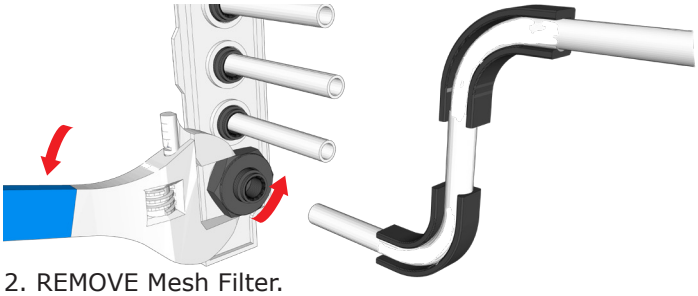
4. RELIEVE any residual pressure from the system by opening the Dispenser Tap.

5. DISCONNECT Port 1: Feedwater supply tube.

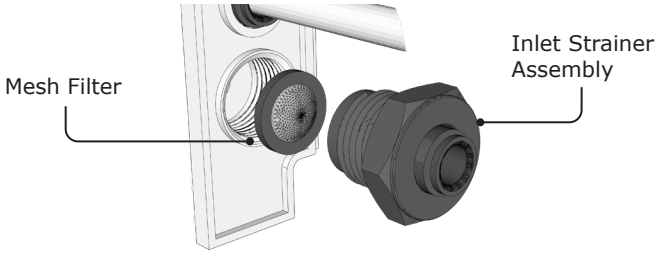


Step 2 - Remove the Inlet Strainer

1. UNSCREW Inlet Strainer using an adjustable spanner or a 24mm fitted size.

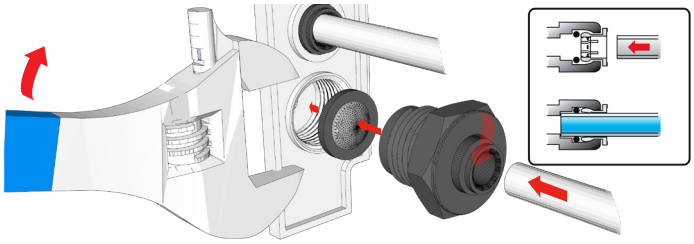


2. REMOVE Mesh Filter.
3. CHECK Mesh Filter for signs of wear or damage, replace or clean as necessary by rinsing with water.

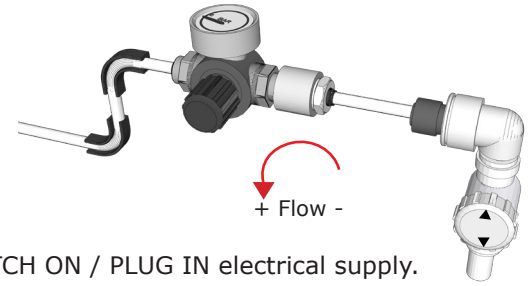


Step 3 - Replace the Inlet Strainer

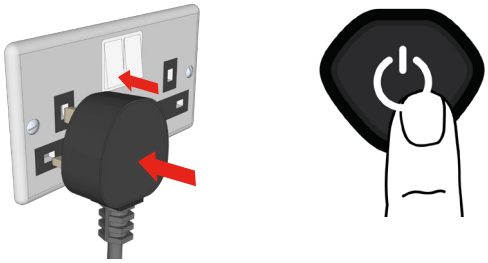
1. INSERT Mesh Filter into PORT 1. ENSURE it's facing the correct direction.
2. SCREW IN Inlet Strainer Assembly (Hand Tight) and LOCK ½ turn to the right.
3. RECONNECT Port 1 tube to Assembly.



4. RE-ESTABLISH the potable feedwater water supply.



5. SWITCH ON / PLUG IN electrical supply.
6. START Chorus system. PRESS Button.

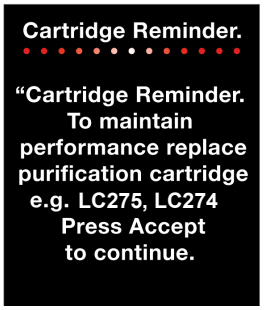


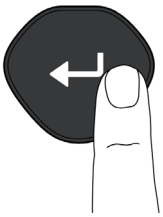
9. MAINTENANCE

9.2 Replacing DI Purification Pack

When a purification pack is fitted into the system it will record the serial number of the Purification Pack.

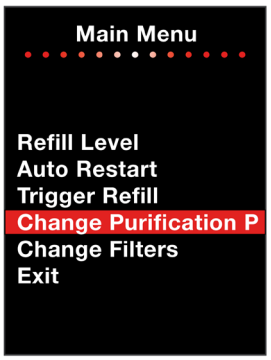
After 8760 hours (12 months) a reminder is displayed to replace the Purification Pack. Status light will be **blinking white** showing system needs attention. Its essential to maintain system performance.

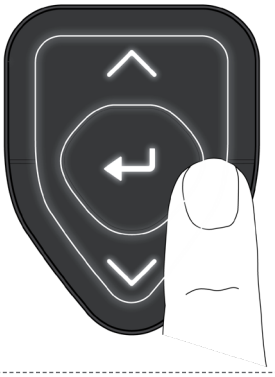


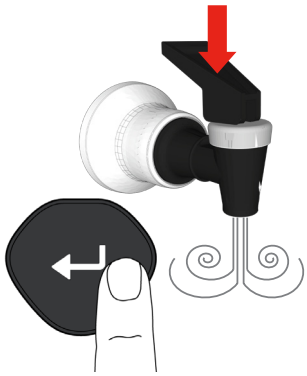


- Or replace a Purification Cartridge without a reminder.

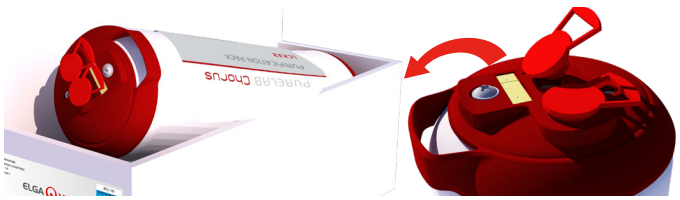
  SELECT Change Purification Pack in the MAIN MENU. PRESS and HOLD Accept button for 2 seconds to enter MAIN MENU. Scroll DOWN and PRESS Accept.



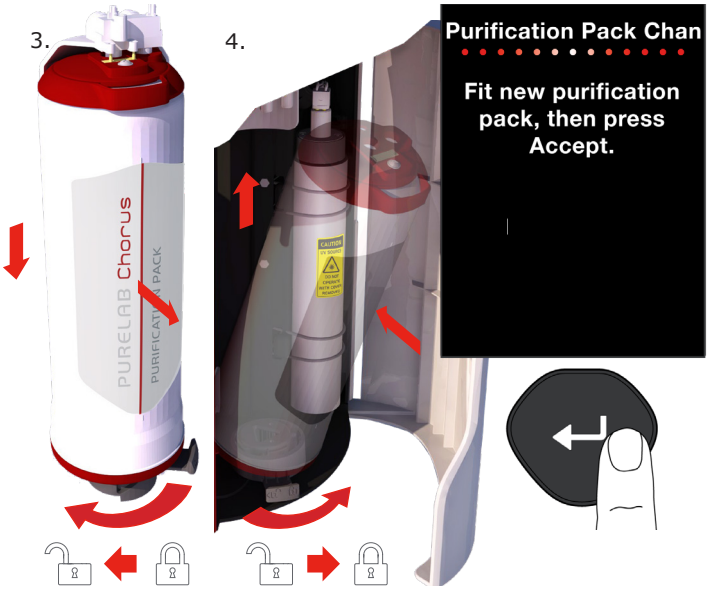


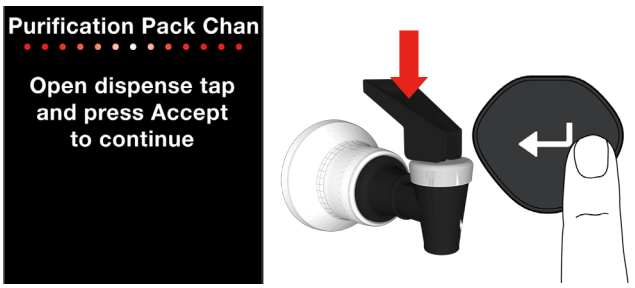


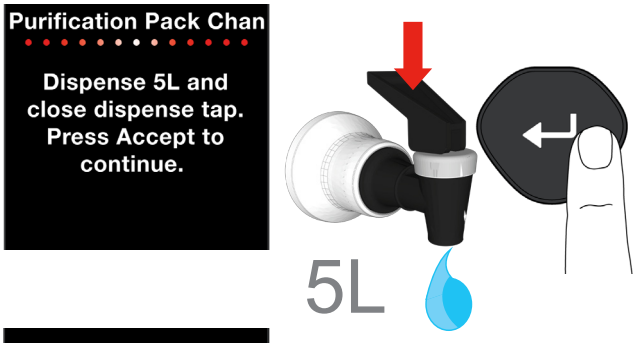
1. You are now ready to install a new Purification Pack. See Section 6 Consumables and Accessories.
2. UNPACK a new Purification Pack and REMOVE red transit plugs before installing into Position 1.



3. REMOVE old Purification Pack from Position 1.
4. INSERT new Purification Pack into Position 1.







- Pack Reminder is automatically reset.

9. MAINTENANCE

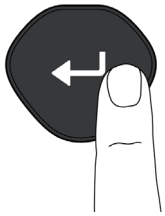
9.3 Replacing Optimizer Pack (Chorus 2+ EDI)

When an Optimizer Pack is fitted into the system it will record the serial number of the Optimizer Pack.

A reminder message is displayed after a set period of time to change the Optimizer Cartridge pack.
Status light will be **blinking white** showing system needs attention.
Its essential to maintain system performance.

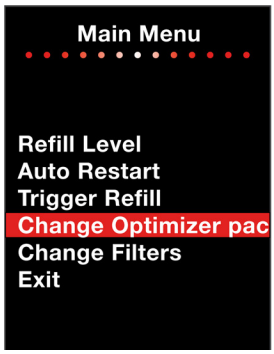
Optimizer Pack Life Times.

