Thermo Scientific Barnstead GenPure xCAD Plus Ultrapure water system

Operating instruction

50137064 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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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 Ultrapure Water Systems 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 xCAD plus 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.

Contents

1

Transport and packaging

Contents

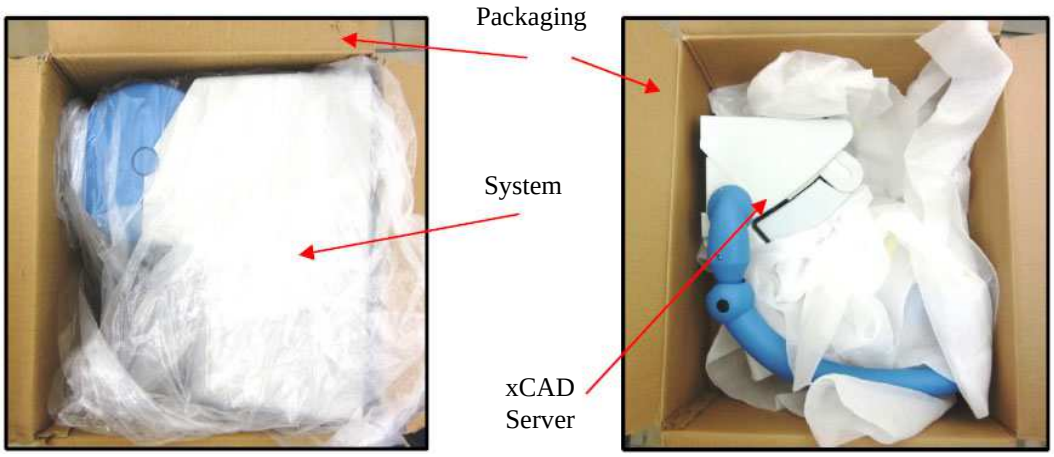
Ultrapure water systems are carefully controlled and packed prior to dispatch, but damage could still possibly occur during transport. When the system is to be carried by hand, two people must always do this. Do not throw or tip the system.

Examination on receipt

- Check the completeness of the goods received against the delivery note.

NOTE

Does the packaging show signs of damage?



Complaints

Should damage have occurred to the goods during transport:

- Immediately contact delivery transport agency.
- Save the complete packaging, including the cardboard box, for a possible inspection of them and/or return shipment of the system.

Packaging and return shipment

If possible, use the original box and packaging material.

When these are no longer available:

- Protect the system from shock by packing it in a suitable bag or sheet in a strong cardboard box.

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. filter 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

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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 sterilization at 120°C for 30min 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

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 system)
-Screw hook 2 x 5.2 x 50 mm or 5.2 x 1.97 inch
Catalog No.: 21.0057 (for GenPure system)

Sub-D extension cable, 25 pin, 5 m or 5.47 yards
Catalog no.: 16.0375

PE hose, Ø8mm x 20 m or 0.31 inch x 21.87 yards
Catalog no.: 18.0036

Sub-D-extension cable, 9pin, 3m or 3.28 yards
Catalog no.: 16.0397

Available GenPure xCAD Plus versions

GenPure xCAD Plus bench version:

50136149 standard	Basic system
50136150 UF	Basic system + ultrafiltration module
50136151 UV	Basic system + UV photooxidation
50136152 UV/UF	Basic system + UV photooxidation + ultrafiltration module
50136153 UV-TOC	Basic system + UV-photooxidation and TOC Measurement
50136146 UV-TOC/UF	Basic system + UV-photooxidation and TOC Measurement + ultrafiltration module

GenPure xCAD Plus wall version:

50136165 standard	Basic system
50136167 UF	Basic system + ultrafiltration module
50136169 UV	Basic system + UV-photooxidation
50136170 UV/UF	Basic system + UV-photooxidation and ultrafiltration module
50136171 UV-TOC	Basic system + UV-photooxidation + TOC Measurement
50136172 UV-TOC/UF	Basic system + UV-photooxidation and TOC Measurement + ultrafiltration module

3 Extent of delivery

Available GenPure xCAD Plus versions

Intended Use

The GenPure xCAD Plus 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 xCAD Plus system is designed to be installed and used 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

