User Manual

Elix® 20, 35, 70 and 100

Note

This User's Manual refers to an item called a 'TAG' Sensor. This version of your system may not include this 'TAG' Sensor. Please kindly disregard all references to this item while reviewing this User's Manual.

Notice

The information in this document is subject to change without notice and should not be construed as a commitment by Millipore SAS. Millipore SAS assumes no responsibility for any errors that might appear in this document. This manual is believed to be complete and accurate at the time of publication. In no event shall Millipore SAS be liable for incidental or consequential damages in connection with or arising from the use of this manual.

We manufacture and sell water purification systems designed to produce pure or ultrapure water with specific characteristics (µS/cm, T, TOC, CFU/ml, Eu/ml) when it leaves the water purification system provided that the systems are fed with water quality within specifications, and properly maintained as required by the supplier.

We do not warrant these systems for any specific applications. It is up to the end user to determine if the quality of the water produced by our systems matches his expectations, fits with norms/legal requirements and to bear responsibility resulting from the usage of the water.

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Manufacturer: MILLIPORE SAS, 67120 MOLSHEIM, FRANCE.

Trademarks

Product warranty and limitation of liability

The applicable warranty and limitation of liability for the products listed in this publication may be found at http://www.millipore.com/ec/cp3/terms within the "Terms and Conditions of Sale" applicable to your purchase transaction.

Recycling

Directive 2002/96 EC: For European users only

The symbol "crossed bin" on a product or its packaging indicates that the product should not be treated like household waste when discarded. Instead the product should be disposed of at a location that handles discarded electric or electronic equipment.

Proper disposal of equipment containing electric or electronic components will help to reduce pollution effects to the environment or to human health. Proper recycling of these products helps in environmental preservation and helps to protect natural resources. For more information about recycling of products containing electric or electronic components, please contact your local recycling representative or organization.

Use appropriate means for lifting and carrying.

Pay special attention to how you handle the system in order not to damage your back.

Lift by straightening your legs. Let your leg muscles, not your back muscles, do the work.

Chapter 1 INTRODUCTION

1-1 USING THIS MANUAL

MATCHING THIS MANUAL WITH YOUR WATER PURIFICATION SYSTEM

This manual is intended for use with a Millipore SAS Elix 20, Elix 35, Elix 70 or Elix 100 Water Purification System.

This User Manual is a guide for use during the normal operation and maintenance of an Elix 20, Elix 35, Elix 70 or Elix 100 Water Purification System. It is highly recommended to completely read this manual and to fully comprehend its contents before attempting normal operation or maintenance of the Water Purification System.

You can easily identify your type of Water Purification System if you do not see the Catalogue Number. The type of Elix System is indicated above the Keypad on the front of the Elix System Cabinet.

If this manual is not the correct one for your Water Purification System, then please contact Millipore SAS.

INSTALLATION INFORMATION

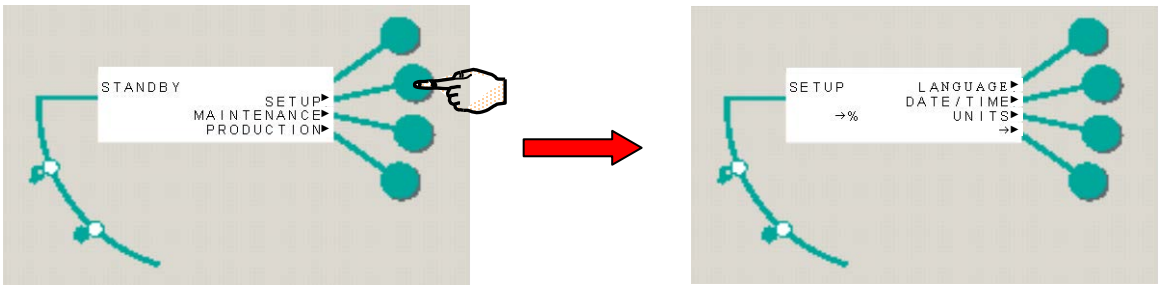
IMPORTANT! INSTALLATION INSTRUCTIONS ARE NOT INCLUDED. INSTALLATION OF THIS PRODUCT IS MEANT TO BE PERFORMED BY A QUALIFIED MILLIPORE SAS SERVICE REPRESENTATIVE.

The Pre-Installation and Installation Documentation for the Elix Systems mentioned above are not found in this Manual. Contact Millipore SAS if you would like to have this information.

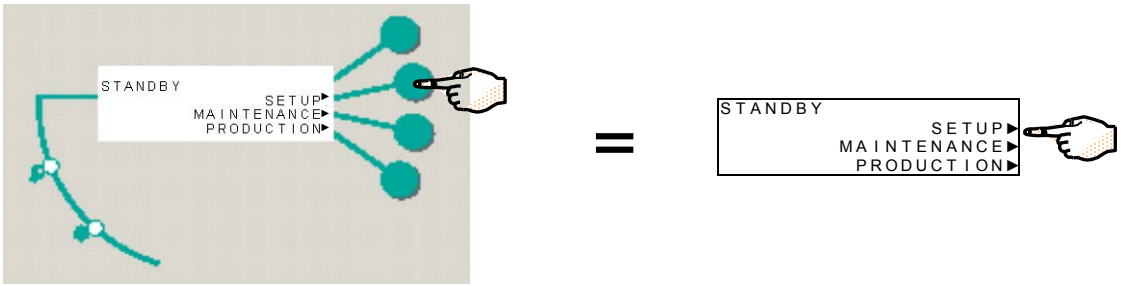
Appendix 2 contains a Pre Installation Checklist and Appendix 3 contains a Post Installation Checklist. These can be used to confirm that you received the necessary items for installation and also that the Elix System was installed according to specifications.

How to use the Keypad and the LCD

The Keypad and LCD are shown below. Press the Keypad Button lining up with the desired action. For example, if you wanted to go from STANDBY Mode to SETUP Mode, you would press the Keypad as shown below.



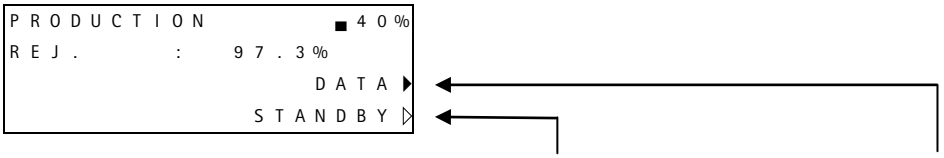
In this manual, pressing a Keypad Button would be shown like this.



There are several symbols that are displayed on the Keypad. These symbols are explained below.

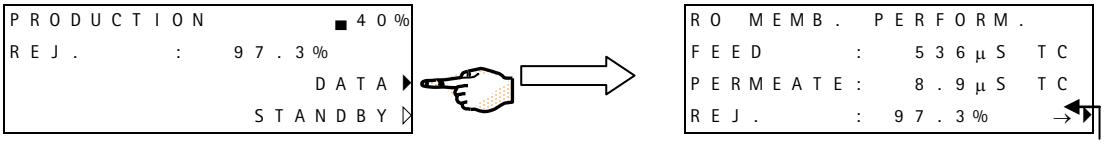
SYMBOL	WHAT IT MEANS
▸	PRESS AND RELEASE SYMBOL. Pressing the Keypad Button next to this symbol brings you immediately to the next LCD Screen.
▸	PRESS AND HOLD SYMBOL. Pressing the Keypad Button next to this symbol for 2-3 seconds brings you to the next LCD Screen.
→	Pressing the Keypad Button next to this symbol brings you to the next LCD Screen within the same software branch.
✕	Pressing the Keypad Button next to this symbol exits the currently viewed software branch. It brings you back to the Root Menu.
⇌	Pressing the Keypad Button next to this symbol toggles between various parameters being displayed.
+	Pressing the Keypad Button next to this symbol increases the value of the currently displayed parameter.
-	Pressing the Keypad Button next to this symbol decreases the value of the currently displayed parameter.

Some examples of various Keypad Button actions are shown below.

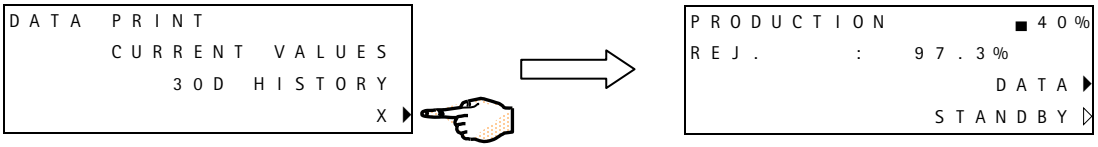


Pressing the Keypad Button next to STANDBY for a few seconds changes the LCD.

Pressing the Keypad Button next to DATA immediately changes the LCD.



Pressing this Keypad Button (→) will scroll the LCD to the next LCD Screen containing DATA information. In this example, DATA is the Software Branch linked together with LCD Screens and the Keypad Arrow shown above.



Pressing this Keypad Button (X) will scroll the LCD to the ROOT Menu.

COMMONLY USED ABBREVIATIONS IN THIS MANUAL

Abbreviation	Full Text + Comments
µS/cm	microSiemens per centimeter
BSP, MBSP, FBSP	British Standard Thread, Male BSP, Female BSP
CFU/ml	Colony Forming Units per millilitre
FI	Fouling Index
GAZ	A type of thread (a metric thread)
i.e.	For Example
kPa	kiloPascals
L	Litre
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LPH	Litre Per Hour
LPM	Litre Per Minute
LSI	Langelier Saturation Index
mm	millimeter
MW	Molecular Weight
nm	nanometer
NPT	National Pipe Thread
NPTF	National Pipe Thread Female
NPTM	National Pipe Thread Male
OD	Outer Diameter
RO	Reverse Osmosis
TOC	Total Organic Carbon

1-2 CONVERSION FACTORS

To convert from	to	multiply by	example
Litres	US Gallon	0.258	1 L = 0.264 US Gal.
Litres	Imperial Gallon	0.215	1 L = 0.220 Imp. Gal.
mm	inches	0.03937	1 inch = 25.4 mm = 2.54 cm
mm	feet	0.0037	1 foot = 304.8 mm = 30.48 cm
kg	lb	2.2	1 kg = 2.2 lb
bar	psi	14.7	1 bar = 1 b= 14.7 psi
bar	kPa	100	1 bar = 100 kPa
°C	°F	(1.8 *°C) + 32	25 °C = 77 °F
LPM	US Gal. per minute	0.264	500 ml/min. = 0.500 LPM = 0.132 USG/min.

1-3 Safety Information

Safety Statement

Your Elix System should be operated according to the instructions in this manual. In particular, the hydraulic and electrical specifications should be followed and met. It is important to use this equipment as specified in this manual; using this equipment in a different manner may impair the safety precautions of the Elix System.

HAZARD	**Do not open the system cabinet at any time.** Electrical and mechanical components inside the Elix System could pose a hazard. A qualified Millipore SAS Service Representative should perform any work that needs to be done while the Elix System cabinet is opened.

Safety Symbols

	This ATTENTION symbol is used to refer to instructions in this manual that need to be done carefully.
	These symbols are used to indicate that proper safety equipment has to be used.
	Protective glasses and gloves must be worn.
	This UV RADIATION sticker is used to refer to a position on the water system Cabinet or inside of it where exposure to UV light is possible.
	This DANGER sticker is used to refer to a position on the water system Cabinet or inside of it that could be hazardous.
	This ELECTRICAL GROUND sticker is used to refer to a position on the water system Cabinet or inside where an electrical ground connection is made.
	This ELECTRICAL DANGER sticker is used to refer to a position on the water system Cabinet or inside where an electrical danger could exist.

1-4 Contact Millipore SAS

For any questions or requests, please use the contact information provided below.

By Internet

The Internet Site can be used to find addresses, telephone/fax numbers and other information.

Internet Site Address:

www.millipore.com
www.millipore.com/techservice
www.millipore.com/lab_water

Manufacturing Site

Millipore SAS
67120 Molsheim
France

Chapter 2 PRODUCT INFORMATION

2-1 ELIX PRODUCT WATER SPECIFICATIONS

PRODUCT WATER FLOW RATES

ELIX 20, ELIX 35, ELIX 70 AND ELIX 100 FLOWRATES

ELIX SYSTEM	PRODUCT WATER FLOW RATE Nominal Flow 7 – 30 °C (See bottom 2 rows of this table)
Elix 20	20 LPH
Elix 35	35 LPH
Elix 70	70 LPH
Elix 100	100 LPH
Water temperature < 25 °C and 10 bar operating pressure. (up to 12 bar with cold feedwater).	
Water temperature ≥ 25 °C and 7 bar operating pressure.	

PRODUCT WATER QUALITY

- Resistivity > 5 MΩ.cm (@25 °C) typically 10-15 MΩ.cm (when CO2 is < 30 ppm in the Feedwater)
- Conductivity < 0.2 µS/cm (@25 °C) typically 0.067-0.10 µS/cm (when CO2 is < 30 ppm in the Feedwater)
- TOC < 30 ppb
- Micro-Organisms < 10 CFU/ml
- Silica Rejection > 99.9%

2-2 System Recovery

What is RO Recovery?

An RO Cartridge has 1 feedwater inlet and 2 water streams exiting it. One exiting water stream is called the RO Permeate. The other is called the RO Reject.

The RO % Recovery is a comparison of the RO Permeate flow rate to the RO Feedwater flow rate. It can be thought of as how much water you 'recover' from the RO as a useful product.

It is calculated as:

% Recovery = [(Permeate flow rate / Feedwater flow rate] * 100%

Membrane % Recovery is defined as the recovery of a single RO Cartridge.

System % Recovery is defined as the amount of water produced relative to the amount going into the entire Elix System.

In most cases, the Membrane and System Recovery values will not be the same number.

Elix System Recovery

An Elix System can be operated with a System Recovery between 30% to 70%. This value will depend upon several factors including the chemical makeup of the Feedwater.

System Recovery is defined above. See "What is RO Recovery?"

The Elix System Recovery is factory pre-set. If desired, the Elix System Recovery can be modified. Contact Millipore SAS for assistance.

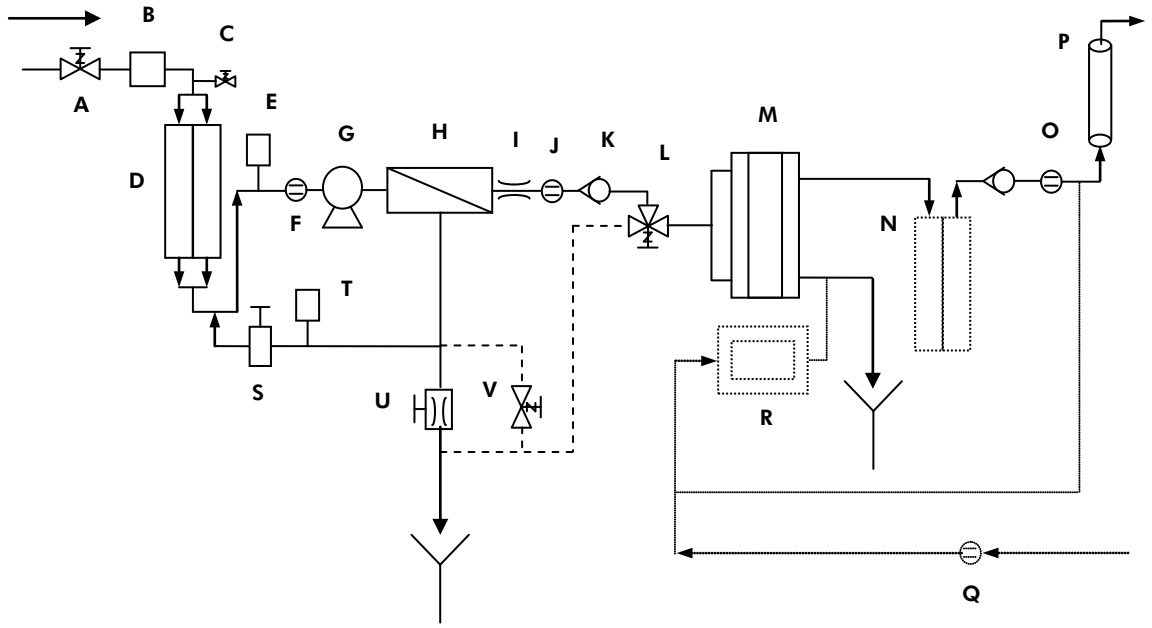
A System Recovery set too low will waste water. A low recovery occurs when a lot of RO Reject Water is sent to drain relative to the RO Permeate flow rate (i.e. RO Recovery = 5%).

A System Recovery set too high can possibly cause the RO Cartridges to become clogged. A high recovery occurs when too little RO Reject Water is sent to drain relative to the RO Permeate flow rate (i.e. RO Recovery = 80%).

2-3 Schematic of Main Components

Schematic of an Elix System

The water flow through an Elix Water Purification System is shown here in a flow diagram. A description of each item is in the next section.

