Thermo Fisher Scientific Barnstead GenPure with xCAD Ultrapure water system

Operating instruction

50131281 Revision A November 2013

Thermo SCIENTIFIC

Release history:

For Research Use Only. Not for use in diagnostic procedures.

Preface

Before you start to install and work with your ultrapure water system, please carefully read the information that is given in these operating instructions on how it is to be installed and operated.

This is particularly important as we, the manufacturer, cannot accept liability for any damage occurring as a result of incorrect operation of the system or from use of it for other than the specified purpose.

The contents of this document are subject to change without notice.

All technical information in this document is for reference purposes only. System configurations and specifications in this document supersede all previous information received by the purchaser.

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This document is not part of any sales contract between Thermo Fisher Scientific Inc. and a purchaser. This document shall in no way govern or modify any Terms and Conditions of Sale, which Terms and Conditions of Sale shall govern all conflicting information between the two documents.

Legal Information

NOTE

Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.

Warranty

Thermo Electron LED GmbH warrants the operational safety and functions of the Thermo Scientific Barnstead GenPure with xCAD ultrapure Water System only under the condition that:

- the system is operated and serviced exclusively in accordance with its intended purpose and as described in these operating instructions,
- the system is not modified,
- only original spare parts and accessories that have been approved by Thermo Electron LED GmbH are used (third-party spares without Thermo Electron LED GmbH approval void the limited warranty),
- inspections and maintenance are performed at the specified intervals,
- an installation verification test is performed on commissioning the system for the first time and repeated after each inspection and repair activity.
  The warranty is valid from the date of delivery of the system to the customer.
- The above mentioned warranty conditions are subject to the general terms and conditions of sale, in effect at the time of purchase, which apply as well.

Explanatory notes on the operating instructions

EU Mark of Conformity

CSA - admission

CAUTION	Indicates a situation which, if not avoided, could result in damage to equipment or property.
WARNING	Important operating and/or maintenance instructions. Read the operating instructions with due care. Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injuries.
DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injuries.
NOTE	General information! Particularly important notes are marked with this information sign.

Risk of electric shock! Electrical work on the system is only to be carried out by qualified personnel.

Protective conductor connection.
Connect the power supply to an electrical socket with a protective connection.

Indicates a situation where protected gloves or clothing is needed.

The information provided in these operating instructions is only valid for the system which has the serial number which is to be entered on the front page. This information is valid for the system that is received.

NOTE

Please enter the serial number* of your GenPure with xCAD system in the space provided on the front page.

* Read the serial number of your ultrapure water system from the type plate.

For quick and correct service, please include the following information on all inquiries and replacement parts orders which relate to your system:

- The serial number
- The catalog number

Standards and Directives

The ultrapure water system complies with the following standards and directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- Machine directive 2006/42/EC
- ASTM D1193-6

Additionally, the ultrapure water system is in compliance with many other international standards, regulations and directives not listed here. Should you have any questions regarding compliance with national standards, regulations and directives applicable for your country, please contact your Thermo Fisher Scientific sales organization.

C

Contents

Contents

Transport and packaging

Contents

Ultrapure water systems are carefully checked and packed prior to shipment but, despite this, there is always a possibility that damage could occur to them during shipment

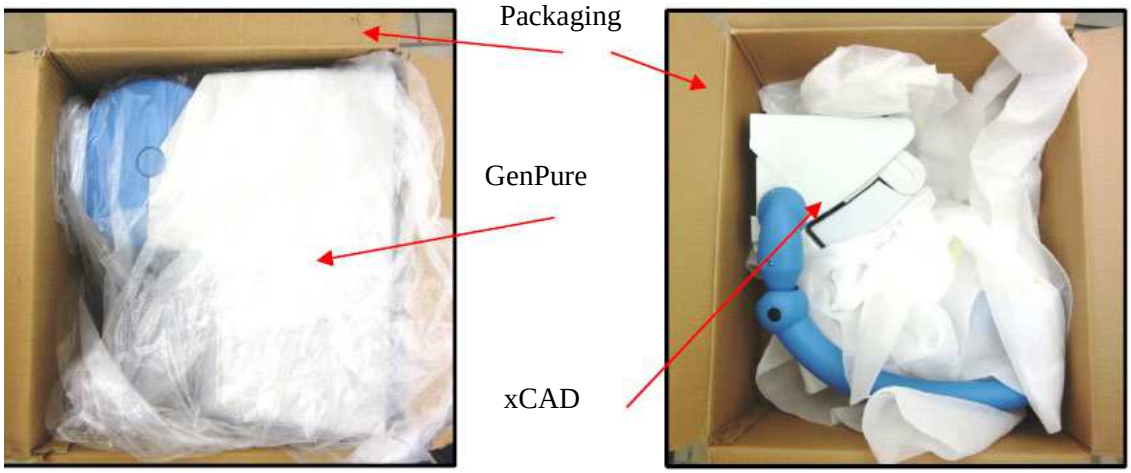
Examination on receipt

- Check the completeness of the delivery against the shipping papers.

NOTE

Does the packaging show signs of damage?

- Inspect the equipment supplied for damage.



Complaints

Should the system have been damaged during transport:

- Immediately contact your delivery transport agency.
- Keep the packaging, including the outer cardboard box, for a possible inspection and/or return shipment.

Packaging and return shipment

Whenever possible use the original packaging and packing materials.

Should these no longer be available:

- Pack the system in packing film and then in a strong cardboard box so that it is held shock-proof.

NOTE

The time limit for claims is 6 days from the time of receipt of the goods. The right to claim for damages ceases when this time has elapsed.

Safety precautions

NOTE

For your own safety, please observe the above safety precautions.

DANGER

Your GenPure series system is a contemporary ultrapure water system. It serves exclusively to purify pretreated water. The water it produces is not fit for drinking.

- Do not start to install and operate the system until you have read through the corresponding information given in these operating instructions.
- Lifting and carrying the ultrapure water system, e.g. to the installation location, should be carried out by two people. To lift it, each person takes hold of it under the base plate at two corners.
- Note that the manufacturer is not liable for damages that result from improper operation of the system, or from use of it for other than the intended purpose.
- The CE-mark is invalidated if constructional changes are made to the system, or if products of other manufacturers are installed in it.
- Protect the system from frost. The temperature in the area in which the system is installed is not to go below +2°C or above +40°C.
- Observe all appropriate rules and regulations, including the valid accident prevention regulations, which are applicable at the location where the system is installed.
- The feedwater pressure must be at least 0.1 bar and at max. 6 bar or 1.45 to 87 PSI. When the feedwater pressure is higher, install an external pressure reducer.
- Protective means need to be installed to prevent tap water contamination.
- A grounded 100-250V, 50/60Hz socket must be available.
- The installation area must have a drain at floor level with at least a nominal diameter of 63 mm or 2.48 inch (DN 50 pipe). Should no such drain be available it is recommend to install a water watcher (only for European specification). Otherwise the manufacturer will not accept liability for any possible water damage.

- If the system is to be at a rest for a longer time (e.g. long, holidays) switch the system off (unplug the mains plug) and shut off the feedwater line.
  Allowing the system to run with the water feed line closed would result in damage to the pump. The manufacturer does not accept liability for such damage.
- The system must be subjected to rinsing and possibly also disinfection after longer rest periods. Follow the directions given in the section „Rinsing procedure“ on page 75.
- The surface or wall where the system is to be installed must have sufficient load-bearing capacity (see „Technical specification“ on page 18).
- When installing the ultrapure water system, ensure that there is sufficient working area around it for convenient operation of it (e.g. ultrapure cartridge replacement, connections, etc.)...

Never look directly into a switched-on UV-lamp, as UV-light endangers eyesight!

To avoid possible risks of crush injury, cuts or electric shock when handling the system, never take the protective casing off of the system. Only trained, skilled personnel are to be assigned to carry out maintenance of the system.

- Regularly carry out visual inspection of the system before operating it, as splashes of liquid could result in a danger of slipping. Any emergent liquid must be immediately mopped up.

Wear protective gloves when chlorine tablets or a disinfection syringe (only US) are to be handled during maintenance. Do not stop a disinfection process that is in progress. After faulty disinfection, carry out a new disinfection run.

Increased heat might be caused by system or system component defects. To reduce skin damage it is recommended to wear protective gloves.

- Do not use oxidative cleaning agents when cleaning the system. They would cause damage to it.
- If the system has a defect, proceed as follows:
  - Switch the system off (dead)
  - Stop the water inlet
  - Contact the Local service organization

Extent of delivery

Contents

Extent of assembly kit

Ultrapure cartridge
Catalog no.: 09.2005

Final filter 0.2 µm
Catalog no.: 09.1003

NOTE

To increase the lifetime of the filter a sterilization at 120 °C for 30 min is recommended. The procedure for the filter can be repeated up to 10 times.

Transformer-table power pack
Catalog no.: 50134196

Universal Holder and Universal adapter
Catalog no.: 21.0007
Catalog no.: 21.0006

Feedwater connecting kit
Catalog no.: 25.0075

PE hose, Ø8mm x 2 m or 0.31 inch x 2.19 yard
Catalog no.: 18.0036

PE hose, Ø6mm x 5 m or 0.24 inch x 5.46 yard
Catalog no.: 18.0047

PE hose, Ø4mm x 5 m or 0.16 inch x 5.46 yard
Catalog no.: 18.0053

Connecting Cord (US) Catalog no.: 50132200
Connecting Cord (british) Catalog no.: 50132203
Connecting Cord (euro) Catalog no.: 50132215

Mounting parts for wall mounting GenPure system and xCAD wall version:
-Plug 4 x S6
Catalog no.: 21.0002 (for xCAD)
-Screw 4x40 mm or 4 x 1.57 inch
Catalog no.: 21.0001 (for xCAD)
-Plug 2 x S8
Catalog no.: 21.0035 (for GenPure)
-Screw hook 2 x 5.2 x 50 mm or 5.2 x 1.97 inch
Catalog No.: 21.0057 (for GenPure)

2x Sub-D extension cable,
25 pin, 5 m or 5.46 yard
Catalog no.: 16.0375

Spiral cable, inlet Ø 9 mm or 0.35 inch,
B10 – 40 mm or B10 - 1.57 inch
Catalog no.: 16.0340

Available GenPure with xCAD versions

GenPure with xCAD bench version:

50131286 standard	Basic system
50131250 UF	Basic system + ultrafiltration module
50131254 UV	Basic system + UV photooxidation
50131252 UV/UF	Basic system + UV photooxidation + ultrafiltration module
50131296 UV-TOC	Basic system + UV-photooxidation and TOC measurement
50131298e UV-TOC/UF	Basic system + UV-photooxidation and TOC measurement + ultrafiltration module

GenPure with xCAD wall version:

50131300 standard	Basic system
50131302 UF	Basic system + ultrafiltration module
50131317 UV	Basic system + UV-photooxidation
50131315 UV/UF	Basic system + UV-photooxidation and ultrafiltration module
50131321 UV-TOC	Basic system + UV-photooxidation + TOC Measurement
50131323 UV-TOC/UF	Basic system + UV-photooxidation and TOC Measurement + ultrafiltration module

3 Extent of delivery

Available GenPure with xCAD versions

Intended Use

The GenPure with xCAD ultrapure water system is a laboratory system and is used for treatment of water. The system allows the purification of water into the water categories mentioned in the standards of ASTM 11.01 and ASTM 11.02.

The GenPure with xCAD system is designed to be installed and use in the following application areas:

- Laboratories for cell biological and biotechnological work with the safety levels L1, L2 and L3.
- Medical and microbiological laboratories according to DIN EN 12128.
- Laboratories in the central area of clinics and hospitals.

Unintended use

The system must not be operated outside of the specifications as described in the operating manual. In particular, the system may not be used for production of drinking water and drugs manufacturing. The system must not be used as a medical device and outside of laboratories.

4 Intended Use

Unintended use

Technical specifications

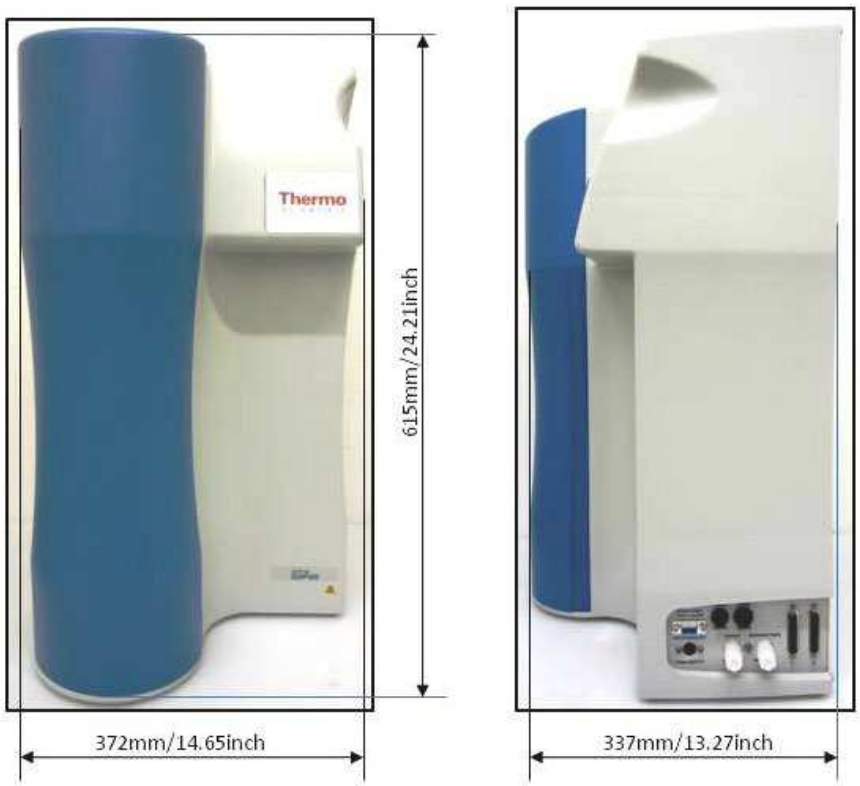
Demands on the feedwater	
Source	Tap water pretreated by reverse osmosis, ion exchange or distillation.
Silt density index (SDI)	max. 1 for all versions. For water that is not pretreated by reverse osmosis, a prefilter with a 1 µm membrane is recommended.
Feedwater resistance	> 0.5 MΩxcm
Free chlorine	max. 0.05 ppm
TOC	max. 50 ppb
Bacteria count	< 100 CFU/ml
Turbidity	< 1.0 NTU
Carbon dioxide (CO_2)	max. 30 ppm
Silicate	max. 2 ppm
Particles	Filtration to 0.2 µm is recommended to protect the internal filter and, if appropriate, the final filter.
Temperature	2 - 40°C
Pressure	0.1 - 6 bar or 1.45 to 87 PSI

Product water quality							
		Standard	**UV**	**UF**	**UV/UF**	**UV-TOC**	**UV-TOC/UF**
Resistance (Reference temp. 25 °C)	**MΩxcm at 25 °C**	18.2	18.2	18.2	18.2	18.2	18.2
TOC	**ppb**	5 - 10	1 - 5	5 - 10	1 - 5	1 - 5	1 - 5
RNase **DNase**	**ng/ml** **pg/ul**	-- --	-- --	-- --	< 0.003 < 0.4	-- --	< 0.003 < 0.4
Bacteria	**CFU/ml**	< 1	< 1	< 1	< 1	< 1	< 1
Bacterial Endotoxines	**EU/ml**	--	--	< 0.001*	< 0.001*	--	< 0.001*
Particles	**> 0.2 µm**	< 1/ml	< 1/ml	< 1/ml	< 1/ml	< 1/ml	< 1/ml

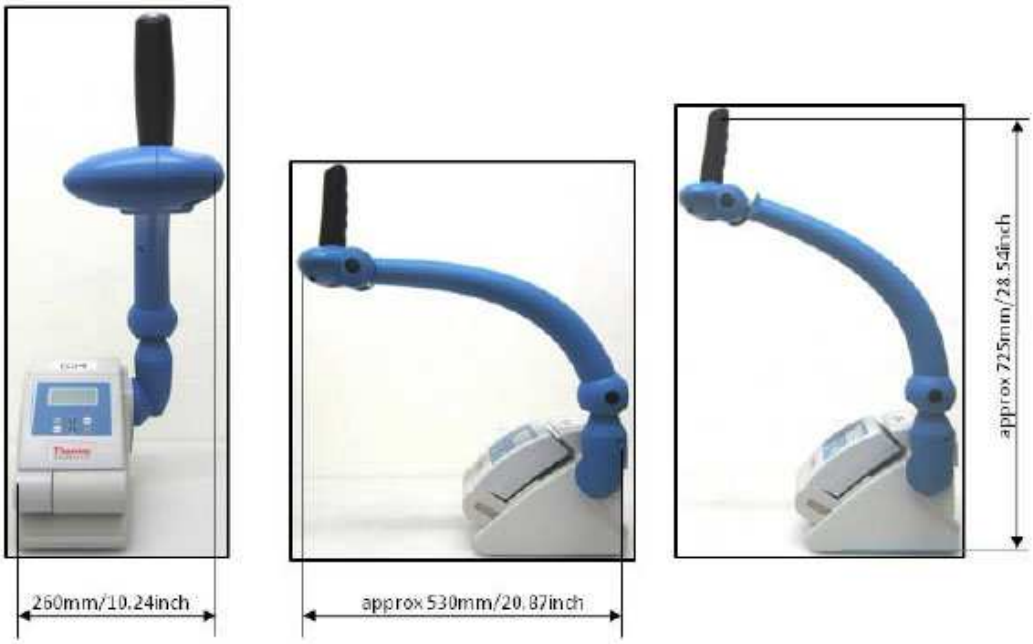
Product water quality							
Flow rate	**L/min****	up to 1.5	up to 1.5	up to 1.5	up to 1.5	up to 1.5	up to 1.5
Flow rate with volume control	**L/min**	1.5	1.5	1.5	1.5	1.5	1.5

* Depending on feedwater and appropriate disinfection
** Depending on feedwater pressure

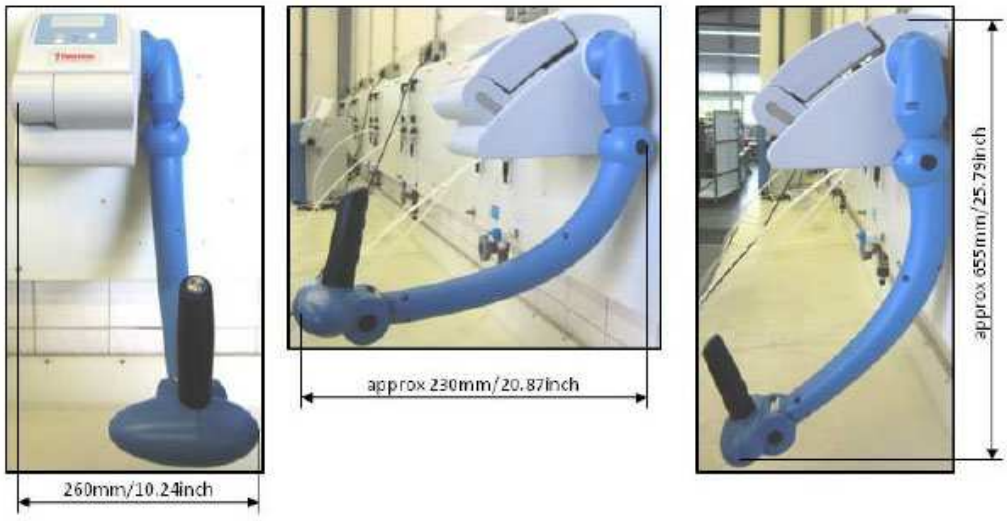
Dimension and weight GenPure system		
Height	615 mm	24.21 inch
Width	372 mm	14.65 inch
Depth	337 mm	13.27 inch
Weight:		
GenPure Standard	22 kg	48.50 lbs (dry weight)
GenPure UF	23 kg	50.71 lbs (dry weight)
GenPure UV	24 kg	52.91 lbs (dry weight)
GenPure UV/UF	24 kg	52.91 lbs (dry weight)
GenPure UV-TOC	24 kg	52.91 lbs (dry weight)
GenPure UV-TOC/UF	25 kg	55.12 lbs (dry weight)



Dimensions and weight xCAD (bench version)		
Height	approx. 725 mm	28.54 inch
Width	260 mm	12.24 inch
Depth	approx. 530 mm	20.87 inch
Weight	12 kg	26.46 lbs (dry weight)



Dimensions and weight xCAD (bench version)		
Height	approx. 655 mm	25.79 inch
Width	260 mm	10.24 inch
Depth	approx. 530 mm	20.87 inch
Weight	5 kg	11.02 lbs (dry weight)



Cell constants, measuring cell	
Conductivity, feedwater	0.16 cm^{-1}
Conductivity, after UV-photooxidation	0.01 cm^{-1}
Conductivity, ultra pure water	0.01 cm^{-1}

Connectors for water GenPure	
Feedwater	Hose, 8 mm o.d.
Rinse water	Hose, 8 mm o.d.
Ultra pure water/outlet	Hose, 6 mm o.d.
Ultra pure water/recirculation	Hose, 4 mm o.d.