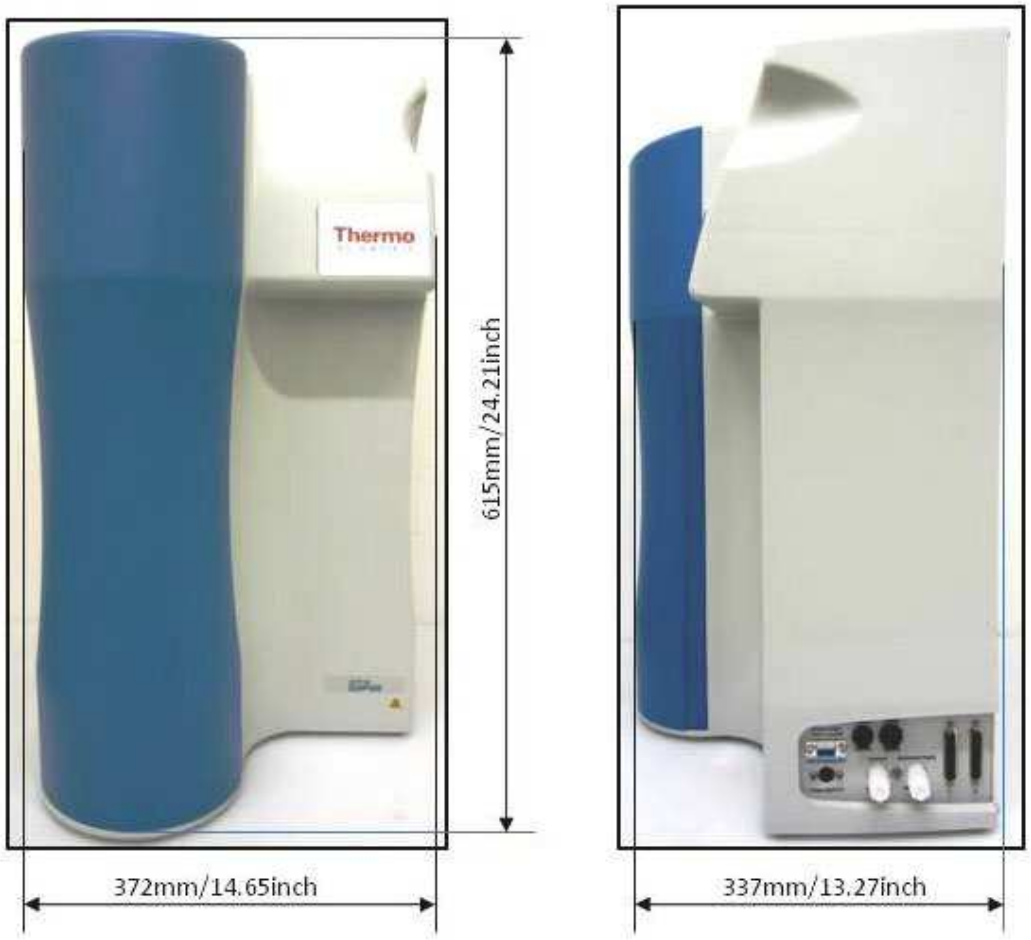
Demands the feedwater must fulfil	
Source	Potable tap water, pretreated by reverse osmosis, ion exchange or distillation.
SDI (blocking rate)	max. 1 for all versions. A 1 µm membrane prefilter is recommended for water not pretreated by reverse osmosis.
Feedwater conductivity	> 0.5 MΩxcm
Free chlorine	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 for protection of the internal filter / final filter.
Temperature	2 - 40°C
Pressure	0.1 - 6 bar or 1.45 to 87 PSI

Product water quality

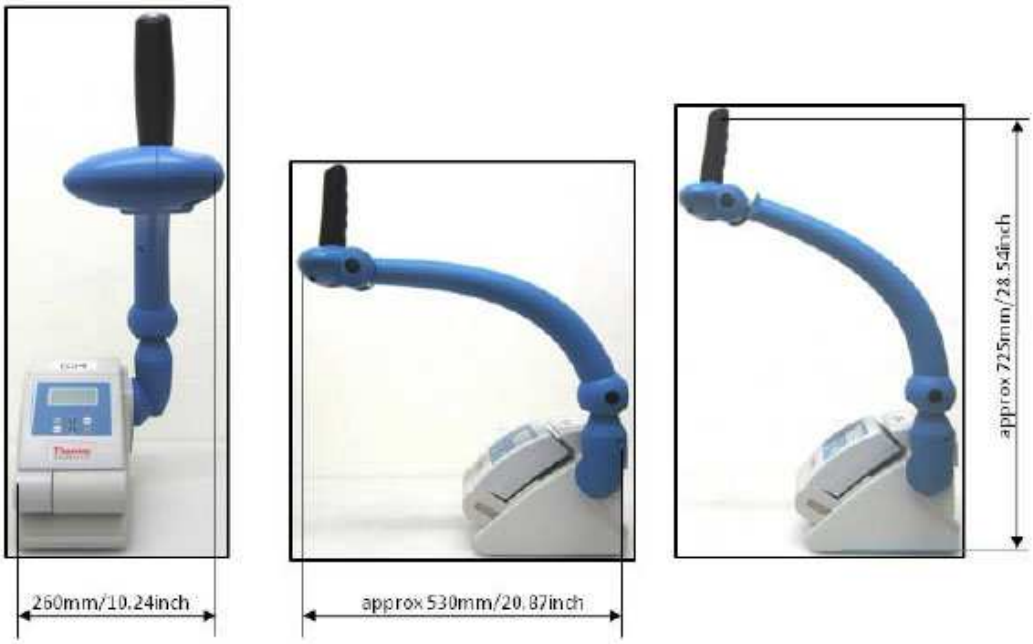
		Standard	UV	UF	UV/UF	UV-TOC	UV-TOC/UF
Resistance (Reference temp. 25 °C)	**MΩxcm**	18.2	18.2	18.2	18.2	18.2	18.2
TOC	**ppb**	5 - 10	1 - 5	5 - 10	1 - 5	1 - 5	1 - 5
RNase **DNase**	**ng/ml** **pg/ul**	-- 	-- 	-- 	< 0.003 < 0.4	-- 	< 0.003 < 0.4
Bacteria	**CFU/ml**	< 1	< 1	< 1	< 1	< 1	< 1
Bacterial endotoxines	**EU/ml**	--	--	< 0.001*	< 0.001*	--	< 0.001*
Particles	**> 0.2 µm**	< 1/ml	< 1/ml	< 1/ml	< 1/ml	< 1/ml	< 1/ml
Performance	**l/min****	1.5	1.5	1.5	1.5	1.5	1.5