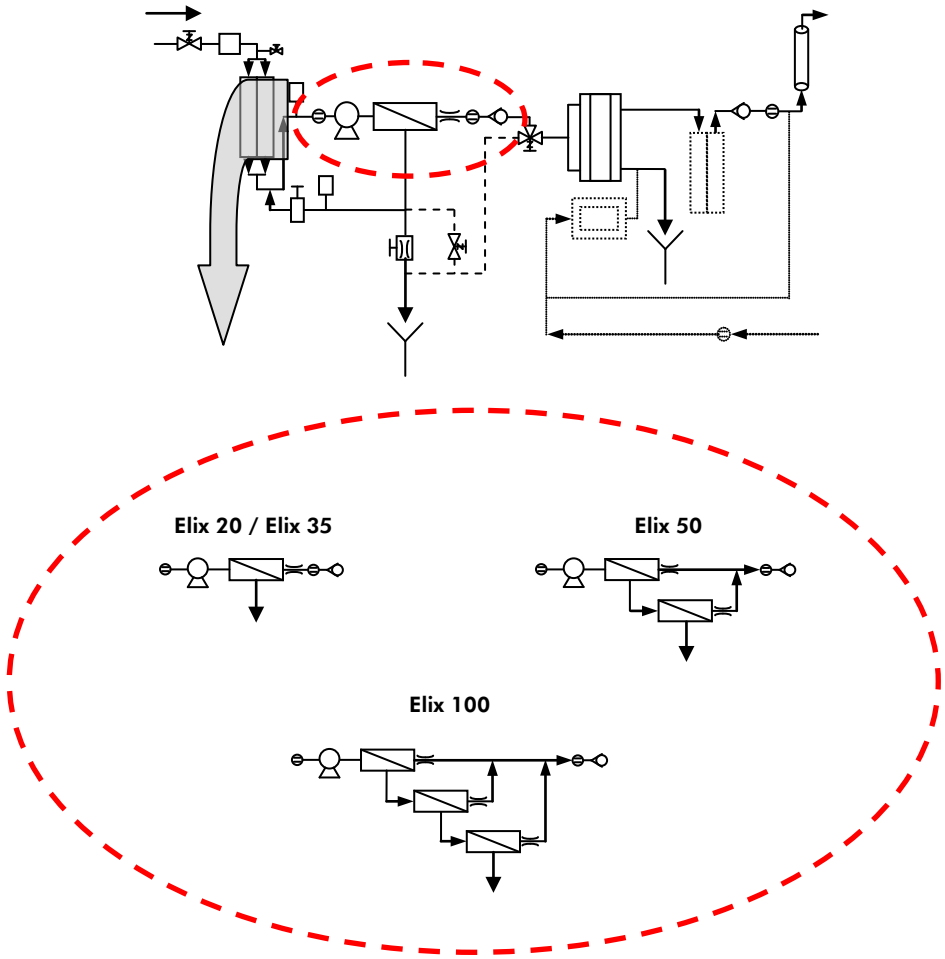


Guide to Schematic

Identification of lettered items in the flow schematic above			
Item	**Description**	**Item**	**Description**
A	Inlet Solenoid Valve	L	RO Permeate Divert Solenoid Valve
B	Flowmeter	M	Elix Module
C	Purge Valve	N	QGard TL 1 Polishing Pack (Optional)
D	Progard™ TL System Pretreatment Pack	O	Product Water Resistivity Sensor
E	Feedwater Pressure Switch	P	UV Lamp
F	Feedwater Conductivity Cell	Q	Loop Resistivity Sensor (Optional)
G	RO Pump (Motor + Pumphead)	R	A10 TOC Monitor (Optional)
H	RO Cartridge	S	Back Pressure Regulator
I	Flow Controller	T	Pressure Sensor
J	Permeate Conductivity Cell	U	RO Reject Control Device
K	Permeate Check Valve	V	RO Reject Solenoid Valve

RO Cartridge configuration for Elix Systems

The RO Cartridge configuration for each type of Elix Water Purification System is shown below.



2-4 Description of Input and Output Connections

This section describes the use of the various ports and other connection places on the front left side of the Elix System Cabinet.

Ports

Port DRAIN 1

The DRAIN 1 Port is used to secure the 1/2 inch OD RO Reject Tubing. This port allows RO Reject Water to exit the Elix System.

Port FEED 2

The FEED 2 Port is used to secure the 1/2 inch OD Feedwater Tubing. This port allows Feedwater to enter the Elix System.

Port CONC. 3

This port is used to secure the 8 mm OD Elix Module Waste Water Tubing. This port allows Elix Module Waste Water to exit the Elix System.

Port PRODUCT 4

The PRODUCT 4 Port is used to secure 8 mm OD Product Water Tubing. This port allows Product Water to exit the Elix System.

Port 5

Port 5 is used when a peripheral device is connected to the Elix System. This port could be used to allow water to enter the Elix System to the device inside.

Port 6

Port 6 is used when a peripheral device is connected to the Elix System. This port could be used to allow water to enter the Elix System to the device inside.

Port 7

Port 7 is used when a peripheral device is connected to the Elix System. This port could be used to allow water to enter the Elix System to the device inside.

TANK LEVEL and RS 232

TANK LEVEL

A Male Stereo Jack from an Analogue Level Sensor can be plugged into the Elix System here. The Supply Voltage coming from this connection to the Level Sensor is normally 5 VDC but can be set to 24 VDC.

RS 232

This connection allows a 9-pin Male RS 232 Cable to be plugged into the Elix System. The Transmit and Receive voltages out of or into this connection are 5 VDC when active.

GROMMETS

The grommets are not labelled with text on the front left side of the Elix System Cabinet. The grommet is a rubber device that covers most of a hole drilled in the side of the cabinet.

GROMMET 1

The bottom grommet is designated as Grommet 1. The Electrical Cable going from the Elix System to the externally located Inlet Solenoid Valve goes through this grommet. The voltage in this electrical cable is either 100, 120 or 230 VAC depending upon the voltage supplied to the Elix System.

GROMMETS 2 THROUGH 7

These grommets are used to allow an electrical cable to go into or out of the Elix System. The electrical cable(s) are used to control or to power peripheral devices. The voltage in any one of these electrical cables is dependent upon the device being used and the way that the device is interfaced with the Elix System PC Board.

2-5 Description of Main Components

Inlet Solenoid Valve

The Inlet Solenoid Valve is used to control the flow of feedwater into the Elix System.

The Inlet Solenoid Valve is located outside of the Elix System Cabinet. It receives 100, 120 or 230 VAC from the Elix System via a 5 meter electrical cable. Typically, it is directly connected to a pipe carrying tap water.

Flowmeter

A Flowmeter is installed inside every Elix System. It measures the total feedwater coming into an Elix System.

As a result of the Flowmeter, the RO Reject flow rate can be determined. This facilitates the manual setting of the RO Reject flow rate (a procedure sometimes done at installation and during the lifetime of the Elix System).

Progard® TL System Pretreatment Pack

Purpose of the Progard TL System retreatment Pack

The Progard TL System Pretreatment Pack (called "Progard TL" for the remainder of this manual) is used to prevent mineral scaling, organic fouling and chlorine oxidation with the Reverse Osmosis (RO) Membranes. The Progard TL is a consumable device that needs to be periodically replaced during the maintenance of an Elix System. The Progard TL is located on the left side of the front of the Elix System cabinet.

It is possible to buy a type of Progard TL that has a chlorine sanitisation tablet inside. When this type of Progard TL is installed on an Elix System, the chlorine sanitisation tablet will dissolve. This will sanitise the RO Cartridge located downstream of the Progard. The dissolved chlorine will leave the Elix System via the drain and will never enter the Product Water Reservoir.

What are the different types of Progard Pretreatment Packs?

There are 4 types of Progard TL Packs. The choice of a Progard TL is based upon 2 factors.

These factors are the Total Chlorine Level and the Fouling Index of the Feedwater. The type of Progard TL used is determined by the magnitude of these parameters. You will be able to choose between a Progard TL1 System Pretreatment Pack ("Progard TL1") or a Progard TL2 System Pretreatment Pack ("Progard TL2"). You can choose either of these with or without a chlorine sanitisation tablet inside.

Which type of Progard TL to use?

Please contact Millipore SAS. An Applications Specialist will be able to determine the appropriate pretreatment for your Elix System.

When do I change the Progard TL?

The Elix System will prompt you to change the Progard TL using a LCD Message. The Elix System will indicate a message "EXCHANGE PT PACK IN 14 DAYS" when the projected Progard TL lifetime is 14 days. The Elix System will indicate a message "EXCHANGE PT PACK OVERDUE: XXDAYS" if the Progard TL is not changed after 14 days.

The Progard TL is changed due to either the amount of time it has been used or from the amount of water that has passed through it. The Elix System has the ability to measure the total volume of Feedwater passed through it. It also measures the amount of time that elapsed since the Progard TL was exchanged.

Using these 2 parameters, the Elix System will be able to project a lifetime for the Progard TL. This lifetime is updated frequently by the Elix System. The Elix System will display "N/A" for the Progard TL lifetime during the first 7 days that the Progard TL was installed. After this, you will be able to see projected lifetime for the Progard TL.

Progard TL1 or TL2 System Pretreatment Pack Catalogue Number

See Section 6-1 ("Ordering Information").

PrePak L1 Pre-System Pretreatment Pak

Purpose of the PrePak L1 Pre-System Pretreatment Pak

A PrePak L1 Pre-System Pretreatment Pak is used with either a Progard TL1 or a Progard TL2 Pretreatment Pak. A PrePak L1 Pre-System Pretreatment Pak is used when a Progard L alone is not sufficient.

There is one version of the PrePak L1 Pre-System Pretreatment Pak (called "PrePak" in the remainder of this manual).

A PrePak is not included with the Elix System and needs to be ordered separately.

What is needed for a PrePak?

A PrePak is mounted on a Pack Holder outside of the Elix System. The Pack Holder is typically located between the Inlet Solenoid Valve and the Elix System Cabinet. The Pack Holder is not included with the Elix System and needs to be ordered separately.

The instructions for mounting the Pack Holder are inside its shipping box. The instructions for mounting it are not inside this manual. Contact Millipore SAS for these instructions if you would like to see them before obtaining the Pack Holder.

When do I change the PrePak?

It is recommended to change the PrePak when the Progard TL is changed. See "When do I change the Progard TL?" (the section above) for more information.

PrePak Catalogue Number and Pack Holder Catalogue Number

See Sections 6-1 and 6-2.

Purge Valve

The Purge Valve is used whenever the Progard TL is removed from the front of the Elix System.

The Purge Valve is opened during a "Pack Change" Mode. When it is open, air will flow through it. The entering air allows any water in the Progard TL to flow into the Elix System and then to drain. This allows a wetted Progard TL to be emptied of water. This prevents water from flowing out of the Progard TL when it is removed from the Elix System.

Feedwater Pressure Switch

The Feedwater Pressure Switch is a sensor that detects if there is not sufficient water pressure after the Progard TL. When the water pressure after the Progard TL is < 0.3 bar for ~ 10 seconds, the Elix System will report a LOW FEED PRESSURE Alarm. This alarm closes the Inlet Solenoid Valve and the Elix System will shut down.

The Feedwater Pressure Switch is used to determine if the Progard TL is clogged or if the supply of feedwater is turned off.

Feedwater and Permeate Conductivity Cells

A Conductivity Cell is a sensor used to measure the electrical conductance of water. The electrical conductivity (electrical conductance per unit length) is directly related to the amount of ions in the water. Higher conductivity values indicate a higher ion content in the water passing through the sensor.

The Feedwater Conductivity Cell is located after the Progard TL and before the RO Cartridge(s). The Permeate Conductivity Cell is located after the RO Cartridge(s).

A comparison between the Feedwater and Permeate Conductivity Cell measurements is done while the Elix System is operating. This information is used to calculate the RO % Rejection. This indicates the relative percentage of ions removed from the Feedwater ("rejected by the RO").

RO Pump (Motor + Pumphead)

The RO Pump consists of a Motor and a Pumphead. The RO Pump is used to increase the flow rate of water into the RO Cartridge(s). The RO Pump in turn becomes a way of pressuring the Feedwater to the RO Cartridge(s).

- Water temperature ≥ 25 °C — Operate at 7 bar
- Water temperature < 25 °C — Operate at 10 bar (up to 12 bar with cold feedwater).

RO Cartridge(s)

Each RO Cartridge removes (rejects) a large percentage of ions from the tap water. In addition, each RO Cartridge removes a large percentage of bacteria and organic material. The RO Cartridge(s) is connected so that there is a single waste stream (RO Reject Stream) that is directed to a sink or a drain. The RO Reject Stream is a single piece of tubing exiting from one of the side ports of the Elix System Cabinet. All ions, bacteria and organic material removed by the RO are directed to the RO Reject Stream.

An Elix 35 has 1 RO Cartridge. An Elix 70 has 2 RO Cartridges. An Elix 100 has 3 RO Cartridges.

An Elix 20 has 1 RO Cartridge. The Elix 20 RO Cartridge has a lower flow rate than the Elix 35 RO Cartridge.

Flow Controller

The Flow Controller limits the RO Permeate flow rate to ~ 50 LPH. The exception to this is an Elix 20 RO Cartridge. Its Flow Controller limits the RO Permeate flow rate to ~ 30 LPH.

RO Permeate Divert Solenoid Valve

The RO Permeate Divert Solenoid Valve is used to divert the RO Permeate Water to drain when the Elix System is in RINSING Mode and during R.O. RINSE Mode.

Pressure Sensor

The Pressure Sensor is used to measure the water pressure near the Back Pressure Regulator. The measured water pressure is displayed on the LCD.

Back Pressure Regulator

The Back Pressure Regulator is used to adjust the RO Pump Pressure. It also adjusts the amount of water in the RO Reject Water Stream being sent back to the RO Pump Inlet.

RO Reject Control Device

The RO Reject Control Device is used to control the RO Reject Water to the drain. As an example, suppose the RO Reject Water to drain is 120 LPH with an Elix 50 System. Now suppose someone wants to lower the RO Reject Water to drain to 80 LPH. The RO Reject Control Device can be adjusted until the RO Reject Flow water is 80 LPH.

The use of the RO Reject Control Device allows the Elix System Recovery to be adjusted.

RO Reject Solenoid Valve

The RO Reject Solenoid Valve is normally closed. For example, during PRODUCTION Mode (when the Elix System is filling a Reservoir), the RO Reject Solenoid Valve is closed.

The RO Reject Solenoid Valve is opened during other software modes such as FLUSH Mode. When it is open, the feedwater side of the RO Cartridge will get swept clean of accumulated impurities. When the RO Reject Solenoid Valve closes, the RO Reject Water is sent through the RO Reject Control Device.

Elix Module

The Elix Module is a device that deionises the RO Permeate Water. It is an electrically operated deionisation device.

Product Water Resistivity Sensor

The Resistivity Sensor is used to measure the electrical resistivity of the post Elix Module Water. The resistivity and the water temperature are shown on the LCD during PRODUCTION Mode.

If a QGard TL 1 Polishing Pack accessory is added to an Elix System, then the Resistivity Sensor measures the electrical resistivity after the QGard.

UV Lamp

What does the UV Lamp do?

The UV Lamp is powered during PRODUCTION Mode. It emits UV light at 254 nm (Germicidal action) using approximately 10 W of electrical power. The UV Lamp is used to kill bacteria.

How often do I change the UV Lamp?

It is recommended to change the UV Lamp every 5000 hours of operation. A timer is incremented every minute the UV Lamp is powered. The Elix System displays the number of days before the UV Lamp needs replacement. This can be viewed in the DATA portion of the software.

When the projected lifetime reaches 14 Days, the LCD Message "EXCHANGE UV LAMP IN 14 DAYS" is displayed. This message is displayed until the UV Lamp is replaced and the software timer is reset.

When the UV lifetime reaches 0 Days, the LCD Message "EXCHANGE UV LAMP OVERDUE: 0 DAYS" is displayed. This message is displayed until the UV Lamp is replaced and the software timer is reset.

UV Lamp Catalogue Number

See Section 6-1.

2-6 Description of Optional Components

QGard TL1 Polishing Pak (Optional)

Purpose of the QGard TL1 Polishing Pak

A QGard TL1 Polishing Pack can be added to an Elix System. The purpose of a polishing pack is to completely deionise the Elix Module Product Water.

How can the Elix System be made to use a QGard TL1 Polishing Pak?

It is not possible to install a QGard TL onto an Elix System unless a Polisher Upgrade Kit has been added. This kit is not factory installed.

The Polisher Upgrade Kit allows a QGard Pack Adapter and a Resistivity Sensor to be added to an Elix System. When the Polisher Upgrade Kit is installed, a QGard TL1 Polisher Pak can be installed and used. The software can then be reconfigured to include the display of the post QGard Product Water Resistivity measured by the Resistivity Sensor.

See Section 6-2 for information about ordering the Polisher Kit (catalogue name RiOs/Elix-L Q-Gard® TL Kit).

What are the different types of QGard TL1 Polishing Packs?

There is only one type of QGard TL Pak. See Section 6-1 for information about ordering it.

When do I change the QGard TL?

An LCD Message "EXCH. QGARD TL: PRODUCT < SETPOINT" is shown to indicate that the QGard TL Pack should be replaced.

This message is shown when the resistivity measured after the QGard is less than the Resistivity Setpoint. The Resistivity Setpoint can be seen using the LCD. This message is not shown after a specific number of days. A timer is not used for the QGard TL Pack lifetime.

Loop Resistivity Sensor (Optional)

Another Resistivity Sensor can be added to an Elix System as an accessory. It can be used to measure the resistivity of water in a distribution loop. The deionised Product Water is sent to a SDS 350 (a 350 L Storage Reservoir sold by Millipore SAS). The SDS has a pump that sends pressurised water into a distribution loop. A sampling port is used to send some water from the distribution loop to a resistivity cell. The measured resistivity is shown on the LCD as the DIST Resistivity.

The Loop Resistivity Sensor is not factory installed in the Elix System. It is available in an upgrade kit. The Resistivity Sensor is then installed inside the Elix System. Water from the distribution loop goes to the sensor. It then goes out of the Elix System back to the SDS.

The Loop Resistivity Values are displayed when the text DIST is shown on the LCD. If resistivity values are shown under the heading PRODUCT, then the values are from the Elix System Product Water Resistivity Sensor.

A10 TOC Monitor (Optional)

What does the A10 do?

The A10 TOC Monitor (called A10 in this manual) is used to measure the TOC of the water passing through it.

The A10 can measure the TOC of either the Elix Product Water or the Loop Water. It is only possible to have one A10 with a single Elix System.

The Elix Product Water is the water leaving the System before it is stored in a Reservoir. The Loop Water is the water that has been stored in a Reservoir and then sent out and pressurised by a pump.