Connectors for water, xCAD	
Ultra pure water/inlet	Hose, 6 mm o.d.
Ultra pure water/recirculation	Hose, 4 mm o.d.
Ultra pure water/outlet	R 1/4"
Final filter outlet	Hose, 8 - 10 mm o.d.

Electrical connections / external switched mode power supply	
Input voltage	AC 100 – 240 V, 50 – 60 Hz, 5 – 3.8 A
Output voltage	DC 24 V, 3.8 A
System connection	DC 24 V, 80 W
Serial interface	RS 232
Protection Class	Class II (external SMPS certified as Class I)

Electrical connections, xCAD	
2x SUB-D socket	25 pin

Airborne sound emission	
Sound-pressure level	49 db(A)

Ambient conditions	
Usage	Indoor rooms
Height	Up to 2000 m
Temperature range	From 5 °C to 40 °C
Relative humidity	Maximum relative humidity 80 % at temperatures of up to 31 °C, linearly decreasing to 50 % relative humidity at 40 °C
Line-voltage variation	Not more than ± 10 % of the line voltage
Transient overvoltages	As usually occur in the supply network (overvoltage category II acc. to IEC 60364-4-443).  The rated level of transient overvoltage is the withstand impulse voltage acc. to overvoltage category II of IEC 60364-4-443
Ventilation requirements	There are no special requirements with regard to ventilation.
Degree of pollution	2

Materials of parts which contact water	
Pressure reducer	NBR = acrylnitril-butadien-rubber
Pump head	Nylon with glass fibre
UV lamp	High purity quartz
UV housing	Stainless steel
Ultrapure cartridge	PP = polyethylene
UF housing	PC = polycarbonate
Rinsing solenoid valve	PA = polyamid
Dispensing valve	PVDF = polivinylidenfluorid
Conductivity measuring cell	POM = polyoxymethylen, stainless steel
Distributor block	POM = polyoxymethylen
Connectors	POM = polyoxymethylen
Hoses	PE = polyethylene
O-rings	EPDM = ethylen-propylen-diene-rubber

5 Technical specifications

The installation area

Take the following criteria into consideration when selecting the installation area:

Feedwater pressure, not below 0.1 bar (1.45 PSI) and not above 6 bar (87 PSI).

CAUTION

The feedwater pressure must never exceed 6 bar. If it is higher than this, install an additional external pressure reducer.

- Minimum air temperature +2 °C.
- Level standing surface.
- A smooth wall is required when the system is to be wall-mounted. Check the statics of the wall. It must have sufficient load-bearing capacity (for system weight, see „Technical specification“ on page 18).
- A floor drain with a nominal out diameter of 63mm or 2.48 inch (DN 50 pipe) drain pipe.
- Free run off to drain.
  When no floor drain is available, install a water watcher to protect against water damage (only available for EU).

CAUTION

Unrestricted gravity flow to drain must be ensured!

- An electrical socket appropriate for the system (see „Technical specification“ on page 20).
- Sufficient working room all around the system (approx 30 cm / 11.81 inch, for replacing filters etc.).
- Easy access for operation and control of the system.
- Water pre treated such as DI, RO or distillation water connection with 3/4 NPT male thread and customer supplied shutoff valve.

6 The installation area

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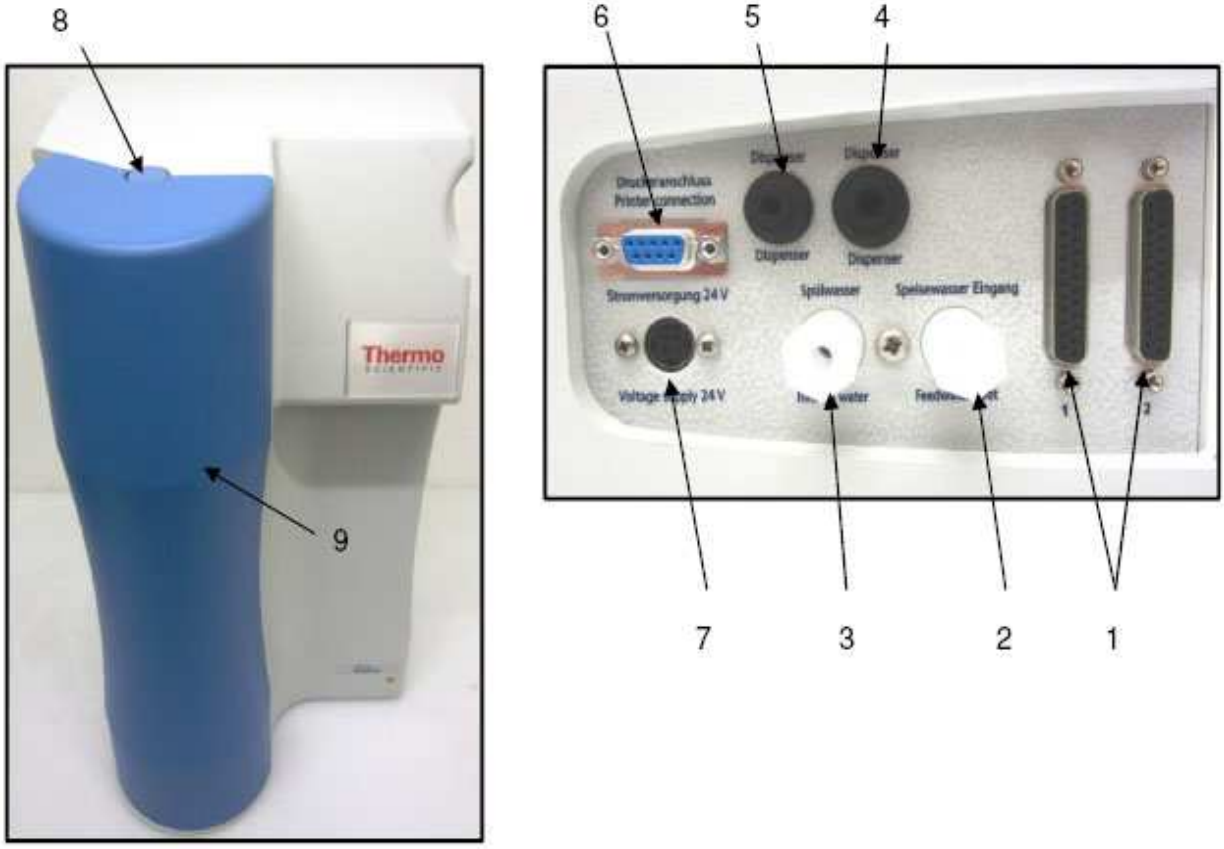
Installation

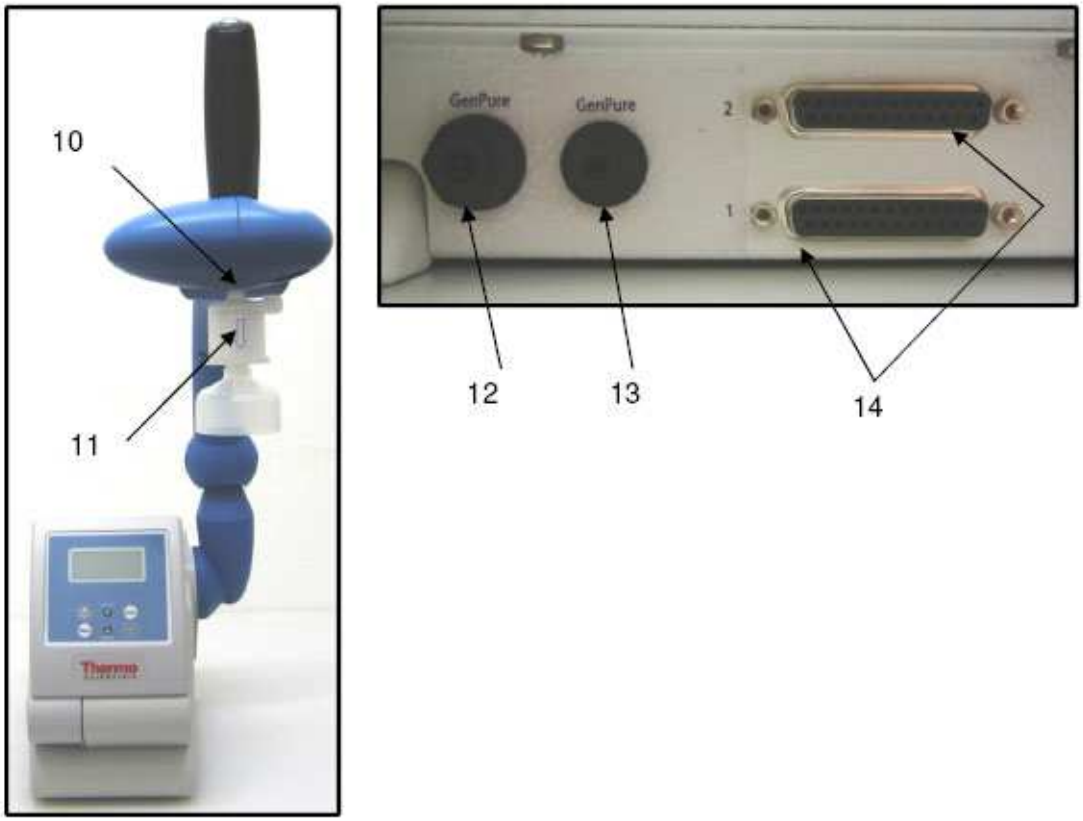
Contents

Connectors GenPure system



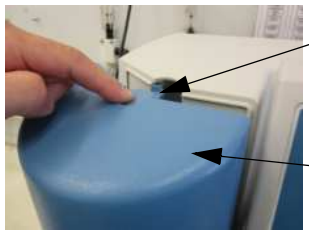
1. Connectors for 25 pin sockets to xCAD (system control)
2. Feedwater connector, 8 mm o.d or 0.31“
3. Rinse water connector, 8 mm o.d 0.31“
4. Ultrapure water connector, 6 mm o.d or 0.24“(to xCAD)
5. Ultrapure water connector, 4 mm o.d 0.16“(to xCAD)
6. Optional printer connection
7. Power supply connector 24 V DC
8. Push button for releasing the cartridge cover
9. Cartridge cover

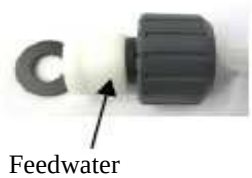
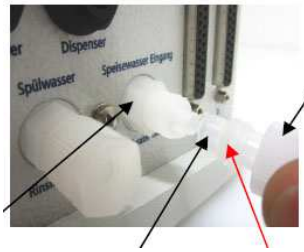
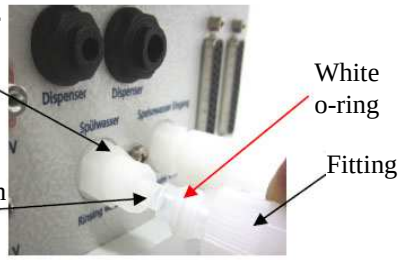
Connectors xCAD

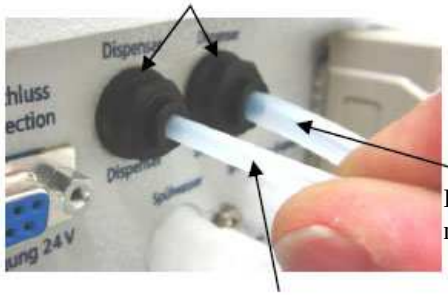
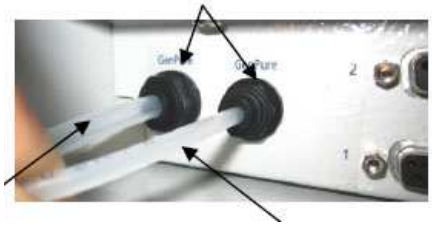
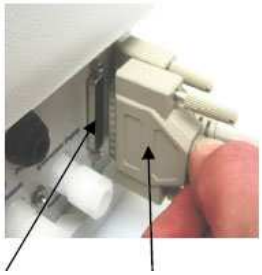
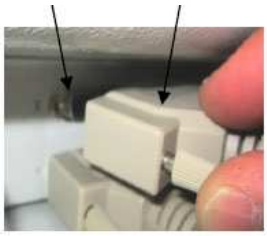


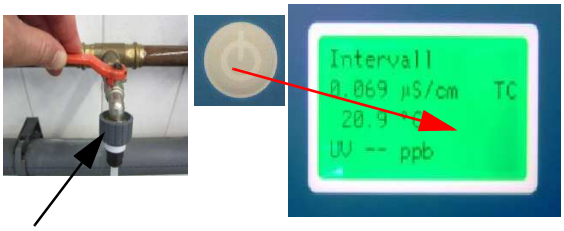
10. Dispensing valve outlet, R 1/4" female thread
11. Final filter 0.2 µm
12. Ultrapure water connector, 6 mm o.d or 0.24“(to GenPure)
13. Ultrapure water connector, 4 mm o.d or 0.16“(to GenPure)
14. Connector for 25 pin sockets to GenPure (system control)

Installation of GenPure with xCAD system, bench version

Step	Action	Figure
1	Either place the GenPure system with the xCAD bench version on the intended surface or hang it on a wall. For wall mounting the GenPure system using the included wall mounting hardware.	NOTE See under chapter "Wall mounting GenPure system" on page 37.
2	Release the cartridge cover by pressing the push button.	
3	Remove the two stoppers from the new ultrapure cartridge and fit the cartridge into the system.	
4	Push each of the quick connectors onto the cartridge. You will know they are attached when an audible "click" is heard. Fit the cartridge cover on again.	

Step	Action	Figure
5	.Mount the feedwater connecting kit together and connect it to the feedwater inlet line. Connect the other end of the hose to the feedwater connector of the system by unscrewing the fitting. After this put the hose through the fitting and mount the white O-ring on it. Screw the fitting back to the system. **CAUTION** Only feedwater that has been pretreated by reverse osmosis, ion exchange or distillation is to be used.	 Feedwater connecting kit 
6	Connect the 8mm o.d hose to the rinse water connection of the system (see step 5) and make a gravity fall (pressureless) connection from the system to the floor drain. The drain to the sewer must be max. 1m (1.09 yards) above the rinsing water connector of the unit.	

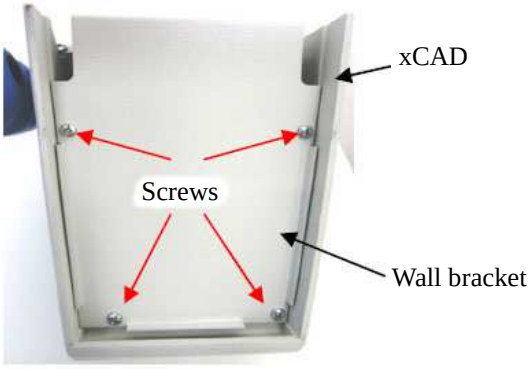
Step	Action	Figure
7	**NOTE** Before you begin with step a guide the two hoses 6 and 4 mm o.d or 0.16 and 0.24 inch through the cable spiral. a. Connect the two ends of the hoses 6 and 4 mm o.d or or 0.16 and 0.24 inch of the cable spiral into the ultrapure water connectors of the GenPure system. b. The other ends of the hoses 6 and 4 mm o.d or 0.16 and 0.24 inch you should connect to the connectors of the xCAD.	a) Connectors GenPure  Hose 6 mm o.d Hose 4 mm o.d b) Connectors xCAD  Hose 6 mm o.d Hose 4 mm o.d
8	a. Plug each of the cables with 25 pin socket in the sockets of the GenPure system and screw them tight. b. Plug in the two 25 pin system control cable onto the xCAD and fix them with the screws **NOTE** In order to recognise the correct connectors of the cables on the xCAD of system and the xCAD they are marked with numbers 1 and 2 (see red arrows).	a)  25 pin connectors  25 pin connector 25 pin connector b)  25 pin connectors 

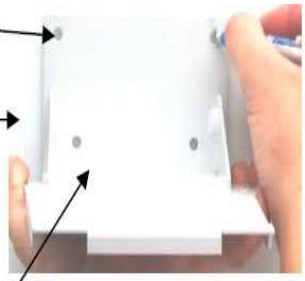
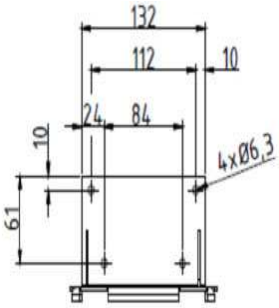
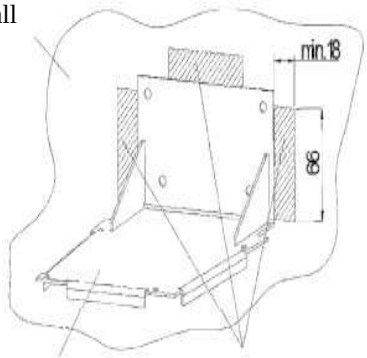
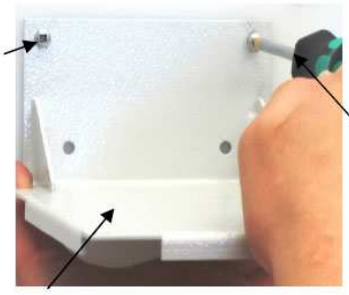
Step	Action	Figure
9	Screw the final filter in counter clockwise direction (see red arrow in the picture) into the 1/4" female thread of the xCAD dispensing valve.	
10	Assemble the power pack and make the voltage connection to the GenPure system.	NOTE See under chapter "Mounting the power pack (voltage supply)" on page 39.
11	If applicable use the RS232 connector (6) to connect the optional data printer. Open the feedwater supply tap. CAUTION Only feedwater that has been pretreated by reverse osmosis, ion exchange or distillation is to be used.	