* Depends on the feedwater and disinfection
** Depends on the feedwater pressure

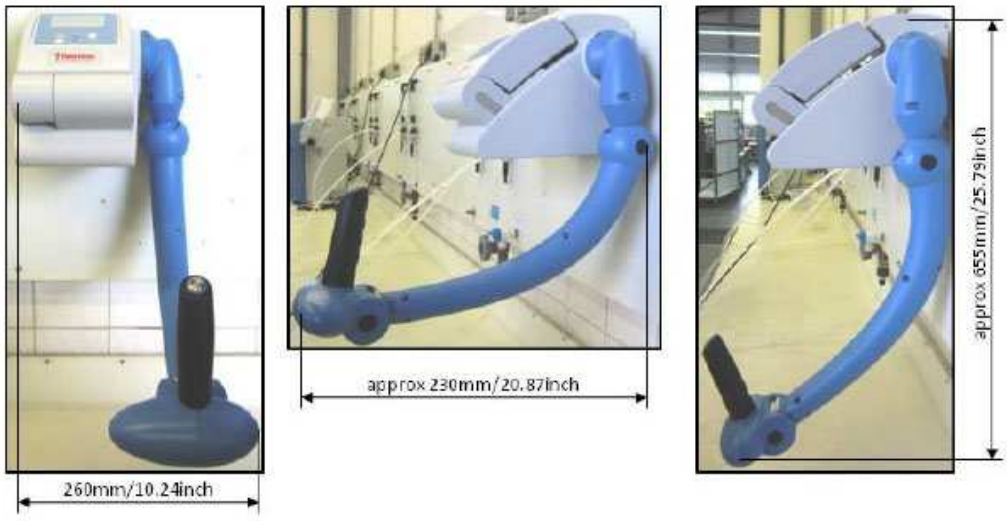
Dimension and weight GenPure system		
Height	615 mm	24.21 inch
Width	372 mm	14.65 inch
Depth	337 mm	13.27 inch
Weight:		
GenPure Standard	22 kg	48.50 lbs (dry weight)
GenPure UF	23 kg	50.71 lbs (dry weight)
GenPure UV	24 kg	52.91 lbs (dry weight)
GenPure UV/UF	24 kg	52.91 lbs (dry weight)
GenPure UV-TOC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



Dimensions and weight xCAD/Server, xCAD Client (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 Server, xCAD Client (wall 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 of the measuring cells	
Feedwater conductivity	0.16 cm^{-1}
Conductivity after UV oxidation	0.01 cm^{-1}
Ultra pure water conductivity	0.01 cm^{-1}

Connectors for water GenPure	
Feed water	Hose, 0.31“ (8 mm) o.d.
Rinse water	Hose, 0.31“ (8 mm) o.d.
xCAD inflow	Hose, 0.31“ (8 mm) o.d.
xCAD return flow	Hose, 0.31“ (8 mm) o.d.

Connectors for water xCAD/Server	
xCAD inflow	Hose, 0.31“ (8 mm) o.d.
xCAD return flow	Hose, 0.31“ (8 mm) o.d.
Ultra pure water / outlet	R 1/4"
Sterile filter outlet	Hose, 0.31“ - 0.39“ (8 - 10 mm) o.d.

Connectors for water xCAD/Client	
xCAD inflow	Hose, 0.31“ (8 mm) o.d.
xCAD return flow	Hose, 0.31“ (8 mm) o.d.
Ultra pure water / outlet	R 1/4"
Sterile filter outlet	Hose, 0.31“ - 0.39“ (8 - 10 mm) o.d.