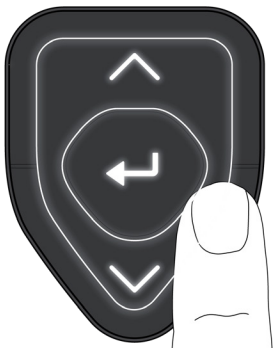
Feedwater hardness selection	Flowrate setting	Life (hrs)
Soft	10L/Hr	3600
<150ppm CaCO3	20L/Hr	1800
Medium	10L/Hr	2200
<150 - 250ppm CaCO3	20L/Hr	1100
Hard	10L/Hr	1600
<250 - 350ppm CaCO3	20L/Hr	800



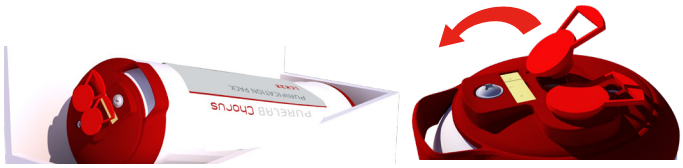
- Or replace a Optimizer Pack without a reminder.

  SELECT Change Optimizer Pack in the MAIN MENU. PRESS and HOLD Accept button for 2 seconds to enter MAIN MENU. Scroll DOWN and PRESS Accept.



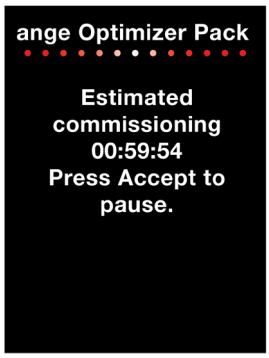


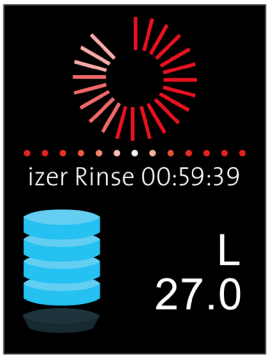
1. Your now ready to install a Optimizer Pack LC243.
2. UNPACK a Optimizer Pack and REMOVE red transit plugs before installing into Position 1.

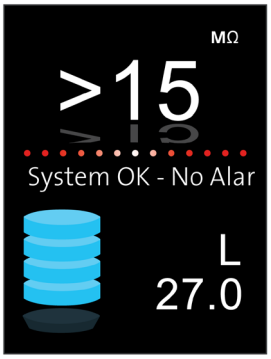


3. REMOVE old Optimizer Pack from Position 1.
4. INSERT new Optimizer Pack into Position 1.

5. Chorus will now perform a commissioning and rinse cycle on the Optimizer Pack. (Approx 120 mins) During this cycle RO water can still be used. (Reservoir Tap Only)

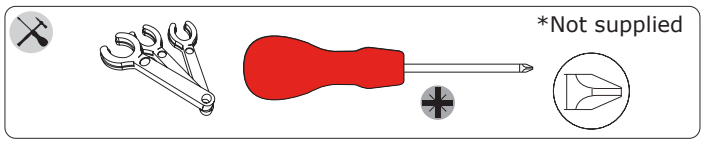






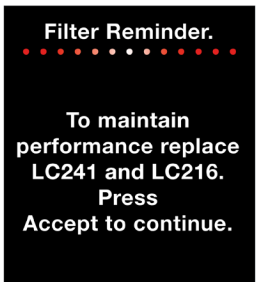
9. MAINTENANCE

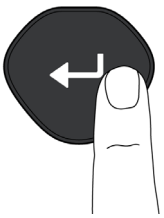
9.4 Replacing Filters LC241 Pre-treatment Cartridge (LC240 RO Modules) and LC216 CVF.



Pre-treatment pack and Composite vent filter (CVF) have a run time measured to give a reminder for when they require changing. This is to maintain optimum water purification performance. When 4380 hours (6 mths) is reached the filter change reminder is active.

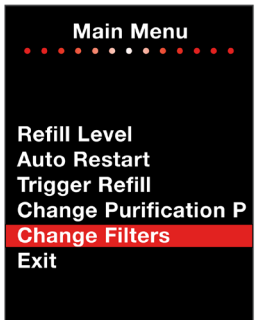
Status light will be **blinking white** showing system needs attention. There is no reminder for replacing the RO Modules (LC240) but it is recommended that they are replaced during this procedure when their service life has expired (2 Yrs).

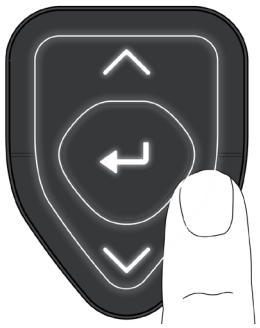




- Or replace the filter Cartridges without a reminder.

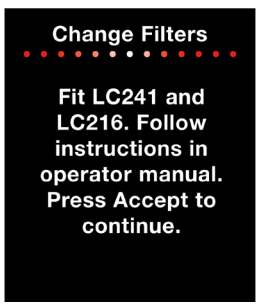
  SELECT Change Filters in the MAIN MENU.
  PRESS and HOLD Accept button for 2 seconds to enter MAIN MENU. Scroll DOWN and PRESS Accept.

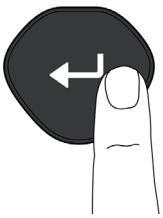




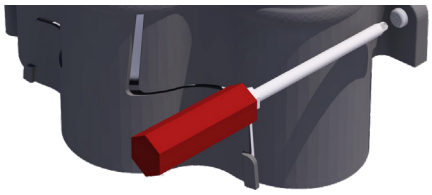
Step 1 - Changing Pre-treatment Cartridge

1. OPEN left side door to Chorus.

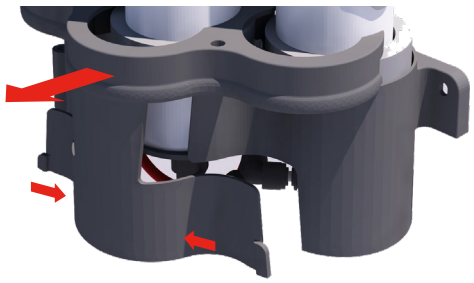




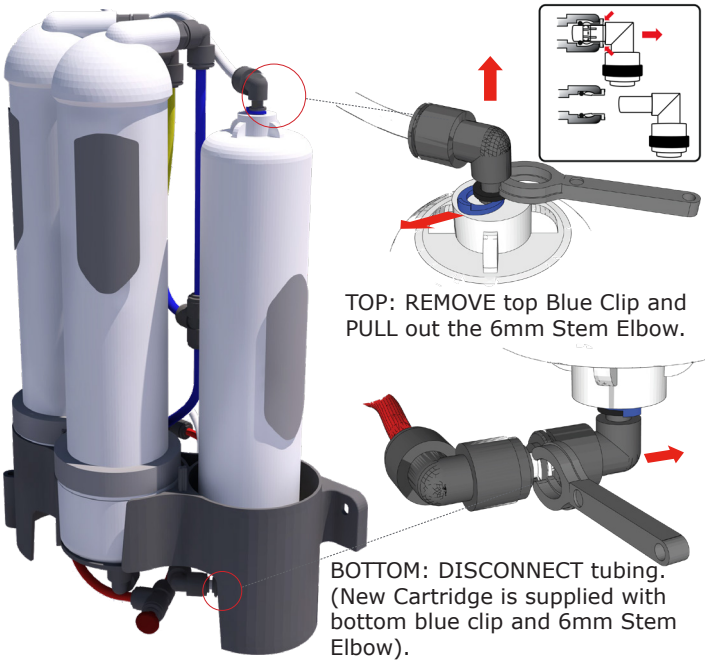
2. UNSCREW the lower RO Mounting Bracket using a phillips screwdriver. PZ 2 X 125



3. REMOVE the Upper RO Mounting Bracket.
   PUSH in bracket sides PULL out to REMOVE.



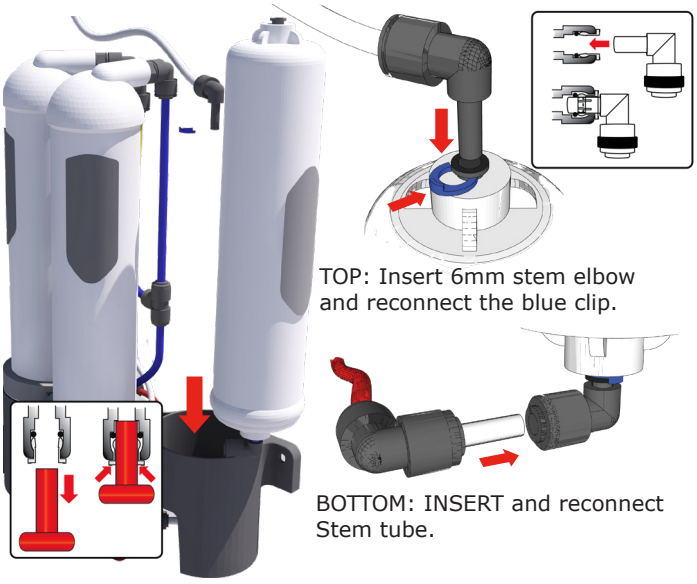
4. DISCONNECT LC241 Pre-treatment Cartridge.



TOP: REMOVE top Blue Clip and PULL out the 6mm Stem Elbow.

BOTTOM: DISCONNECT tubing. (New Cartridge is supplied with bottom blue clip and 6mm Stem Elbow).

5. INSERT a new LC241 Pre-treatment Cartridge.



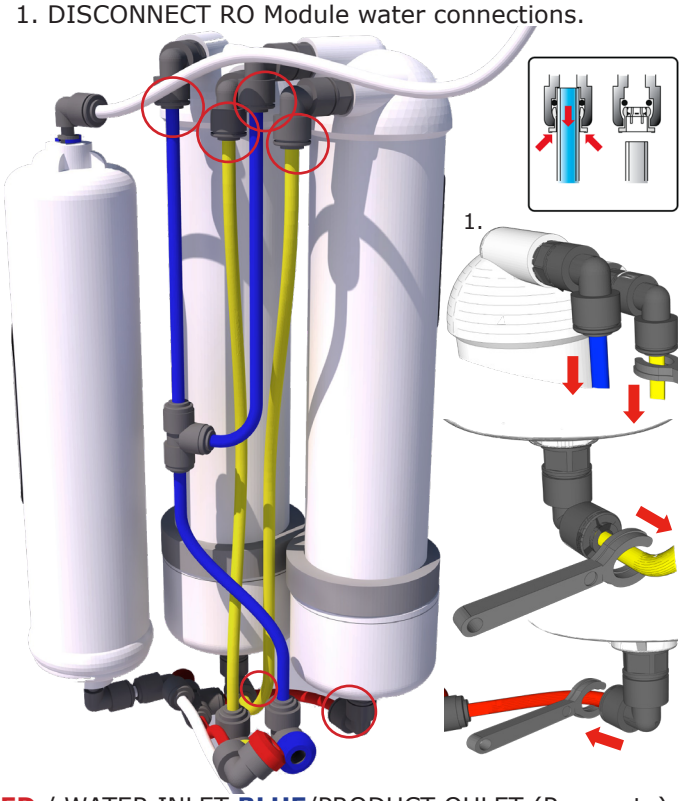
TOP: Insert 6mm stem elbow and reconnect the blue clip.