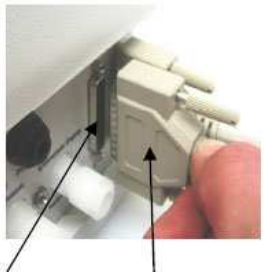
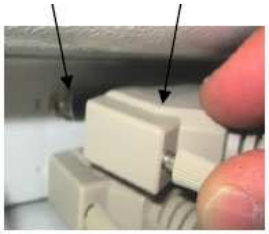
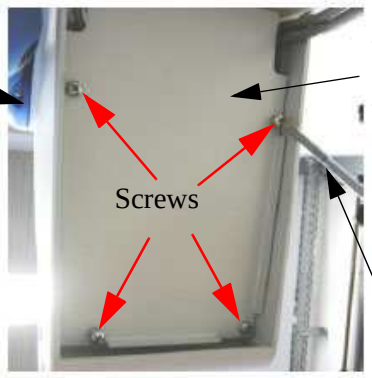
Installation of GenPure with xCAD system, wall version

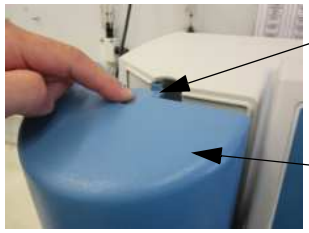
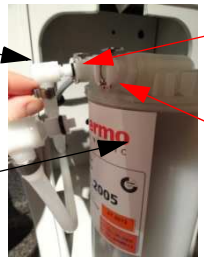
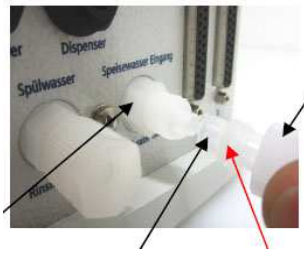
CAUTION

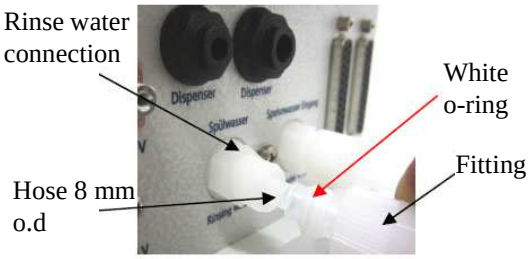
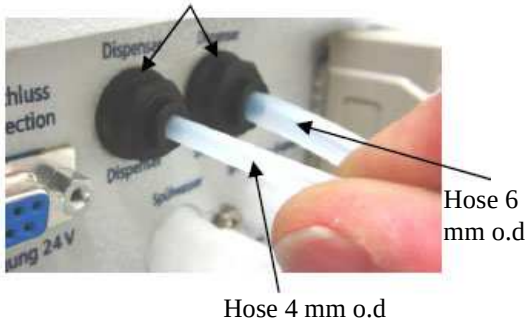
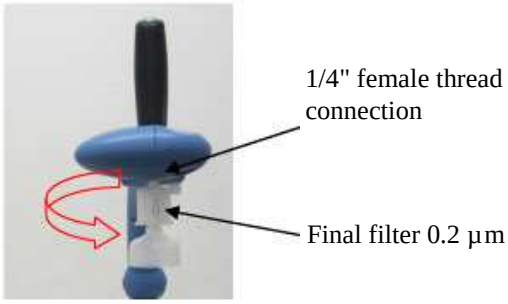
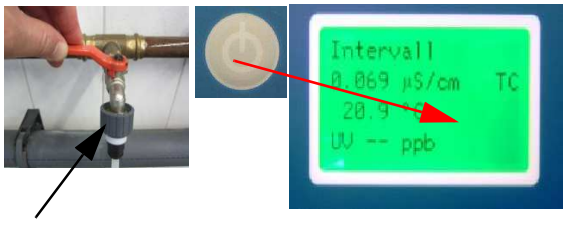
Before hanging the xCAD onto a wall make sure that the wall can support the weight of the system once it's full of water.

Step	Action	Figure
1	Either place the GenPure system on the intended surface or hang it on a wall. For wall mounting the GenPure system using the included wall mounting hardware.	**NOTE** Lift and carried out the xCAD wall version by two people. It is easier to work and mount it onto a wall.
2	To wall mount the xCAD wall version unscrew the 4 screws (see red arrows in the picture) of the underside from the xCAD and remove the wall mount bracket.	

Step	Action	Figure
3	a. Hold the wall mount bracket at the desired position on the wall and mark the four boreholes for fixing the wall mount bracket. Then use a 6 mm or 1/4" twist drill to make the holes and put in the four S6 dowels which are supplied in the assembly kit. **NOTE** If you are want to take the hoses and cables out of back the wall look at the pictures 1) and 2) and step b). When it is not wish going to step 4. b. Refer to dimensions on picture 1) and 2) to make the necessary wall cuts needed if you want to push the 0.31“(8mm) o.d hoses and cable out through the wall behind the xCAD.	a) Boreholes Wall  Wall mount 1)  Dimensions boreholes of wall mount bracket 2) Wall  Wall mount Possible wall cut- outs for cable and hose taken out at back
4	Attach the wall mount bracket to the wall by screwing in the 4 supplied screws with a philips screw driver into the wall where you have put in the plugs before.	Screw  Philips screw-driver Wall mount bracket

Step	Action	Figure
5	**NOTE** Before you begin with step 5 guide the two hoses 6 and 4 mm o.d or 0.16 and 0.24 inch through the cable spiral. a. C. Plug each of the cables with 25 pin socket in the sockets of the GenPure system and fix them with the screws. b. Plug in the two 25 pin system control cable onto the system and fix them with the screws. **NOTE** In order to recognise the correct connectors of the cables on the xCAD of system and the xCAD are they marked with numbers 1 and 2 (see red arrows).	a)  25 pin connector 25 pin connector 25 pin connectors  b)  25 pin connectors 
6	Place the xCAD wall version onto the mounted wall mount bracket. There are two cuts on the bracket (see red arrows) the cables and hoses for guidance. **NOTE** When you have made the possible wall cuts (see step 3) plug the cables and hoses throughout the wall.	xCAD Cables Cut  Hoses Cut Wall mount bracket
7	Screw in the 4 screws (see red arrows) which you unscrewed in step 2 to attach the xCAD Client on the wall mount bracket.	xCAD  Wall mount bracket Screws Philips screwdriver

Step	Action	Figure
8	Release the cartridge cover by pressing the push button.	
9	Remove the two stoppers from the new ultrapure cartridge and insert the cartridge into the system.	
10	Push each of the quick connectors onto the cartridge. You will know they are attached when an audible “click” is heard. Fit the cartridge cover on again.	
11	Mount the feedwater connecting kit together and connect it to the feedwater sample. Connect the other end of the hose from the feedwater connecting kit to the feedwater connector of the system by unscrewing the fitting. After this stick the hose through the fitting and mount the white o-ring on it.Screw the fitting back to the system **CAUTION** Only feedwater that has been pretreated by reverse osmosis, ion exchange or distillation is to be used.	 

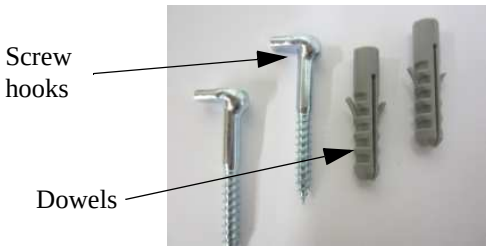
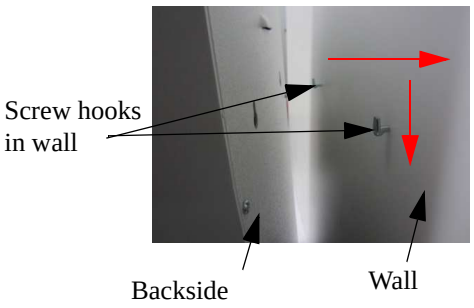
Step	Action	Figure
12	Connect the 8mm o.d (0.31“)hose to the rinse water connection of the system (see step 5) and make a gravity fall (pressureless) connection from the system to the floor drain. The drain to the sewer must be max. 1m(1.07 yards) above the rinsing water connector of the unit.	
13	Connect the two other ends of the hoses 6 and 4 mm o.d or 0.16 and 0.24 inch of the cable spiral which you have mounted in step 5 to the xCAD into the ultrapure water connectors of the GenPure system.	a) 
15	Screw the final filter in counter clockwise direction (see red arrow in the picture) into the 1/4" female thread of the xCAD dispensing valve.	
16	Assemble the power pack and make the voltage connection to the GenPure system.	NOTE See under chapter “Mounting the power pack (voltage supply)” on page 39.
17	If applicable use the RS232 connector (6) to connect the optional data printer. Open the feedwater supply tap. CAUTION Only feedwater that has been pretreated by reverse osmosis, ion exchange or distillation is to be used.	

Wall mounting GenPure system

NOTE

You have the possibility to place your system onto a smooth surface or hang it on a wall. Before hanging the system onto a wall make sure that the wall can support the weight of the system once it's full of water.

Proceed as follows to hang your system onto a wall

Step	Action	Figure
1	Draw with a pencil the distance from the holes to make the holes in the wall. Then use a twist drill (8mm or 5/16 inch) to make the two holes in the wall that are required as shown in the diagram.	See figure 1 holes for wall mounting.
2	Plug the nylon S8 dowels that are supplied in the assembly kit in the holes. Screw the 5.2 x 50mm screw hooks that are also supplied in the assembly kit into the dowels.	
3	Lift the GenPure System and hang the back side of it onto the screw hooks. CAUTION Lifting and carrying the GenPure system should be completed by 2 people.	

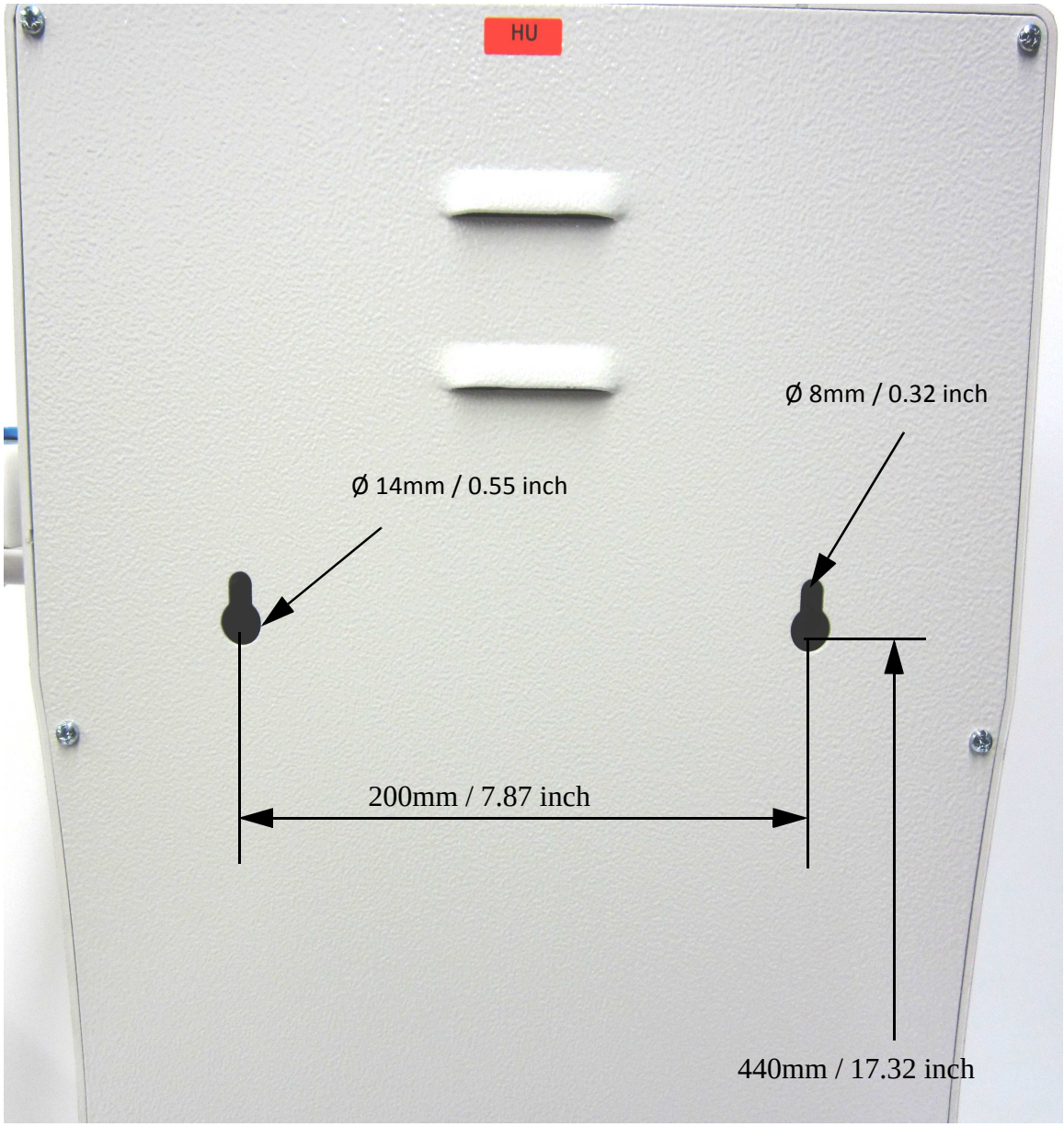
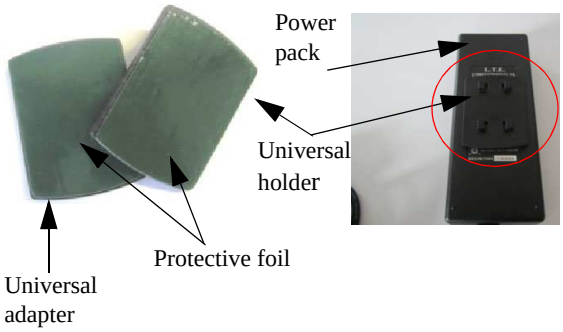
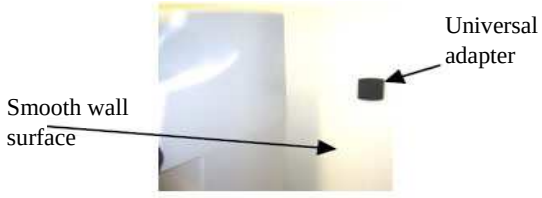
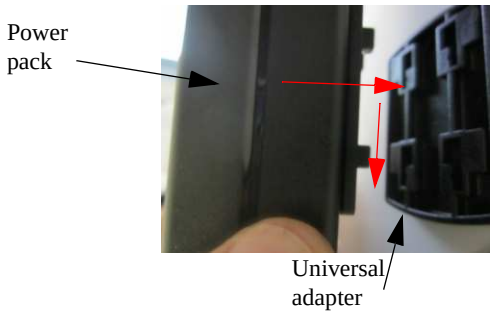
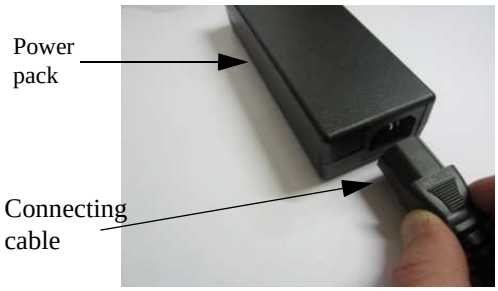


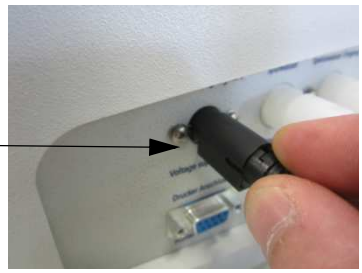
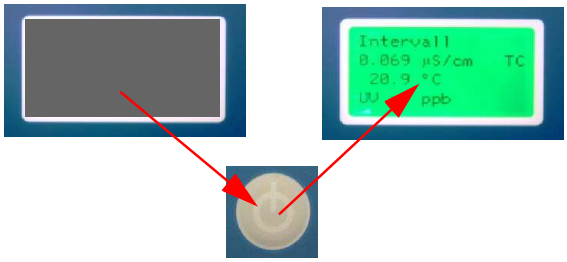
Figure 1. Holes for wall mounting

Mounting the power pack (voltage supply)

NOTE

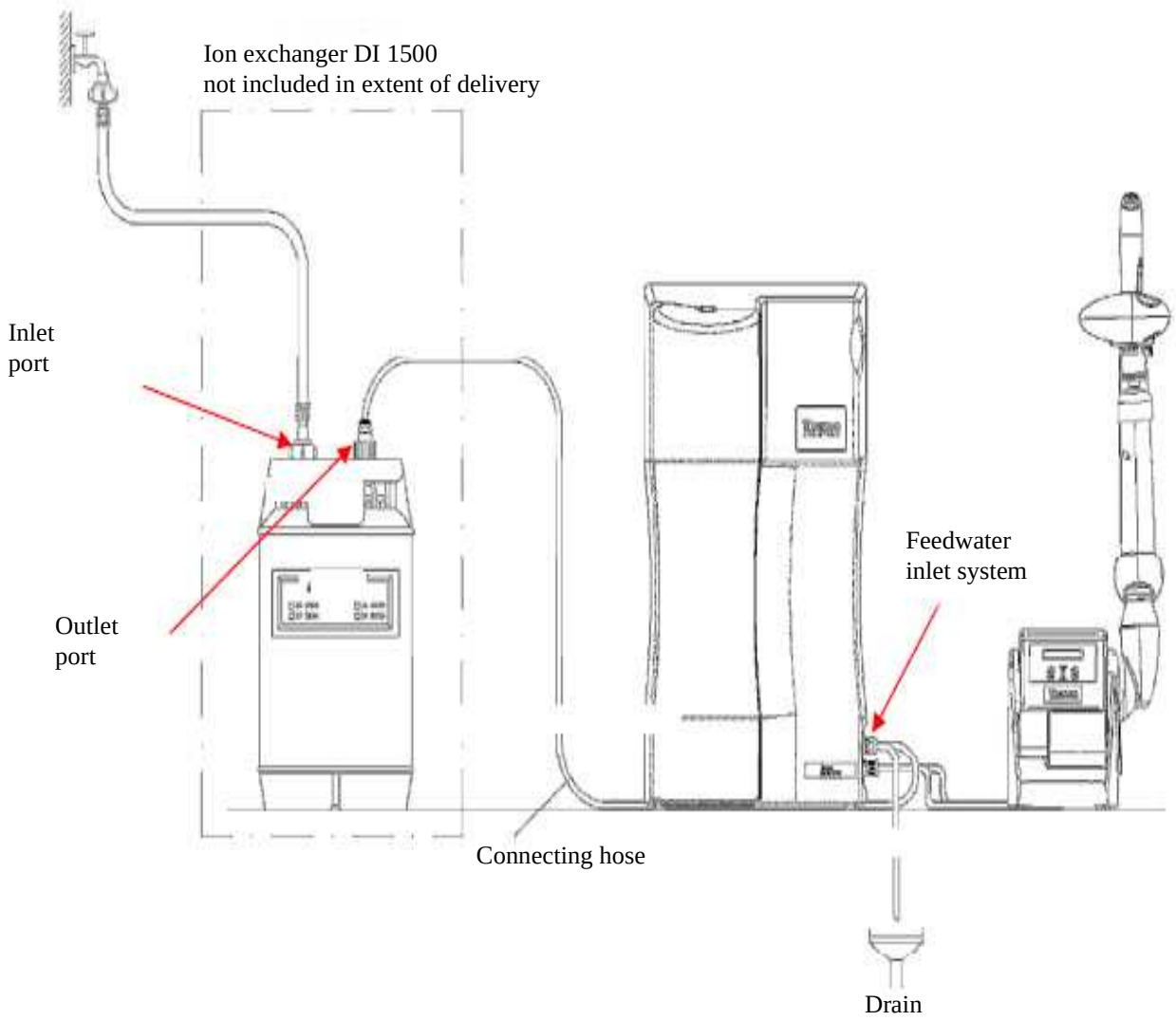
Whenever possible, mount the power pack on the wall to the left or right of the ultra pure water system where it is freely accessible and will not come in contact with water for get wet.

Step	Action	Figure
1	**NOTE** Before beginning to work with the universal adapter and holder remove the protective foil from the backside of them. Stick the universal holder which is supplied in the assembly kit to the back of the power pack as shown in the above figure next to this text.	
2	Stick the universal adapter to a smooth wall surface or screw it to the wall using the dowels and screws supplied in the assembly kit.	
3	When the universal holder and universal adapter have been fitted, hang the power pack in by pressing the power pack to the holder and then pull down (see red arrows). **NOTE** The removable line cord must be shown to the bottom.	
4	Plug the connecting cable (appliance cable) in the power pack socket. **DANGER** Do not bring the power pack in contact with water. Risk of an electrical shock.	