When the A10 is fed with Elix Product Water, the TOC is only measured in PRODUCTION Mode. The TOC value is displayed along with the Elix Product Water Resistivity value. A TOC measurement is made every 15 minutes during PRODUCTION Mode.

When the A10 is fed with Loop Water, the TOC is only displayed while the SDS Pump is operating. The TOC value is displayed along with the Loop Resistivity value. A TOC measurement is made every 30 minutes while the SDS Pump is running.

What maintenance is involved with the A10?

The A10 uses a small UV light during its TOC analysis mode. The A10 UV Lamp needs to be replaced periodically. The normal useful lifetime of the A10 UV Lamp is 1 year. The Elix System uses a calendar day timer to record the age of the A10 UV Lamp. A service message is prompted 14 days before the end of 1 year ("EXCHANGE A10 UV IN 14 DAYS") to remind you to change the A10 UV Lamp. **The Catalogue Number for the A10 UV Lamp is ZFA10UV01.**

There is a Cleaning Mode for the A10. This Cleaning Mode can be initiated with the Elix System software. The A10 Cleaning mode does not use a chemical reagent of any kind. The A10 Cleaning is explained in further detail in the Maintenance Section of this manual.

Does the A10 need to be calibrated?

It is recommended to calibrate the A10 once per year. The A10 can not be calibrated «on-site» – it needs to be calibrated by Millipore SAS. The accuracy claims of the TOC measurement are valid for 1 year from calibration. The A10 UV Lamp is replaced as part of the calibration procedure.

An annual verification can be performed instead of a complete calibration depending on your requirements.

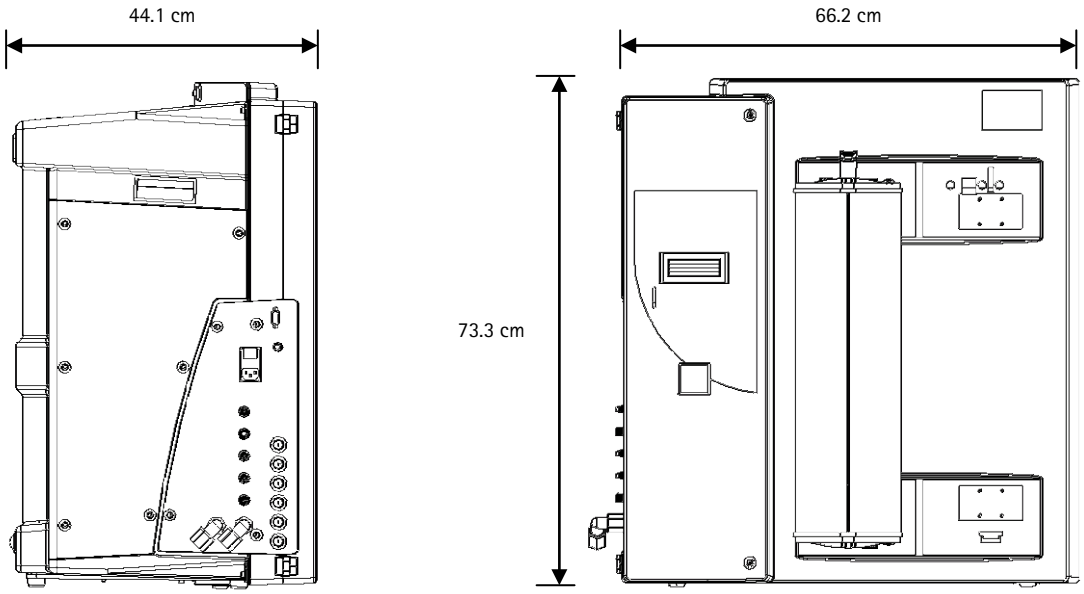
Contact Millipore SAS for further information regarding a calibration or verification of the A10 TOC Monitor Device.

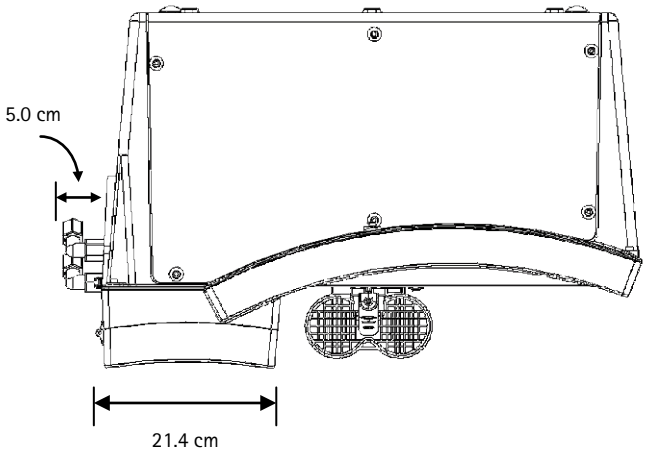
2-7 TECHNICAL SPECIFICATIONS

DIMENSIONS

SYSTEM HEIGHT, WIDTH AND DEPTH

The height, width and depth of an Elix System are shown here:





SHIPPING CONTAINER

- Height: 96 cm
- Width: 82 cm
- Depth: 82 cm

Weight

SYSTEM	Elix 20	Elix 35	Elix 70	Elix 100
Operating Weight	45 kg	48 kg	56 kg	62 kg
Dry Weight	41 kg	45 kg	49 kg	53 kg
Shipping Weight	63 kg	67 kg	71 kg	75 kg

Operating Weight

Operating Weight is defined as a system having a wetted Progard TL, all tubings, RO Cartridges and Elix Module full of water. If an accessory has been added to the Elix System, then its weight would have to be added to the Operating Weight.

Dry Weight

Dry Weight is defined as an unused system without its shipping container. It does not include the Progard TL or any accessories.

Shipping Weight

Shipping Weight is defined as a dry system in its shipping container. It does not include the Progard TL or any accessories (i.e. an External Booster Pump).

Progard TL Wetted Weight

A wetted Progard TL Pack, by itself, weighs 5 kg.

Operating Pressures

The Recommended Operating Pressures are shown below. An Operating Pressure is defined as the Post Pump Pressure during PRODUCTION Mode. This value is shown on the LCD in PRODUCTION (DATA) Mode.

- Water temperature ≥ 25 °C — Operate at 7 bar
- Water temperature < 25 °C — Operate at 10 bar (up to 12 bar with cold feedwater).

Environmental

- Indoor Use Only
- Ambient Storage Temperature — Between 2 °C and 40 °C
- Altitude — Less than 3000 meters
- Installation Category — II
- Pollution Degree — 2
- Relative Humidity — Max. 80% without condensation

Electrical

The electrical requirements for an Elix System are:

- 100 VAC ± 10%, 50/60 Hz. 10 amp source, 10 amp T fuse (Millipore SAS Spare Part FTPF04803)
- 120 VAC ± 10%, 50/60 Hz. 10 amp source, 10 amp T fuse (Millipore SAS Spare Part FTPF04803)
- 230 VAC ± 10%, 50/60 Hz. 5 amp source, 10 amp T fuse (Millipore SAS Spare Part FTPF04803)

The source of electrical power should be within 1 meter of the Elix System. The source of electrical power must be earth grounded.

Power used at each voltage

The power values shown below are typical when the Elix System is in PRODUCTION Mode. The power values do not include any accessory devices being powered by the Elix System (i.e. External Booster Pump powered by the Elix System).

The Elix System Catalogue Number is listed alongside the power value in the table below.

SYSTEM	Elix 20	Elix 35	Elix 70	Elix 100
100 VAC – 60Hz	500 VA ZLXS80020	500 VA ZLXS80035	500 VA ZLXS80070	500 VA ZLXS80100
100 VAC – 50 Hz	500 VA ZLXS70020	500 VA ZLXS70035	500 VA ZLXS70070	500 VA ZLXS70100
120 VAC	600 VA ZLXS60020	600 VA ZLXS60035	600 VA ZLXS60070	600 VA ZLXS60100
230 VAC	500 VA ZLXS50020	500 VA ZLXS50035	500 VA ZLXS50070	500 VA ZLXS50100

Materials of construction for wetted components

Please contact Millipore SAS for a list of the materials of construction for wetted components.

Noise Level

An Elix System has a maximum noise level of 70 dB at a distance of 1 meter away.

Measurement Ranges for Conductivity, Temperature, Pressure and Flow

The Elix System can display various parameters. The range of measurement of each parameter is written below.

- Feedwater Conductivity Measurement Range: 1.0 – 4626 µS/cm at 25 °C
- Permeate Conductivity Measurement Range: 0.066 – 194 µS/cm at 25 °C
- Temperature Measurement Range: 1 – 50 °C
- Pressure Measurement Range: 0 – 20 bar
- Flowmeter Measurement Range: 0 - 999 LPH
- Resistivity Measurement Range: 0-94.6 MΩ.cm @ 25 °C

Chapter 3 USING THE ELIX SYSTEM

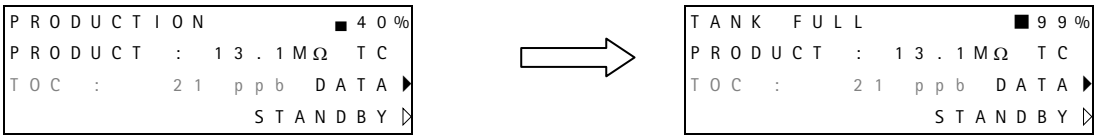
3-1 HOW THE ELIX NORMALLY DELIVERS PRODUCT WATER

SDS AND LOOPS

The Product Water from an Elix System is normally delivered to a Storage Reservoir (called a SDS). The SDS usually has a Distribution Pump. The Distribution Pump is used to pressurise stored water and to send it through a network of pipes (a Loop). The Loop is used to deliver water to various applications such as a dishwasher, humidifiers and so forth. The water from the Loop that is not used is returned back the SDS.

AUTOMATIC METHOD

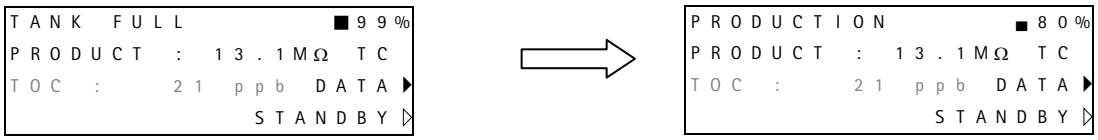
The Elix System will enter PRODUCTION Mode automatically if it is connected to a SDS or similar type of storage reservoir.



When the word **PRODUCT appears on the 2nd line**, the Resistivity and TOC values are measured inside the Elix System.

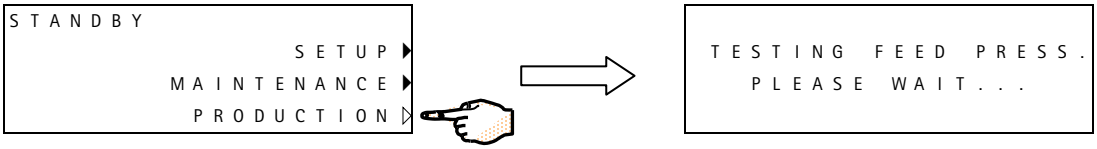
TC = Temperature Compensated to 25 °C

A parameter called the TANK LEVEL RESTART is used to go from TANK FULL Mode to PRODUCTION Mode. This parameter is factory set to 80%. When the Elix System is in TANK FULL Mode and water is withdrawn from the Reservoir, then the Elix will go to PRODUCTION Mode automatically when the Reservoir is 80% full.



MANUAL METHOD

1. Start in STANDBY Mode.
2. Press the PRODUCTION Keypad Button for about 2 seconds.

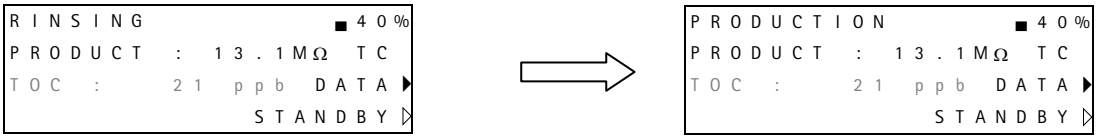


Press PRODUCTION for about 2 - 3 seconds.

Lasts for about 16 seconds.

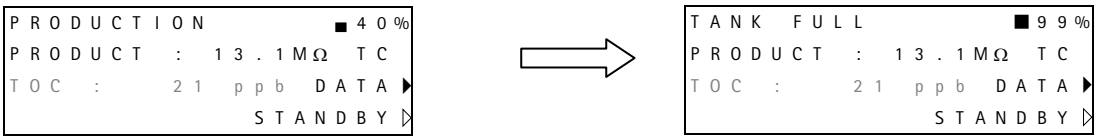
3. The Elix System will perform a Pressure Test for about 16 seconds. This tests the pressure reaching the Elix System.
4. The Elix System will go into RINSING Mode for a minimum of 1 minute. See Section 3-5 for an explanation about RINSING Mode.

5. When RINSING Mode is finished, the Elix System will go into PRODUCTION Mode.



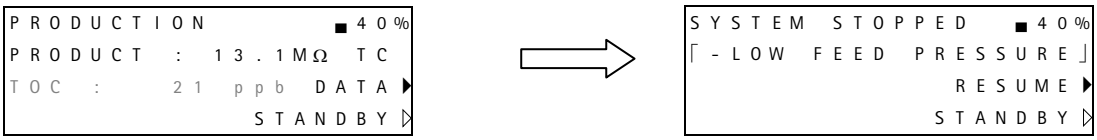
If a Polisher Upgrade Kit or a Loop Resistivity Sensor has been added, then this LCD may look different. See Section 3-2.

6. The Elix System will stay in PRODUCTION Mode until TANK FULL Mode. TANK FULL Mode results when a level sensor device on a storage reservoir indicates that it is full. In this example, the reservoir water level went from 40% full to 100% full. The Product Water Resistivity shown in TANK FULL Mode is the last value measured in PRODUCTION Mode.
7. Press STANDBY to exit PRODUCTION Mode if you do not want to go to TANK FULL Mode.



Alarm Message Displayed

1. Certain Alarm Messages, when activated, will cause PRODUCTION Mode to stop (i.e. LOW FEED PRESSURE Mode). See Section 5-1 for an explanation of the Alarm and Maintenance Messages.

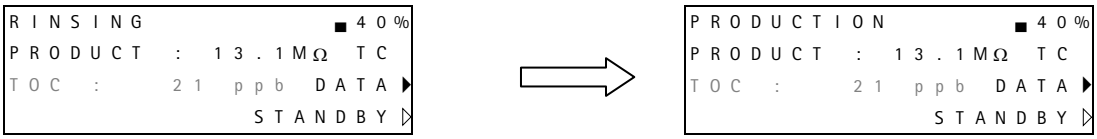


2. When the cause of the Alarm Stop Message has been corrected, press RESUME to go back to PRODUCTION Mode.

3-2 ELIX WITH A POLISHER, LOOP RESISTIVITY SENSOR OR A10 ADDED

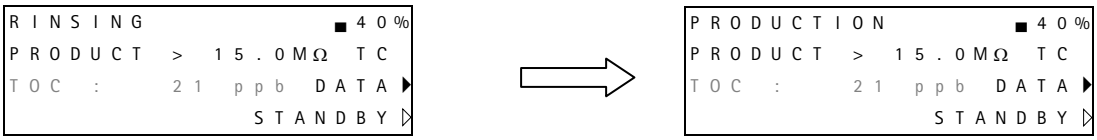
There are a few additional LCD Messages shown when the QGard TL Pack is used or if a Loop Resistivity Sensor has been added.

1. PRODUCTION Mode for an **Elix System without a Polisher Upgrade Kit** looks like:



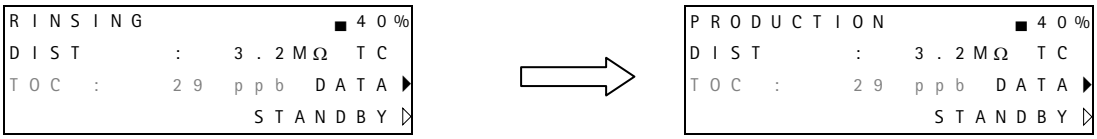
The TOC value may or may not be shown. This depends if the Elix System is configured to have an A10 TOC Monitor.

2. PRODUCTION Mode for an **Elix System with a Polisher Upgrade Kit looks like**:



When a **Polisher is added to an Elix System**, the existing System Resistivity Sensor is used. When a Polisher is added, the existing Resistivity Sensor is configured to measure the Resistivity of the Post QGard Polisher Water instead of the post Elix Module Water. In the example displays above, the Polisher increased the resistivity from 13.1 MΩ.cm to > 15.0 MΩ.cm (at 25 °C).

3. PRODUCTION Mode for an **Elix System with a Loop Resistivity Sensor** looks like:

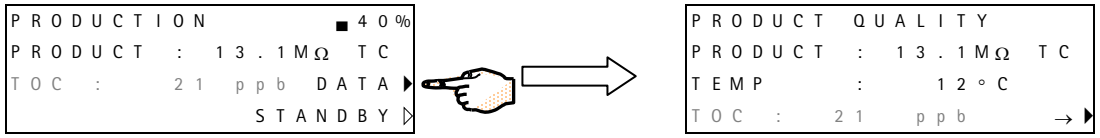


When **DIST is shown on the 2nd line**, then the Resistivity and TOC values are measured from the Loop Water. In the example shown immediately above, the water in the Loop has a Resistivity of 3.2 MΩ.cm (at 25 °C) and a TOC value of 29 ppb. In this same example, pressing DATA will then show the Resistivity and Temperature of the Elix System Product Water (the water filling the storage reservoir that becomes the Loop Water).

3-3 How to view the Elix System Performance

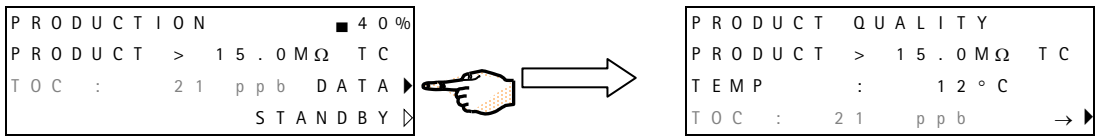
There are several parameters that can be seen using the DATA Button. These parameters are explained and shown below.