Electrical connections / external power supply	
Input voltage	AC 100 – 240 V, 50/60 Hz, 2 – 1 A
Output voltage	DC 48 V, 2.5 A
Device connection	DC 48 V, 120 W
Serial interface	RS 232
Protection class	Class II (SMPS external, certified as Class I)

Electrical connections xCAD/Server	
1x SUB-D socket	25 pin
2x SUB-D socket	9 pin

Electrical connections xCAD/Client	
2x SUB-D socket	9 pin

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

Ambient conditions	
Usage	Indoor rooms
Altitude	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). NOTE 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	Polycarbonate
Rinsing solenoid valve	PA = polyamid
Dispensing valve	PVDF = polivinylidenfluorid
Conductivity measuring cell	POM = polyoxymethylen, stainless steel

Materials of parts which contact water	
Distributor block	POM = polyoxymethylen
Connectors	POM = polyoxymethylen
Hoses	PE = polyethylene
O-rings	EPDM = ethylen-propylen-diene-rubber

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 diameter pipe 63 mm (DN (nominal diameter) 50) size 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.

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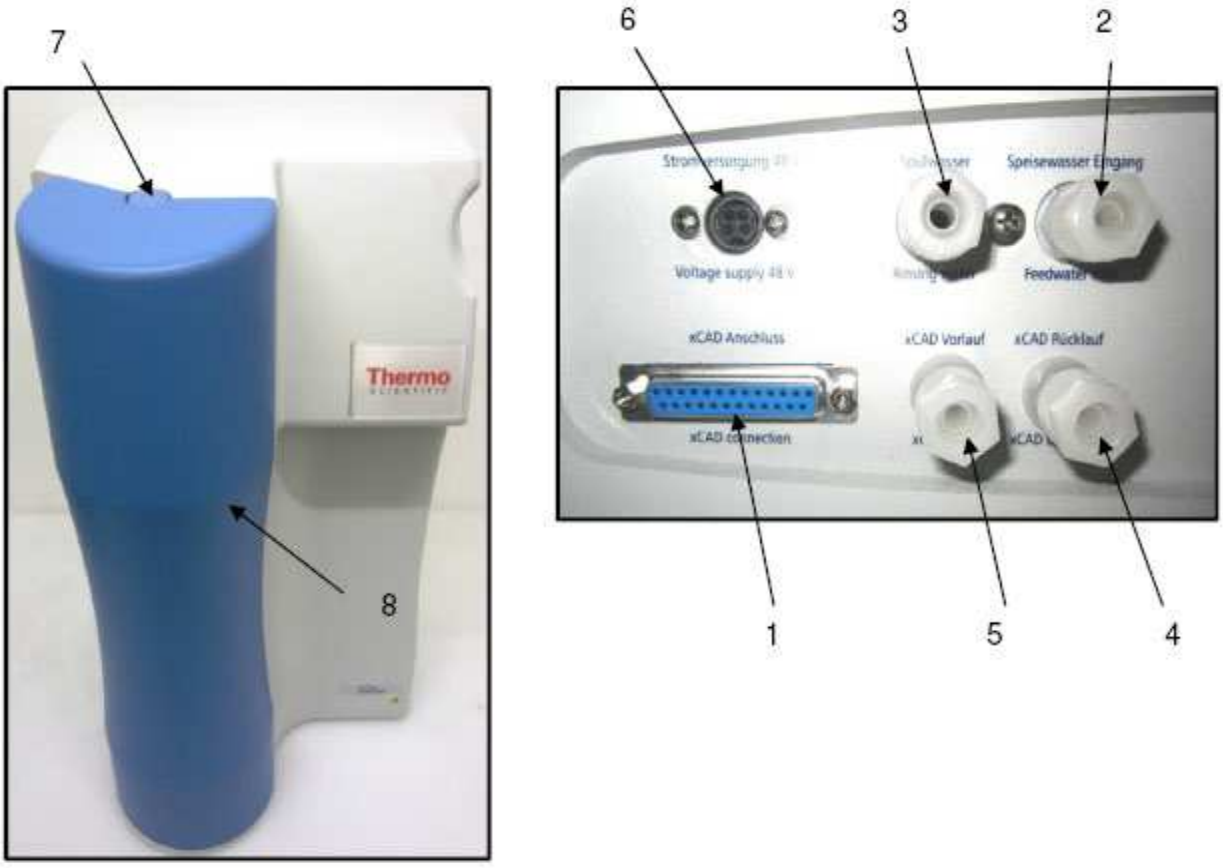
Installation