Step	Action	Figure
5	Connect the power pack to the ultrapure water system (24V 4-pin power supply connector, connector 8) and to an earthed 100 - 250V, 50/60Hz socket.	Power supply connector 
6	Put the system on. The system is now ready for use.	

Installation examples

Connection to an Ion exchanger DI 1500 (option)



Proceed as follows to connect an ion exchanger to the upstream side of the GenPure system:

Step	Action
1	Connect the hose which has a R3/4 female nut (1) from the raw water tap to the R3/4” input of the ion exchanger.
2	Make connection from the R3/4 output of the ion exchanger to the feedwater connector of the GenPure system by using the hose (2) that is contained in the assembly kit.

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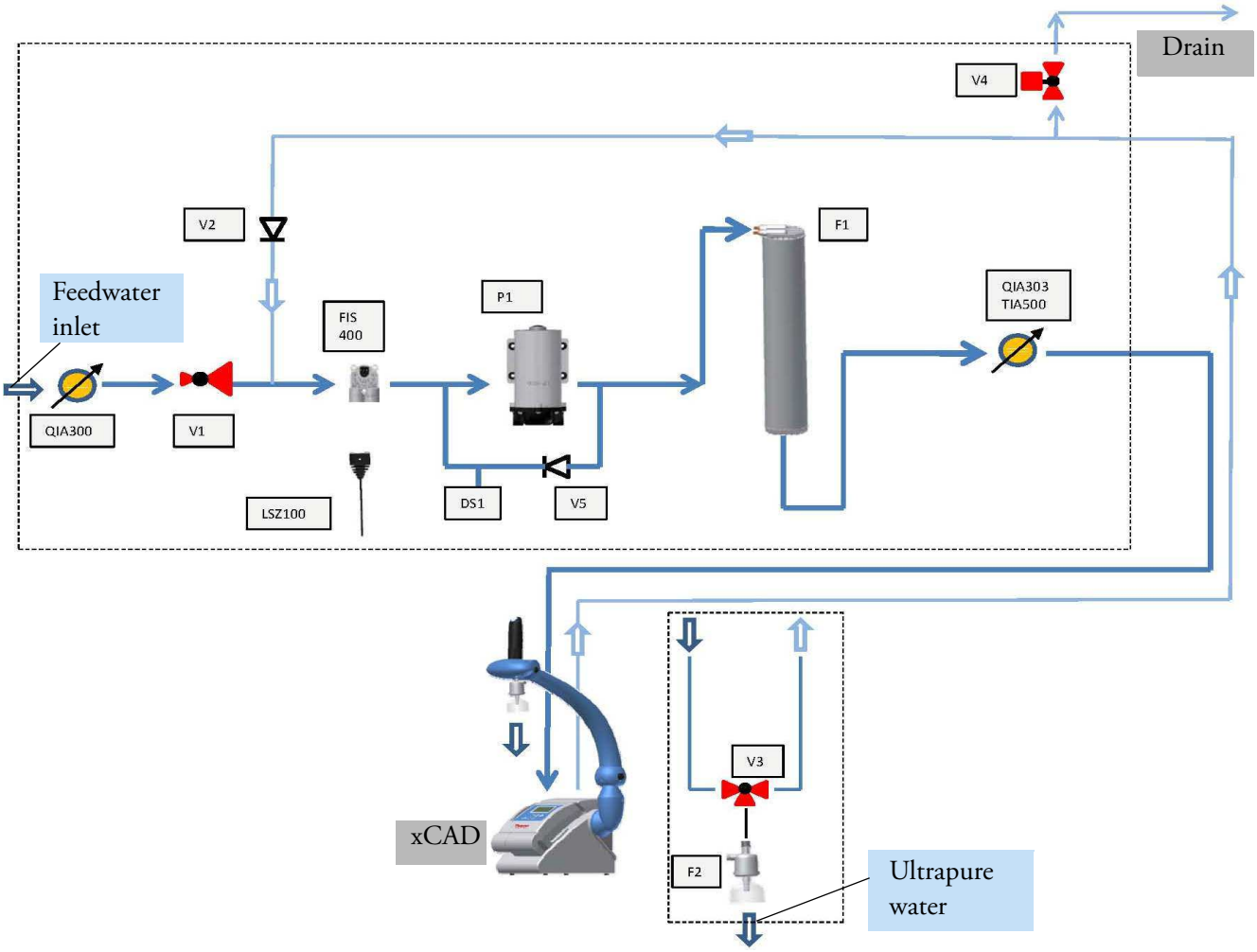
Flow charts

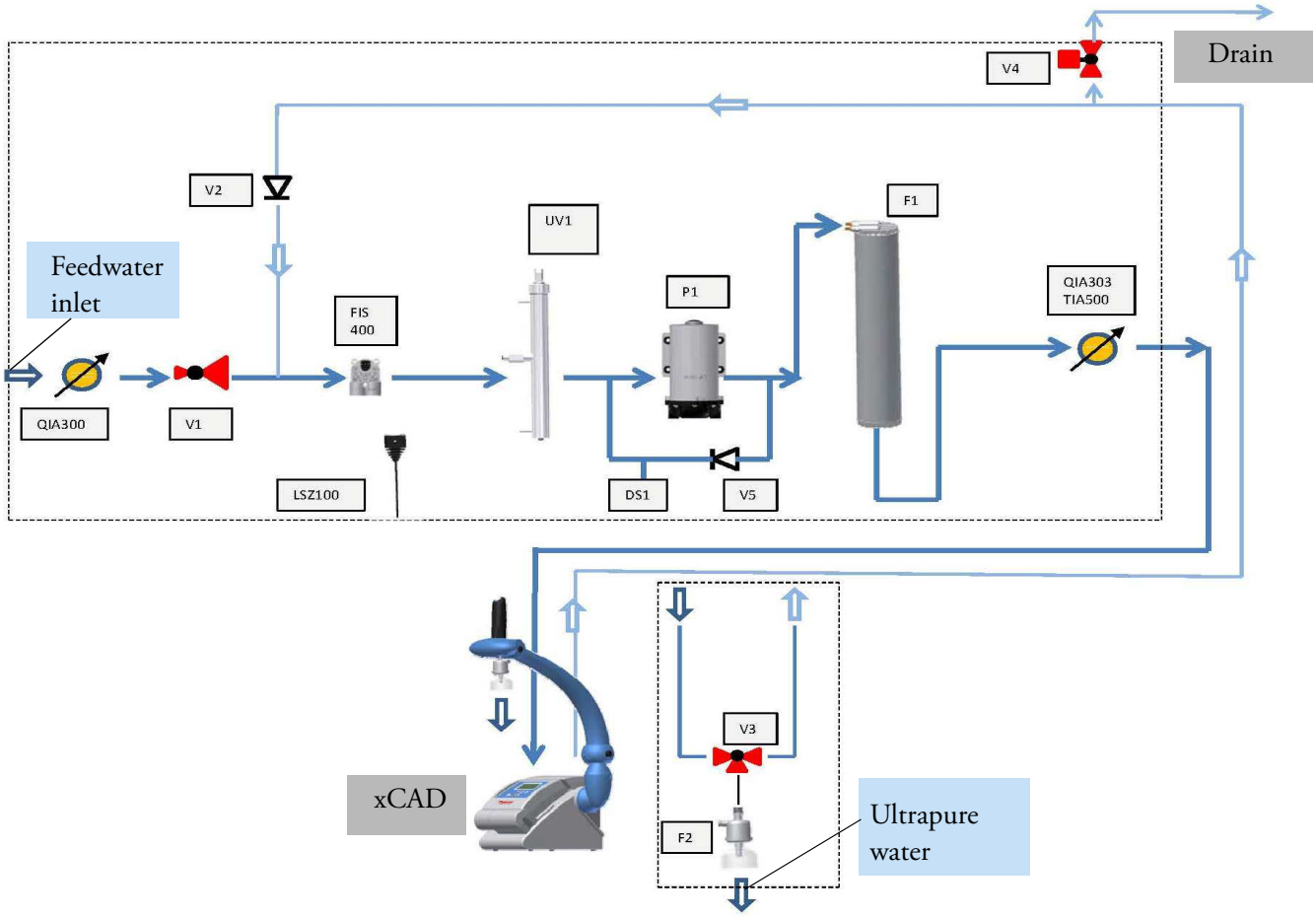
Contents

Flow chart, GenPure with xCAD standard



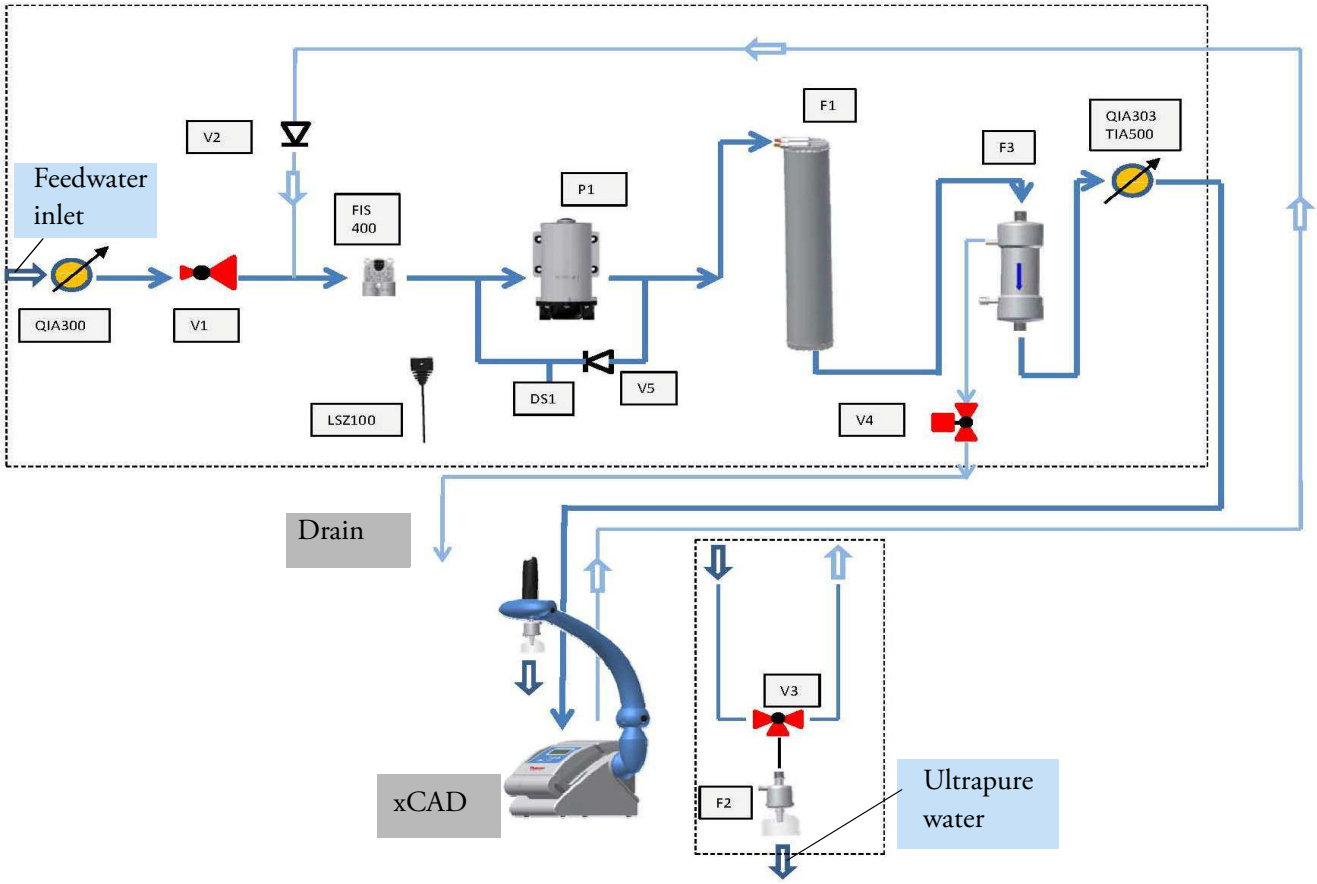
DS1 Dosing orifice
F1 Ultrapure cartridge
F2 Final filter
P1 Circulation pump
FIS400 Digital flowmeter
QIA 300Conductivity, feedwater
QIA 301Conductivity, ultra pure water
TIA 500Temperature sensor
V1 Pressure reducer
V2 Check valve
V3 Solenoid valve
V4 Rinsing solenoid valve
V5 Check valve 1 bar

Flow chart, GenPure UV with xCAD



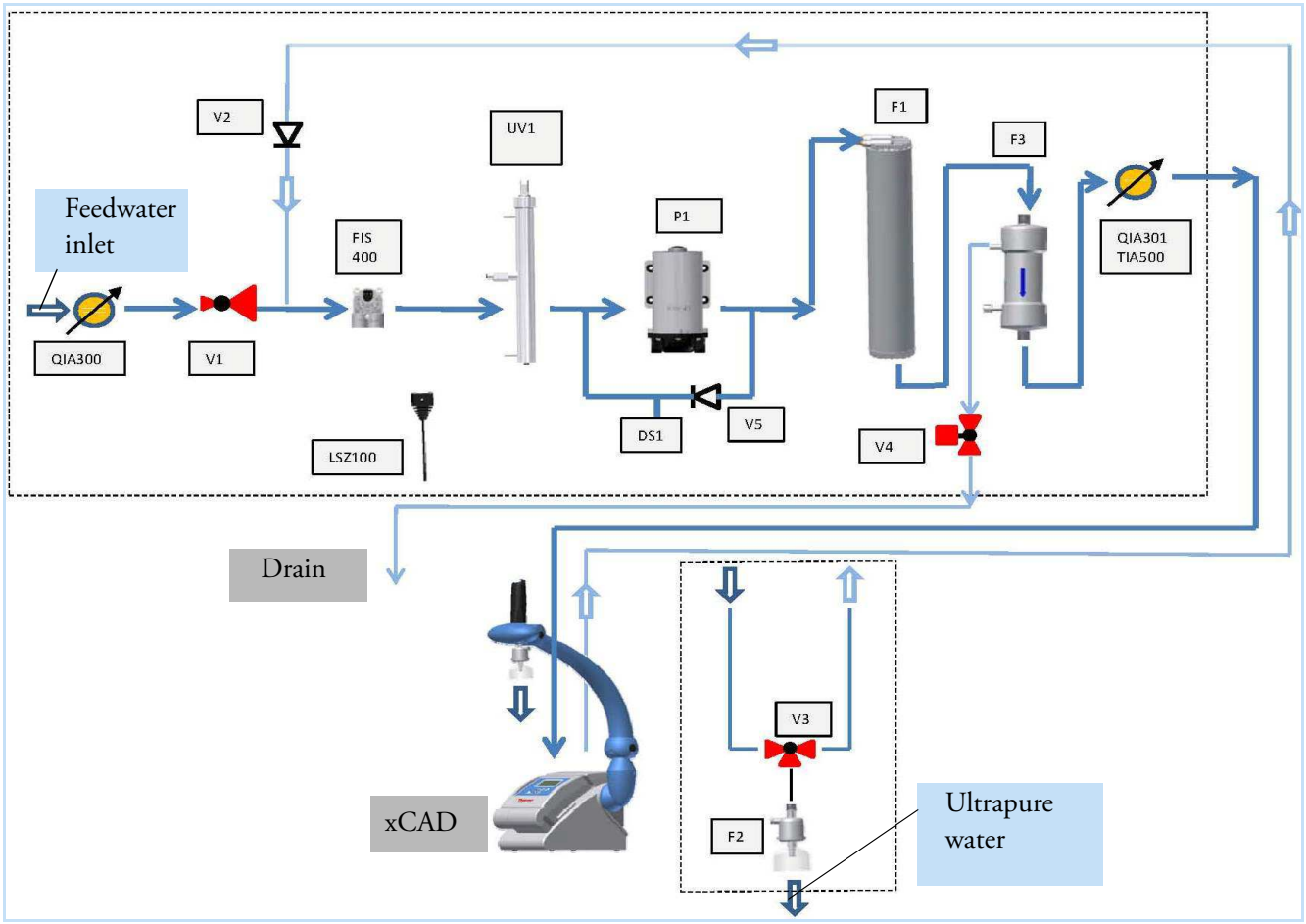
DS1 Dosing orifice
F1 Ultrapure cartridge
F2 Final filter
P1 Circulation pump
UV1UV-photooxidation
FIS400 Digital flowmeter
QIA 300Conductivity feedwater
QIA 301Conductivity, ultra pure water
TIA 500Temperature sensor
V1 Pressure reducer
V2 Check valve
V3 Solenoid valve
V4 Rinsing solenoid valve
V5 Check valve 1 bar

Flow chart for GenPure UF



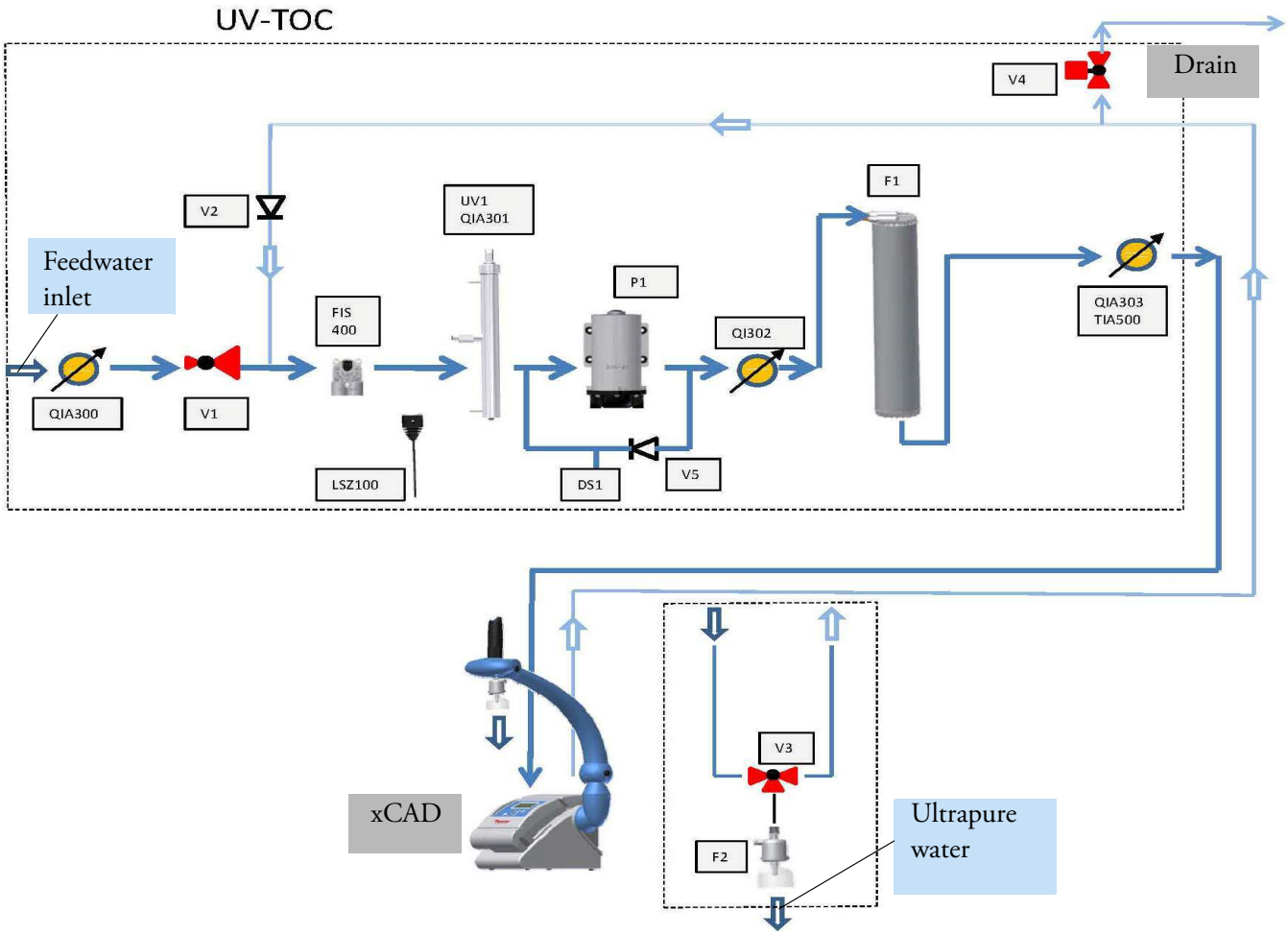
DS1 Dosing orifice
F1 Ultrapure cartridge
F2 Final filter
F3 Ultrafiltration module
P1 Circulation pump
FIS400 Digital flowmeter
QIA 300Conductivity, feedwater
QIA 301Conductivity, ultra pure water
TIA 500Temperature sensor
V1 Pressure reducer
V2 Check valve
V3 Solenoid valve
V4 Rinsing solenoid valve
V5 Check valve 1 bar