1. Start in PRODUCTION Mode. Press the DATA Keypad Button. If the Elix System is **without a Polisher Upgrade Kit or without a Loop Resistivity Cell**, then the LCD will look like:



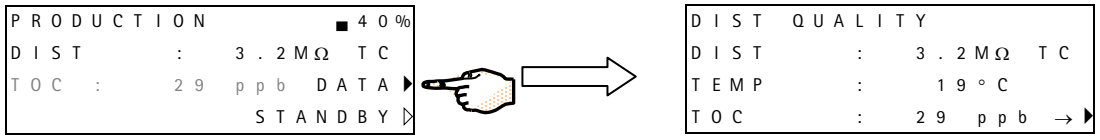
The Elix System Product Water Resistivity is 13.2 MΩ.cm. at 25 °C. The TOC is 21 ppb.

2. Start in PRODUCTION Mode. Press the DATA Keypad Button. If the Elix System is **with a Polisher Upgrade Kit**, then the LCD will look like:



The post QGard TL Polisher resistivity is > 15.0 MΩ.cm at 25 °C. The same water has a temp. of 12 °C.

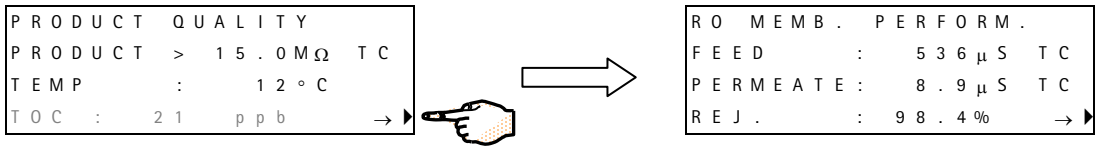
3. Start in PRODUCTION Mode. Press the DATA Keypad Button. If the Elix System is **with a Loop Resistivity Sensor**, then the LCD will look like:



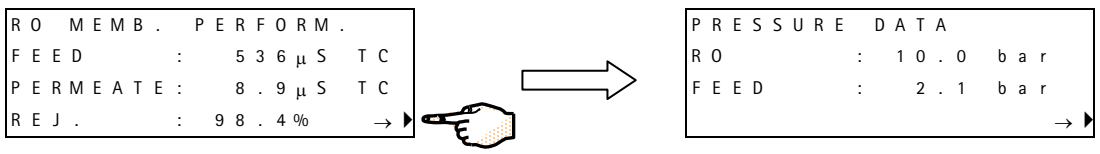
The Loop Water has a resistivity of 3.2 MΩ.cm and a TOC value of 29 ppb. The Loop Water has a temp. of 19 °C.

The parameters shown in the next several displays are the same for any configuration of an Elix System.

4. When the PRODUCT QUALITY is shown, press the Bottom Keypad Button to see the RO Cartridge performance.



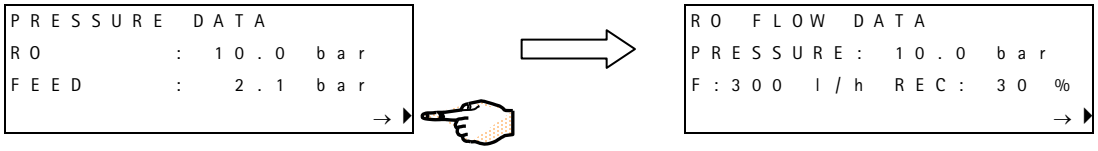
5. When the RO Cartridge performance is shown, press the Bottom Keypad Button to see the PRESSURE DATA.



The RO Cartridge performance is shown here.

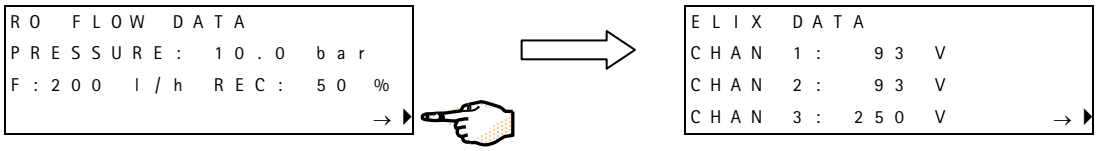
Feedwater pressure is 2.1 bar and the applied RO pressure is 10.0 bar.

6. Press the Bottom Keypad Button to see the FLOWMETER DATA.

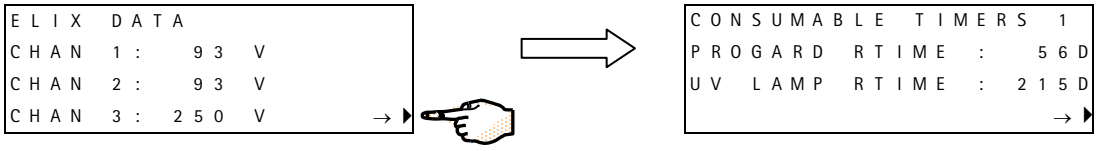


The Feedwater flow rate is 200 LPH. In this example, an Elix 70 was used and the calculated System Recovery is 30%.

7. Press the Bottom Keypad Button to see the Elix Module electrical data.

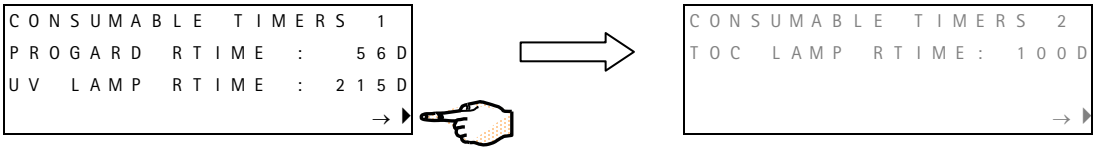


8. Press the Bottom Keypad Button to see the CONSUMABLE TIMER.



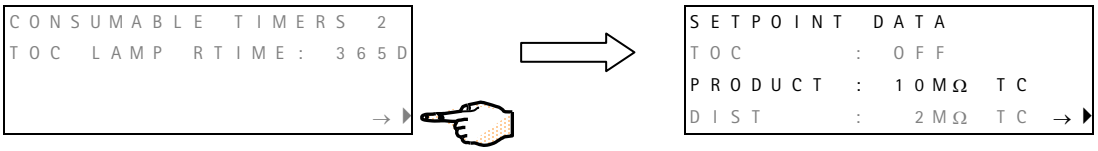
In this example the Progard TL needs to be replaced in 56 days and the Elix System UV Lamp needs to be replaced in 215 days.

9. Press the Bottom Keypad Button to see the next display. If the Elix System is configured to have an A10 TOC Monitor, then the A10 UV Lamp maximum lifetime is shown. In the example shown here, the A10 UV Lamp will normally be replaced every 365 Calendar Days (365 D).



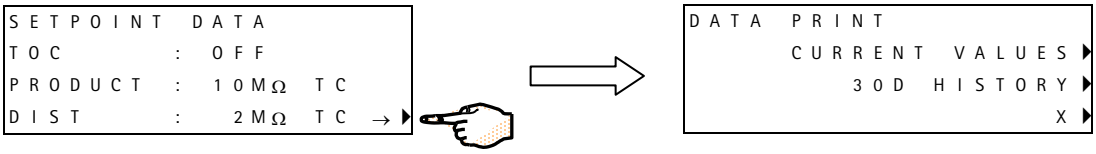
In this example, the A10 UV Lamp will need to be replaced in 100 Days

10. Press the Bottom Keypad Button to see the SETPOINT DATA.

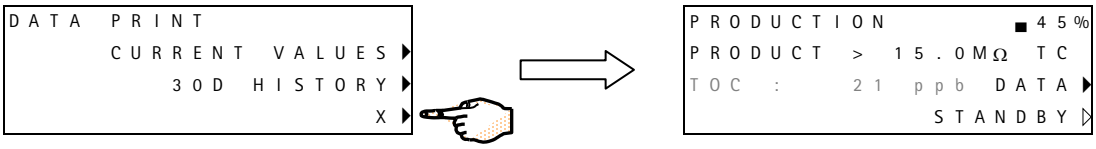


There are 3 Setpoints in the example shown immediately above. The TOC Setpoint is turned off. The Elix System Product Water Resistivity will turn on a message if its resistivity is < 10.0 MΩ.cm. The Loop Resistivity Setpoint is 2 MΩ.cm. A message will be displayed if the Loop Water Resistivity is < 2.0 MΩ.cm.

11. Press the Bottom Keypad Button to see DATA PRINT.



12. Press the Bottom Keypad Button to return to PRODUCTION Mode.



3-4 How to view Serial Numbers and Maintenance Information from the LCD

Serial Number found on the Elix System Cabinet

The Serial Number of the Elix System can be found on the left side of the Elix System Cabinet. A Serial Number sticker is placed just above the Feedwater Tubing Port.

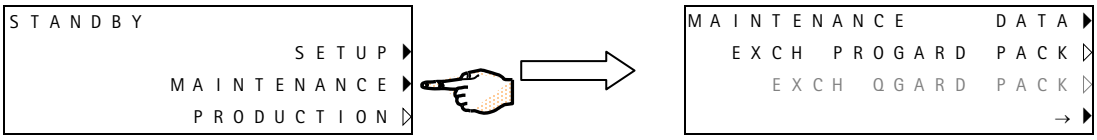
Serial Number and other information found with the LCD

It is possible to view information about your Elix System on the LCD. This information includes:

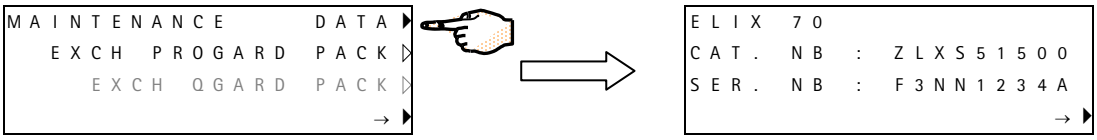
- Elix System Catalogue Number
- Elix System Serial Number
- Elix System Installation Date
- Elix System Software Version
- Elix System Accumulative Production Time
- Progard TL Serial Number
- Progard TL Installation Date
- Progard TL Remaining Time
- UV Lamp Remaining Time
- A10 UV Lamp Remaining Time

Follow the steps below to see the information listed above.

❑ Start in STANDBY Mode. Press MAINTENANCE.

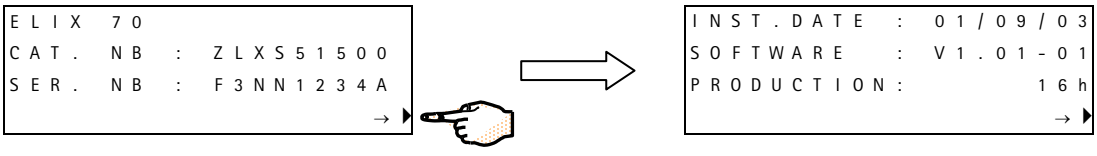


❑ Press the DATA Keypad Button.



❑ The Catalogue Number for the Elix System is shown. The Serial Number for the Elix System is shown.

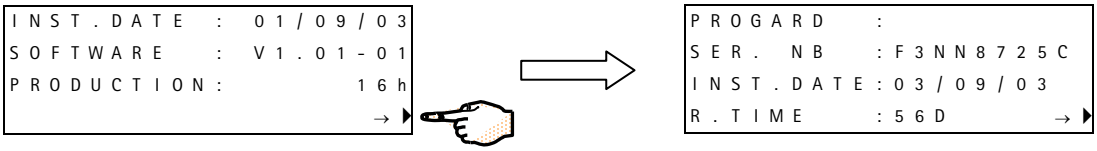
❑ Press the 4th Keypad Button to access more information about the Elix System.



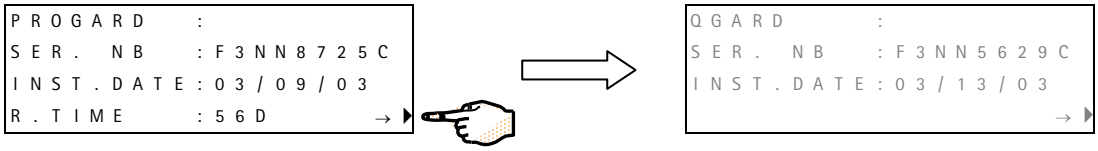
❑ The Elix System Installation Date is shown. The Software Version is shown. The Elix System Production Time is shown. This is the accumulated time that the RO Motor has been powered in order to make RO Permeate Water.

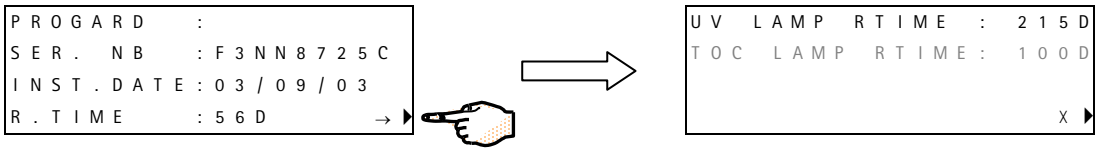
Using the Elix System

- Press the 4th Keypad Button to see information about the Progard TL.

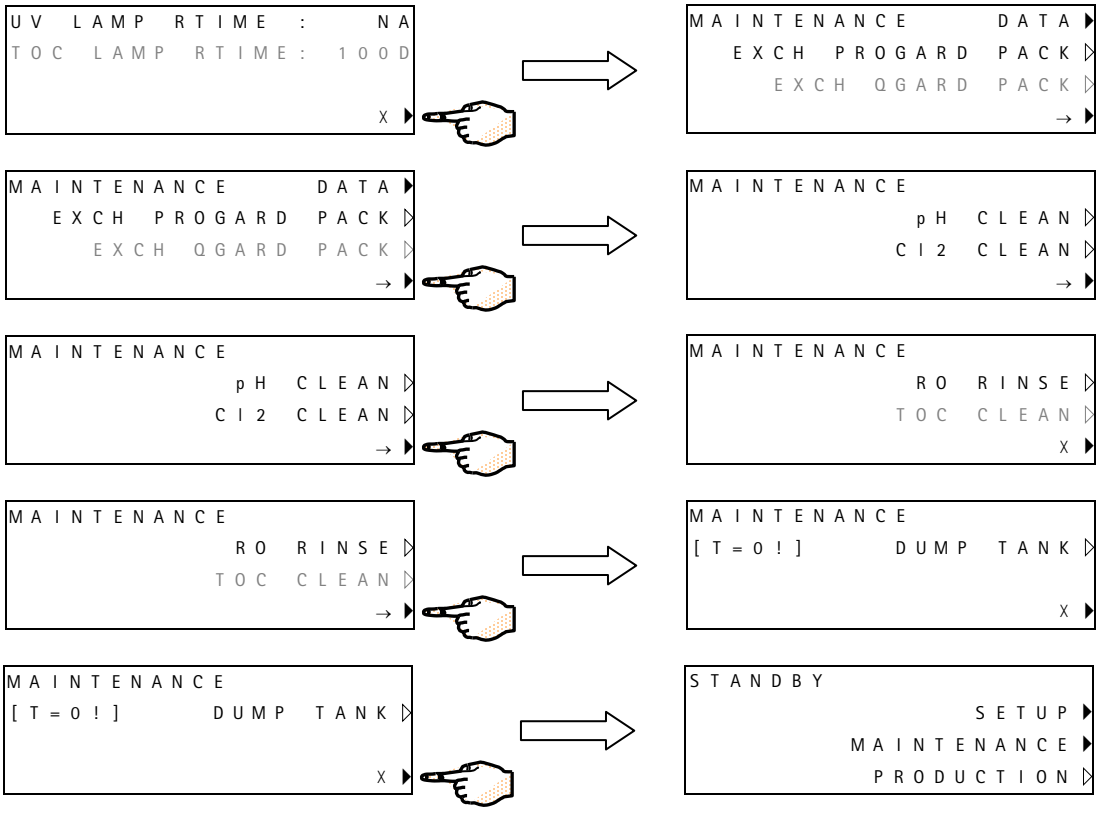


- The Progard Serial Number (SER. NB) is shown. The Installation Date (INST.DATE) is shown (d/m/year). The Progard TL Pack Remaining Time (R.TIME) is shown. If the R.TIME value is "NA" (not available), then the Progard TL has been installed within the last 7 days.
- Press the 4th Keypad Button to see information about the QGard TL if it is installed.





- Press the 4th Keypad Button to view information about the UV Lamp.
- The UV Lamp Remaining Time (RTIME value) is shown. The value shown is based upon the number of hours the UV Lamp has been powered. If the UV Lamp has been powered for less than 100 hours, then the value is shown as "NA" (Not Available).
- Follow the steps below to return to STANDBY Mode.

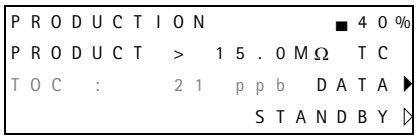


3-5 WHAT ARE THE DIFFERENT OPERATING MODES?

STANDBY MODE

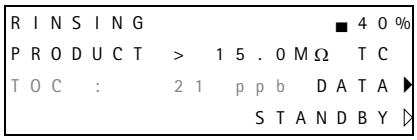
The Elix System is not producing water. STANDBY Mode is used to enter other software modes such as MAINTENANCE, SETUP and PRODUCTION Mode.

PRODUCTION MODE



The Elix System is producing water. A storage reservoir is getting filled with water from the Elix System. Pressing DATA in PRODUCTION Mode allows various operating parameters to be seen.

RINSING MODE



The Elix System is diverting the RO Permeate to drain instead of sending it to a Storage Reservoir. RINSING Mode is used to insure that only high quality RO Permeate is sent to the Storage Reservoir.