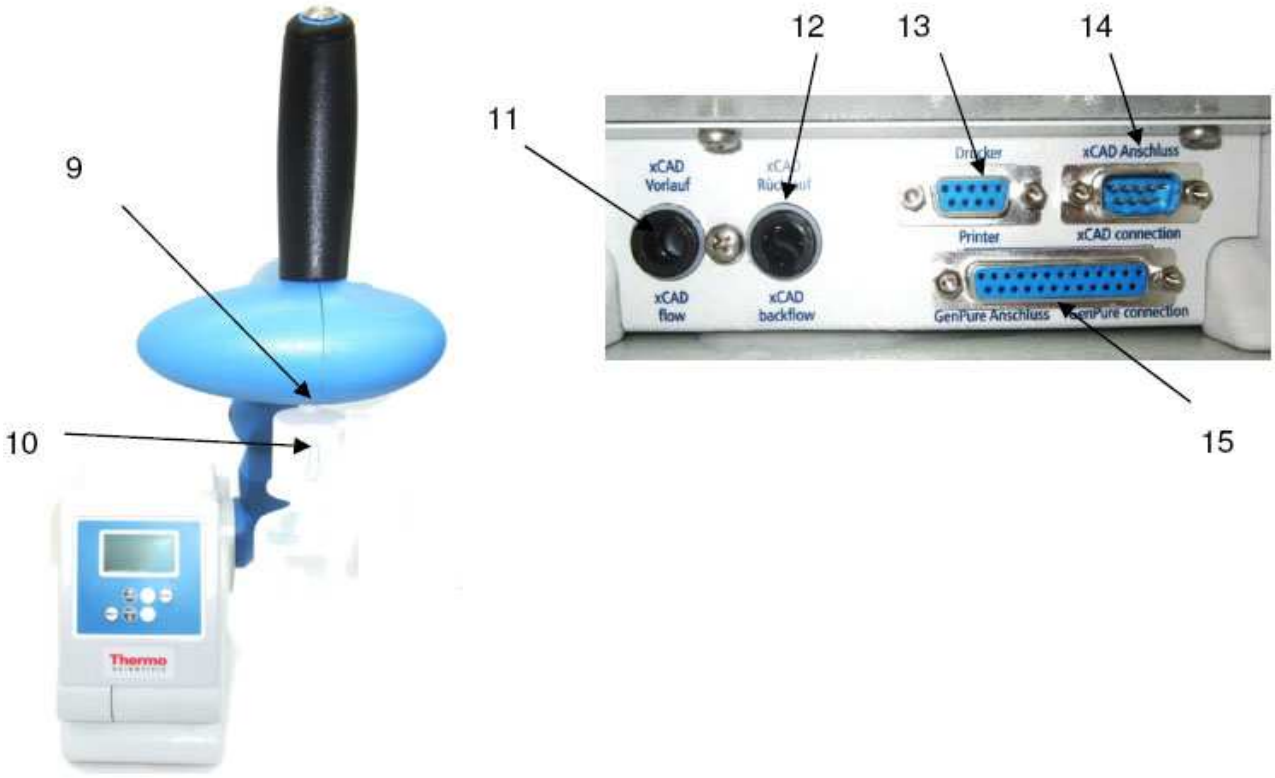
Contents

Connectors GenPure system



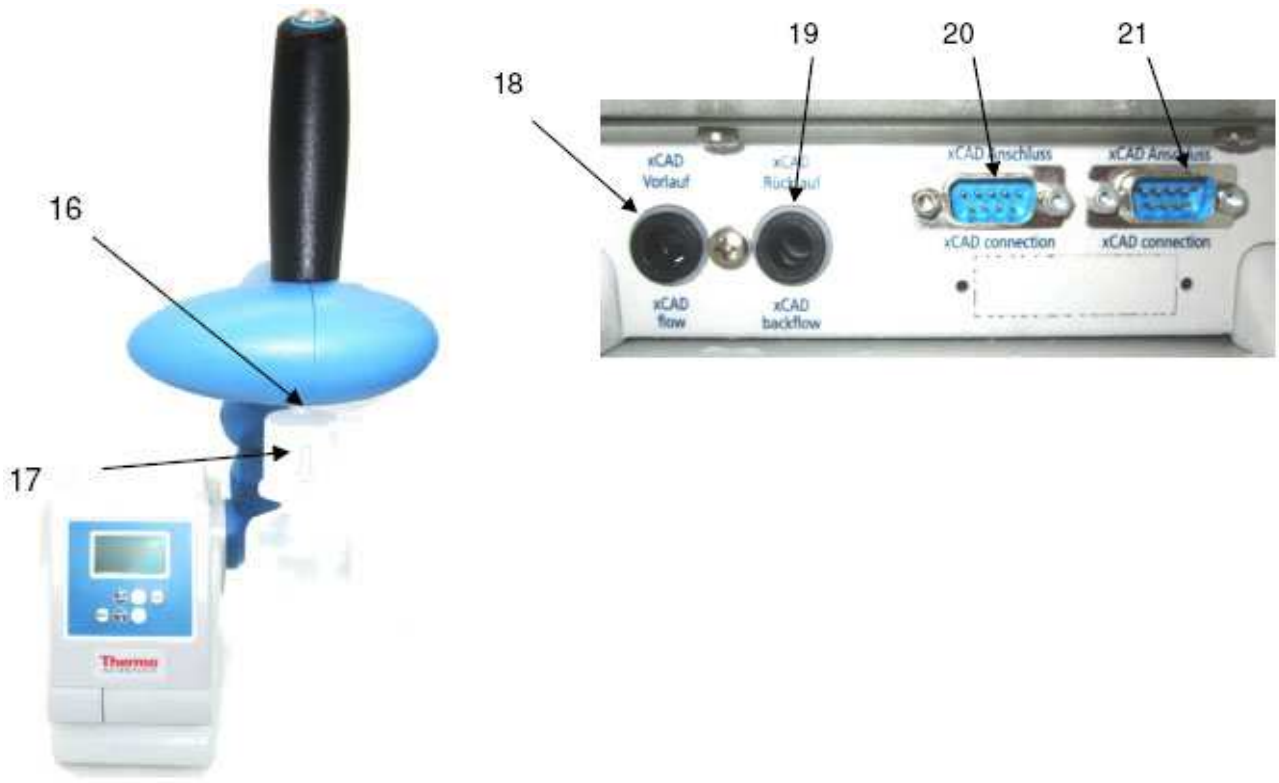
1. Connector for 25 pin socket to xCAD Server (system control)
2. Feedwater connector, hose 0.31” (8 mm) o.d
3. Rinse water connector, hose 0.31“(8 mm) o.d
4. Ultrapure water connector, hose 0.31“(8 mm) o.d (to xCAD Server backflow)
5. Ultrapure water connector, hose 0.31“(8 mm) o.d (to xCAD Server Flow)
6. Power supply connector 24 V DC
7. Push button for releasing the cartridge
8. Cartridge cover

Connectors xCAD Server



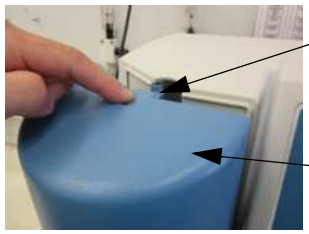