BOTTOM: INSERT and reconnect Stem tube.

9. MAINTENANCE

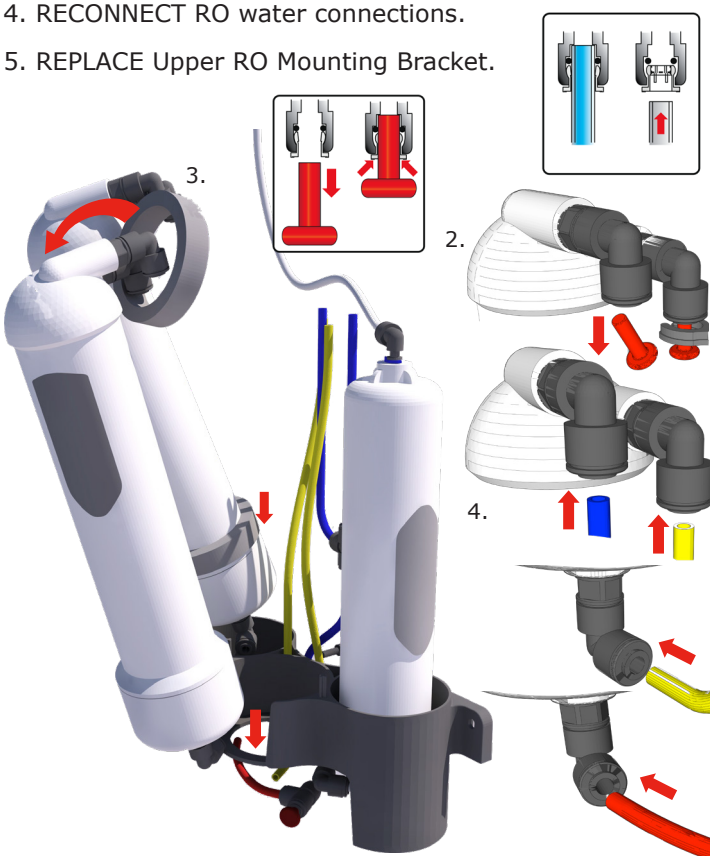
Step 2A - Changing RO Modules LC240 (If Required)
(Tubing Diagram: 2 RO's 20L/hr)

1. DISCONNECT RO Module water connections.



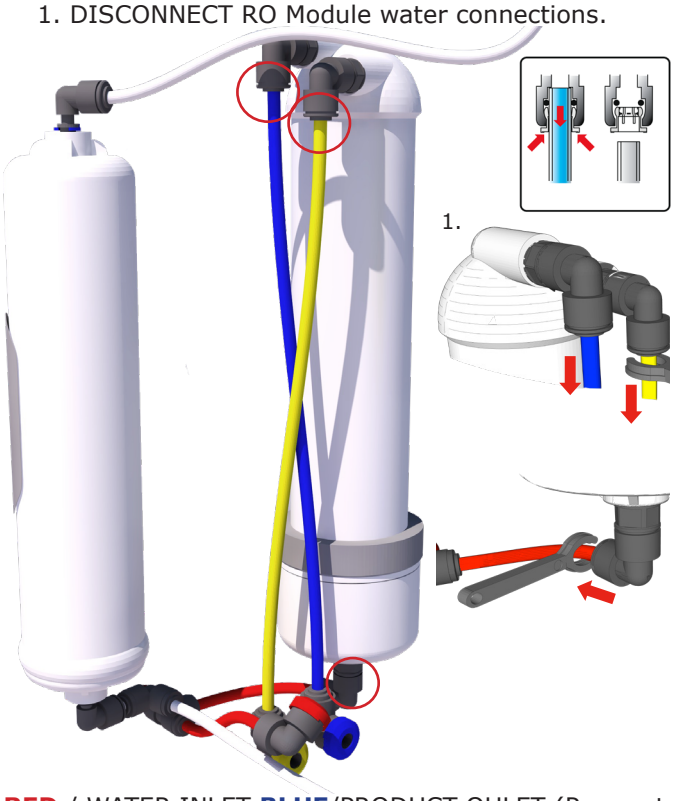
RED / WATER INLET **BLUE**/PRODUCT OULET (Permeate)
YELLOW / DRAIN (Concentrate)

2. UNPACK new RO Modules and REMOVE red transit plugs before installing into the RO holder.
3. RE-USE Foam supports on new RO Modules.
4. RECONNECT RO water connections.
5. REPLACE Upper RO Mounting Bracket.



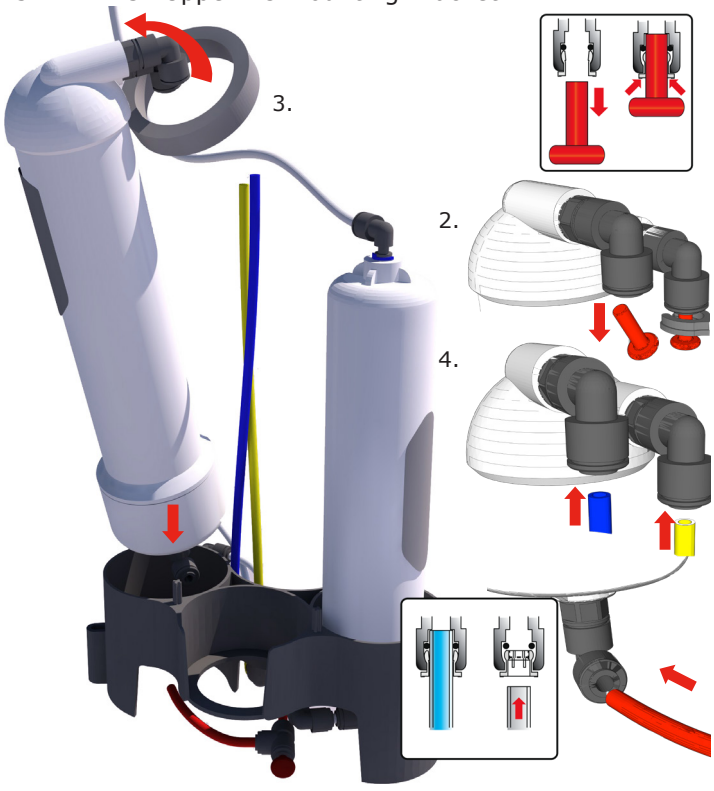
Step 2B - Changing RO Module LC240 (If Required)
(Tubing Diagram 1 RO 10L/hr)

1. DISCONNECT RO Module water connections.



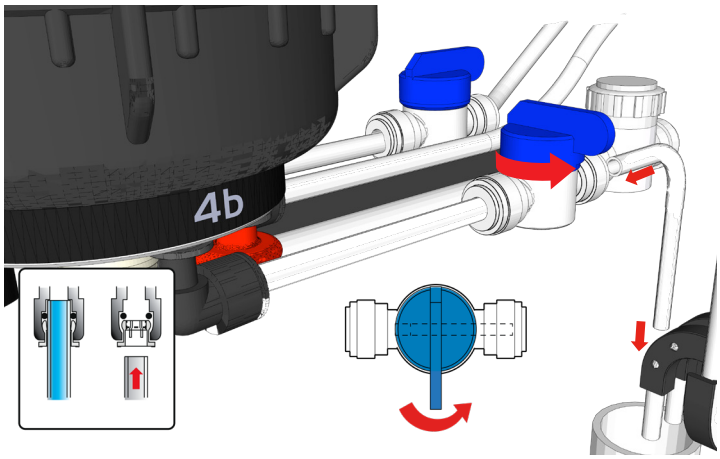
RED / WATER INLET **BLUE**/PRODUCT OULET (Permeate)
YELLOW / DRAIN (Concentrate)

2. UNPACK new RO Module and REMOVE red transit plugs before installing into the RO holder.
3. RE-USE Foam support on new RO Module.
4. RECONNECT RO water connections.
5. REPLACE Upper RO Mounting Bracket.



9. MAINTENANCE

6. (Non EDI Models ONLY. RO replacement ONLY)
   OPEN Manual valve Reservoir Outlet Port 4b ⬇ and INSERT tube to waste water pipe. Allow reservoir to empty to drain.
   (EDI Models have an automatic 3 way drain valve V2.)

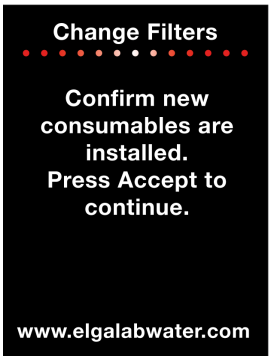


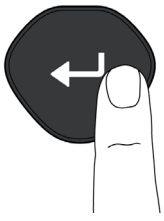
Step 3 - Changing CVF LC216

1. UNSCREW old Composite Vent Filter.
2. UNPACK a new Composite Vent Filter.
3. WRITE date and SCREW IN (Hand tight only).

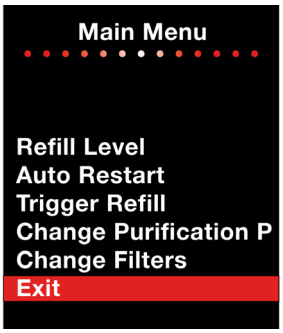
4. PRESS Accept, Filter Pack reminders are reset automatically then EXIT Main Menu.

   Normal operation resumes if you have **not** replaced RO Modules.