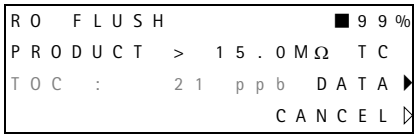
RINSING Mode occurs for a few different reasons.

One reason is that the Elix System is going into PRODUCTION Mode. RINSING Mode will occur automatically for one minute or more whenever entering PRODUCTION Mode.

The 2nd reason for RINSING Mode is that the RO % Rejection is 1% lower than the Memorised RO % Rejection Value. When 4 continuous minutes of PRODUCTION Mode have occurred, the RO % Rejection is "memorised". RINSING Mode will continue until the RO % Rejection is within 0.5% of the Memorised Value.

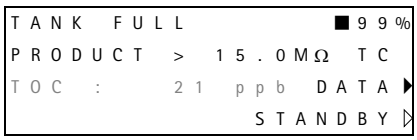
FLUSH MODE

FLUSH Mode occurs when the Inlet Solenoid Valve and the RO Reject Solenoid Valve both are open. This allows Tap Water to enter and to sweep away any accumulated impurities on the Feedwater surface of the RO Cartridge.



FLUSH Mode occurs automatically every 6 hours for 5 minutes in either STANDBY Mode (1st LCD screen shown on the left) or in TANK FULL Mode (2nd LCD).

TANK FULL MODE



TANK FULL Mode occurs when a Storage Reservoir is full. A Level Sensor in the reservoir sends a signal to the Elix System indicating that it is full. The Elix System will stay in TANK FULL Mode until water is withdrawn from the reservoir (i.e. emptied about 20%). The Resistivity and TOC values measured upon entering TANK FULL Mode are displayed during TANK FULL Mode.

Chapter 4 MAINTENANCE

4-1 SCHEDULED MAINTENANCE TABLE

See the Maintenance Table below for the typical maintenance that needs to be performed on your Elix System. The catalogue numbers and other ordering information are found in Section 6-1. Detailed information about the various consumable items can be found in Section 2-5.

Item or action	Maintenance Needed	When?	How to?
A10 TOC Monitor	Calibration.	Once per year.	Contact Millipore SAS.
A10 UV Lamp	Replacement.	When prompted to by a LCD Message.	See Section 4-9.
Clean A10 TOC Monitor	Cleaning.	When a QGard is changed.	See Section 4-8.
Clean RO Cartridges	Cleaning.	As necessary.	See Section 4-6.
Other Pretreatment	See Pretreatment Device User Manual for this information.	See Pretreatment Device User Manual for this information.	See Pretreatment Device User Manual for this information.
PrePak L1 Pre-System Pretreatment Pack	Replacement.	Change when Progard TL1 or TL2 Pack is changed.	See information that came with the Pack.
Progard TL1 or TL2 System Pretreatment Pack	Replacement.	When prompted to by a LCD Message.	See Section 4-2.
QGard TL Polisher Pack	Replacement.	When prompted to by a LCD Message.	See Section 4-7.
RO Pump Pressure	Adjustment.	Water temp. < 25 °C, operate at 10 bar. (up to 12 bar with cold feedwater). Water temp. ≥ 25 °C, operate at 7 bar.	Contact Millipore SAS. See Section 4-4.
Sanitise RO Cartridges	Sanitisation.	Automatically when the Progard TL1 or TL2 Pack is changed or as needed.	See Section 4-5.
UV Lamp	Replacement.	When prompted to by a LCD Message.	See Section 4-3.

4-2 How to replace the Progard TL

ATTENTION

Do not remove the Pack without following the software instructions shown below.

When to replace the Progard TL

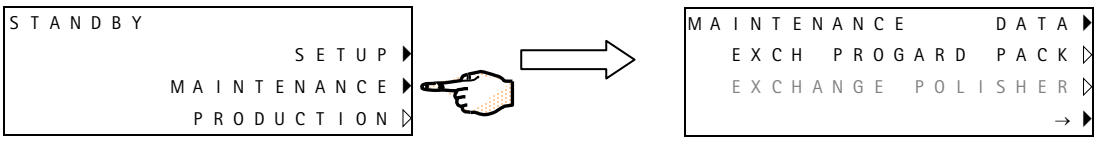
A message, EXCH. PROGARD TL IN XX DAYS, will be shown when it is near the recommended time to exchange the Progard TL. This message is shown 14 days prior to the recommended replacement date. The LCD would show EXCH. PROGARD TL IN 14 DAYS. This message decrements a day at a time until the recommended replacement date.

If the Progard TL is not replaced on the recommended replacement date, then a message, PROGARD TL EXCH. OVERDUE: XX DAYS, is shown.

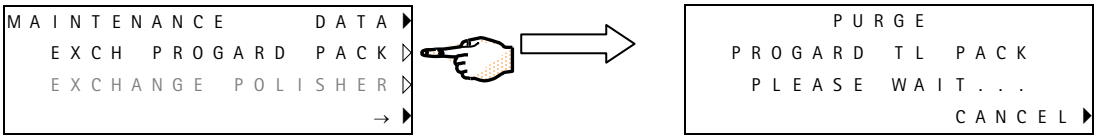
If the Progard TL is replaced using the MAINTENANCE Menu, then the messages explained above are erased from the LCD.

Removing the used Progard TL

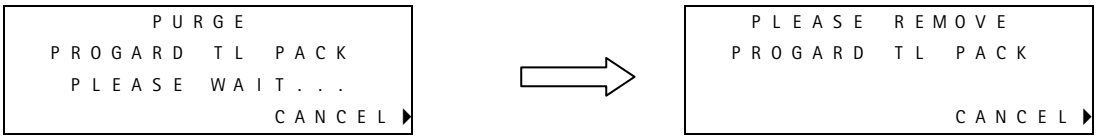
- ❑ Place the Elix System into STANDBY Mode. See Section 3-1 for more information if necessary.
- ❑ Press the MAINTENANCE Keypad Button.



- ❑ Press the EXCH PROGARD PACK Keypad Button for a few seconds. The Progard TL (on the Elix System) will automatically be purged of water. This helps to prevent water coming out of the ports of the Progard TL when it is removed from the Elix System. It will purge for 12 seconds during which time the Pump will operate.



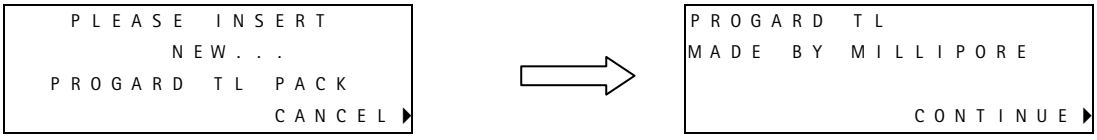
- ❑ When the Progard TL is purged of water, the LCD will tell you to replace it.



- ❑ Unlock the Pack by lifting up the clip that holds the Progard TL in place. Gently remove the Progard TL from the Elix System.

INSTALLING THE NEW PROGARD TL

- Remove the new Progard TL from its shipping box. Verify the Millipore SAS Catalogue Number by looking at the sticker on the side of the Progard TL. Remove the plastic covers on the 4 ports of the Progard TL Pack. Look inside the ports to locate the black rubber O-rings. Make sure these are pushed in so they are firmly in-place. Wet the Progard TL Pack O-rings with water.
- Look below the ports on the bottom of the Progard TL. Locate the TAG Sensor.
- After the used Progard TL is removed, install the new Progard TL with the TAG Sensor at the bottom. The Elix System will automatically identify the type of Progard TL by accessing data contained on the Pack TAG. Normally the Elix System will recognise and accept the information from the Progard TL.
- Make sure the top and bottom ports of the new Progard TL are pushed in. After this, secure it in place by pushing down on the Pack Locking Handle.

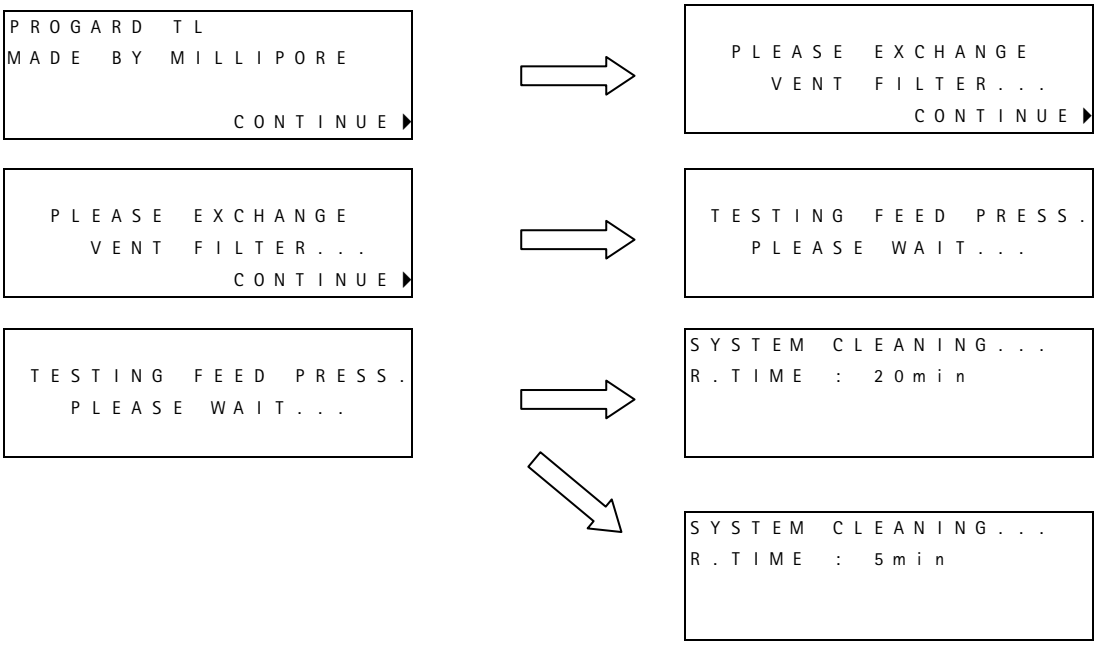


- The Elix System will now rinse the new Progard TL. This is done to empty it of air and to hydrate the material inside.
- If you have a Storage Reservoir with a Vent Filter, then the LCD will remind you to change the Vent Filter at this time.

If the Progard TL does not have a chlorine tablet inside of it, then the Elix System will go into SYSTEM CLEANING Mode for 5 minutes.

If the Progard TL does have a chlorine tablet inside of it, then the Elix System will go into SYSTEM CLEANING Mode for 20 minutes.

- A DEPRESSURISATION Mode and a PRESSURE TEST Mode will occur for a few seconds prior to the 5 minute or 20 minute SYSTEM CLEANING Mode.



The CANCEL Keypad Button is not shown if the Progard TL is brand new and never used.

4-3 How to replace the UV Lamp inside the Elix System

A message, EXCH. UV LAMP IN XX DAYS, will be shown when it is near the recommended time to exchange the UV Lamp. The message is shown 14 days prior to the recommended replacement date. The LCD would show EXCH. UV LAMP IN 14 DAYS.

It is highly recommended to have a Millipore SAS Field Service Representative change the UV Lamp. The replacement of the UV Lamp involves removing the cover of the Elix System. The instructions for replacing the UV Lamp are not included in this manual. The instructions are included with the replacement UV Lamp.

Contact Millipore SAS for a copy of these instructions if you would like to see them before ordering a replacement UV Lamp.

If the UV LAMP is not replaced on the recommended replacement date, then a message, UV LAMP EXCH. OVERDUE: XX DAYS, is shown.

If the UV Lamp is replaced, then these messages will not be shown anymore.

4-4 How to check and adjust the pump pressure

The pump pressure is normally adjusted if the water temperature changes significantly.

The pump pressure used at different temperatures is shown below.

- Water temperature ≥ 25 °C Operate at 7 bar pump pressure.
- Water temperature < 25 °C Operate at 10 bar pump pressure. (up to 12 bar with cold feedwater).

It is recommended to have a Millipore SAS Field Service Representative adjust the pump pressure. The adjustment of the pump pressure involves removing the cover of the Elix System. The instructions for adjusting the pump pressure are not included in this manual.

Contact Millipore SAS for a copy of these instructions if you would like to see them.

4-5 How to Sanitise the RO Cartridge(s)

What is needed to Sanitise the RO Cartridge(s)

It is possible to sanitise the RO Cartridges either:

- automatically when you replace the Progard TL1 or TL2, System Cl_2 autoClean Pretreatment Pack
- manually by introducing a chemical sanitant (chlorine tablet) into the Elix System

The information provided below explains what is needed for either method.

Automatic Way of Sanitisation

Progard TL System Cl_2 Pretreatment Pack with Integrated Chlorine Tablet

The Progard TL System Cl_2 Pretreatment Pack includes a chlorine sanitisation tablet inside. When this type of Progard TL Pack is installed in an Elix System, the chlorine sanitisation tablet will dissolve. This will sanitise the RO Cartridge located downstream of the Progard TL Pack. The dissolved chlorine will leave the Elix System via the drain and will never enter the Product Water Reservoir.

How to Automatically Sanitise the RO cartridge(s)

The method used to automatically sanitise an RO Cartridge(s) is very easy. Follow the steps below.

1. A Progard TL1 or TL2 System Cl_2 autoClean Pretreatment Pack is needed. See Section 6-1 for Catalogue Numbers and Ordering Information.
2. Install the pack using the procedure shown in Section 4-2 "How To Replace the Progard TL Pack". The RO Cartridge(s) will automatically be sanitised.

Manual Way of Sanitisation

Cleaning Port Kit

The RiOs/Elix-L Cleaning Port Kit is used to introduce the Chemical Sanitant (as a dry tablet) into the Elix System. The Cleaning Port, when installed, has a removable cap. This cap can be unscrewed and a Chemical Sanitant (Chlorine Tablet) can be placed inside. It is not possible to make a Chemical Sanitant in the liquid form and pour it into the RO Cartridge.

ATTENTION

The Cleaning Port Kit is not supplied with the standard Elix System. It is necessary to order a Cleaning Port Kit as a separate item. See Section 6-2.

It is recommended to have a Millipore SAS Field Service Representative install the Cleaning Port Kit. The installation of the Cleaning Port Kit involves removing the cover of the Elix System. The instructions for installing the Cleaning Port Kit are not included in this manual. The instructions are included with the Kit.

Chlorine Sanitisation Tablets

It is necessary to use Chlorine Sanitisation Tablets as the RO Cartridge Sanitant.

The Millipore SAS Catalogue Number for a container of 45 Chlorine Tablets is ZWCL01F50.

How often should the RO Cartridge(s) be manually sanitised?

Normally the Manual Sanitisation is not necessary if the Automatic Sanitisation is performed with the Progard TL autoClean Pack. However, the end user of the Elix System may develop a protocol whereby the Elix System is sanitised on a periodic basis (i.e. every 12 weeks). In this case, the instructions below would be followed for performing a manual sanitisation.

How to manually sanitise the RO Cartridge(s)

- ❑ Make sure you have a Chlorine Tablet (see information above).
- ❑ Make sure the Elix System has a Cleaning Port installed. It is installed as an accessory device and is not factory installed.
- ❑ Place the Elix System into STANDBY Mode.
- ❑ Locate the Cleaning Port Cap on the top of the Elix System. It is located towards the back top end of the Elix System cabinet.
- ❑ Unscrew the Cleaning Port Cap. Place the Chlorine Tablet into the Cleaning Port. Screw the cap back on.

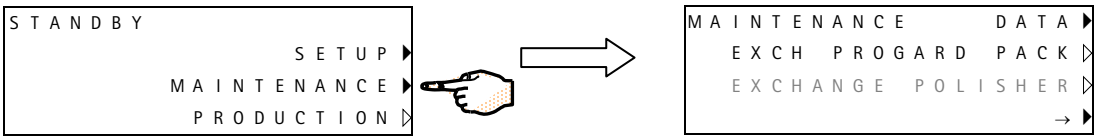
ATTENTION

Make sure the Cleaning Port Cap is tightened after putting in the Chlorine Tablet. Additionally, make sure that the RO Reject Tubing is in a sink or drain. Make sure it is fastened securely in place.

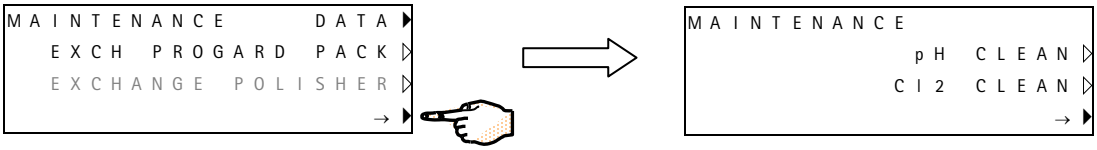
HAZARD

The Chlorine Table will form a strong chemical solution when mixed with water. This solution can be dangerous for your eyes and your skin. Wear Eye Safety Glasses. Use Laboratory Gloves and other appropriate safety equipment.

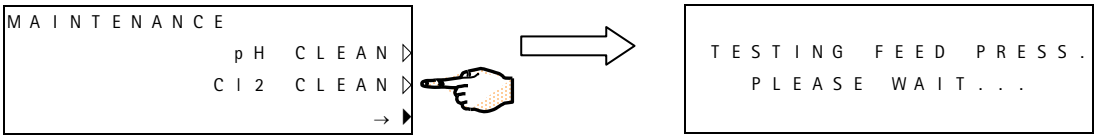
- ❑ Press MAINTENANCE.



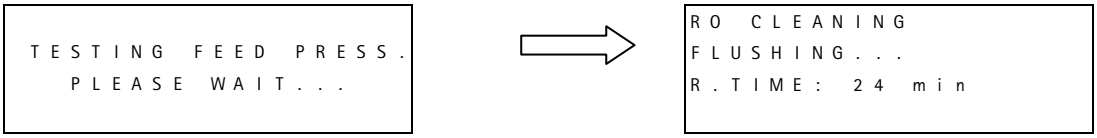
- ❑ Press the Bottom Keypad Button.