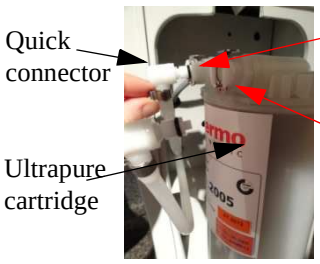
9. Dispensing valve outlet, R 1/4" female thread
10. Final filter 0.2 µm
11. Ultrapure water connector, 0.31“(8 mm) o.d xCAD flow (to GenPure)
12. Ultrapure water connector, 0.31“(8 mm) o.d xCAD backflow (to GenPure)
13. Printer connection
14. xCAD connector (to xCAD Client)
15. Connector for 25 pin sockets to GenPure (system control)

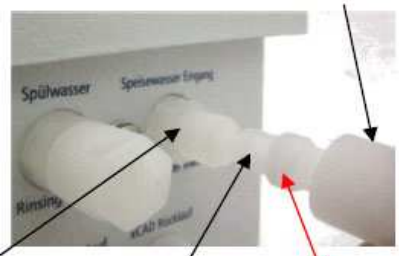
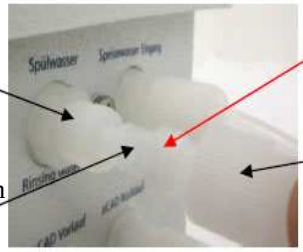
Connectors xCAD Client

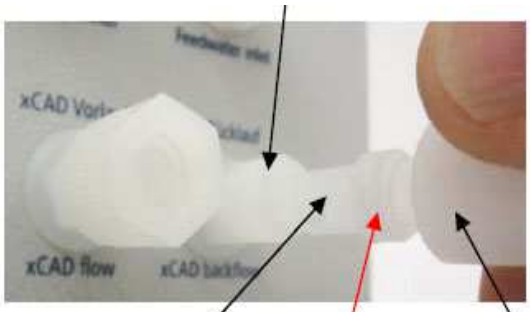
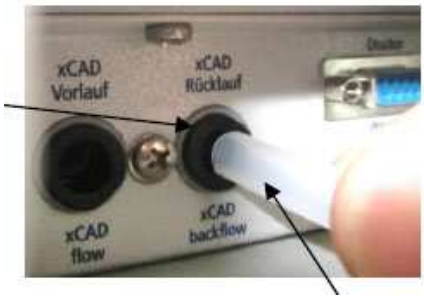