Accept Button (Enter)

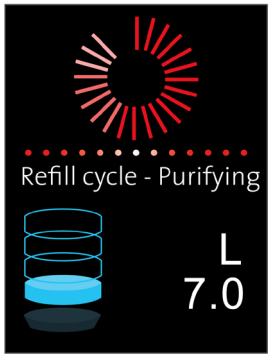


Normal Operation

Chorus 2 +

Chorus 1 Complete

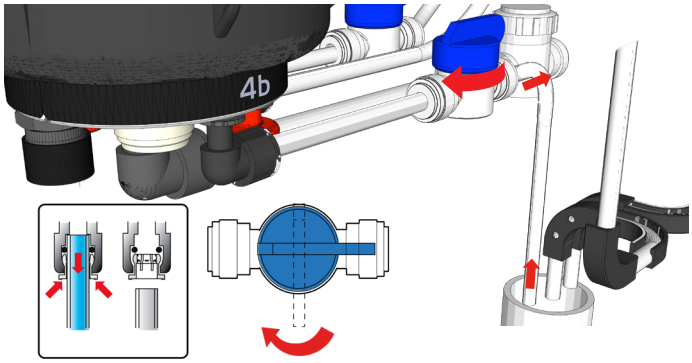
5. If you have replaced RO Modules a refill cycle - RO Purifying timer will start, rinsing to drain for 1hr.



RO Rinse Timer

6. (Non EDI Models ONLY) AFTER 1hr CLOSE Manual valve Reservoir Outlet Port 4b ⬇ and REMOVE drain tube from the waste water pipe.

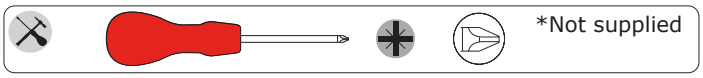
   (EDI Models have an automatic 3 way drain valve V2.)



7. Reservoir will start to fill and normal operation resumes.

9. MAINTENANCE

9.5 Replacing Ultraviolet Lamp LC285 or LC210.



WARNING!

UV-C Radiation is harmful to the eyes and skin.
UV Lamp should be operated in the chamber.
It is strongly recommended that during the handling of the UV lamp cut-resistant gloves are worn.
Mercury is Hazard, do not break. The lamp contains small amount of mercury. May cause redness or irritation as a result of contact with skin or eyes.

When 13140 hours (18 months) is reached the UV lamp change alarm is active (Reminder displayed).

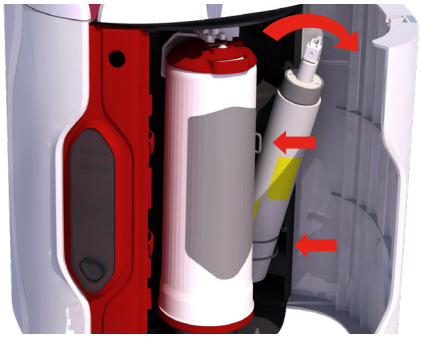
Status light will be **blinking white** showing system needs attention. Section 6 Consumables and Accessories for UV Lamp Part no.s.

Step 1 - Disconnect Mains Electrical Supply

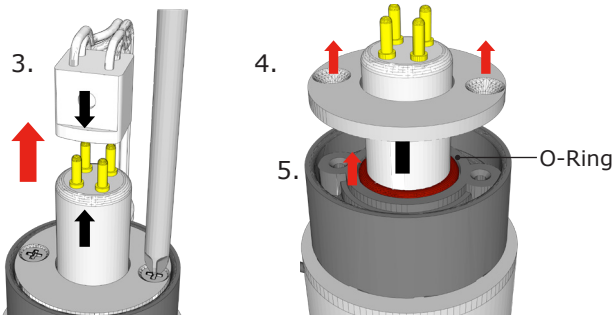
1. STOP Chorus system. PRESS Process button (OFF).
2. SWITCH OFF electrical supply at the mains.
3. RELIEVE any residual pressure from the system. (Open Dispense Tap)

Step 2 - Removing the UV Lamp

1. OPEN the front right door panel.
2. REMOVE top and bottom retaining bands and tilt housing for better access.

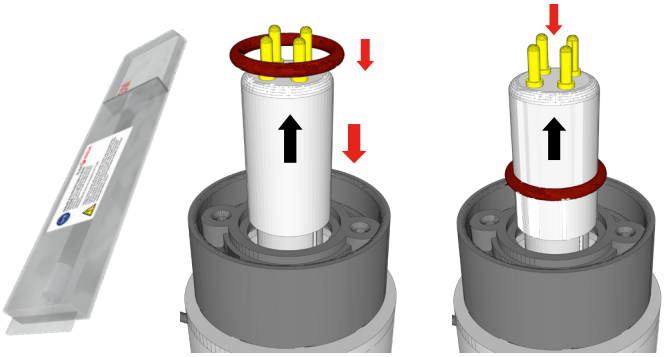


3. UNPLUG white lamp plug fitted to the top of the UV lamp. UNSCREW securing plate with a phillips screw driver.
4. REMOVE securing plate and CHECK O-ring for deterioration during use over the last 18 months. RE-USE or REPLACE O-ring.
5. REMOVE old UV Lamp.

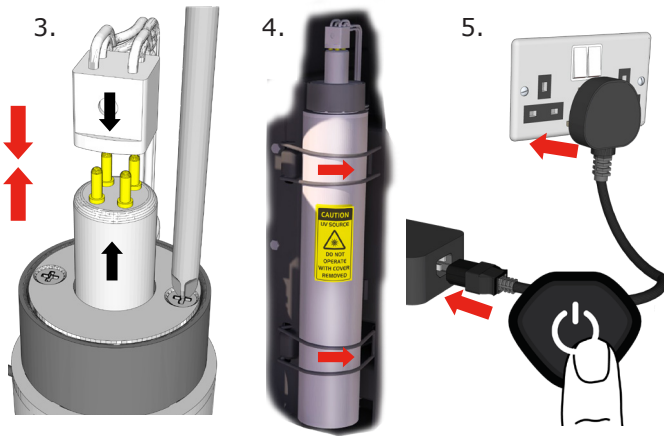


Step 3 - Fitting a new UV Lamp

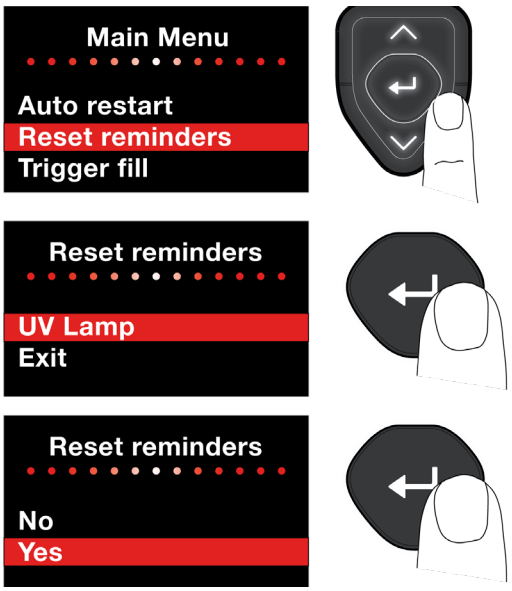
1. UNPACK new UV lamp. Take care not to touch the surface of the glass. Ideally handle with soft cloth and wipe the surface with alcohol wipe supplied before fitting into the housing.
2. RE-FIT O-ring and SLIDE in the new UV lamp.



3. SCREW in securing plate with a phillips screw driver. CONNECT the white lamp plug.
4. RE-FIT top and bottom retaining bands.
5. PLUG IN Mains and PRESS Processs button (ON).

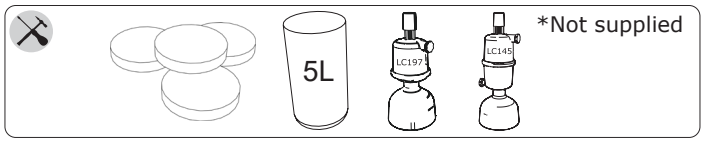


6. Reset UV lamp reminder via the Main Menu.



9. MAINTENANCE

9.6 Sanitization Procedures.



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. DO NOT USE UNSPECIFIED CHLORINE TABLETS.

The normal sanitization procedure for the Chorus 1 Complete and Chorus 2+ RO/DI is to sanitize the Reverse Osmosis (RO) modules, associated pipework and the distribution loop.

Normal sanitization procedure for the Chorus 2+ EDI system is to sanitize the Reverse Osmosis (RO) modules and associated pipework (ONLY).

The RO is sanitized to reduce the growth of microbiological contamination within the RO modules. The Chorus 1 Complete and 2+ have a built-in sanitization port, which allows the sanitization agent (CT1 or Effersan Tablet) to be introduced into the water feeding the RO. Please read this entire section to become familiar with the procedure before you start.

The sanitization requirement is dependent on the feedwater, local environment, usage patterns.

As a general rule, ELGA® LabWater recommends sanitization of the RO at 6-monthly intervals. However, the period between sanitizations could be extended in particular circumstances. For example, microbial growth will usually be lower with clean feedwater, well-maintained pre-treatment, low temperatures and heavy usage.

Contact ELGA® LabWater Technical Support or your local representative for further information. They will also advise on procedures before and after extended periods of non-use.

If required, the complete system may also be sanitized.

It is recommended that only ELGA® LabWater Service Personnel or other fully trained staff should perform the sanitization procedure for the reservoir.

Chlorine Tablets:

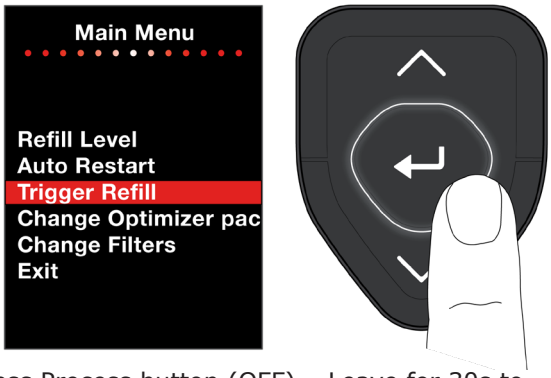
CT1 Chlorine tablets or EfferSan™ multi-purpose disinfecting tablets are required to successfully complete this procedure.
(United States EPA Approved Effersan™ Tablets)

EfferSan™ are not supplied and must be sourced from your local ELGA® LabWater distributor. Refer to the EfferSan™ label for additional information and follow all applicable directions for use on the manufacturers label in conjunction with the following instructions.