Flow chart, GenPure UV/UF with xCAD



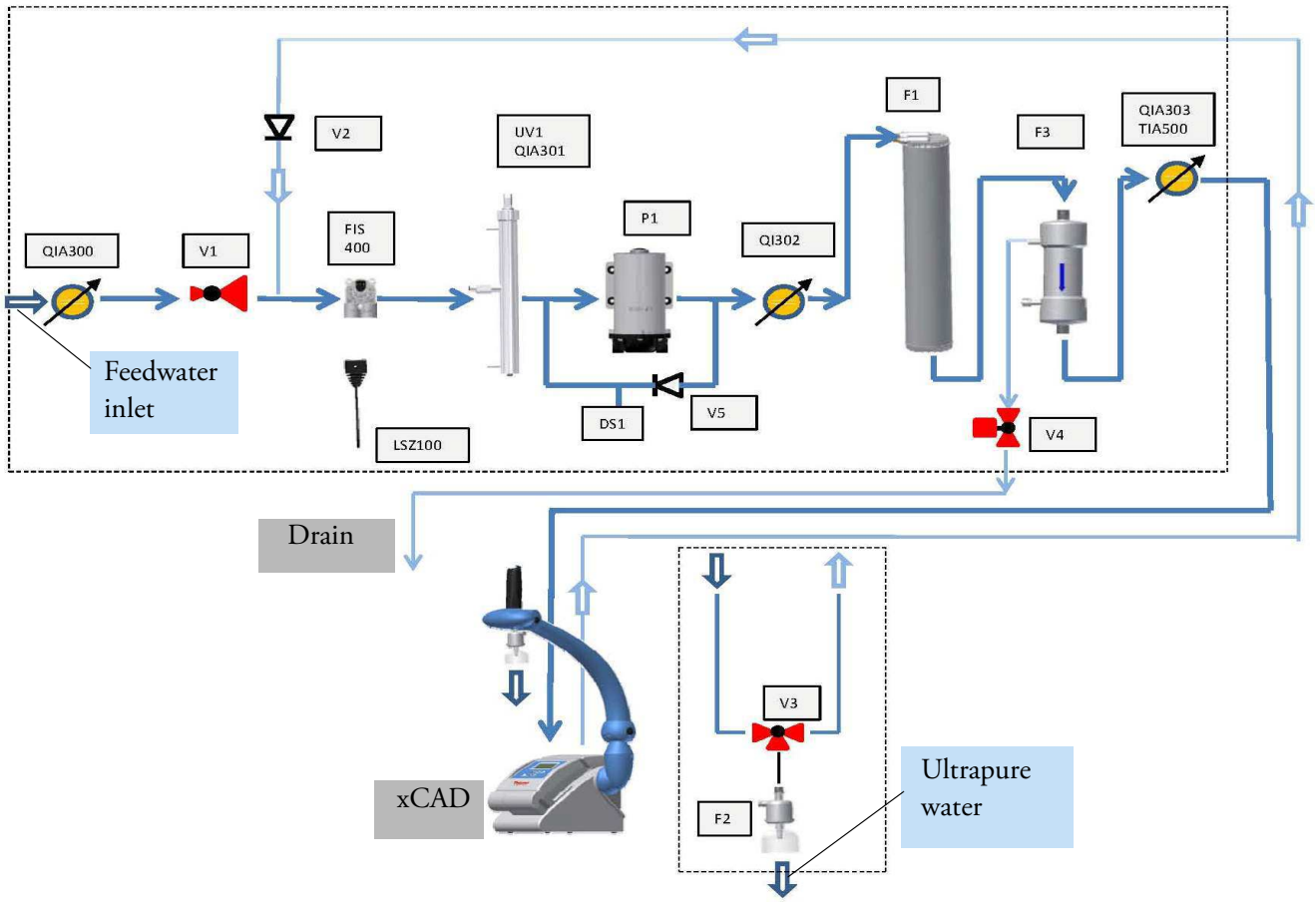
DS1 Dosing orifice
F1 Ultrapure cartridge
F2 Final filter
F3 Ultrafiltration module
P1 Circulation pump
UV1UV-photooxidation
FIS 400 Digital flowmeter
QIA 300Conductivity, feedwater
QIA 301Conductivity, ultra pure water
TIA 500Temperature sensor
V1 Pressure reducer
V2 Check valve
V3 Solenoid valve
V4 Rinsing solenoid valve
V5 Check valve 1 bar

Flow chart, GenPure UV-TOC with xCAD



DS1 Dosing orifice
F1 Ultrapure cartridge
F2 Final filter
P1 Circulation pump
UV1UV-photooxidation
FIS400 Digital flowmeter
QIA 300Conductivity, feedwater
QIA 301UV-Intensity
QI 302Conductivity, TOC measurement
QIA 303Conductivity, ultra pure water
TIA 500Temperature sensor
V1 Pressure reducer
V2 Check valve
V3 Solenoid valve
V4 Rinsing solenoid valve
V5 Check valve 1 bar

Flow chart, GenPure UV-TOC/UF with xCAD



DS1 Dosing orifice
F1 Ultrapure cartridge
F2 Final filter
F3 Ultrafiltration module
P1 Circulation pump
UV1UV-photooxidation
FIS400 Digital flowmeter
QIA 300Conductivity, feedwater
QIA 301UV-Intensity
QI 302Conductivity, TOC measurement
QIA 303Conductivity, ultra pure water
TIA 500Temperature sensor
V1 Pressure reducer
V2 Check valve
V3 Solenoid valve
V4 Rinsing solenoid valve
V5 Check valve 1 bar

8 Flow charts

Flow chart, GenPure UV-TOC/UF with xCAD

How the system function

NOTE **System Function as applied in all GenPure systems**

Tap water that has been pretreated upstream by reverse osmosis, ion exchange or distillation flows through a pressure reducer and into the ultrapure water system, where the conductivity is monitored. A pump directs this feedwater through UV-photooxidation (only possible in UV lamp equipped systems) and then through the ultrapure cartridge. From there the water flows through an ultrafiltration module (only possible in UF equipped systems). Then follows a permanent definition of conductivity measured by a special conductivity measuring cell equipped with temperature compensation. When ultrapure water is dispensed from the system, it flows through a a end filter before reaching the point of use. During Interval operation, the water in the system is circulated in an internal circuit at regular intervals.

Systems with UV-TOC, UV-TOC/UF

Tap water that has been pretreated upstream by reverse osmosis, ion exchange or distillation passes through a pressure reducer and into the ultrapure water system, where the conductivity is monitored. A pump directs this feedwater through UV-photooxidation, which follows a conductivity measurement to determine the TOC value. Then follows a ultrapure cartridge and an ultrafiltration module (only with UV-TOC/UF), and the conductivity is then permanently measured by a special measuring cell (with temperature compensation). When ultrapure water is taken from the system, it flows through a final filter before reaching the dispensing outlet. During Interval operation, the water in the system is recirculated in an internal circuit at regular intervals.

The TOC value is calculated by taking the difference between the values measured by the measuring cells QIA300 and QI302. The measurement range is 0 - 30 ppb. When this range is exceeded, the number 99 is shown in the display instead of the measured value.
In Stand-by operation, „___“ is shown.

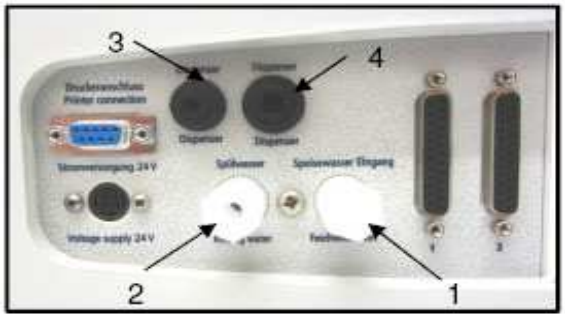
Putting system into operation

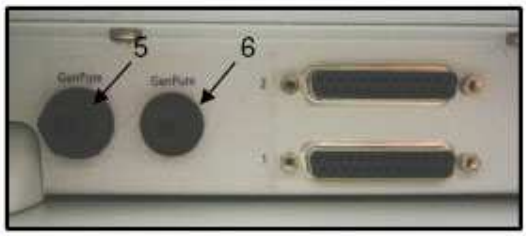
NOTE

The system must have cooled down, or warmed up, to room temperature before being put into operation.

CAUTION

Check that all connections have been made as described above.





1. Feedwater connection system 8 mm o.d or 0.31“
2. Rinse water connection system 8 mm o.d or 0.31“
3. Ultrapure water connection system 4 mm o.d or 0.16“
4. Ultrapure water connection system 6 mm o.d or 0.24“
5. Ultrapure water connection xCAD 6 mm o.d or 0.24“
6. Ultrapure water connection xCAD 4 mm o.d or 0.16“

Press this button to switch the system on. After a compulsory rinse, the system switches to the last used operating mode.

NOTE

Vent the system by switching it to “Rinsing” three times in succession and, during this procedure, withdraw approximately 5 liters of water and discard it. The ultrapure water limiting value may be exceeded during this procedure.

Use the “NONSTOP” button to switch the system to the “Nonstop” operating mode. This is the only mode which you can dispense water.

When the system successfully produces the ultrapure water quality that you require in “Nonstop” mode, press this button to return the system to the “Interval” mode.

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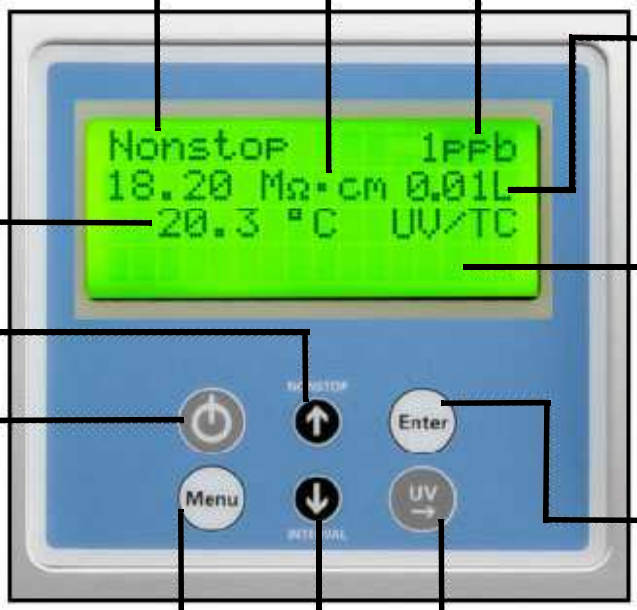
Operating elements

Contents

Describtion of Display



Shows actual operating mode of the system.

Display of the ultra pure water resistance

Shows the TOC content in systems equipped with TOC monitoring. If TOC feature is not equipped it will read „- -“

Shows the volume of ultra pure water that would be dispensed while it is being set.

Temperature measurement

Shows the ON/OFF status of the UV-lamp operating mode and of the temperature compensation.

Switches to Nonstop mode for dispensing. Increases numerical values in the menu.

ON/OFF Switch

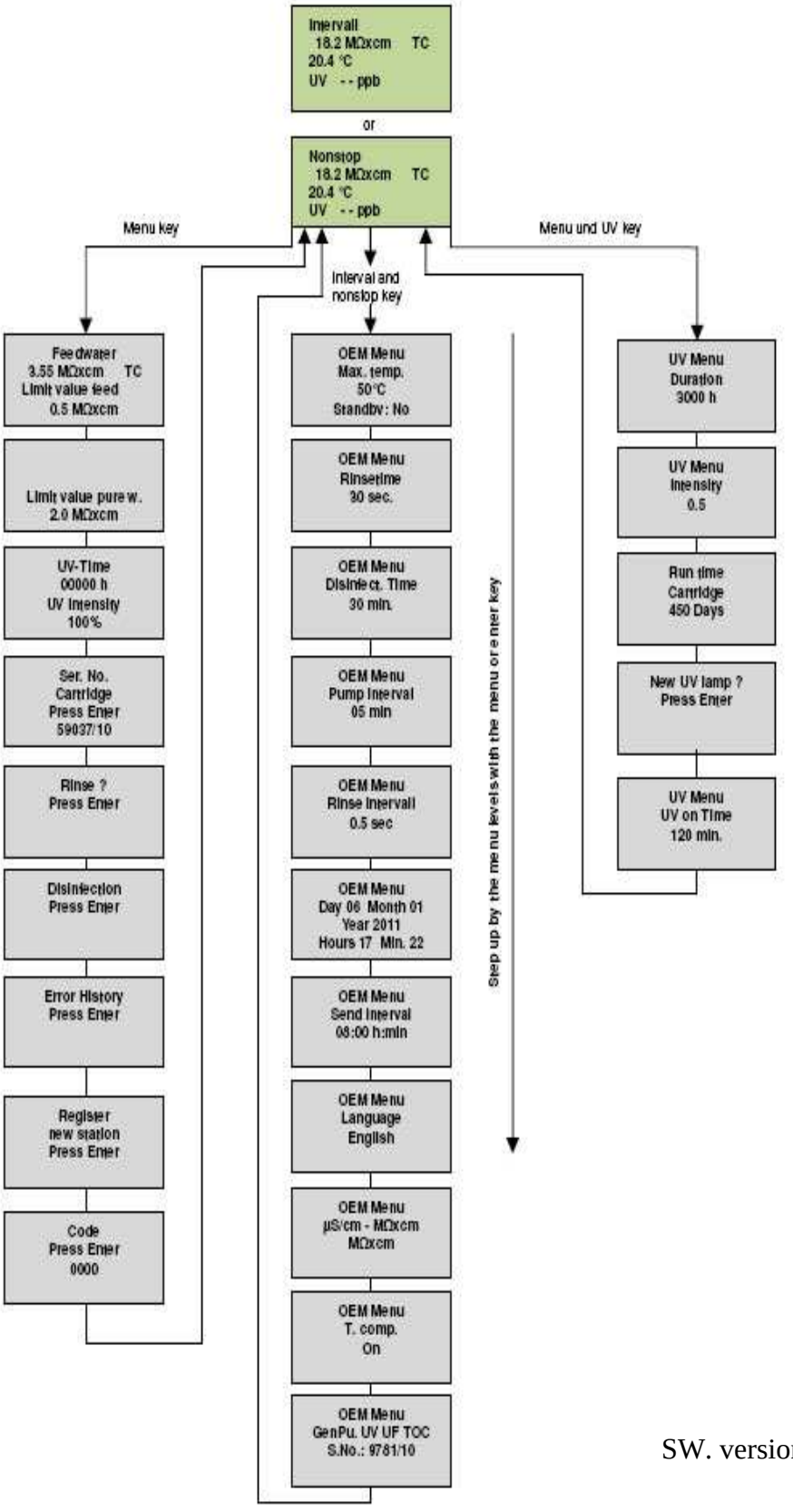
Confirms prompts and selections.

The menu key brings you to the following system parameters:
- Setting for the feedwater resistance
- Setting for the ultra pure water resistance
- UV-Lamp intensity and operating time
- Cartridge number and maintenance interval
- Rinsing
- Disinfection
- System errors display
- System errors print-out
- Unlocking the factory setting with your password

Switches to the Interval mode when the Nonstop mode is activated.. Decreases numerical values in the menu.

UV Key for manual operation of the UV-lamp. Also enables values to be changed in the menu mode.

Flow chart of menu system control



SW. version 0.0.0

Flow chart of menu system control

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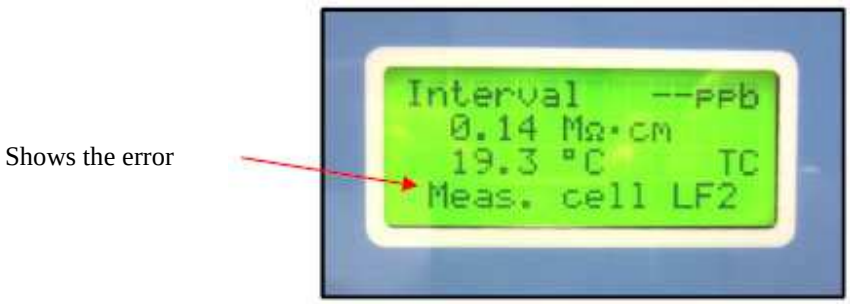
The system control

Contents

General information

The software structure consists of five operating modes and four menus, which will be described in more detail in the following sections. Measured values are continually shown in the display and/or in the menus. The displayed TOC value is calculated from the difference in the ultrapure water measuring cell and TOC-measurement measuring cell values.

Should an error occur, the corresponding error message is transmitted via the potential-free output and is shown in clear text in the 4th line of the display. In the case of several errors occurring at one time, they are alternately shown in the display.



Operating modes

Interval operating mode after switching on

Initially press the ON/OFF button. Then the display will show at first the system version, the system serial number and the software version number to display for 3 seconds. The system then automatically switches to the Interval operating mode (see “Interval operation” on page 60), whereby the green background of the display is switched on and remains in that work until system control is switched off via the ON/OFF-button. The “UV” text message is displayed when the UV-lamp is switched on. The “TC” message is displayed when measured values are subject to temperature compensation. Further to these, the measured values for ultrapure water (measuring cell LF1) and temperature are also displayed. The displays of messages and measured values are independent of the operating mode.
The TOC value is not shown in Interval mode.
The display shows:

Non-stop mode

A press on the “nonstop” button switches the system to the non-stop mode.The non stop mode is the only mode in which water can be dispensed from the system. It is also the mode in wich the system will continuously recirculate water with the systemto keep the water ready for use. The circulation pump starts to run, the (UF) rinsing solenoid valve (V4) opens for the set “Intv.rinse time”.Non-stop operation is stopped automatically latest after 2 hours. Then the system operates in the “Interval”-Mode. The message UV is shown in the display when the UV-lamp is switched on. The UV lamp can only be switched on and off in this non-stop mode (see UV lamp). The TOC value is additionally shown in the display (TOC or UV only when applicable) whenever the UV-lamp is switched on for systems that have the TOC option.
The display shows:

Interval operation

The system is in the Interval mode when the system is switched on with the ON/OFF button. The interval mode is used when there is no demand for the non-stop mode. The interval mode is designed to protect the system against bacteria growth as it will periodically recirculate water. Water can not be dispensed in this mode. The pump runs for the set interval pump time and the rinsing solenoid valve (V4) opens for the set “Intv.rinse time”. When the interval pump time has expired, the pump is switched off until the end of the standstill time. The rest time is given by the difference between half an hour and the interval pump time, so that the pump and the solenoid valve are actuated in an half-hourly rhythm. The TOC value is not shown in this operating mode.
The display shows:

UV-Lamp

A press on the UV-button results in showing the letters „UV“. However the UV-lamp is only switched on, however, when the system is in Nonstop operation. The UV-lamp is switched off at the end of Nonstop operation (settable). When Nonstop operation is manually ended by a press on the “Non stop” button. The UV-lamp is switched off after glowing for 0.5 hours. During the time that the

UV-lamp is glowing. Furthermore the UV light intensity is monitored and is displayed in Menu (only applicable to systems with TOC monitoring). Should the limiting value for the UV-intensity (OEM menu / Menu) fall below a set value, the potential free output is set and the “UV Intensity” error message is displayed.