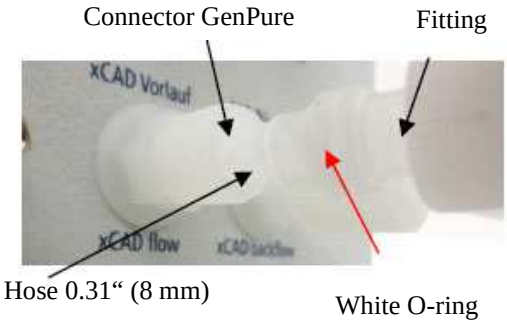
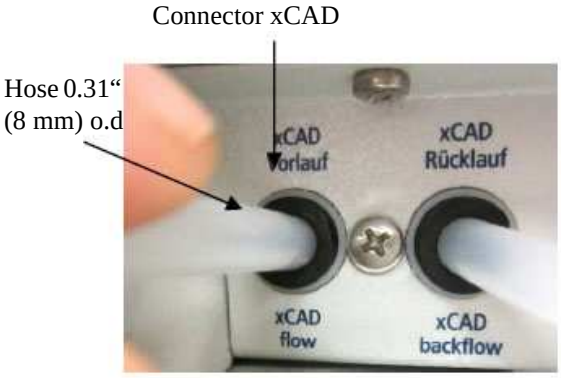
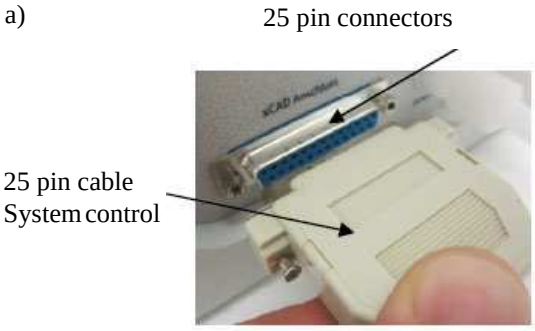
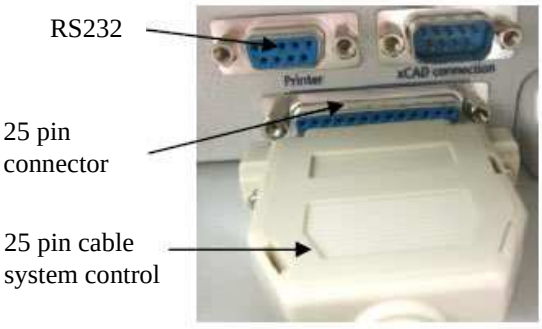
16. Dispensing valve outlet, R 1/4" female thread
17. Final filter 0.2 µm
18. Ultrapure water connector, 0.31“(8 mm) o.d xCAD flow (to GenPure)
19. Ultrapure water connector, 0.31“(8 mm) o.d xCAD backflow (to GenPure)
20. Connector for 9 pin sockets to xCAD Server (system control)
21. Connector for 9 pin sockets to an additional xCAD Client

Installation of GenPure xCAD Plus 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 xCAD Plus system" on page 46.
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. The other end of the hose you should be connected it to the feedwater connector of the system by unscrew 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 Fitting  Feedwater connector unit Hose 8 mm o.d White O-ring
6	Connect the 0.31” (8 mm) 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.	Rinse water connection White O-ring  Fitting Hose 8 mm o.d

Step	Action	Figure
7	a. Connect the one end of the 0.31” (8 mm) od hose to the xCAD backflow connector on 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. b. The other end of the 0.31” (8 mm) o.d hose you should connect to the xCAD backflow connector of the xCAD Server.	a) Connector GenPure  Hose 0.31“ (8 mm) o.d White O-ring Fitting b) Connector xCAD Server  Hose 0.31” (8 mm) o.d

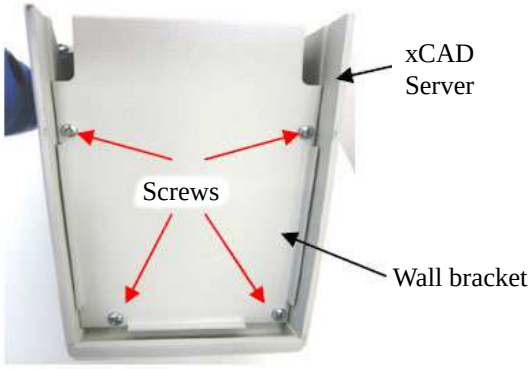
Step	Action	Figure
8	a. Connect the one end of the 0.31” (8 mm) od hose to the xCAD flow connector on the system by unscrewing the fitting. After this put the hose through the fitting and mount the white O-ring on it. Screw the fitting back to the system. b. The other end of the 0.31” (8 mm) o.d hose you should connect to the xCAD flow connector of the xCAD Server.	a)  b) 
9	a. Plug the cable with 25 pin socket into the socket of the GenPure system and screw it tight. b. Plug the other end of the 25 pin cable for system control into the xCAD Server connector. NOTE If applicable use the RS232 connector (13) to connect the optional data printer.	a)  b) 