Sanitization of RO and Distribution Loop Chorus 1 Complete and Chorus 2+ RO/DI/UV

Approximate duration: 30 minutes
(Excluding final fill of Reservoir)

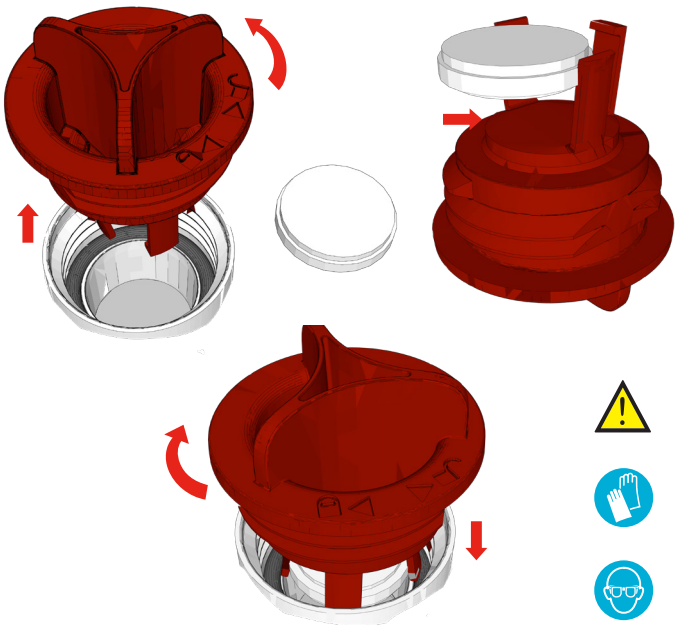
1. FILL Reservoir to >15L, SELECT 'Trigger Refill' if lower.



2. Press Process button (OFF) – Leave for 30s to dissipate any residual pressure.

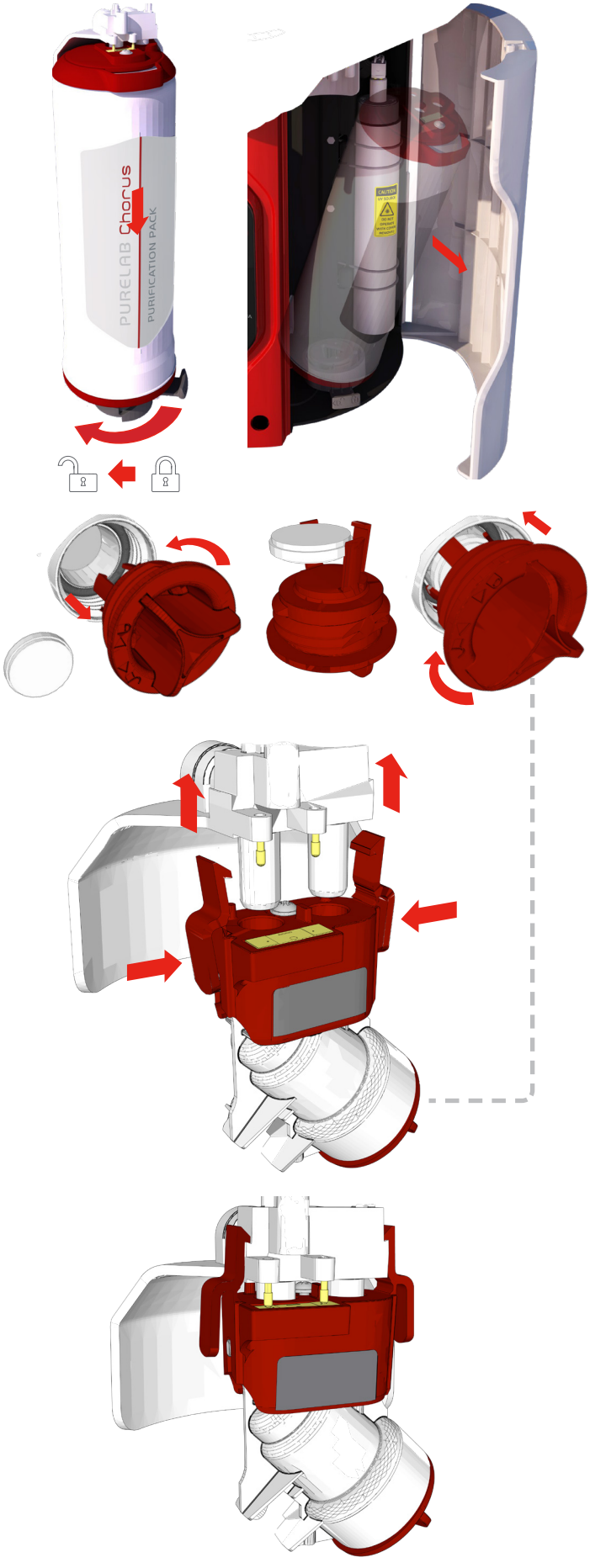
3. UNSCREW RO Sanitization Port at the top of the unit.

4. Add 1 CT1 or 1 Effersan tablet to RO Sanitization Port.



9. MAINTENANCE

5. REMOVE DI Pack and fit LC272 with CT1 or Effersan™ tablet.

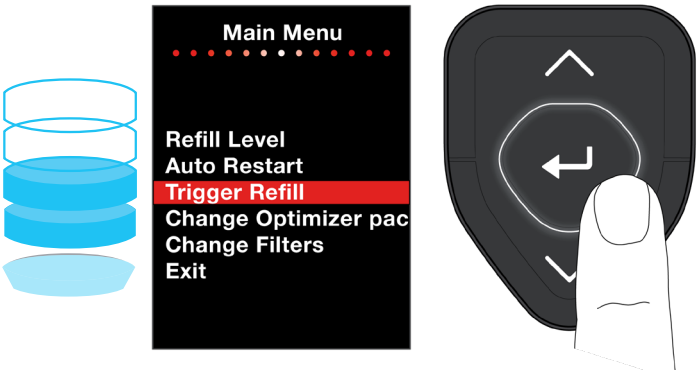


6. PLACE a container under the Dispense Tap and OPEN. (REMOVE Point-Of-Use filter if fitted)

7. PRESS Process button (ON) to start dispensing chlorinated water.

8. When the Reservoir level is LESS than full initiate 'Trigger Refill' via the MAIN MENU. (CONTINUE Dispensing chlorinated water).

TO PAUSE dispensing at anytime, PRESS Process button ONCE (OFF). To continue; PRESS Process button (ON) Ensure that fill cycle is initiated by SELECTING 'Trigger Refill' in the MAIN MENU on start up. (OPEN Dispense Tap)



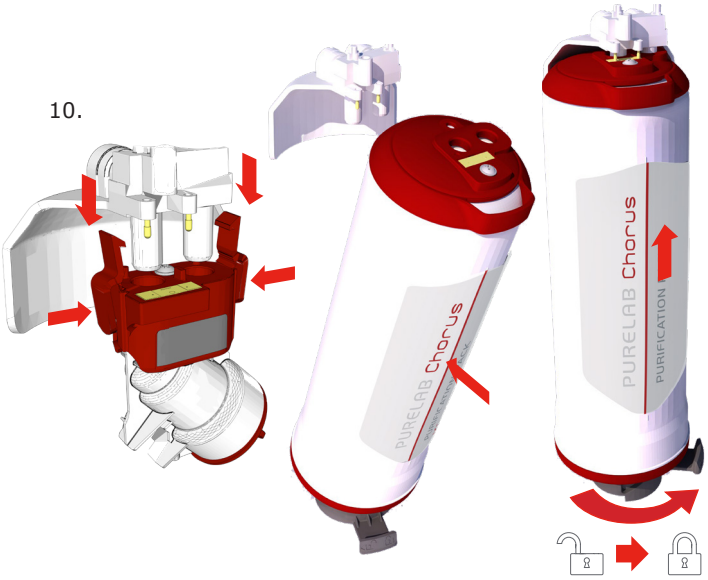
9. After dispensing 15L STOP process, CLOSE Dispense Tap and REMOVE LC272 and refit DI Pack.

10. Continue normal operation.

(If required FIT a new Point-Of-Use filter)

- Purified water can be used as normal from Reservoir Dispense Tap through-out the sanitization procedure. (15L is needed for the sanitization procedure)

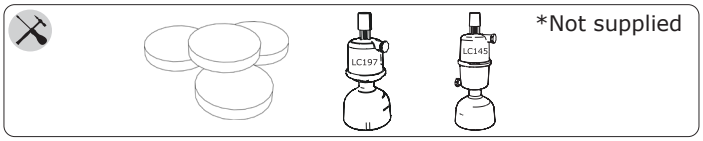
10.



9. MAINTENANCE

Sanitization of RO Chorus 2+ RO/EDI/UV

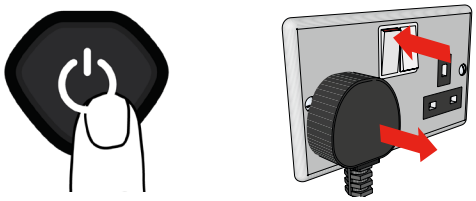
Approximate duration: 60 minutes



WARNING!

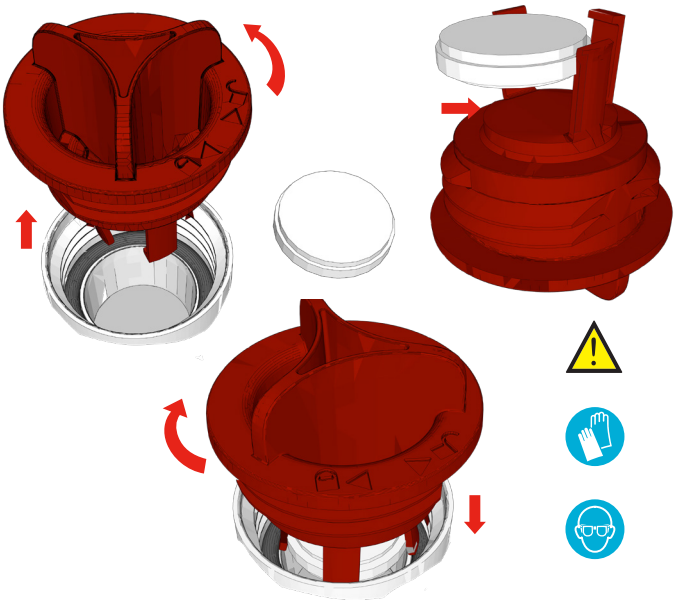
ALWAYS WEAR RUBBER GLOVES, APRON AND FACEMASK. DO NOT BREATHE FUMES OR ALLOW TO COME IN CONTACT WITH SKIN OR EYES. ALWAYS FOLLOW RECOMMENDATIONS FOUND IN THE MANUFACTURERS MATERIAL SAFETY DATA SHEET AND ANY APPLICABLE OSHA STANDARDS FOR THE CHEMICAL BEING USED. DO NOT USE NON SPECIFIED CHLORINE TABLETS.