The operating time of the UV-lamp is recorded and the “*UV time*” error message is brought to display when the limiting value set for this time is exceeded. TOC measurement is carried out during the time that the UV-lamp is glowing only.
The display shows:

Water dispensing via volumetric dispense

Ultrapure water systems which are equipped with the volumetric dispense option can dispense a preset volume of water.

As soon as the Nonstop-mode is selected, a litre volume is shown in line 2 of the display. This is the volume of ultrapure water which was last dispensed.
A single press on the Enter-button enables this volume value to be changed within the range from 0.01 to 65.5 litres by means of the arrow-buttons. The UV-button can be used to position the cursor at the particular number that you wish to change.

A second press on the Enter-button causes the volume of water that has been set to be dispensed. The liter volume shown in the display is the actual volume dispensed. Dispensing stops as soon as the set volume is reached.

Dispensing can be stopped at any time by a further press on the Enter-button. This enables small volumes to be dispensed by two successive presses on the Enter-button. One press starts dispensing and, when the wanted amount has been dispensed, a second press stops dispensing.

Volumetric dispense is supported in all program versions.
The display shows:

OFF mode

A second press on the ON/Off-button causes the display to switch off and all text messages on the display to be extinguished. button

User menu

All measured values, operating times and limiting values which are relevant for the user can be set and read in this menu.

A press on the menu-button brings you to this menu. Each further press on the menu-button moves you further from one menu prompt to the next.
Settings can be changed with the arrow buttons. When you confirm a value by pressing on the Enter-button, you are guided to the next menu prompt. Settings are only possible when system control has been previously unlocked by entering a valid code number.

To simplify the change of settings, a press on the UV-button allows you to select a certain individual numbers in the numerical value. The arrow buttons can now be used to enter the new number from 0 to 9 at that position.

Feedwater limiting value:

A single press on the menu-button allows the feedwater conductivity to be read or the limiting value of it to be changed. The error message „*Limit value feed*“ flashes in the 4th line of the display when the limiting conductivity value is exceeded.

Feedwater measuring range:	**10 – 0.01 MΩxcm**
Limiting value setting range:	**0.1- 50.0 µS/cm**
Basic setting:	**0.5 MΩxcm**

When a setting above 50 µS/cm/ 0.02 Mxcm is entered for the limiting value, the limiting value is switched off and the word „Off“ appears in the display.

Press the Menu-button once then the display shows:

Ultrapure water limiting value

Two presses on the menu-key in this menu allow the fault display for the pure water limiting value and the pure water limiting value to be set. As soon as the fault display is switched on, the fault will be displayed both in Stand-by mode and in Production mode. When the fault display is switched off, the fault is only displayed in Production mode. The “Lim. val.pure w.” message is displayed when the limiting value is exceeded.

Ultrapure water measuring range:	**0.1 MΩxcm**
Limiting value setting range:	**0.055- 5.000 µS/cm**
Basic setting:	**10 MΩxcm**
Basic setting, fault suppression:	**On**

When a setting above 5.0 µS/cm is entered for the limiting value, the limiting value is switched off and the word „*Off*“ appears in the display.

Press the Menu-button twice then the display shows:button

UV-Lamp operating time and intensity:

In this menu the operation hours of the UV-lamp are indicated and the evaluation of UV-sensor input into the display under “*UV time*”.
The fault message "*UV duration*" is displayed when the maximum operating time has been reached.
The UV-sensor measures the intensity of the UV-light, and this is displayed as a percentage value of the maximum value.

Press the Menu-button 3 times then the display shows:

NOTE

For more details see under chapter “Change the UV-lamp” on page 80.

Ultrapure cartridge operating hours counter:

After fourth press on the menu-button the operating hours counter for the filter cartridge is set by input of a valid serial number.

Press the Menu-button 4 times then the display shows:

NOTE

For more details see under chapter "Change the ultrapure cartridge" on page 71.

Rinsing procedure

A fifth press on the menu-button calls the question asking if rinsing is to be carried out. A press on the enter-button confirms this and triggers the rinsing procedure. The pump starts and the rinsing solenoid valve V4 opens for the rinsing time set in the OEM-menu.
The remaining rinsing time is shown in the display during rinsing.
Neither fault messages nor measured values are displayed during rinsing.
When the rinsing procedure is finished, the system returns to the last operating state (Interval or Nonstop).

Step	Action	Figure
1	Press the menu-button 5 times then the display shows:	
2	Confirm rinse by putting the enter button. The rinsing is started for 30 sec.	

Disinfection procedure

A sixth press on the menu-button calls the question asking if a disinfection is to be carried out. A press on the enter-button confirms this, following which the demand "*Disinfection cartridge must be fitted*" is shown. When this has been fitted, a confirming press on the enter-button triggers the disinfection procedure. The pump starts for the full time set in the OEM-menu and, when the half of this time has elapsed, the rinsing solenoid valve opens and stays open until the disinfection procedure has finished. The demand "*New Filterset must be fitted*" is then displayed. When this has fitted, confirmation with the enter-button causes the system to return to the last operating state.

During disinfection the remaining disinfection time is shown in the display.

Step	Action	Figure
1	Press the menu-button 6 times then the display shows:	
2	Confirm disinfection by putting the enter button. Change the filter cartridge with the disinfection cartridge (see under chapter "Disinfection" on page 74)	
3	Confirm with enter. The Disinfection is started for 30 min, indicating the remaining time.	

NOTE

The completely process is describe under chapter "Disinfection" on page 74" .

Error history

Confirmation of this prompt with Enter allows the fault storage to be looked through.
Two errors, each with date and time, are shown in the display. Pressing the arrow buttons takes you successively through preceding or following errors.
Press the menu-button to end the error display. This takes you to the next menu prompt.

Step	Action	Figure
1	Press the menu-button 7 times then the display shows:	
2	Confirm error history by putting the enter button. Now you can see the two last recorded errors with date and time. The error code can be requested at the local service organization.	

Print out of Data

In this menu, the current system data can be printed via a connected printer.

Press the menu-button 8 times then the display shows:

Entering a code number

To prevent unauthorized access to system control Factory settings, can only be changed when a valid code number is entered and confirmed with Enter in this menu. Each code access is issued to the printer (RS 232) with date, time and code number. Valid codes are found in this manual in section 13.8.

Press the menu-button 9 times then the display shows:

NOTE

You can assign the permissible code numbers listed in the Table on the following page to appropriate members of the staff etc.
When names have been entered, tear the page out and file it where it is safe from unauthorized viewing.

NOTE

Press the menu-button 10 times and you are leave the User menu and the system is back to the last System system operation that you have choose.

Code lock

To prevent unauthorized access to system control settings, changes to these settings can only be carried out when a correct code number has been entered and confirmed with Enter.
In deviation to existing programmes, control release can be given at three levels. Only the menu is released for changes at the first level. Both the menu and the OEM menu are released at the second level. All menus are released at the third level.

Code numbers:

No.	Menu	No.	Menu + OEM-menu	No.	All levels
1	0150	4	0450	7	0750
2	0250	5	0550	8	0850
3	0350	6	0650	9	0950

Each access via the code is printed out by the printer (RS 232) complete with date, time and the code number used.

The OEM Menu

Basic settings and limiting values can be changed in this menu. To make such changes in the OEM-menu, the system must be unlocked first (see 13.3.10).

Accessing the OEM menu.

Simultaneous presses on the INTERVAL-button and the NONSTOP-button call the OEM-menu. The display shows "*OEM-Menu Press enter!*". On confirming this by pressing the enter-button, the first menu point is called to be worked on. To simplify making changes, a press on the UV-button allows the position that is to be changed in a number to be selected, so that the arrow buttons can be used to replace it with any digit from 0 – 9.

A press on the menu-button takes you to the next menu point.
The display shows:

Set the limiting value for temperature:

The maximum operating temperature limit for the system is set here. Should this temperature be exceeded, the fault message „*Max. temperature*" is triggered.
This is shown in the 3th line of the display.

Basic setting: 35 °C
Setting range: 1 - 50 °C

After enter the OEM menu press the menu-button once then the display shows:

Set the rinsing time:

In this Menu point you can set the manually rinsing time.

Basic setting: 30 sec.
Setting range: 10 - 60 sec.

After entering the OEM menu press the menu-button twice then the display shows:

Change the disinfection time:

Basic setting: 30 min.
Setting range: 15 - 90 min.

After entering the OEM menu press the menu-button 3 times then the display shows:

Set the pump interval time:

In this point you can setting the pump interval time. When the system operates in the Interval mode the system is going to be recalculating every 30 min. for 5 min.

Basic setting: 5 min.
Setting range: 1 - 30 min.

After entering the OEM menu press the menu-button 4 times then the display shows:

Set the rinse interval time:

In this point you can set the rinse interval time. When the system operates in the Interval mode the system is going to be rinsing the hoses for 0.5 sec every 30 min.

Basic setting: 0.5 sec.
Setting range: 0.1 - 2 sec.

After entering the OEM menu press the menu-button 5 times then the display shows:

Adjust the real time clock:

Basic setting: The actual date
Setting range: Month 1 - 12, Day 1 - 31, Hour 0 - 24, Minutes 0 - 60.

After entering the OEM menu press the menu-button 6 times then the display shows:

Set the sending interval:

The sending interval at which measured values and fault messages are transmitted via the RS 232 interface can be set here.

Basic setting: 1 hour
Setting range: 0.5 - 12 hours

After entering the OEM menu press the menu button 7 times then the display shows:

Select the language:

Basic setting: German
Setting range: German, English, French

After entering the OEM menu press the menu-button 8 times then the display shows:

Switch units, conductivity/resistance:

Basic setting: Resistance MΩxcm
Setting range: Resistance MΩxcm, specific electrical resistance MΩ cm

After entering the OEM menu press the menu-button 9 times then the display shows:

Switch temperature compensation on/off:

Basic setting: On
Setting range: On, Off

After entering the OEM menu press the menu-button 10 times then the display shows:

Using volume control for water dispensing

GenPure systems that are equipped with the option of volume control allow volume-controlled dispensing to be carried out.
As soon as the Nonstop operating mode is selected, the number of litres that were last required appears asset value in line 2 of the display.
Press once on the Enter-button if you wish to use the arrow buttons to change this set value within the permissible range of 0.01 to 65.5 litres. You can use the UV-button to position the cursor at the position where you want to change the number.
Press twice on the Enter-button if you wish to have the displayed water volume dispensed. During dispensing, the number shows the actual volume dispensed. Dispensing is stopped as soon as the set value has been reached.
Dispensing can be stopped at any time by a further press on the Enter-button.
To carry out manual dispensing of volumes smaller than the set value, first press the Enter-button twice, then press it once again when the required volume has been dispensed.

The display shows:

Printer output

By means of the printer different parameters are documented. It is differentiated between three messages.

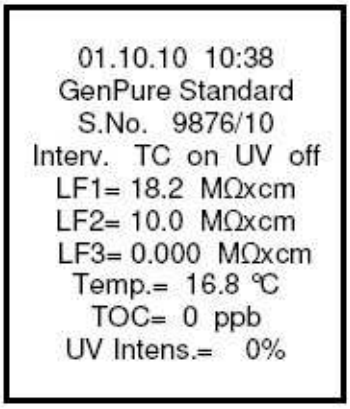
- Standard message
- Code message
- Error message

Standard message:

Here in dependence of the transmit interval of all measured values are printed out. Within the NONSTOP-operation a complete data record is printed out.

Print-out:

e.g.:

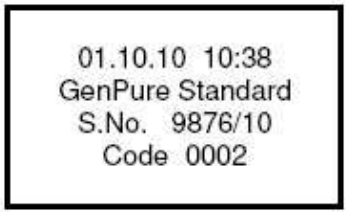


The standard record documents all measured values. With systems without TOC measurement and UV-intensity, 0 is entered in place of measured values for these functions!

Code message:

Whenever a code number is entered in system control and confirmed with Enter, the code input is immediately printed out.
Code identification (see the “Assignment Table for code numbers which unlock the system”).

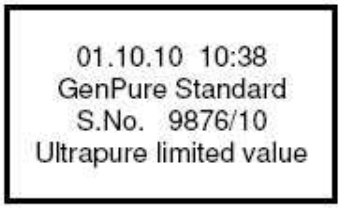
Print-out:



Error message:

When a fault message is shown in the display, e.g. for the ultrapure water limiting value, then the fault message is printed out on expiry of the sending interval.

Print-out:



13

Maintenance

Contents

Regular servicing of your system ensures that the quality of water is maintained. We recommend a service contract with a factory authorized service company to ensure that the system is properly maintained. You then have the certainty of a high operational, safe, and reliable water purification system.

To ensure error-free operation, your system must be checked, serviced and cared for at regular time intervals in accordance with these operating instructions. For this reason, the operating instructions must be readily available to operating and maintenance staff at all times, and be carefully followed.

Calibration of the conductivity is only to be carried out and recorded by a factory-authorized service technician.

Cleaning and disinfection should be performed at least once yearly, or when the ultrapure cartridge is replaced, or when bacteria is present in the product water.

Control and maintenance work on electrical systems are only to be carried out by an appropriately trained, skilled electrician.

Maintenance intervals

Consumable materials are to be replaced according to the directions below. The intervals were determined for the average user and are completely dependent on the actual feed water quality and volume of water used daily.

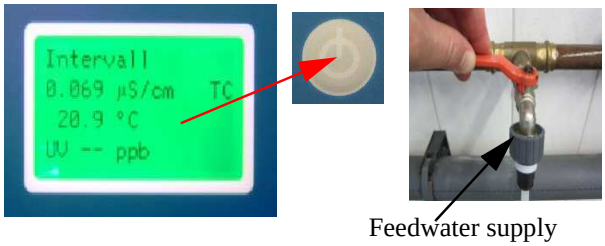
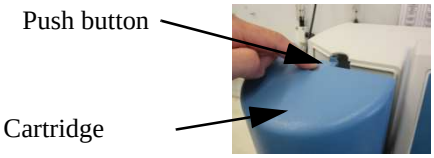
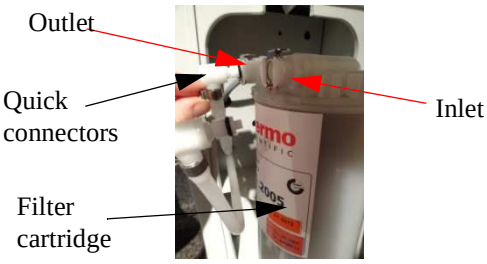
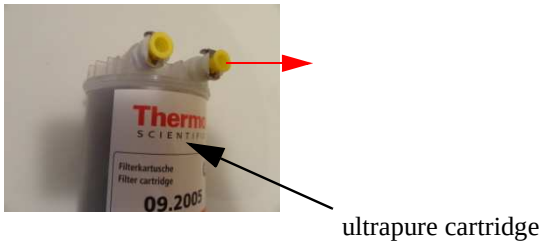
Material	Flow chart no.	Catalog no.	Interval	Other problems
Ultrapure cartridge	F1	09.2005	12 Months	Or when the ultrapure water limiting value is exceeded, whichever is shorter. Longer usage can result in bacterial growth on the resin.
Sterile 0.2 micron filter	F2	09.1003	12 Months	Or flow rate is noticeably slower.
Ultrafiltration membrane (only applicable for systems with a UF filter)	F3	50133980	24 Months	Or when the ultrapure water limiting value is exceeded, whichever is shorter. Longer usage can result in bacterial growth on the resin.
UV-lamp (only applicable for systems with a UV lamp)	UV1	09.2002	24 Months	Or unless system indicates the lamp needs to be replaced.

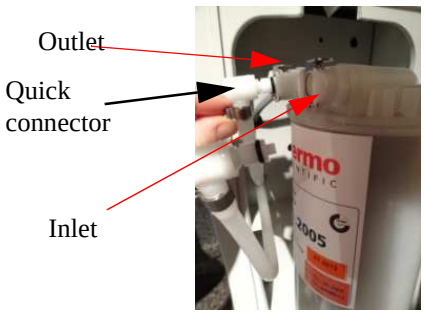
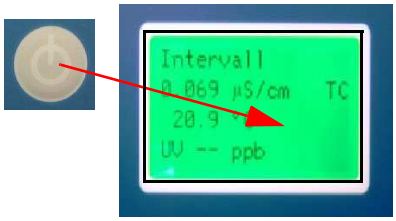
*Please keep in mind that the life of your consumable is directly dependent on the quality of the feed water and the amount of water used daily.

Change the ultrapure cartridge

CAUTION

Replace the ultrapure cartridge when the maximum limiting value that you have set for the ultrapure water is exceeded or when the „New filter set“ message is shown in the display.

Step	Action	Figure
1	Switch the system off and shut off the supply of feedwater.	
2	Remove the cartridge cover by pressing the push button.	
3	Disconnect the Quick connectors on the feedwater inlet and purified water outlet of the cartridge, close the inlet and outlet with the stoppers you have kept for later use.	
4	If you change an existing ultrapure cartridge please sanitize your system.	**NOTE** For sanitize your system see under chapter“Disinfection” on page 78.
5	Remove the yellow stoppers from the new ultrapure cartridge and insert it into the system. Keep the yellow stoppers for the next time you have to change the cartridge.	

Step	Action	Figure
6	Plug the quick-connects correctly onto the new cartridge. You will know they are attached when an audible „click” is heard. Replace the cartridge cover.	
7	Open the supply of feedwater and switch the system on again.	 
8	**NOTE** For the code to perform this transaction please refer to the Code table „code lock” found in chapter „Code lock on page 67“. You need a level one code. a. Go in the Menu to the point „change ultrapure cartridge” and press enter. b. Enter new serial number of the ultrapure cartridge in by pushing the button nonstop or Interval to change the digits and the UV button to go to the next value. c. When you are finished, press enter and the new serial number is saved. You can only use a serial number one time.	a.  b.  c. 
9	**NOTE** Discard at least 5 liters of water.	

Disinfection

CAUTION

Disinfection must be regularly carried out, at the latest when the ultrapure cartridge is replaced, or when bacteria is present in the product water.

A Disinfection cartridge (Catalog no. 09.2201) is required for disinfection of the system.

Use cleaning solutions as follows:
MICRO-Chlorine Granulate, 1 box, Catalog no. 09.2202 (Europe Emerging markets, and APAC markets)

Cleaning Solution, 1 syringe, Catalog no. CMX 25 (US and LATAM markets).

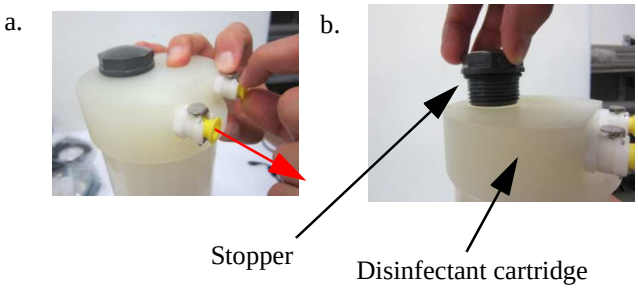
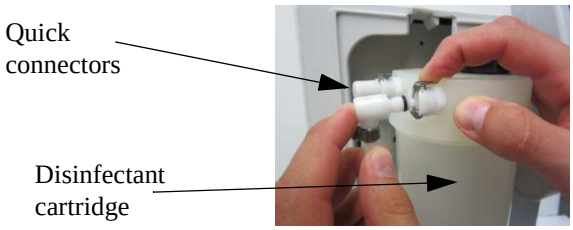
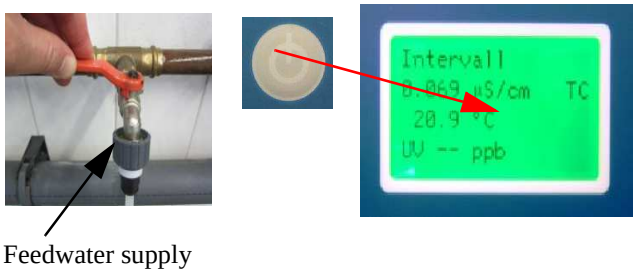
NOTE

For effective disinfection the cartridge must be completely filled with distilled water.