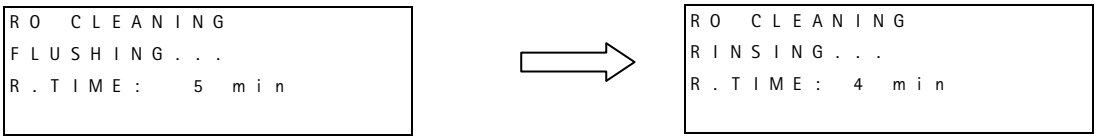
- ❑ Press Cl2 CLEAN for a few seconds. The Elix System will perform a Pressure Test for about 16 seconds.



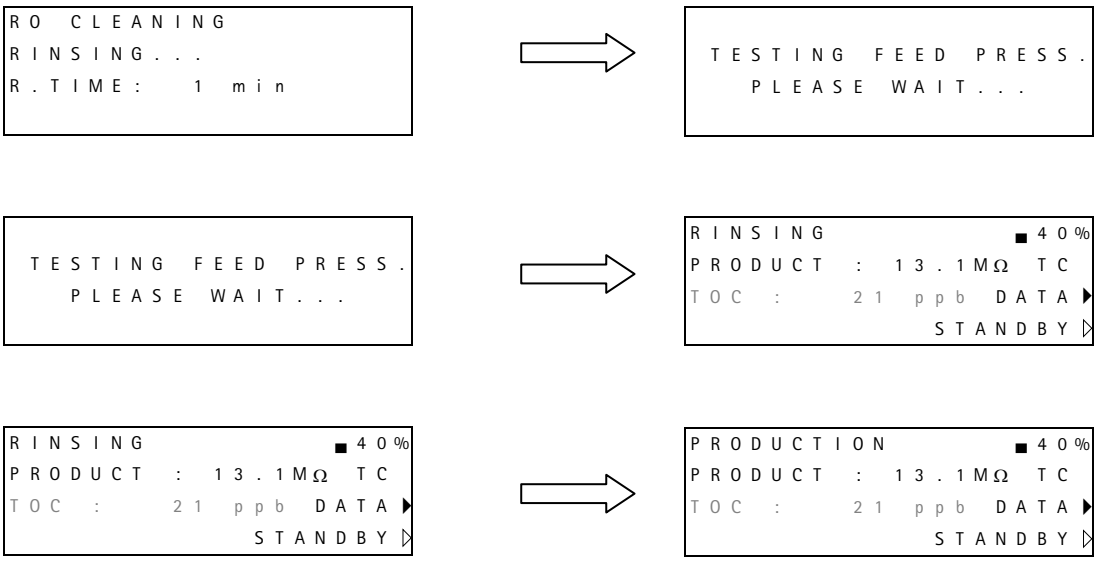
- ❑ The Elix System will go to RO CLEANING Mode. It will flush for 20 minutes.



- The Elix System will go to RINSING Mode for 5 minutes.



- The Elix System will go to PRODUCTION Mode at the end of the Cl2 CLEAN Mode.



You have finished sanitising the RO Cartridge(s).

4-6 How to clean the RO Cartridge(s)

What is needed to clean the RO Cartridge(s)

Cleaning Port Kit

The RiOs/Elix-L Cleaning Port Kit is used to introduce the chemical cleaner (as a pouch containing a dry chemical cleaner) into the Elix System. The Cleaning Port Kit, when installed, has a removable cap. This cap can be unscrewed and a pouch can be placed inside. It is not possible to make a chemical cleaner in the liquid form and pour it into the RO Cartridge.

The Cleaning Port Kit is not supplied with the standard Elix System. It is necessary to order a Cleaning Port Kit as a separate item. See Section 6-2.

It is recommended to have a Millipore SAS Field Service Representative install the Cleaning Port Kit. The installation of the Cleaning Port Kit involves removing the cover of the Elix System. The instructions for installing the Cleaning Port Kit are not included in this manual. The instructions are included with the Cleaning Port Kit.

RoClean™ A or RoClean™ B Tablets

Millipore SAS recommends RoClean A or RoClean B as the RO Cartridge cleaner.

RoClean A is an acidic cleaner. The Millipore SAS Catalogue Number for RoClean A is ZWACID012 (10 pouches per box).

RoClean B is a base cleaner. The Millipore SAS Catalogue Number for RoClean B is ZWBASE012 (10 pouches per box).

Which cleaner to use, RoClean A or RoClean B?

Contact Millipore SAS for assistance is choosing the type of cleaner for your Elix System.

- RoClean B is normally used when the Feedwater contains a high amount of silt and other organic matter.
- RoClean A is normally used when the Feedwater contains a high amount of hardness and alkalinity.

How often should the RO Cartridge(s) be cleaned?

Millipore SAS recommends that an RO Cartridge(s) be cleaned whenever:

- the RO % Rejection decreases 3% under standard operating conditions or
- the RO Product Water Flow Rate drops 10% under standard operating conditions

As an example, suppose a new Elix 70 is operating at 97.5% RO % Rejection. The Elix System is fed with feedwater from a large lake (surface water). Over the course of a few months, the RO % Rejection has dropped to 93%. In this case, the use of RoClean B is recommended.

How to manually clean the RO Cartridge(s)

- ❑ Make sure you have a RoClean A Pouch or a RoClean B Pouch (see information above).
- ❑ Make sure the Elix System has a Cleaning Port Kit installed. It is installed as an accessory device. It does not come factory installed.
- ❑ Place the Elix System into STANDBY Mode.
- ❑ Locate the Cleaning Port Cap on the top of the Elix System. It is located towards the back top end of the Elix System Cabinet.
- ❑ Unscrew the Cleaning Port Cap. Place the Cleaning Pouch into the Cleaning Port. Screw the Cleaning Port Cap back on.

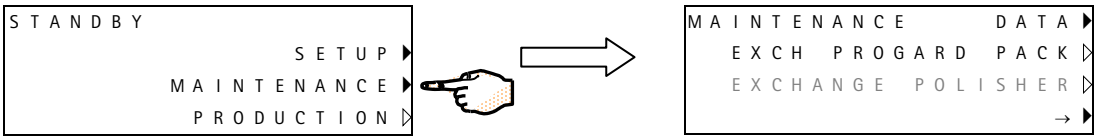
ATTENTION

Make sure the Cleaning Port Cap is tightened after putting in the Cleaning Pouch. Additionally, make sure that the RO Reject Tubing is in a sink or drain. Make sure it is fastened securely in place.

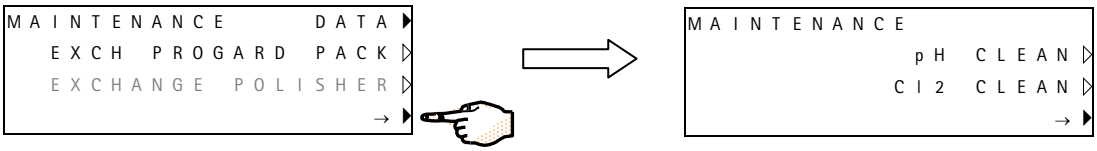
HAZARD

The Cleaning Pouch will form a strong chemical solution when mixed with water. This solution can be dangerous for your eyes and your skin. Wear Eye Safety Glasses and use Laboratory Gloves and other appropriate safety equipment.

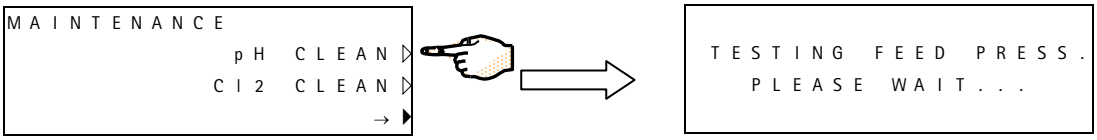
- ❑ Press MAINTENANCE.



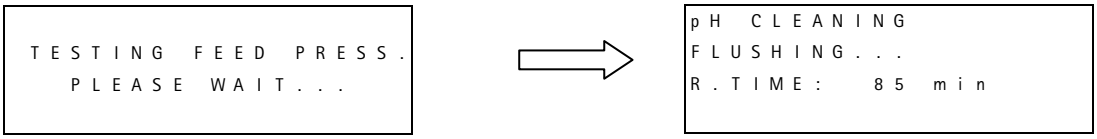
- ❑ Press the Bottom Keypad Button.



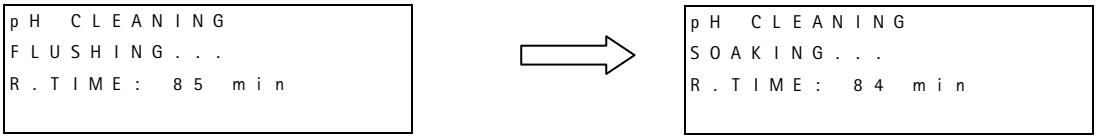
- ❑ Press pH CLEAN for a few seconds. The Elix System will perform a Pressure Test for about 16 seconds.



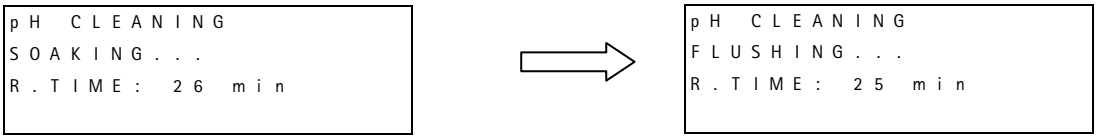
- ❑ The Elix System will go to FLUSHING Mode for about 1 minute.



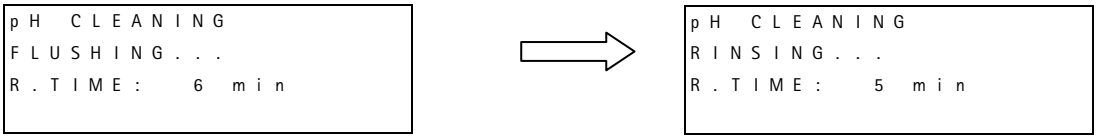
- The Elix System will go into SOAKING Mode for 60 minutes.



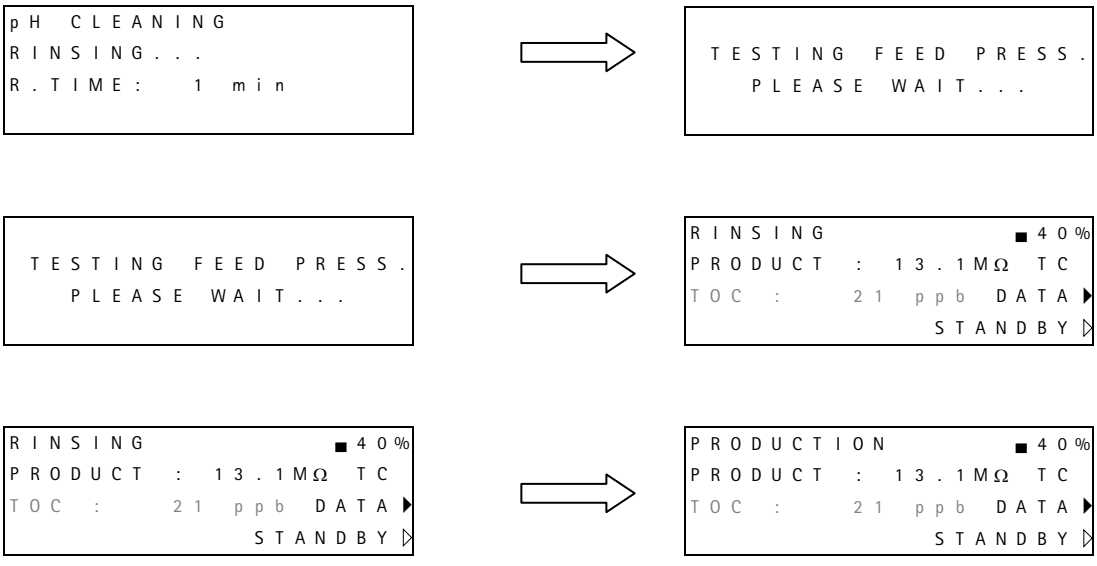
- The Elix System will go to FLUSH Mode for 20 minutes. The Elix System will perform a Depressurisation and a Pressure Test for a total of 10 seconds (LCDs not shown in the text below).



- The Elix System will go to RINSING Mode for 5 minutes.



- The Elix System will go to PRODUCTION Mode at the end of the pH CLEAN Mode.



You have finished pH Cleaning the RO Cartridge(s).

4-7 How to replace the QGard TL1 Polisher Pack

ATTENTION

Do not remove the Pack without following the following the software instructions shown below.

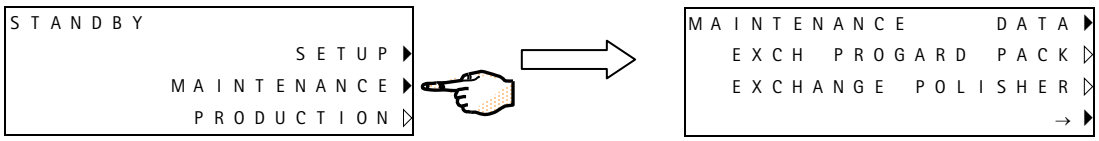
When to replace the QGard TL Pack

A LCD Message "EXCH. QGARD TL: PRODUCT < SETPOINT" is shown to indicate that the QGard TL Pack should be replaced.

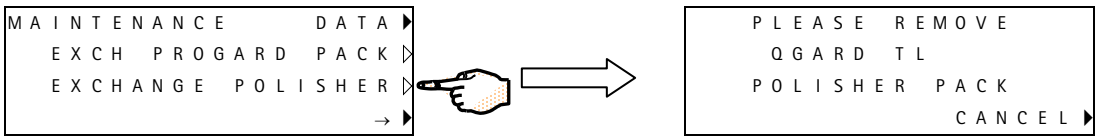
This message is shown when the resistivity measured after the QGard is less than the Resistivity Setpoint. This Setpoint is normally 10.0 MΩ.cm (@ 25 °C). This message is not shown after a specific number of days. A timer is not used for the QGard TL Pack lifetime.

Removing the used QGard TL Pack

- ❑ Place the Elix System into STANDBY Mode. See Section 3-1 for more information if necessary.
- ❑ Press the MAINTENANCE Keypad Button.



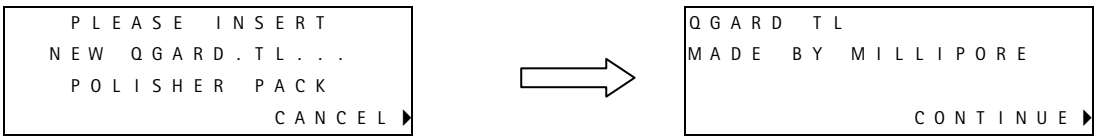
- ❑ Press the EXCHANGE POLISHER Keypad Button for a few seconds.



- ❑ Unlock the Pack by lifting up the clip that holds the QGard TL Pack in place. Gently remove the QGard TL Pack from the Elix System.

INSTALLING THE NEW QGARD TL PACK

- Remove the new QGard TL Pack from its shipping box. Verify the Millipore SAS Catalogue Number by looking at the sticker on the side of the QGard TL Pack. Remove the plastic covers on the 2 ports of the QGard TL Pack. Look inside the ports to locate the black rubber O-rings. Make sure these are pushed in so they are firmly in-place. Wet the QGard TL Pack O-rings with water.
- Look below the ports on the top of the QGard TL Pack. Locate the TAG Sensor.
- After the used QGard TL Pack is removed, install the new QGard TL Pack with the TAG Sensor at the top. The Elix System will automatically identify the QGard TL type by accessing data contained on the Pack TAG. Normally the Elix System will recognise and accept the information from the QGard TL Pack.
- Make sure the ports of the new Pack are pushed in. After this, secure the Pack in place by pushing down on the Pack Locking Handle.



- Press CONTINUE to go back to PRODUCTION Mode.

ATTENTION

The QGard TL Pack has a Sensor ("TAG") on it. The QGard TL Pack has to be installed so that the Sensor is oriented at the top of the QGard.

4-8 How to Clean the A10 TOC Monitor

The A10 TOC Monitoring Device may need to be cleaned sometimes. This cleaning does not involve any chemical reagents. This cleaning is initiated with the Elix System software and is simple to perform.

How long does the A10 Cleaning take?

The A10 Cleaning takes 60 minutes to complete.

Why would I need to do an A10 Cleaning?

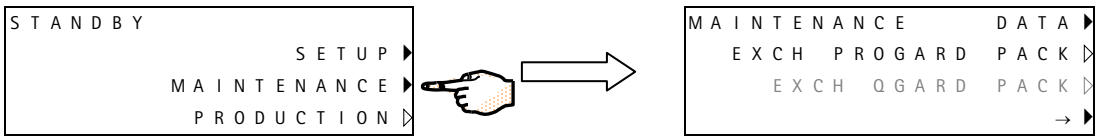
The A10 Cleaning is recommended when:

1. the Q-Gard has been replaced.
2. the displayed TOC values are fluctuating.
3. the displayed TOC values are higher than normally seen.
4. the Elix System has been powered off for more than 12 hours.

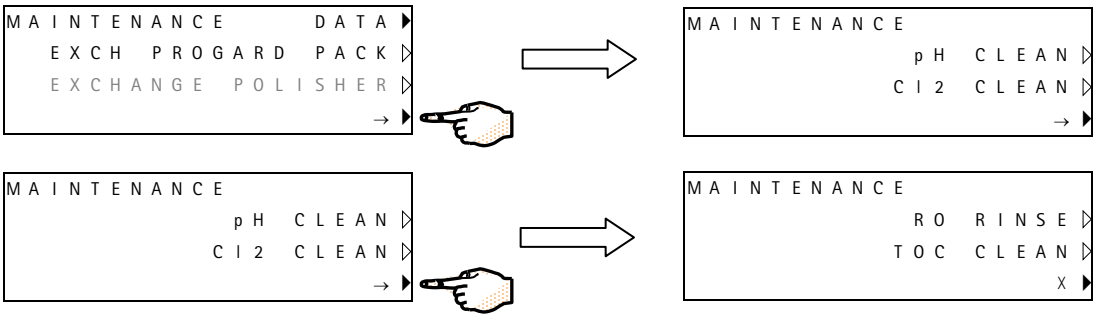
How do I do an A10 Cleaning?