1. PRESS Process button (OFF) - Leave for 30s to dissipate any residual pressure.
2. Disconnect the mains power supply (Unplug).



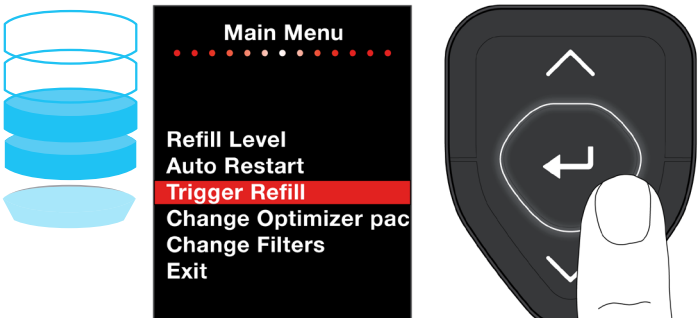
3. UNSCREW RO Sanitization Port at the top of the unit.

4. Add 1 CT1 or 1 Effersan™ tablet to Sanitization Port.



5. Reconnect the mains power supply (Plug In).
6. PRESS Process button (ON) to start sanitization chlorinated water flush. EDI models have an automatic drain valve (V2) which directs waste water to drain.

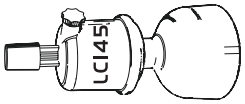
7. Dispense at least 5L of water. Ensure reservoir is not full then initiate 'Trigger Refill' function via the MAIN MENU.



8. 1hr 'Optimizer Pack Rinse' will be carried out which will also sanitise the RO system to drain.

9. After 1hr 'Optimizer Pack Rinse' Continue normal operation.

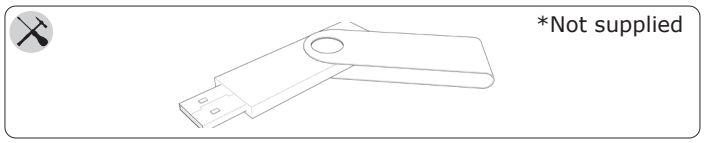
(If required fit a new Point-Of-Use filter)



- Purified water can be used as normal from Reservoir Dispense Tap through-out the sanitization procedure. (15L is needed for the sanitization procedure)

10. SOFTWARE UPDATE AND DATA LOGGING

10.1 Software Update



Software Update - Firmware File Upload
(Requires a USB Memory Stick)

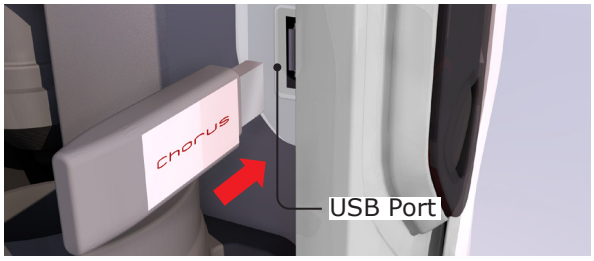
Approximate duration: 25 minutes

Updating your Chorus improves stability - functionality. Please make sure the Flash USB memory stick is empty before downloading the latest version of software from ELGA® Labwater website:
www.elgalabwater.com/en-gb/customize

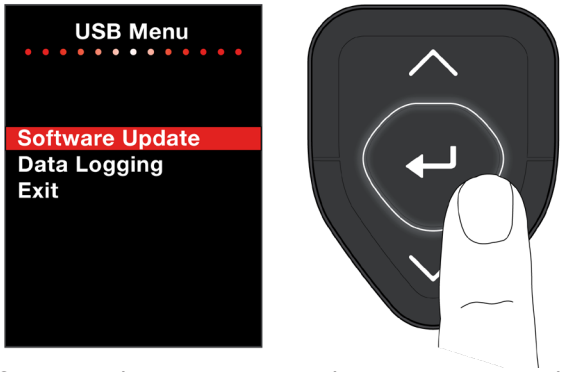
1. PRESS Process button ONCE (OFF).

2. OPEN left side door.

3. INSERT a Flash USB memory stick into the USB port with the lastest version of software.



4. USB Main Menu will appear, SELECT 'Software Update' PRESS Accept to begin.



5. Software update in progess; Please wait, Status light and Warning light will be **blinking** red and white.

6. ONCE Software Update is complete, Chorus will power down. Process button (ON)
Software version no. is display on Start-up screen.

7. Software update complete. Normal operation resumes.

10.2 Advanced Data Logging

Advanced data logging allows the user to adjust when data is recorded and interval. When a USB flash drive is present the data logging menu can be accessed though the USB Menu.

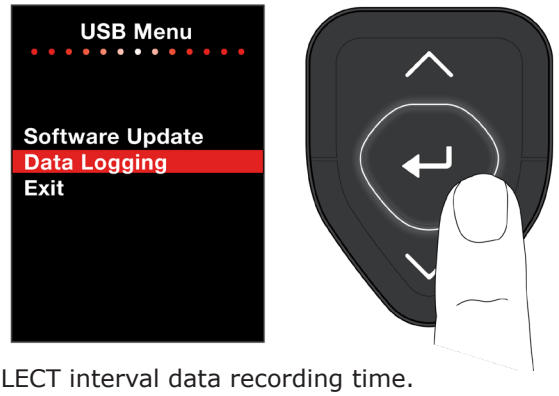
Options: Adjust when data is recorded and interval.

- 5 seconds
- 30 seconds
- 1 minute
- 5 minutes
- 15 minutes
- 30 minutes
- 1 hour

Time and date are accurately recorded for each entry to the log with advanced logging. Columns have appropriate titles and units of measure stated.

1. INSERT a Flash USB memory stick into USB port.

2. PRESS Accept to enter Data Logging options.



3. SELECT interval data recording time.

• 5 seconds • 30 seconds • 1 minute • 5 minutes
• 15 minutes • 30 minutes • 1 hour

4. RECORDING in progess.

5. To Finish Data Recording PRESS DOWN button and REMOVE USB stick.

Chorus 1 Complete screenshot.
Chorus 2+ will display >15 MΩ.

6. Data file can be viewed using Microsoft Excel.

10. SOFTWARE UPDATE AND DATA LOGGING

II. PROCESS DESCRIPTION AND FLOW CHART

11.1 Process Description - Chorus 1 Complete

Water Grade Type 1: High Performance Liquid Chromatography (HPLC), GC, AAS, immunocytochemistry, mammalian cell culture, plant tissue culture.

The product consists of a single box solution where all purification technologies are included inside.

This includes a combination of the following water technologies:

- Pre-treatment and reverse osmosis.
- Boost pump and non boost pump variants.
- Degassing available as an optional extra, retrofit kit.
- Recirculation of the purified water through the reservoir ensuring repeated exposure to ultraviolet germicidal irradiation / photo-oxidation and deionisation technologies.
- Additional Point of Use filter are available. (See section 6, Consumables and Accessories)

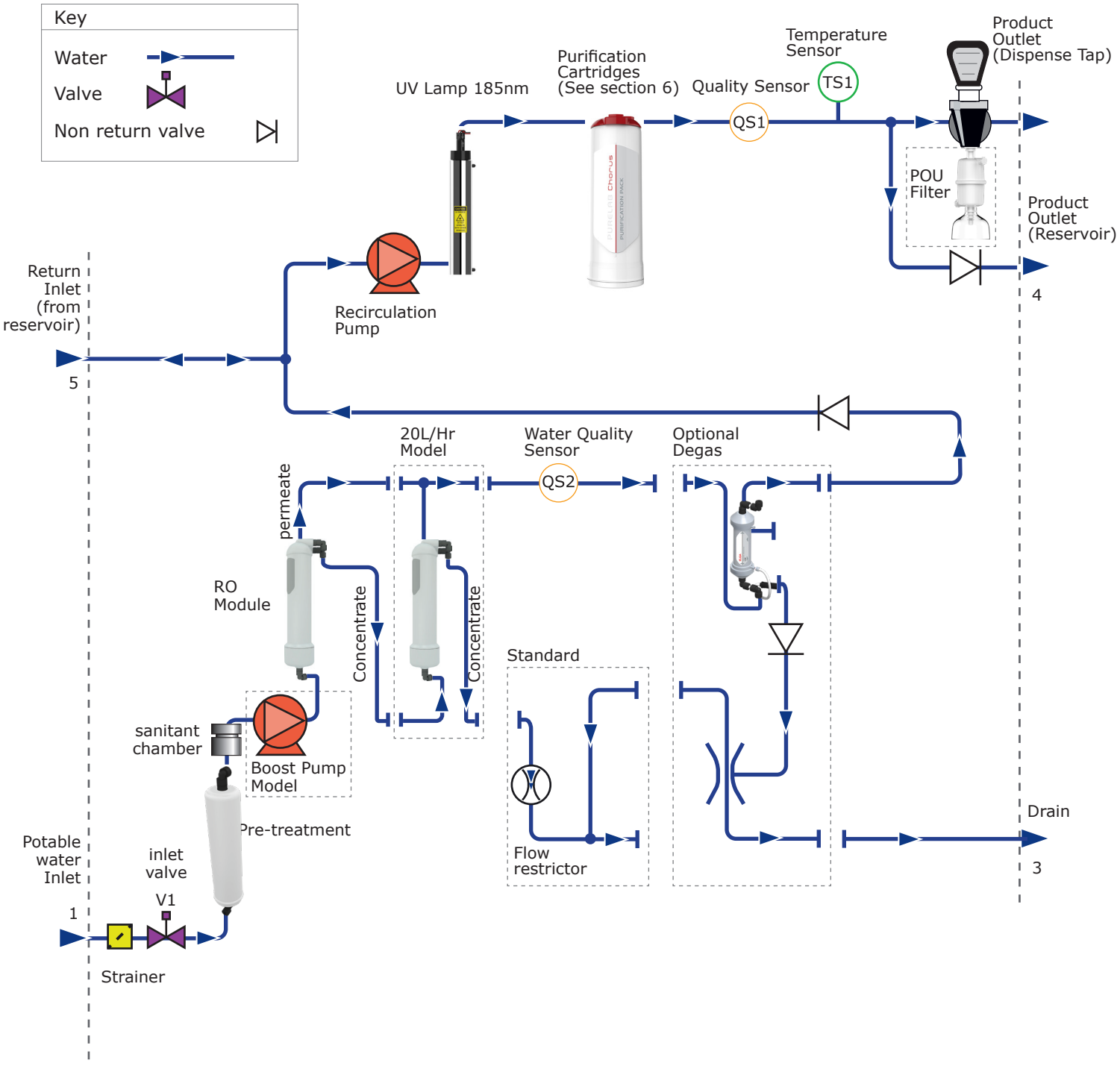
The system is designed to operate from pressurised potable water supply (drinking water) and produces up to 20 liters per hour of reverse osmosis grade water which is further purified and circulated through a treated water reservoir.