Wear protective gloves for handling chlorine tabs or a syringe of Cleaning Solution.

WARNING

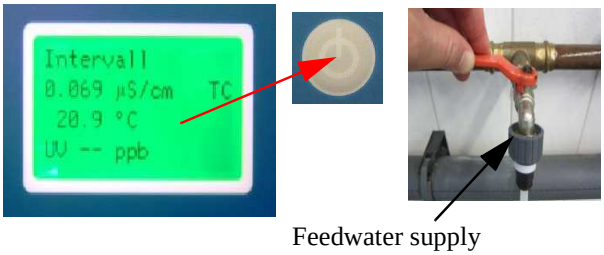
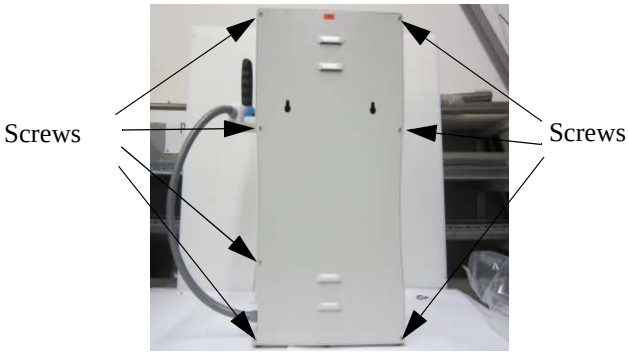
Please observe the information given in the safety data sheet supplied with Micro-Chlor disinfectant to avoid possible health hazards!

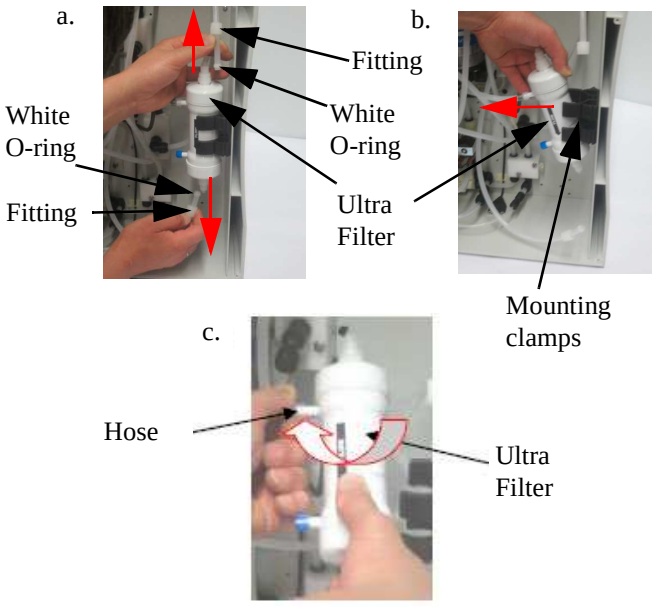
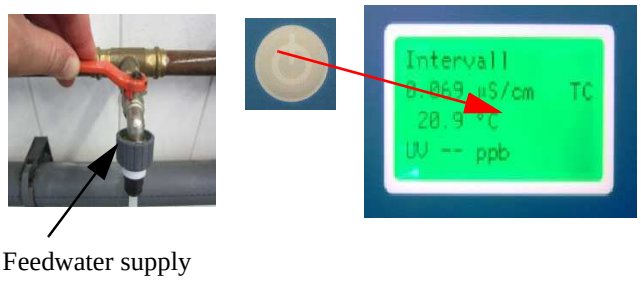
Step	Action	Figure
1	Switch the GenPure with xCAD system off and shut off the supply of feedwater. After this remove the ultrapure cartridge. **NOTE** See under chapter "Change the ultrapure cartridge" on page 76.	
2	a. Remove the yellow stoppers. b. Unscrew the stopper from the disinfectant cartridge. c. Fill the cartridge with distilled water, then empty the contents of a syringe of Cleaning solution or a can of MICRO CHLOR into the water.	
3	Screw the stopper back on the disinfectant cartridge and connect the cartridge into the system. **NOTE** See under chapter "Change the ultrapure cartridge" on page 76 to put in the ultrapure cartridge in to the system.	
4	Re-open the feedwater supply, switch the system on again.	

Step	Action	Figure
5	Push the menu button until „Enter code” is displayed **NOTE** The Code to do this transaction please refer from the Code table under chapter „Code lock on page 67“. You need a level 1 code. a. Select “Disinfection“ from the system menu and press “Enter“. b. Confirm the Disinfection Cartridge has been loaded by pushing “Enter“ again c. The disinfection process will begin. **NOTE** The disinfection program is finished after approx 30 min and is adjustable in the OEM Menu.	a.  b.  c. 
6	Switch the system off and shut off the water supply.	**NOTE** See step 1.
7	Remove the disinfectant cartridge, empty and dry it and put in the yellow stoppers that you have saved for later use. Save the disinfection cartridge for later use.	**NOTE** See step 5 under chapter “Change the ultrapure cartridge” on page 76.
8	**CAUTION** Before dispensing water from the system, let water run out for approx 15 minutes. The system is then ready for use.	

Change the ultrafilter

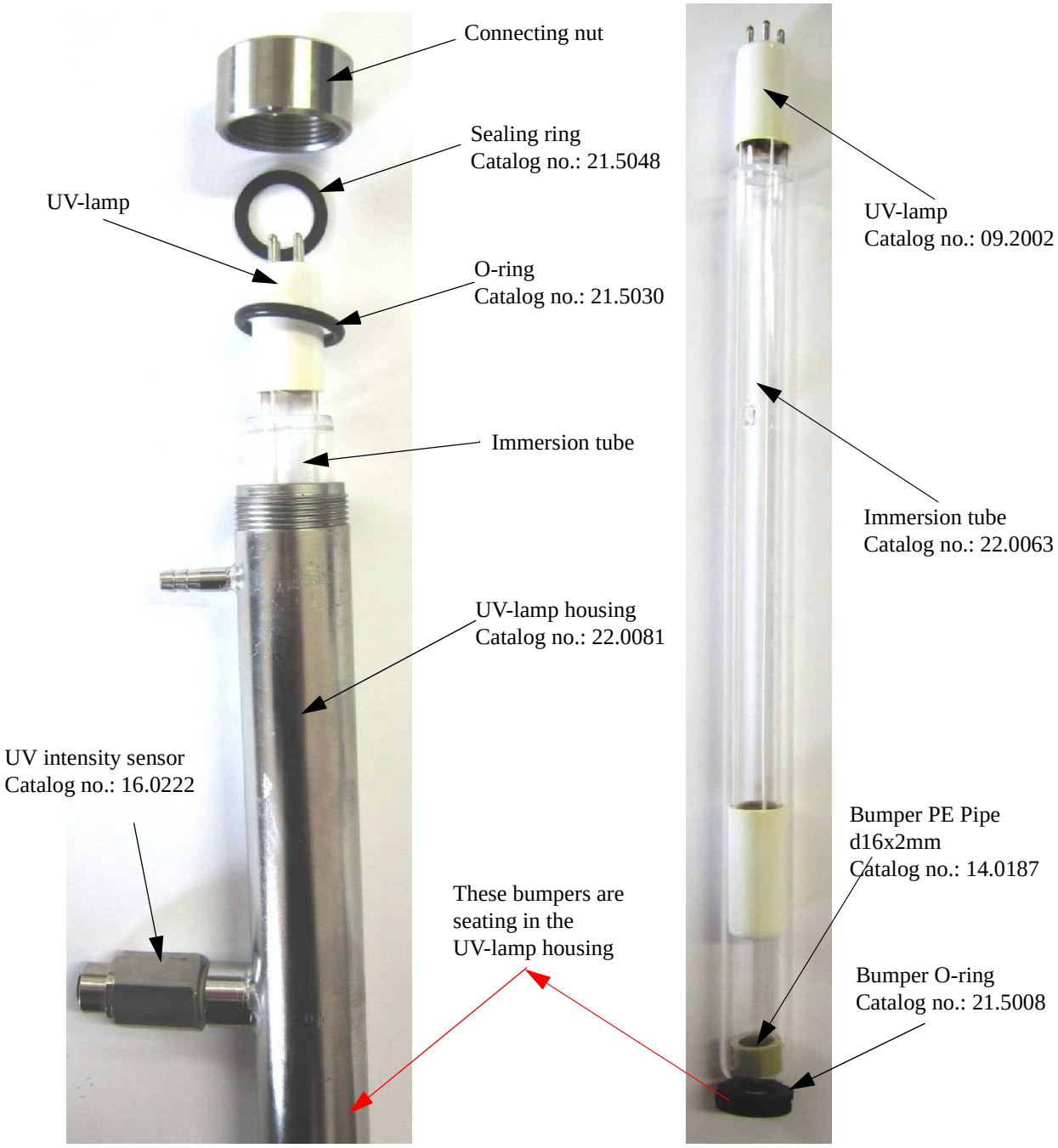
(applicable only for systems with UF)

Step	Action	Figure
1	Switch the GenPure with xCAD system off and shut off the supply of feedwater.	
2	Remove the four screws of the back panel. **CAUTION** Remove carefully the back panel from the system and unscrew the yellow ground wire from the back panel.	

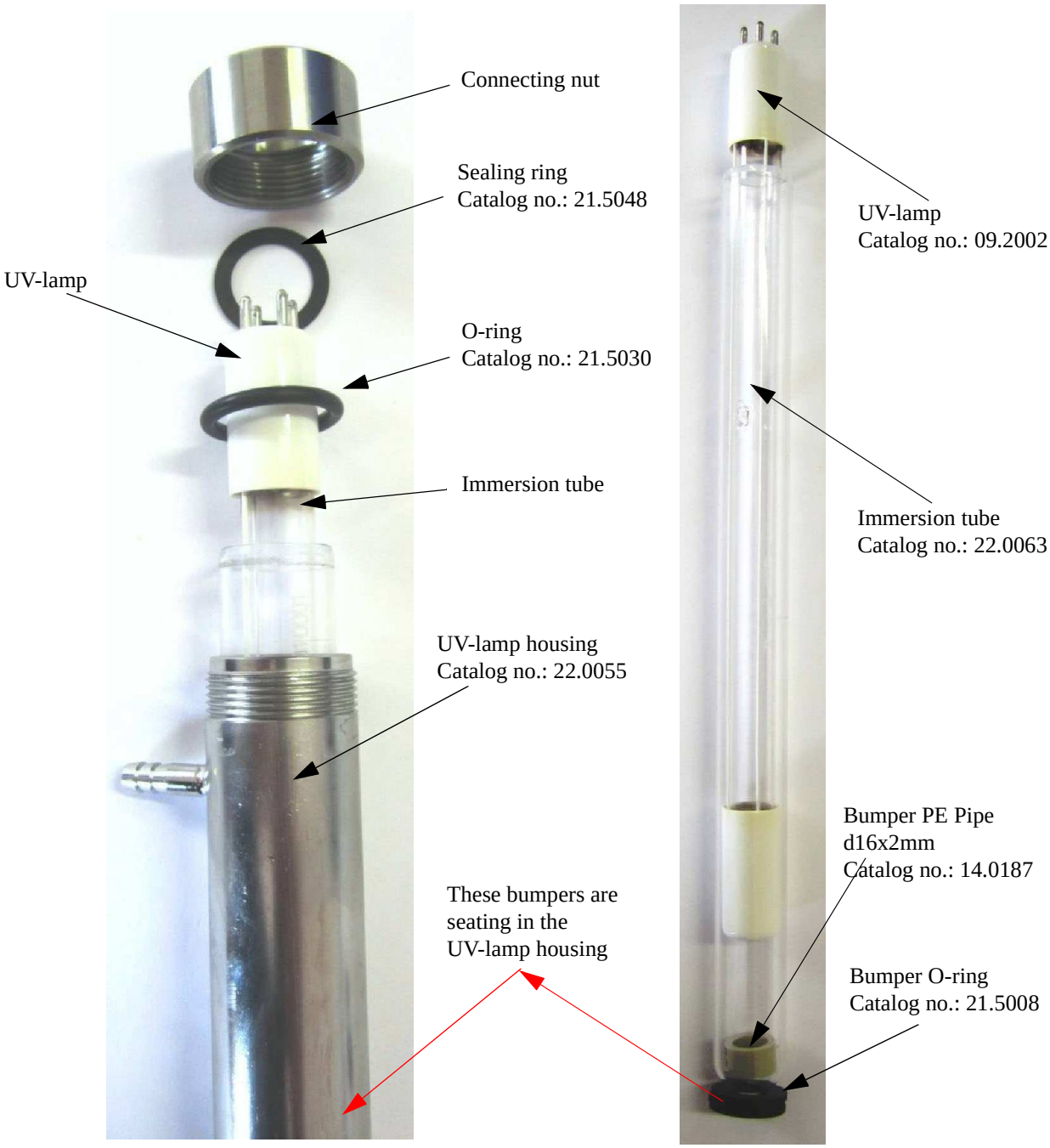
Step	Action	Figure
3	a. Pull out the hoses 8 mm by unscrew the two fittings (see red arrows). b. After this procedure draw out the ultrafilter from the mounting clamp (see red arrow). c. Hold with one hand the hose and with the other hand turn in clockwise direction the ultrafilter to unscrew the hose connection. d. When you are finished with step c install the new ultrafilter by attaching hoses and mounting it in the clamp. **NOTE** e. When you are installing the new UF filter the flow arrow of the filter must be pointing to the bottom of the system.	
4	Reinstall the back panel, reopen the feedwater supply and switch on the system again.	

Structure of the UV-lamp

UV unit with UV intensity sensor



UV unit without UV intensity sensor

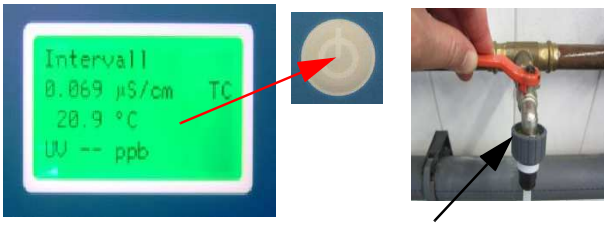
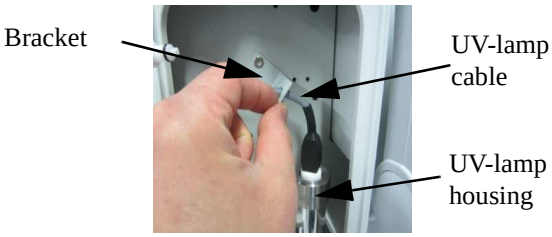
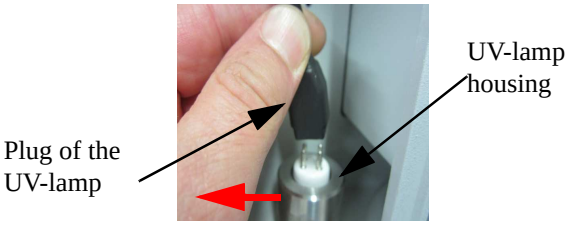


Change the UV-lamp

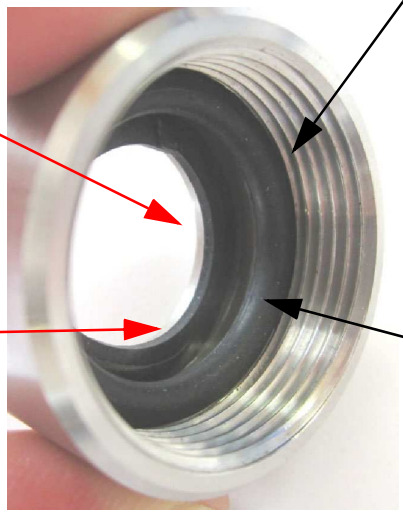
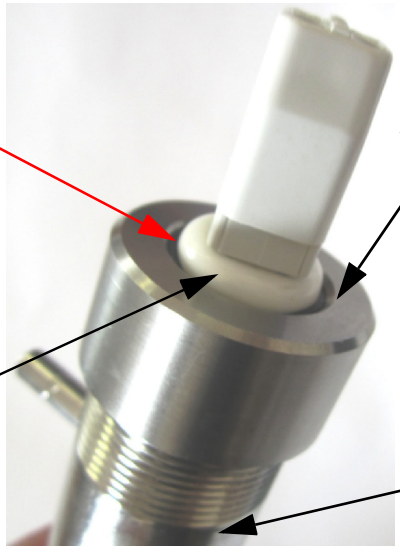
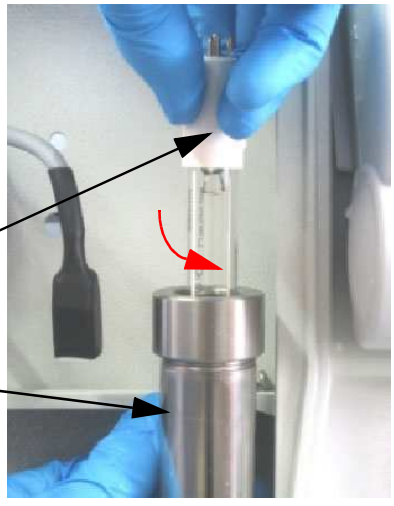
WARNING

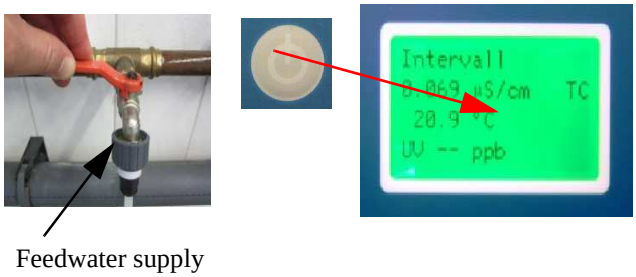
Never look directly into a switched-on UV-lamp, as UV-light endangers eyesight!

(applicable only for systems with UV lamp)

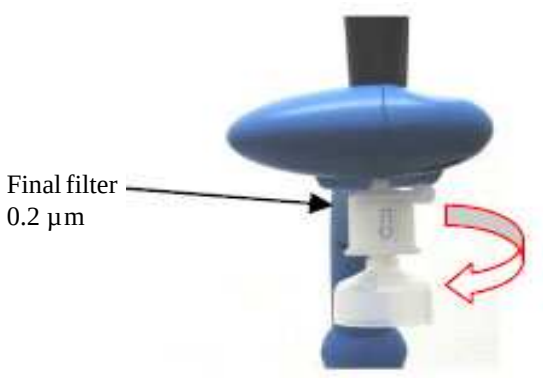
Step	Action	Figure
1	Switch the GenPure with xCAD system off and shut off the supply of feedwater.	
2	Remove the cartridge cover and take off the ultrapure cartridge.	**NOTE** See under chapter "Change the ultrapure cartridge" on page 76.
3	Unscrew the bracket from the mounting plate and take it up over the UV-lamp cable.	
4	Draw the UV-lamp housing slightly to the front (see red arrow) and take the plug off of the UV-lamp.	

Step	Action	Figure
5	Now carefully draw the UV-lamp upwards while lightly turning it clockwise. During the replacement of a UV-lamp, great care must be taken to avoid touching the glass of the UV-lamp with fingers, to avoid dirtying of the lamp which would impair the functioning of it. **NOTE** We therefore recommend that clean gloves be worn.	UV-lamp UV-lamp housing  **NOTE** See chapter "Structure of the UV-lamp" on page 83 where is seating the sealing ring to not damage it.