Follow these steps below to perform an A10 CLEANING.

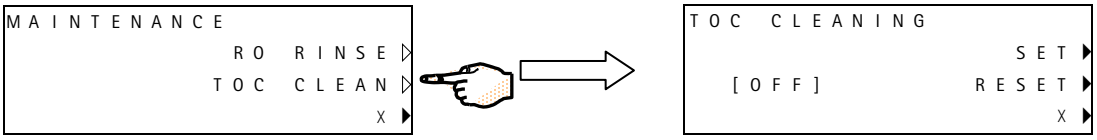
- ❑ Start in STANDBY Mode. Press MAINTENANCE.



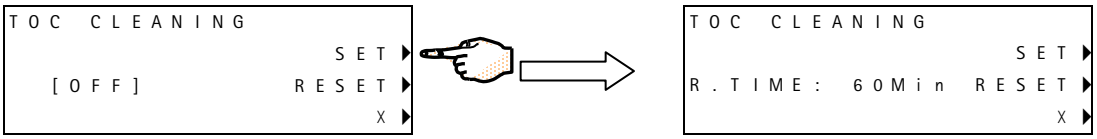
- ❑ Press the Bottom Keypad Button until TOC CLEAN is shown. See the LCD screens below.



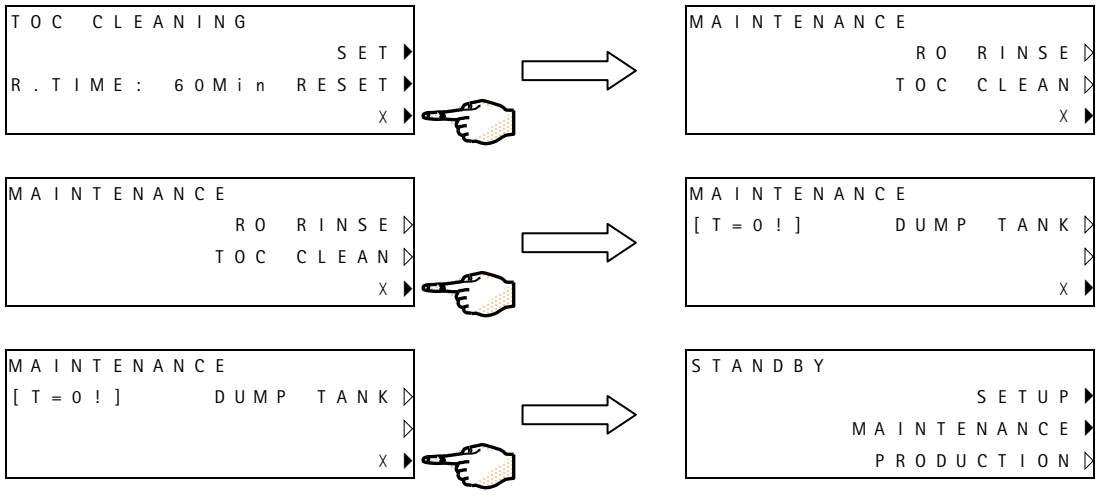
- ❑ Press TOC CLEAN for 2-3 seconds.



- ❑ Press SET. A 60 minute timer will be shown.



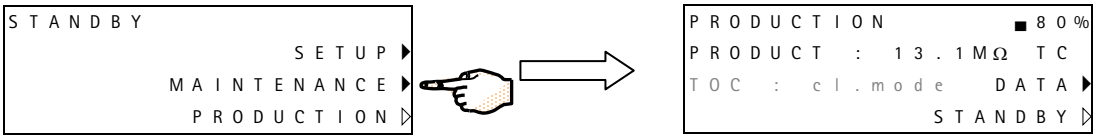
- ❑ Press the Bottom Keypad Button 3 times to go back to STANDBY Mode.



If the A10 TOC Monitor is measuring the TOC of the Elix System Product Water before entering the Storage Reservoir, then the TOC CLEANING Mode will start when the system enters PRODUCTION Mode.

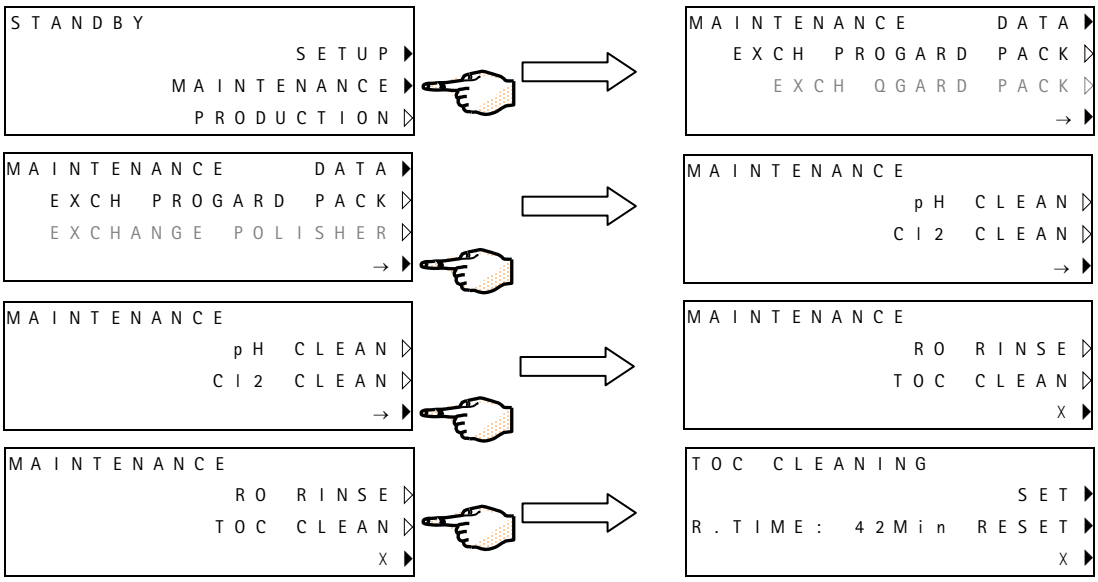
If the A10 TOC Monitor is measuring the TOC of the Loop Water, then the TOC CLEANING will start when the Loop Distribution Pump is operating.

- ❑ Place the Elix System into PRODUCTION Mode if the TOC Monitor is measuring the Elix System Product Water. The text "cl.mode" will be shown in place of the TOC value. This indicates that the TOC CLEANING Mode is taking place.



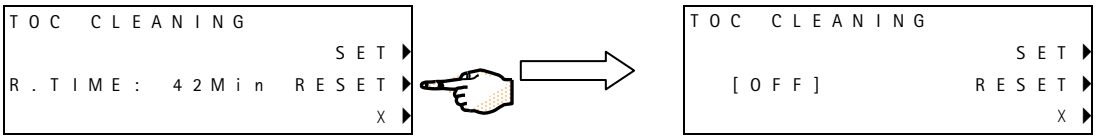
How to see the remaining time of the A10 CLEANING.

Place the system into STANDBY Mode. Press the Keypad as shown below. In this example, the TOC CLEANING remaining time is 42 minutes.



How to cancel an A10 CLEANING

Follow the instructions above to go to the LCD screen showing the R.TIME value. Press RESET. This will turn off the A10 TOC



CLEANING.

4-9 How to replace the A10 UV Lamp

The A10 UV Lamp is normally replaced once per year (every 365 Days).

A message, EXCH. A10 UV IN 14 DAYS, will appear indicating that the A10 UV Lamp needs to be replaced.

It is recommended to have a Millipore SAS Field Service Representative change the A10 UV Lamp. The replacement of the A10 UV involves removing the cover of the system. The instructions for replacing the A10 UV Lamp are not included in this manual. The instructions are included with the replacement UV Lamp.

Contact Millipore SAS for a copy of these instructions if you would like to see them before ordering a replacement A10 UV Lamp.

4-10 How to Calibrate the A10 TOC Monitor

It is recommended to recalibrate or at least to re-verify the A10 TOC Monitoring Device once a year. The Elix System **will not** display any type of message indicating that the A10 needs to be recalibrated.

The A10 TOC Monitoring Device can not be recalibrated on-site. It is necessary to contact Millipore SAS when you need to have the A10 recalibrated.

Please note that if the A10 is sent to Millipore SAS for recalibration, then the A10 UV Lamp will also be replaced by Millipore SAS as part of the recalibration procedure.

Chapter 5 TROUBLESHOOTING

5-1 MAINTENANCE, ALARM, ALARM STOP AND CUSTOM MESSAGES

TYPES OF MESSAGES

There are 4 types of LCD messages that can be displayed whenever there is a need to prompt the user about a problem or when maintenance is needed.

The 4 types of messages can be classified as:

- **Maintenance Message** – The Yellow LED is blinking while the message is displayed. The Elix System continues to operate.
- **Alarm Message** – The Red LED is blinking while the message is displayed. The Elix System continues to operate.
- **Alarm Stop Message** - The Red LED is blinking while the message is displayed. The Elix System is stopped and will not go into PRODUCTION or RINSING Mode.
- **Customised Message** – Two customised messages can be added to the Elix System by a Service Representative via a computer. These messages can be individually set-up to be displayed as a Maintenance Message, an Alarm Message or as an Alarm Stop Message. For example, one Customised Message could be set-up as a Maintenance Message and the 2nd Customised Message could be set-up as an Alarm Message.

  If a SDS Accessory is being used with a single pump, then only one Customised Message is available.

  If a SDS Accessory is being used with 2 pumps (duplexed pumps), then no Customised Messages are available.

  When an Elix System is manufactured, there are no Customised Messages added during its manufacture.

HOW MESSAGES ARE DISPLAYED AND OTHER INFORMATION

1. The messages are only displayed during operating modes and in STANDBY Mode. For example, if you were using the SETUP Menu, then you would not see an Alarm Message displayed until you exited SETUP Mode.
2. Alarm Stop Messages will not be shown in PRESSURE TEST, DEPRESSURISATION, TANK FULL and STANDBY Modes.
3. Alarm Stop Messages can be removed by going to STANDBY Mode. However, the condition causing the message is not reset. Pressing RESUME (during an Alarm Stop Message) will tell the Elix System to re-check all stop conditions. The Elix System will go back to PRODUCTION Mode if the stop conditions are not found again.
4. If a water quality issue (for example, a Customised Message related to RO % Rejection) causes an Alarm Stop Message, then pressing RESUME will change the condition from Alarm Stop to Alarm for 2 hours. After 2 hours or if the Elix System goes to TANK FULL or STANDBY Mode, the Alarm Stop condition will reappear.
5. Up to 5 messages can be displayed at one time.
6. If an Alarm or Alarm Stop Message is displayed, then any Maintenance Message(s) are not displayed.
7. The Alarm Stop Message(s) will not effect the operation of the SDS or ASM Accessories.

5-2 AN ALARM MESSAGE OR MAINTENANCE MESSAGE IS DISPLAYED

LCD MESSAGE	WHAT IT MEANS ▪ WHAT TO DO	ALARM, ALARM STOP OR MAINTENANCE MESSAGE?
% REJECTION < SETPOINT	The RO % Rejection is below the RO % Rejection Setpoint. ▪ Verify that the RO % Rejection Setpoint is 92%. Allow the Elix System to operate for several minutes. This may raise the measured RO % Rejection.	Programmable – can be set to any type of message (Maintenance by Factory Default).
ACCESS CONFLICT	The information on the TAG Sensor was not read correctly during PACK EXCHANGE Mode. ▪ Replace the Progard or accept it.	
ASM UV LAMP EXCH. OVERDUE: XX DAYS	The UV Lamp in the ASM Accessory should have been changed XX days ago. ▪ The message will go away when a new ASM UV Lamp is installed and its software timer is reset.	Maintenance (Yellow LED).
BAD PROGARD TYPE	The wrong type of pack is being installed. ▪ Check the type of pack being installed. Contact Millipore SAS for assistance.	
CANNOT ACCESS CONSUMABLE INFO	The information on the TAG Sensor was not read correctly in PRODUCTION Mode. ▪ Replace the Progard or accept it.	Alarm (Red LED).
CHECK A10 COM	The communication between the A10 TOC Monitor and the Elix System PC Board is interrupted. ▪ Contact Millipore SAS.	Programmable – can be set to any type of message (Maintenance by Factory Default).
CHECK ASM UV LAMP	The UV Lamp in the ASM Accessory is not turning on. ▪ Contact Millipore SAS.	Programmable – can be set to any type of message (Maintenance by Factory Default).
CHECK ELIX MODULE	The voltage or the electrical intensity being supplied to the Elix Module is out of specification(s). ▪ Contact Millipore SAS.	Maintenance (Yellow LED).
CHECK UV LAMP	The UV Lamp in the Elix System is not turning on. ▪ Contact Millipore SAS.	Programmable – can be set to any type of message (Maintenance by Factory Default).
CUSTOM ALARM 1	A customised alarm is displayed. ▪ Contact Millipore SAS.	Programmable – can be set to any type of message.
CUSTOM ALARM 2	A customised alarm is displayed. ▪ Contact Millipore SAS.	Programmable – can be set to any type of message.

LCD MESSAGE	WHAT IT MEANS ▪ WHAT TO DO	ALARM, ALARM STOP OR MAINTENANCE MESSAGE?
DIST WATER CONDUCTIVITY < MINI	The measured resistivity of the Distribution Loop is too high (> 94.9 MΩ.cm). The displayed resistivity may not show any higher than 18.2 MΩ.cm (@ 25 °C). ▪ Keep the Loop operating for a few minutes to remove any air that could be trapped in the Resistivity Sensor. ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
DIST WATER QUALITY < SETPOINT	▪ The displayed Resistivity of the Distribution Loop Water is less than the Resistivity Setpoint.	Programmable – can be set to any type of message (Maintenance by Factory Default).
EXCH. TOC UV LAMP IN XX DAYS	The A10 UV Lamp has been installed for 1 year. This message will begin to appear 2 weeks before the end of one year. ▪ Replace the A10 UV Lamp.	Maintenance (Yellow LED).
EXCH. ASM UV LAMP IN XX DAYS	The UV Lamp in the ASM Accessory should be replaced in xx Days. ▪ The message will go away when a new ASM UV Lamp is installed and its software timer is reset.	Maintenance (Yellow LED).
EXCH. PROGARD TL IN XX DAYS	The Progard TL Pack should be replaced in XX Days. ▪ The message will go away when a new Progard TL Pack is installed.	Maintenance (Yellow LED).
EXCH. POLISHER: PRODUCT < SETPOINT	The measured Resistivity of the Polisher Product Water is below the Resistivity Setpoint. Exchange the Polisher and Product Water Resistivity is > Resistivity Setpoint.	Programmable – can be set to any type of message (Maintenance by Factory Default).
EXCH. UV LAMP IN XX DAYS	The UV Lamp in the Elix System should be replaced in XX Days. ▪ The message will go away when a new UV Lamp is installed and the software timer is reset.	Maintenance (Yellow LED).
FEED > MAXI	The Feedwater Conductivity is measured as > 4626 µS/cm (@ 25 °C). If the LOW TDS Option has been selected, then the Alarm Value is > 927 µS/cm. ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
FEED < MINI	The Feedwater Conductivity is measured as < 5.2 µS/cm (@ 25 °C). If the LOW TDS Option has been selected, then the Alarm Value is < 1.0 µS/cm. ▪ Verify that the Feedwater is not already purified. Is the Feedwater Conductivity really this low? ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
HIGH PUMP PRESSURE	The RO Pump Pressure is > 13 bar. ▪ Set the RO Pump Pressure lower. Contact Millipore SAS for assistance.	Maintenance (Yellow LED).

LCD MESSAGE	WHAT IT MEANS ▪ WHAT TO DO	ALARM, ALARM STOP OR MAINTENANCE MESSAGE?
LOW FEED PRESSURE	The water pressure after the Progard TL Pack is < 0.3 bar. ▪ Verify that the Feedwater supply is turned on. Verify that the Progard TL Pack is not clogged (view the RO Reject Water in FLUSH Mode). This Alarm is automatically reset during FLUSH Mode if the water pressure problem is resolved.	Alarm Stop (Red LED and System Stopped).
LOW PUMP PRESSURE	The RO Pump pressure is < 6 bar. ▪ Set the pump pressure higher. Contact Millipore SAS for assistance.	Maintenance (Yellow LED).
PERMEATE < MINI	The Permeate Conductivity is measured as < 0.22 µS/cm (@ 25 °C). If the LOW TDS Option has been selected, then the Alarm Value is < 0.06 µS/cm. ▪ Verify that the Feedwater is not already purified (Very low Feedwater Conductivity can lead to very low Permeate Conductivity values). ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
PERMEATE > MAXI	The Permeate Conductivity is measured as > 194 µS/cm (@ 25 °C). If the LOW TDS Option has been selected, then the Alarm Value is > 58 µS/cm. ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
PRODUCT CONDUCTIVITY < MINI	The measured resistivity from the Polisher or Elix Module is too high (> 94.9 MΩ.cm). The displayed resistivity may not show any higher than 18.2 MΩ.cm. at 25 °C. ▪ Keep the Elix System in PRODUCTION Mode for a few minutes to remove any air that could be trapped in the Resistivity Sensor. ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
PRODUCT RES.<SETPOINT	Shown with Elix Systems not having a QGard Polisher. The Product Water after the Elix Module is < the Product Resistivity Setpoint (normally 10 MΩ.cm). ▪ Let the system operate for an extended time (few hours) in PRODUCTION Mode. Contact Millipore SAS if the message continues.	Programmable – can be set to any type of message (Maintenance by Factory Default).
PROGARD TAG VOID OR TEST KEY ERROR	A test was not performed correctly by information in the TAG Sensor of the Progard TL. ▪ Replace the Progard TL Pack.	Maintenance (Yellow LED).
PROGARD TL EXCH. OVERDUE: XX DAYS	The Progard TL should have been changed XX days ago. ▪ The message will go away when a new Progard TL is installed.	Maintenance (Yellow LED).
PROGARD TL PACK EXHAUSTED	The Progard TL Pack is used up. This is indicated by the TAG Sensor. ▪ Replace the Progard TL pack or accept the used up Progard until a new one is available.	Maintenance (Yellow LED).