A user interface displays the system status and provides control by means of three function buttons.

The water is processed and treated by the PURELAB® Chorus Complete system as follows:

- Potable water enters through a strainer and inlet solenoid valve before entering the pre-treatment cartridge.
- The water then passes the sanitant chamber and (boost pump, model dependant) through one or two reverse osmosis cartridges, which split the flow into permeate and concentrate streams.
- The permeate water then passes though a water quality sensor (QS2) which measures the conductivity of the water. (µS/cm)
- At this point a optional degassing module can be added which removes CO_2 from the water, extending the life of the Purification Cartridge.
- The water then passes through a non return value before entering the reservoir or being drawn into the main recirculation steam.
- Water from the reservoir is drawn into the main recirculation stream by the recirculation pump and passes directly through the UV chamber where it is exposed to intense UV irradiation to provide continuous bacterial control and photo oxidation to promote the cleavage of organic molecules. (185nm UVC - UVB Light)
- The water then passes through the deionization resin cartridge pack which removes ionic impurities from the water. (See section 6, Consumables and Accessories)
- Finally the water is passed through a:
- Water quality sensor (QS1, line-cell) which measures the resistivity of the water. (MΩ.cm)
- Temperature sensor (TS1, line-cell) which provides accurate temperature measurement.
- Dispense Tap and Point-of-Use Filter (If Required).
- During periods of non-use the system will automatically operate in intermittent recirculation mode to maintain water purity with maximum efficiency.

11.2 Process Flow Chart - Example PURELAB® Chorus 1 Complete PC120COBPM1



11.3 Process Description - Chorus 2+ RO/EDI/UV

Water Grade Type 2+: General laboratory applications requiring higher inorganic purity.

The product consists of a single box solution where all purification technologies are included inside.

This includes a combination of the following water technologies:

- Pre-treatment and reverse osmosis.
- Boost pump and non boost pump variants.
- Degassing available as an optional extra, retrofit kit.
- Recirculation of the purified water through the reservoir ensuring repeated exposure to ultraviolet germicidal irradiation or electro deionization technologies.
- Additional Point of Use filters are available. (See section 6, Consumables and Accessories)

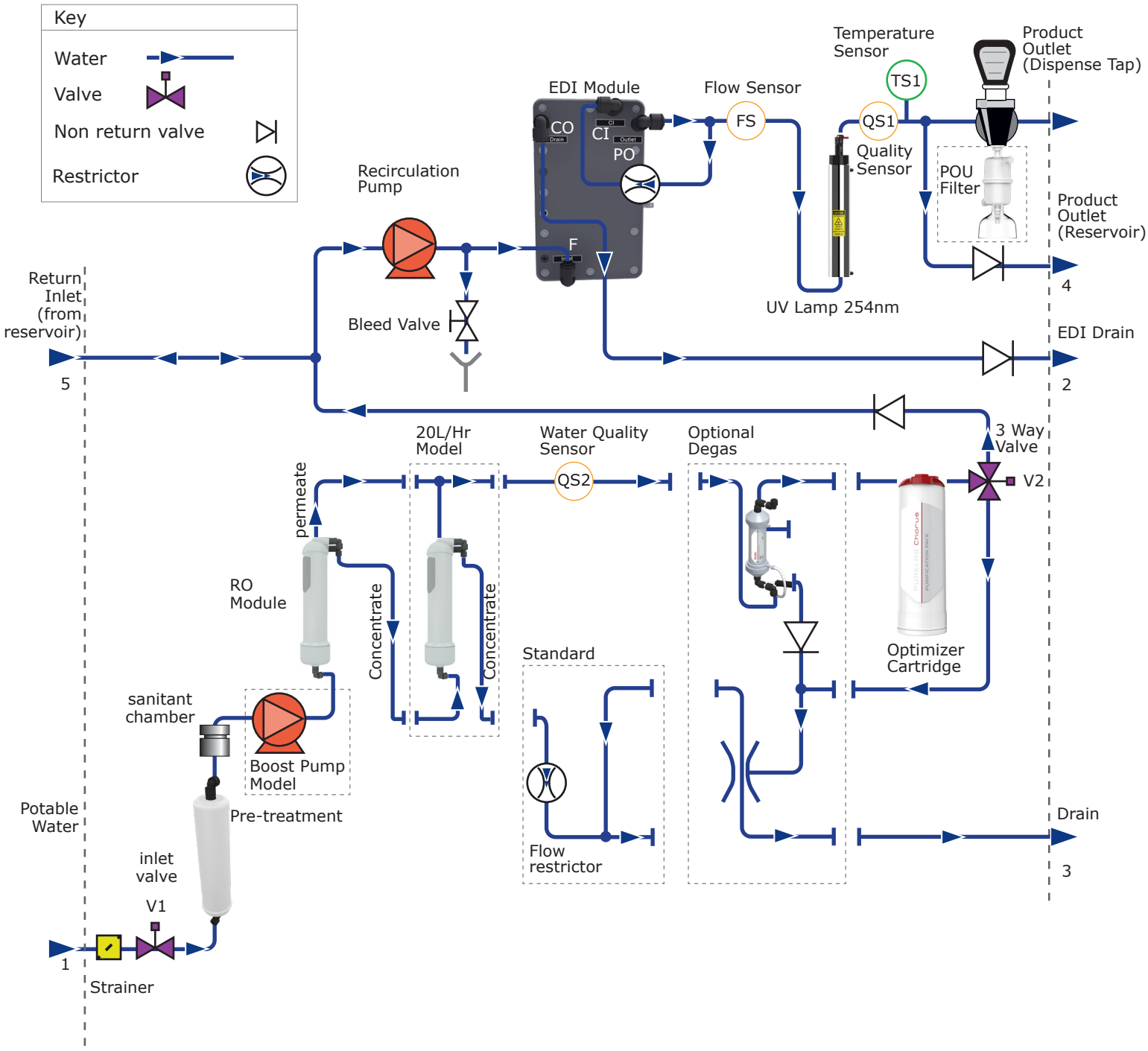
The system is designed to operate from a pressurised potable water supply (drinking water) and produces up to 20 liters per hour of reverse osmosis grade water which is further purified and circulated through a treated water reservoir.

A user interface displays the system status and provides control by means of three function buttons.

The water is processed and treated by the PURELAB® Chorus 2+ RO/EDI/UV system as follows:

- Mains Feed water enters through a strainer and inlet solenoid valve before entering the pre-treatment cartridge.
- The water then passes the sanitant chamber and (boost pump, model dependant) through one or two reverse osmosis cartridges, which split the flow into permeate and concentrate streams.
- The permeate water then passes though a water quality sensor (QS2) which measures the conductivity of the water. (µS/cm)
- At this point a optional degassing module can be added which removes CO_2 from the water, which reduces the ionic load on the EDI module.
- The permeate water passes through the Optimzer Cartridge resin cartridge pack which removes traces of hardness remaining in the water. (See section 6 Consumables and Accessories)
- The water then passes through a 3 way valve (V2) and a non return value before entering the reservoir or being drawn into the main recirculation stream.
- Water from the reservoir is drawn into the main recirculation stream by the re-circulation pump and passes through the electro-deionization module. The EDI module removes ionized species from the water.
- Concentrate water from the EDI module is passed to drain.
- Purified water passes through a flow switch.
- The purified water is pumped directly through the UV chamber where it is exposed to intense UV irradiation to provide continuous bacterial control. (254nm UVC - UVB Light)
- Finally the water is passed through a:
- Water quality sensor (QS1-line cell) which measures the resistivity of the water. (MΩ.cm)
- Temperature sensor (TS1-line cell) which provides accurate temperature measurement.
- Dispense Tap and Point-of-Use Filter (If Required).
- During periods of non-use the system will automatically operate in intermittent re-circulation mode to maintain water purity with maximum efficiency.
- When the reservoir needs to be refilled, there is an initial flush period. During which water is directed to drain via the 3-way valve (V2). This can be 10-50 minutes depending on system usage.

11.4 Process Flow Chart - PURELAB® Chorus 2+ RO/EDI/UV PC220EUBPM1



11.5 Process Description - Chorus 2+ RO/DI/UV

Water Grade Type 2+: General laboratory applications requiring higher inorganic purity.

The product consists of a single box solution where all purification technologies are included inside.

This includes a combination of the following water technologies:

- Pre-treatment and reverse osmosis.
- Boost pump and non boost pump variants.
- Degassing available as an optional extra, retrofit kit.
- Recirculation of the purified water through the reservoir ensuring repeated exposure to ultraviolet germicidal irradiation and deionisation technologies.
- Additional Point of Use filter are available. (See section 6, Consumables and Accessories)