Step	Action	Figure
6	**CAUTION** Ensure that the position of the sealing ring (flat o-ring at the top of the connection nut) is correct as you put in the new UV-lamp, otherwise you will have a leak. The sealing ring must be seat in the rabbet of the connecting nut (see picture a and b). Carefully introduce the new UV-lamp under a slight turning motion like before but in the anti-clockwise direction (see picture c). Attach the plug into the lamp and push the housing back to the system. Once it is in place, re-mount the bracket holding the UV housing onto the system's remove the mounting plate.	a.  b.  c. 

Step	Action	Figure
7	Put the cartridge cover back on (see under chapter “Change the ultrapure cartridge” on page 76), re-open the feed water supply and switch the system on again.	 Feedwater supply
8	Push the menu button until „Enter code” is displayed. **NOTE** The Code to do this transaction please refer to the Code table under chapter „Code lock on page 67“. You need a level 3 code. a. After entering the code and confirming with enter push the Menu and UV button simultaneously. The display shows UV Menu. b. Push the Menu button repeatedly until new UV-lamp appears and press enter to confirm. c. The system sets the operating hours counter of the UV-lamp back and save the new values by an automatic calibration. **NOTE** The UV-lamp must be switched on (Nonstop mode). The calibration process of the UV intensity can be take between 5 min. and 2 hours.	a.  b.  c. 

Change and autoclave the Final filter

Step	Action	Figure
1	Unscrew the blocked or uesd final filter by turning it in clockwise direction.	
2	Unpacking the new Final filter and screw in the it in the dispensing valve outlet (R 1/4" female thread).	

Autoclave the Final filter

NOTE

To increase the lifetime of the filter you can autoclave it. To autoclave the final filter proceed as follows.

Step	Action	Figure
1	Unscrew the used final filter by turn it in clockwise direction.	 Final filter 0.2 µm
2	Use a autoclave to sterilize the filter. The temperature of the autoclaving process must be 121°C and should take 30 min. You can repeat the procedure for the filter up to 10 times. When the sterilization is finished screw in the final filter back in the 1/4" female thread connection (see chapter “Change and autoclave the Final filter” on page 89). NOTE If you trying to dispense water and nothing is coming out from the outlet, the final filter is blocked. Please look then in chapter „Trouble shooting on page 94“or change with a new one.	

Waste disposal

When the packaging is no longer needed it can be disposed of as household waste.

Systems are in conformity with EEC Guideline 2011/65/EU.

The system is not to be thrown away as household waste but must be properly disposed of. It can be returned to the manufacturer for safe disposal according to EEC Guideline 2011/65/EU. We therefore request our customers in Germany and other member States in the European Economic Area to contact our local service center or our headquarters or per E-Mail to:

weee.recycle@thermofisher.com

WEEE-Reg.-no.: DE 12471402

In countries outside of the European Economic Area, please contact your local authorities or waste disposal company.

Trouble shooting

NOTE

If the error can not be solved by the customer, the service is should be to refrain.

Error	Cause	Remedy
The system does not start	• No supply of power	• Provide power
Dispensing not possible	• Feedwater tap is closed	• Open the feedwater tap
	• Feedwater and rinse water connections are mixed up	• Correct the connections
	• Feedwater pressure < 0.1 bar	• Increase the feedwater pressure
	• Final Filter is blocked	• Change with a new one
Resistance < 18.2 MΩxcm	• Ion exchange capacity is exhausted	• Replace ultrapure cartridge with a new one
	• Poor feedwater	• Correct feedwater
	• Temperature compensation turned off calibration needed	• Turn temperature compensation on (Display should show „TC" in bottom right) Contact Service for calibration
System control no longer reacts	• Improper operation	• Unplug the mains plug for 5 seconds. Contact the Service.
	• error PCB	• Contact Thermo for service
	• Faulty Dispense button	
Water flows out	• Leaky hose connection	• Check and seal the hose connection
	• Feedwater pressure > 6 bar	• Install a pressure reducer
		• Contact Thermo for service
Dispensed amount is too small	• UF-Module blocked	• Replace UF-module
	• Pre-pressure too low	• Increase the pre-pressure
	• Internal pressure too low	• Readjust pressure reducer
	• Volumetric Dispense out of Tolerance	• Contact Thermo for volume calibration

Error	Cause	Remedy
Wrong time or date	• Time zone • Summer/winter time	• Reset time and date
Wrong language	• Wrong language set	• Correct the language setting
Error message: *„Limit value feed“*	• Feedwater conductivity too high • Limiting value set too low • TOC selected on non-TOC units	• Check the pretreatment • Check and suit the limiting value setting • Turn LF3 to off
Display reads +IN	• Measuring cell cable break	• Replace measuring cell
Error message: *„Lim. va.pure w.“*	• ultrapure cartridge exhausted • Limiting value set too low	• Replace with new ultrapure cartridge • Check and set the limiting value
Error message: *„UV-time“*	• UV-Lamp operating time has been exceeded	• Replace the UV-lamp • Re-set the operating time counter
Error message: *„UV-intensity“*	• UV-Lamp intensity no longer sufficient • UV-Sensor is dirty • Limiting value set too low	• Replace with a new UV-lamp • Clean the UV-sensor • Check and set the limiting value
Error message: *„max. Temperature“*	• The temperature in the system is too high • Interval pump time too long • Limiting value set too low • Feedwater temperature is too high	• Reduce the temperature by running water off • Reduce interval pump time • Check and suit the limiting value • Reduce the feedwater temperature
Error message: *„Measuring cell LF1“*	• Measuring cell cable break • System control defect • Conductivity of ultrapure water outside of the measuring range	• Replace the measuring cell • Replace system control • see “Resistance < 18.2 MΩxcm” on page 94
Error message: *„Measuring cell LF2“*	• Measuring cell cable break • System control defect • Feedwater conductivity outside of measuring range	• Replace the measuring cell • Replace system control • see *“Error message: „Limit value feed““* on page 95

Error	Cause	Remedy
Error message: *„Measuring cell LF3“*	• Measuring cell cable break	• Replace the measuring cell
	• System control defect	• Replace system control
Error message: *„Temp. meas. cell.“*	• A break in the measuring cell cable	• Replace the measuring cell
	• System control defect	• Replace the system control
Error message: *„change cartridge“*	• Operating hours of the filter cartridge has expired	• Replace it with a new one

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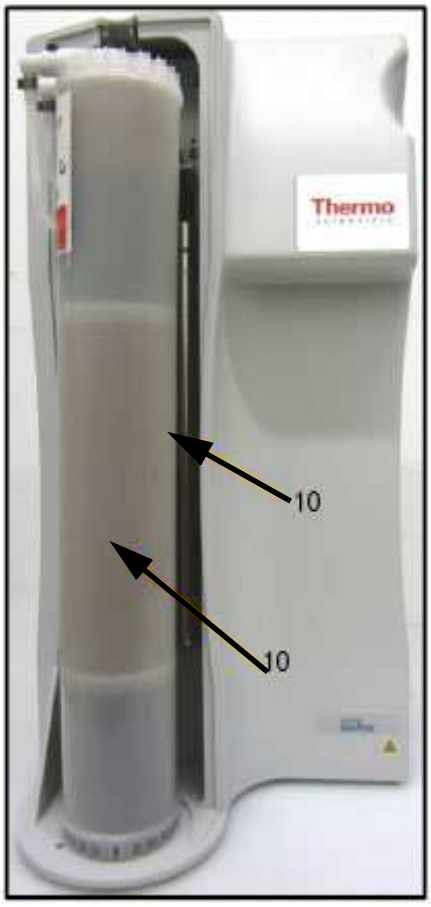
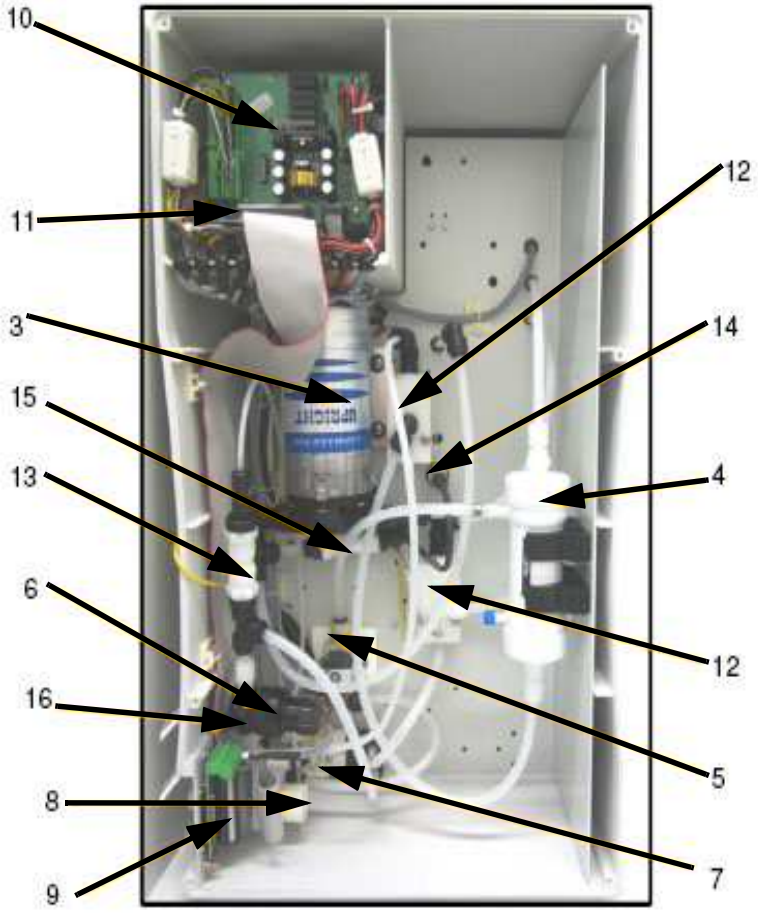
Replacement parts and consumables

GenPure





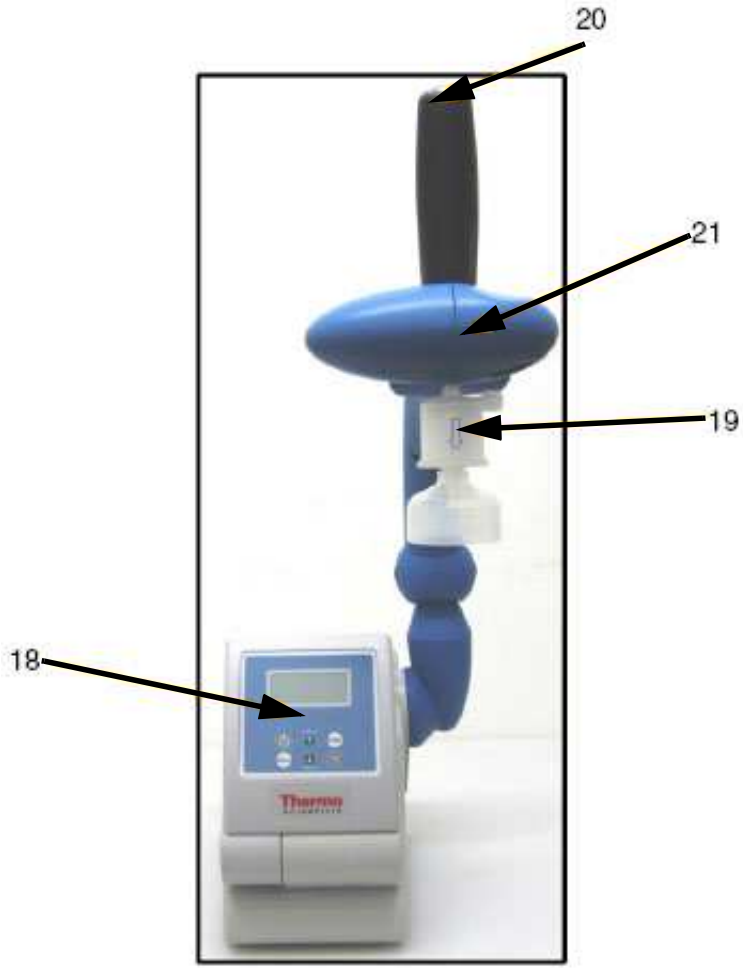
Parts marked with an „x“ are wear parts (exchange is performed by service people)

No.	Flow chart no.	Designation	Catalog no.	
1	F1	Ultrapure cartridge	09.2005	
2	UV1	Replacement UV lamp	09.2002	
3	P1	Pressure booster pump	19.0050	x
4	F3	Ultrafiltration module (optional)	50133980	
5	V4	Rinsing solenoid valve	50131190	x
6	V1	Pressure reducer	50133985	
7	FIS400	Flowmeter	15.0100	
8	QIA300	Conductivity measuring cell, feedwater	16.0126	
9		Adapter board	16.0364	
10		Microprocessor-system control, interface	50131346	
11		Booster for UV lamp (optional)	22.0088	
12	QIA303 TIA500	Conductivity measuring cell, ultra pure water Conductivity measuring cell, temperature sensor	50133992	
13	V2	Check valve	15.0009	
14	QIA301	UV-Intensity sensor (optional)	16.0222	
15	V5	Check valve	15.0019	
16		Fuseholder for glas tube fuse, 5x20mm Glas tube fuse, 5x20mm, 3.15 A, slow	50133979 50131758	
17		Table top power pack, 24V DC (not shown)	50134196	

NOTE

We ask for your understanding that our guarantee for this system is invalidated when replacement parts, accessories or consumable materials from other manufacturers are used in or for the system, as we have no influence on their composition or quality.

xCAD



Parts marked with an „x“ are wear parts (exchange is performed by service people)

No.	Flow chart no.	Designation	Catalog no.	
18		Microprocessor-system control	26.0025	
19	F2	Final filter 0.2 µm	09.1003	x
20		Press button	16.0370	
21	V3	Solenoid valve	15.0101	x
22		Extension cable SUB-D, 25 pin, GenPure/xCAD (not shown)	16.0375	

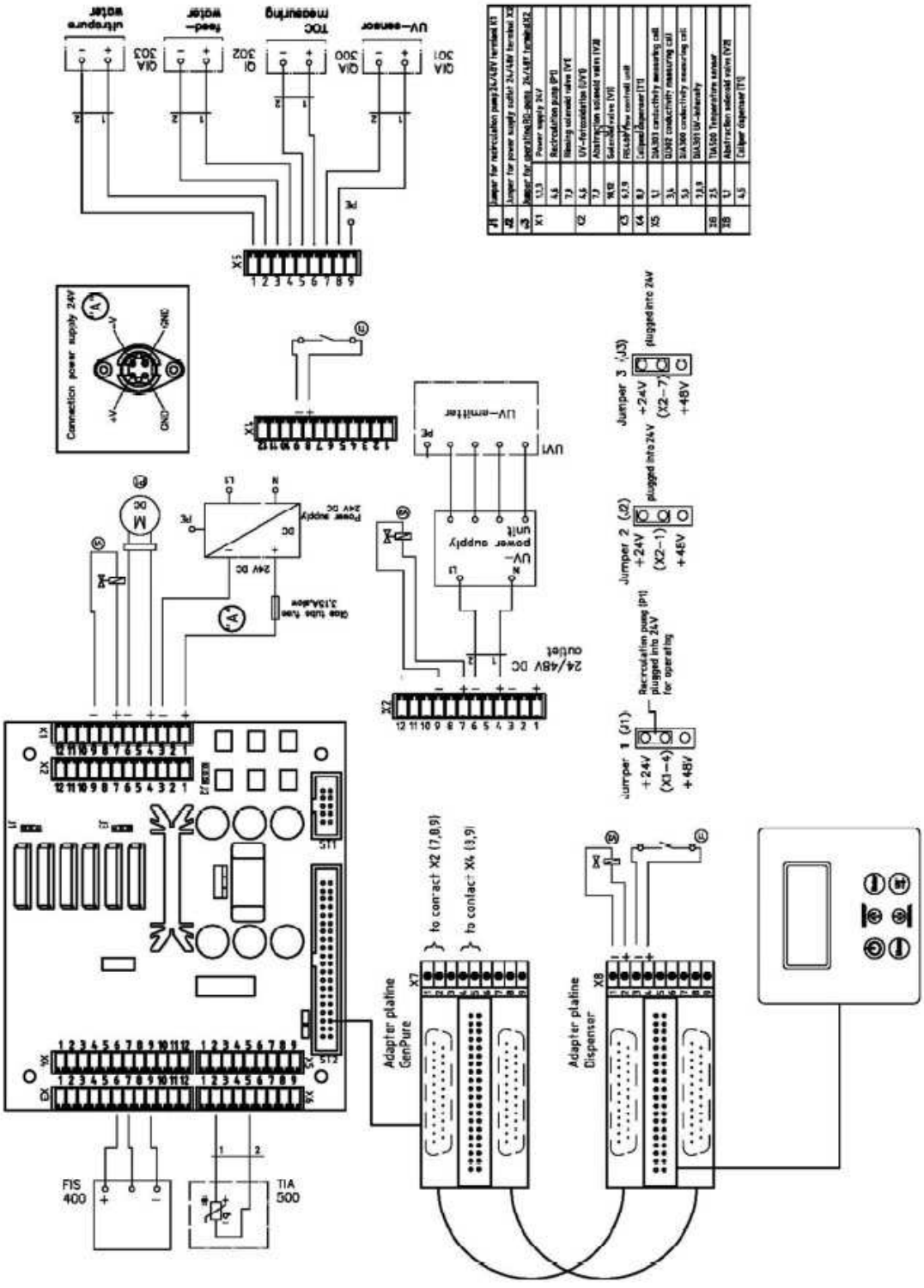
Consumable materials

Designation	Catalog no.
Ultrapure cartridge	09.2005
UV-Lamp	09.2002
Ultrafiltration module	50133980
Final filter 0.2 µm	09.1003

Accessories

Designation	Catalog no.
Disinfection cartridge	09.2201
Disinfection agent, MICRO-Chlor (pack of 12 cans, Europe only)	09.2202
Cleaning Solution, 1 syringe (US-market only)	CMX25
Printer	09.2207
Ion exchanger DI 1500	02.1500
DI 1500 hose kit for new installations	04.1690

Terminal assignment



Maintenance records

Customer address:	Location:	
		System type:
		Serial no.:
		Year made:

Date	Feedwater resistance [MΩxcm]	Ultrapure water resistance [MΩxcm]	Temperature [°C]	TOC value [ppb]	UV intensity [%]	UV-lamp operating time [h]

Ultrapure water flow rate [l/h]	Last ultrapure cartridge replacement	Last cleaning, disinfection	Remarks	Signature

Any false entry is considered to be a falsification of documents.

The following point should be observed for maintenance of the quality of the system:

- 1x / Weekly, acquire measured values.

Contact Information Thermo Scientific

The address to contact when your system requires service:

Overview of Thermo Scientific International Sales Organization
Postal address USA:
Thermo Scientific
275 Aiken Road
Asheville, NC 28804
USA

Enquiries from USA/Canada
Sales: +1 866 984 3766
Service +1 800 438 4851

Enquiries from Latin America
Sales: +1 866 984 3766
Service: +1 866 984 3766

Enquiries from Asia:
China
Sales: +86 10 8419 3588
Service : Toll free 8008105118
Support Mobile 4006505118 or +86 10 8419 3588

India
Sales: +91 22 6716 2200
Service: Toll free 1 800 22 8374 or +91 22 6716 2200

Japan
Sales: +81 45 453 9220
Service: +81 45 453 9224

Enquiries from the Rest of Asia/Australia/New Zealand
Sales: +852 2885 4613
Service: +65 6872 9720

Enquiries from Countries not listed / Rest of EMEA
Sales: +49 6184 90 6940 or +33 2 2803 2000
Service: +49 6184 90 6940

Enquiries from Europe:
Austria
Sales: +43 1 801 40 0
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Service: +32 53 73 4241

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