LCD MESSAGE	WHAT IT MEANS ▪ WHAT TO DO	ALARM, ALARM STOP OR MAINTENANCE MESSAGE?
PROGARD TL PACK NOT IN PLACE	The Progard TL is not installed correctly or it has been removed. ▪ Verify that the Progard TL is installed with its "TAG" at the bottom (see "How to replace the Progard TL Pack").	Alarm Stop (Red LED and System Stopped).
PROGARD TL PACK TYPE ERROR	The type of Progard TL has not been identified when it was installed. ▪ Check the Catalogue Number of the Progard TL using its label. Replace if necessary.	Alarm (Red LED).
PROGARD TL PACK UNKNOWN	A pack has been detected but the information in the TAG Sensor is not valid (Trademark not valid). The Elix System does not recognise the Pack being installed. ▪ Press "ACCEPT PROGARD" to continue.	Maintenance (Yellow LED).
QGARD TAG VOID OR TEST KEY ERROR	A test was not performed correctly by information in the TAG Sensor of the QGard TL Polisher. ▪ Replace the QGard TL Polisher.	Maintenance (Yellow LED).
QGARD TL POLISHER NOT IN PLACE	The QGard TL Polisher is not installed correctly or it has been removed. ▪ Verify that the QGard TL Polisher is installed with its "TAG" Sensor at the top.	Alarm Stop (Red LED and System Stopped).
QGARD TL POLISHER TYPE ERROR	The type of QGard TL Polisher Cartridge has not been identified when it was installed. ▪ Check the Catalogue Number of the pack using its label. Replace if necessary.	Alarm (Red LED).
QGARD TL POLISHER UNKNOWN	The QGard Polisher has not been recognised by the Elix System. ▪ Verify that the correct QGard Pack is being installed.	Maintenance (Yellow LED).
QUALIFICATION CONTRACT REQUESTED	A Millipore SAS Service Representative validated the Elix System. A requalification of the validation is needed.	Maintenance (Yellow LED).
REJ. FLOW < SET POINT	The RO Reject Flow to the drain is less than a predetermined value. Tested in PRODUCTION Mode and RINSING Mode. ▪ Increase the RO Reject Water flow to the drain. ▪ Contact Millipore SAS for assistance.	Alarm (Red LED).
DIST PUMP 1 FAILURE or DIST PUMP 2 FAILURE	A signal has been sent to the Elix System indicating that the one of the Distribution Pumps has stopped working. ▪ Contact Millipore SAS for assistance.	Maintenance (Yellow LED).
DIST PUMP FAILURE	A signal has been sent to the Elix System indicating that the Distribution Loop Pump has stopped working. 2 Distribution Loop Pumps have failed at the same time. ▪ Contact Millipore SAS for assistance.	Alarm (Red LED).

LCD MESSAGE	WHAT IT MEANS ▪ WHAT TO DO	ALARM, ALARM STOP OR MAINTENANCE MESSAGE?
DIST TEMPERATURE < 0 °C	The measured temperature is < 0 °C. ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
DIST TEMPERATURE > 50 °C	The measured temperature is > 50 °C. ▪ Verify if the water is really this warm. Lower the Feedwater Temperature.	Programmable – can be set to any type of message (Maintenance by Factory Default).
SERVICE CONTRACT REQUESTED	The Elix System is being maintained with a Service Contract. A timer has indicated that a Service Contract visit is due.	Maintenance (Yellow LED).
SYSTEM TEMPERATURE < 0 °C	The measured temperature is < 0 °C. ▪ Contact Millipore SAS for assistance.	Programmable – can be set to any type of message (Maintenance by Factory Default).
SYSTEM TEMPERATURE > 50 °C	The measured temperature is > 50 °C. ▪ Verify if the water is really this warm. Lower the Feedwater Temperature.	Programmable – can be set to any type of message (Maintenance by Factory Default).
TANK EMPTY	A SDS (a specific type of reservoir) is empty of water. ▪ Verify that the reservoir is empty and is now filling up. Verify that the Level Sensor from the SDS is connected to the Elix System. This message will disappear when the water level is 10% full in the SDS.	Alarm (Red LED).
TOC > SETPOINT	The measured TOC is > the TOC Setpoint. Check the value of the TOC Setpoint using the DATA Keypad Button in PRODUCTION Mode. ▪ Contact Millipore SAS.	Programmable – can be set to any type of message (Maintenance by Factory Default).
TOC METER ERROR 0	A10 PCB E^2Prom defective. Turn off/on the Elix System and dispense water for several minutes. If the message continues, then contact Millipore SAS.	Maintenance (Yellow LED).
TOC METER ERROR 1	A10 PCB A/D converter defective. Turn off/on the Elix System and dispense water for several minutes. If the message continues, then contact Millipore SAS.	Maintenance (Yellow LED).
TOC METER ERROR 2	A10 Thermistor defective. Turn off/on the Elix System and dispense water for several minutes. If the message continues, then contact Millipore SAS.	Maintenance (Yellow LED).
TOC METER ERROR 3	Problem occurred with temperature compensation. Turn off/on the Elix System and dispense water for several minutes. If the message continues, then contact Millipore SAS.	Maintenance (Yellow LED).
TOC METER ERROR 4	The water entering the A10 is < 4 °C. Contact Millipore SAS.	Maintenance (Yellow LED).
TOC METER ERROR 5	The water entering the A10 is > 41 °C. Contact Millipore SAS.	Maintenance (Yellow LED).

LCD MESSAGE	WHAT IT MEANS ▪ WHAT TO DO	ALARM, ALARM STOP OR MAINTENANCE MESSAGE?
TOC METER ERROR 6	The conductivity of the water entering the A10 is > 1.1 µS/cm. Contact Millipore SAS.	Maintenance (Yellow LED).
TOC METER ERROR 7	The temperature inside the A10 during its analysis mode reached > 55 °C. Contact Millipore SAS.	Maintenance (Yellow LED).
TOC METER ERROR 9	The A10 UV Lamp is not turning on. Contact Millipore SAS.	Maintenance (Yellow LED).
TOC UV LAMP EXCH. OVERDUE: XX DAYS	When the age of the A10 UV Lamp is > 1 year old this message is displayed. ▪ Replace the A10 UV Lamp.	Maintenance (Yellow LED).
TOO HIGH PUMP PRESSURE	The RO Pump pressure is > 14 bar for > 3 seconds. ▪ Set the pump pressure lower. Contact Millipore SAS for assistance.	Alarm Stop (Red LED and System Stopped).
UV LAMP EXCH. OVERDUE: XX DAYS	The UV Lamp in the Elix System should have been changed XX days ago. ▪ The message will go away when a new UV Lamp is installed and the UV Lamp software timer is reset.	Maintenance (Yellow LED).
WATER DETECTED	A Water Sensor (an accessory connected to the Elix System) has detected water. The Elix System stops operating and the Inlet Solenoid Valve closes. ▪ Clean up the spilled water and press RESUME on the Keypad to go back to PRODUCTION Mode.	Alarm Stop (Red LED and System Stopped).

Chapter 6 ORDERING INFORMATION

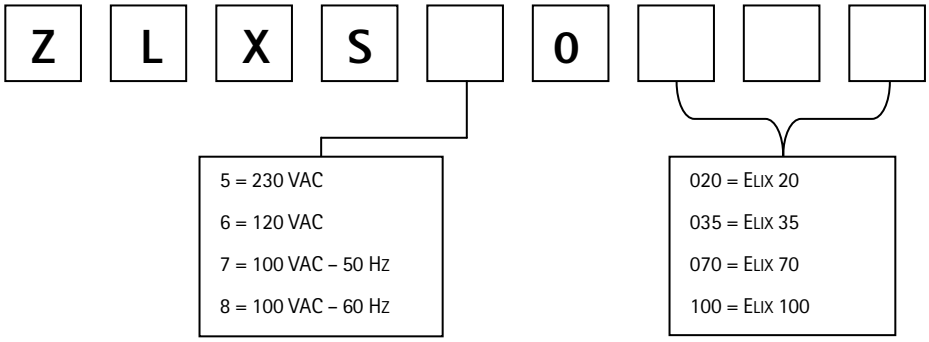
6-1 CATALOGUE NUMBERS FOR CONSUMABLES

Consumable Item	Catalogue Number	Comments
Progard TL1 System Pretreatment Pak	PR0GTL0S1	1/box
Progard TL1 System Cl_2 autoClean Pretreatment Pak	PR0GTLCS1	1/box
Progard TL2 System Pretreatment Pak	PR0GTL0S2	1/box
Progard TL2 System Cl_2 autoClean Pretreatment Pak	PR0GTLCS2	1/box
PrePak L1 Pre-System Pretreatment Pak	PRPK0L0S1	1/box; requires Pack Holder (see Accessories below)
UV Lamp	ZLXUVLPL1	1/box (used for replacement UV Lamp for an Elix System or ASM)
QGard TL1 Polishing Pak	QGARDTL01	1/box (used only with an Elix System having the Polishing Option added)
A10 UV Lamp	ZFA10UV01	1/box

6-2 CATALOGUE NUMBERS FOR ACCESSORIES

Accessory	Catalogue Number	Comments
RiOs/Elix-L Syst. Wall Bracket	ZLX0WMBKT	Wall Mounting Bracket for an Elix System
Wall Bracket PrePak L	WBPRPKL01	Wall Mounting Bracket for external PrePak L
Water Sensor RiOs/Elix-L	TANKLK001	Water Sensor that connects to an Elix System
Water Sensor with cable	TANKLK002	Used to add a 2nd Water Sensor.
RiOs/Elix-L Cleaning Port Kit	ZR00CLNKT	Used to add a Cleaning Port to the Elix System.
RiOs/Elix-L Q-Gard TL Kit	ZLXQGRDKT	Kit allows an Elix System to use a Polisher to deionise the Product Water.
RiOs/Elix-L Resistivity Sensor Kit	ZLX0RESKT	Kit allows the measurement of resistivity in a loop and to be reported on the Elix System LCD.
Flow Meter Kit RiOs/Elix-L	ZLXFL0WKT	Kit allows an extra Flow Meter to be added to an Elix System.
System Mounting Cart	ZAFSCART1	Cart which can be used to hold the Elix System.
Elix-L TOC Upgrade Kit	ZLX0T0CKT	Kit that allows an A10 to be added to an Elix System.

6-3 CATALOGUE NUMBERS FOR ALL ELIX SYSTEMS



Chapter 7 APPENDIXES

APPENDIX 1 HOW TO CHANGE THE MAIN POWER FUSE

Follow the steps below to replace the main Power Fuse.

Place the Elix into STANDBY mode.

1. Turn off the Power Switch. It is located on the back of the cabinet just above the location where the Power Cord is plugged into the Elix System.
2. Unplug the Power Cord from the Elix System.
3. Obtain the correct replacement fuse. There is a spare fuse located in the fuse holder. See Step 4.

It is very important to use the correctly sized replacement fuse. Failure to use the correct replacement fuse could result in system damage or an electrical fire.

System Voltage	Main Power Fuse Size
100 VAC ± 10%	10 Amp. T, 5 mm x 20 mm Millipore SAS Spare Part Number FTPF04803
120 VAC ± 10%	10 Amp. T, 5 mm x 20 mm Millipore SAS Spare Part Number FTPF04803
230 VAC ± 10%	10 Amp. T, 5 mm x 20 mm Millipore SAS Spare Part Number FTPF04803

1. Use a small flathead screwdriver to open the Fuse Holder. This is located immediately above the point where the Power Cord plugs in.
2. Remove the entire fuse holder. Replace the blown fuse (you can check the fuse for electrical continuity with an Ohmmeter).
3. Place the Fuse Holder back into the Elix System. Put the Power Cord back in. Turn on the Power Switch.
4. The LCD will show the type of system, the Elix System serial number and software version for a few seconds. Wait about 10 seconds for this to go away.
5. Place the Elix System into PRODUCTION Mode or whatever mode it was previously in.

CONTACT MILLIPORE SAS IF THE MAIN POWER FUSE BLOWS AGAIN.

APPENDIX 2 PRE INSTALLATION – WHAT'S INSIDE THE SHIPPING BOX

Please use this Appendix to confirm that all items were shipped to you and are accounted for. Use the checklist below and account for each item prior to having a Millipore SAS Service Representative install your system. Use the illustrations should you need help in identifying the various items.

Check the box ☐ if the item is present.

Contact Millipore SAS if an item is missing.

Do you have?

- ❑ Elix System
- ❑ Progard TL1 or TL2 System Pretreatment Pack (not included inside the Elix System box)
- ❑ Electrical Power Cord
- ❑ Inlet Solenoid Valve with electrical cable attached to the Elix System
- ❑ User Manual ("How To Use the Elix System") in paper format; 5 languages.
- ❑ User Manual in CD Format (complete User Manual)

Inside the Accessories Bag:

- ❑ 2 lengths of 1/2 inch OD Black PE Tubing; each length is 5 meters long
- ❑ 8 mm OD Black Tubing; 5 meter length
- ❑ Tubing Guide for 8 mm Tubing (allows tubing to be bent 90°)
- ❑ Gasket (used with the Inlet Solenoid Valve Pipe connection)
- ❑ System Identification Plastic Card

Other items (i.e. accessories or peripheral devices). Fill in the item description.

- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

Observed by

Name: _____

Signature: _____

Date: _____

Verified by

Name: _____

Signature: _____

Date: _____

APPENDIX 3 POST INSTALLATION CHECKLIST

WHAT IS THE POST INSTALLATION CHECKLIST?

It is highly recommended that a Millipore SAS Service Representative installs the Elix System. The Pre Installation Manual and the Installation Manual are not found in this Owner's Manual.

Place a check in the box next to the item or items as they were done during the installation of an Elix 30, Elix 50, Elix 100, Elix 150 or Elix 200 Water Purification System.

Some "Comments" areas are provided throughout the Post Installation Checklist. These can be used to document any comments. As an example, a comment could be made and recorded pertaining to the fact that the Drain was 3 meters away from the Elix System. The comment could be written such that you indicate your knowledge of this and that you are willing to go outside a specification in order to complete the installation.

POST INSTALLATION CHECKLIST

- ❑ Was Appendix 2 in this manual read and reviewed (accounting for items in the Shipping Box)?
- ❑ Was the Inlet Solenoid Valve water flow direction identified (is the water flowing in the correct direction through the Inlet Solenoid Valve)?
- ❑ Were the specifications for the Feedwater minimum pressure and minimum flowrate met?
- ❑ Were the specifications for the electrical supply and electrical connections (distance to source, earth grounded) met (see the Pre Installation document for these specifications)?
- ❑ Was the RO Reject Tubing kept to a maximum length of 2.5 meters?
- ❑ Was the Progard TL Pack installed such that:
  - ❑ it is located on front left side of the Elix System?
  - ❑ it was installed according to the directions given in Section 2-4 in the Installation Manual?
- ❑ Did the Elix System go through either a 5 minute SYSTEM CLEANING (Progard TL without chlorine tablet inside) or a 20 minute SYSTEM CLEANING (Progard TL with a chlorine tablet inside)?
- ❑ Was the RO RINSE done according to the directions given in Section 2-6 in the Installation Manual? Was the RO RINSE completed?
- ❑ Was the pump pressure checked during PRODUCTION Mode (checked against operating temperature – see Section 2-5 in the Installation Manual)? Was the pump pressure adjusted if necessary?
- ❑ Was the RO Reject flow to the drain measured?
- ❑ Was the Elix System Recovery checked using the DATA information in PRODUCTION Mode?
- ❑ Was the Elix System Recovery changed if necessary according to Section 2-5 in the Installation Manual?
- ❑ Were the Date and Time set for the Elix System?
- ❑ Were the units of Pressure changed if necessary?
- ❑ Were the Storage Reservoir Units changed if necessary?
- ❑ Were the Conductivity or Resistivity values checked in PRODUCTION Mode for Temperature Compensation or Non Temperature Compensation (according to the user requirements)?

COMMENTS:_____

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Observed by

Name: _____

Signature: _____

Date: _____

Verified by

Name: _____

Signature: _____

Date: _____

APPENDIX 4 FEEDWATER REQUIREMENTS

FEEDWATER FLOWRATE REQUIRED

The source of feedwater should deliver ≥ 5 LPM at a minimum pressure of 2 bar.

FEEDWATER PRESSURE REQUIRED

Maximum Feedwater pressure: ≤ 6 bar at ≥ 5 LPM (use a Pressure Regulator if necessary)

Minimum Feedwater Pressure: ≥ 2 bar at ≥ 5 LPM (use a Booster Pump if necessary)

FEEDWATER PIPING CONNECTION REQUIRED

The Feedwater should be supplied in a pipe that terminates in a 1/2 inch Male GAZ connection. This is the type of connection needed for the Inlet Solenoid Valve.

A 1/2 inch NPTM or 1/2 inch BSP connection can also be used.

FEEDWATER CHEMISTRY REQUIRED

- Potable Mains (Tap) Water
- Calcium < 300 ppm (as CaCO3) when System Recovery is > 50%
- Maximum LSI = +0.3
- Fouling Index – Contact Millipore SAS
- Conductivity < 2000 µS/cm (@ 25°C)
- pH 4 – 10
- Total Chlorine Level – Contact Millipore SAS

FEEDWATER TEMPERATURE REQUIRED

Between 5 °C and 35 °C.