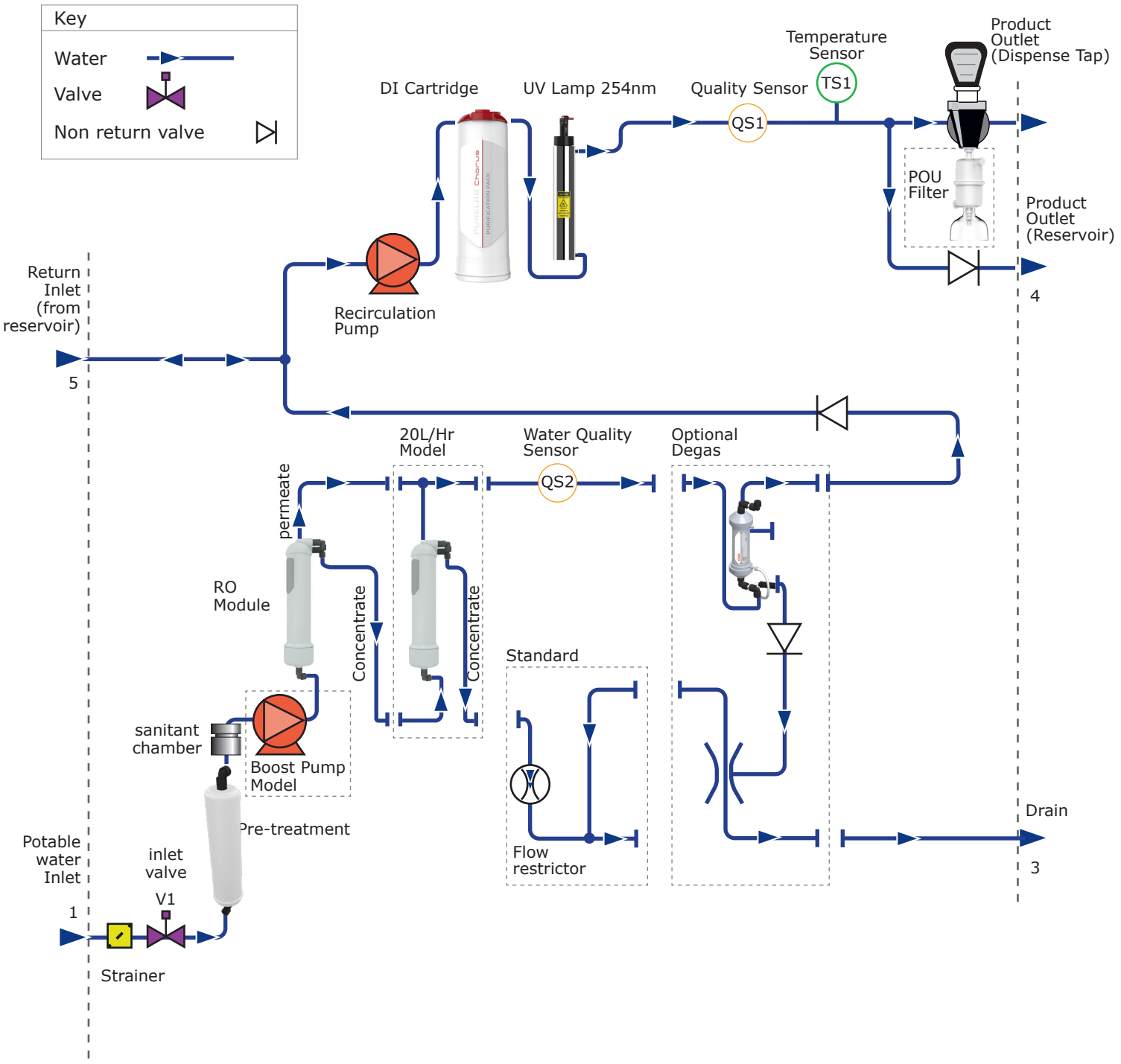
The system is designed to operate from pressurised potable water supply (drinking water) and produces up to 20 liters per hour of reverse osmosis grade water which is further purified and circulated through a treated water reservoir.

A user interface displays the system status and provides control by means of three function buttons.

The water is processed and treated by the PURELAB® Chorus 2+ RO/DI/UV system as follows:

- Potable water enters through a strainer and inlet solenoid valve before entering the pre-treatment cartridge.
- The water then passes the sanitant chamber and (boost pump, model dependant) through one or two reverse osmosis cartridges, which split the flow into permeate and concentrate streams.
- The permeate water then passes though a water quality sensor (QS2) which measures the conductivity of the water. (µS/cm)
- At this point a optional degassing module can be added which removes CO_2 from the water, extending the life of the DI Cartridge.
- The water then passes through a non return value before entering the reservoir or being drawn into the main recirculation steam.
- Water from the reservoir is drawn into the main recirculation stream by the recirculation pump and passes directly through the deionization resin cartridge pack which removes ionic impurities from the water. (See section 6, Consumables and Accessories)
- The water then passes through the UV chamber where it is exposed to intense UV irradiation to provide continuous bacterial control. (254nm UVC Light) (See section 6, Consumables and Accessories)
- Finally the water is passed through a:
- Water quality sensor (QS1, line-cell) which measures the resistivity of the water. (MΩ.cm)
- Temperature sensor (TS1, line-cell) which provides accurate temperature measurement.
- Dispense Tap and Point-of-Use Filter (If Required).
- During periods of non-use the system will automatically operate in intermittent recirculation mode to maintain water purity with maximum efficiency.

11.6 Process Flow Chart - Example PURELAB® Chorus 2+ RO/DI/UV PC220DUBPM1



12. TECHNICAL SPECIFICATIONS

Product Specifications	
PURELAB® Chorus 1 Complete, PURELAB® Chorus 2+ RO/DI/UV and PURELAB® Chorus 2+ RO/EDI/UV (all variants)	
Warranty period	12 Months
Inlet power Main supply voltage (Volts)	100-240Vac 50/60Hz
Power rating (VA)	155VA
Maximum Noise (dBA)	<45
Height	679mm (26.7")
Width	376mm (14.8")
Depth	353mm (13.9")
Pipework connections (General)	8mm OD tube
Pipework connections (High Flow outlet of reservoir)	15mm OD tube
Reservoir Volumes (Litres)	15, 30, 60, 100
Environment conditions	
Maximum temperature (°C)	35
Minimum temperature (°C)	5
Maxiumum humidity	80% non-condensing
Storage conditions	Clean, dry, indoors
Feed Water Quality	
Source	Potable mains water supply
Pressure - models with boost pump PC110COBPM1, PC120COBPM1, PC210DUBPM1, PC220DUBPM1, PC210EUBPM1, PC220EUBPM1	Max Pressure: 2 bar (30 psi) boost pump fitted Min Pressure: 0.2 bar (3 psi) boost pump fitted LA512 Fitted when inlet pressure >2.0bar (30psi)
Pressure - models without boost pump PC110COXXM1, PC120COXXM1, PC210DUXXM1, PC220DUXXM1, PC210EUXXM1, PC220EUXXM1	Max Pressure: 6 bar (90 psi) without boost pump fitted Min Pressure: 4 bar (60 psi) without boost pump fitted LA512 Fitted when inlet pressure >6.0bar (90psi)
Conductivity - Non-EDI models PC110COBPM1, PC110COXXM1, PC120COBPM1, PC120COXXM1, PC210DUBPM1, PC210DUXXM1, PC220DUBPM1, PC220DUXXM1	2000µS/cm
Conductivity - EDI models PC210EUBPM1, PC210EUXXM1, PC220EUBPM1, PC220EUXXM1	1400µS/cm
Free / total chlorine Max. (ppm)	0.5
CO2 Max. (ppm)	30
CO2 recommended (ppm)	<20
Heavy Metals (ppm)	0.05
Silica (ppm)	30
Temperature (°C)	1-35

12. TECHNICAL SPECIFICATIONS

Product Specifications					
Model Type	Part Number	Boost Pump	Flow Rate (l/hr)	Max. Usage (l/day)	Dry Weight (Kg)
PURELAB® Chorus 1 Complete	PC110COXXM1	✗	10	240	14.2
	PC110COBPM1	✓	10	240	16.4
	PC120COXXM1	✗	20	480	15.2
	PC120COBPM1	✓	20	480	17.4
PURELAB® Chorus 2+ RO/DI/UV	PC210DUXXM1	✗	10	240	14.2
	PC210DUBPM1	✓	10	240	16.4
	PC220DUXXM1	✗	20	480	15.2
	PC220DUBPM1	✓	20	480	17.4
PURELAB® Chorus 2+ RO/EDI/UV	PC210EUXXM1	✗	10	220	17.8
	PC210EUBPM1	✓	10	220	20.1
	PC220EUXXM1	✗	20	220	18.8
	PC220EUBPM1	✓	20	220	21.1

Product Water Specifications			
System Type	PURELAB® Chorus 1 Complete	PURELAB® Chorus 2+ RO/DI/UV	PURELAB® Chorus 2+ RO/EDI/UV
Models	**PC110COBPM1** (10 l/hr with boost pump) **PC110COXXM1** (10 l/hr) **PC120COBPM1** (20 l/hr with boost pump) **PC120COXXM1** (20 l/hr)	**PC210DUBPM1** (10 l/hr with boost pump) **PC210DUXXM1** (10 l/hr) **PC220DUBPM1** (20 l/hr with boost pump) **PC220DUXXM1** (20 l/hr)	**PC210EUBPM1** (10 l/hr with boost pump) **PC210EUXXM1** (10 l/hr) **PC220EUBPM1** (20 l/hr with boost pump) **PC220EUXXM1** (20 l/hr)
Dispense Flow Rate (L/Min)	>1.5	>1.5	>1.0
pH	Effectively Neutral	Effectively Neutral	Effectively Neutral
inorganics at 25°C	up to 18.2	10 to >15	10 to >15
Temperature (°C)	Ambient	Ambient	Ambient
Total Organic Carbon (TOC)	<5 ppb	<10 ppb * Dependent of feed water conditions.	<10 ppb * Dependent of feed water conditions.
Bacterial spec	<0.001 Cfu/ml with POU filter LC134 or Biofilter LC197	<0.001 Cfu/ml with POU filter LC134 or Biofilter LC197	<0.001 Cfu/ml with POU filter LC134 or Biofilter LC197
Endotoxin	<0.001 EU/ml with Biofilter LC197	<0.001 EU/ml with Biofilter LC197	<0.001 EU/ml with Biofilter LC197
Particles*	0.2µm	0.2µm	0.2µm
Dnase	<5 pg/ml		
Rnase	<1 pg/ml		

* With a Point-Of-Use filter fitted.

Optimizer Pack Life Times, Feedwater hardness selection	Flowrate setting	Runtime of V1 energised (Hrs)
Soft	10L/Hr	3600
<150ppm CaCO3	20L/Hr	1800
Medium	10L/Hr	2200
<150 - 250ppm CaCO3	20L/Hr	1100
Hard	10L/Hr	1600
<250 - 350ppm CaCO3	20L/Hr	800

Dependent on feed water or part of our policy of continual improvement, we reserve the right to alter the specifications given in this document.

13. WARRANTY / CONDITIONS OF SALE

ELGA Veolia® 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. 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) 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.

VWS (UK) Ltd. 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:

the date of installation, or 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 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 labour for the first ninety (90) days of the above warranty period is included in the warranty; thereafter, labour 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. 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.

NOTICE

VWS (UK) Ltd. is constantly striving to improve its products and services. Consequently, the information in this document is subject to change without notice and should not be construed as a commitment by VWS (UK) Ltd.

Also VWS (UK) Ltd. assumes no responsibility for any errors that may appear in this document. This manual is believed to be complete and accurate at the time of publication. In no event shall VWS (UK) Ltd. be liable for incidental or consequential damages in connection with or arising from the use of this manual.

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

The Labwater Specialists

Tel: +44 203 567 7300 Email: info@elgalabwater.com Web: www.elgalabwater.com