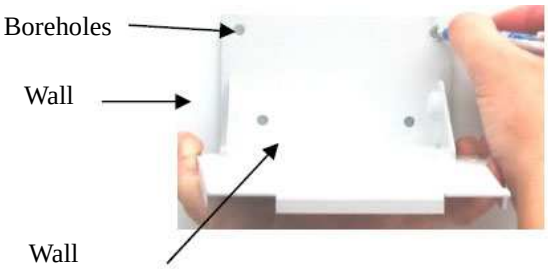
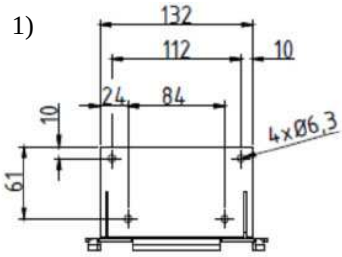
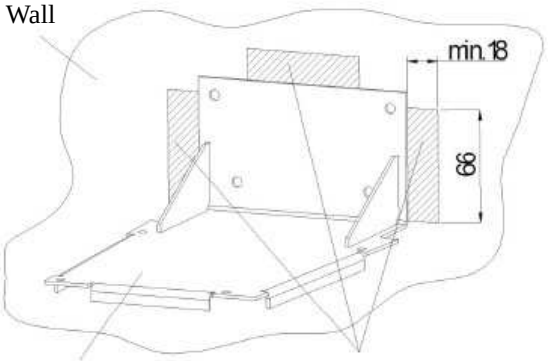
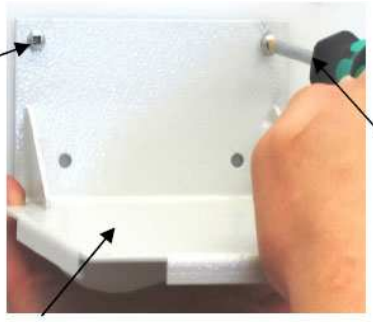
Step	Action	Figure
10	Screw the final filter in counter clockwise direction (see red arrow in the picture) into the 1/4" female thread of the xCAD dispensing valve.	 1/4" female thread connection Final filter 0.2 µm
11	Assemble the power pack and make the voltage connection to the GenPure system.	NOTE See under chapter "Wall mounting GenPure xCAD Plus system" on page 46.
12	Open the feedwater supply and switch the system on. The system is now ready for use. CAUTION Only feedwater that has been pretreated by reverse osmosis, ion exchange or distillation is to be used.	 Feedwater supply

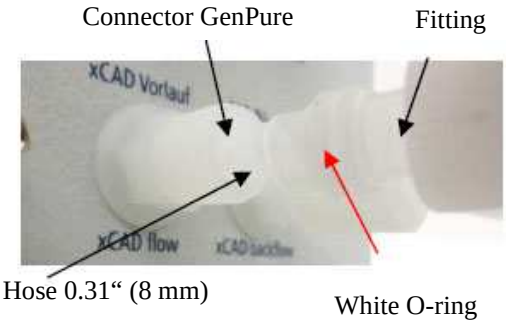
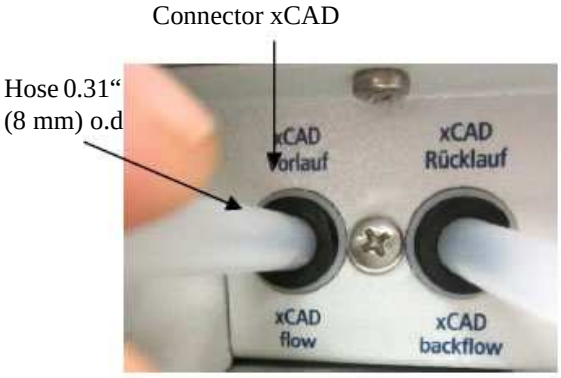
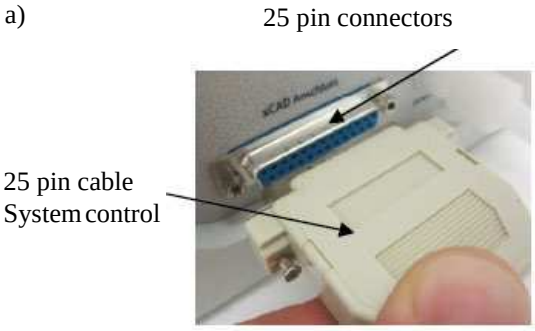
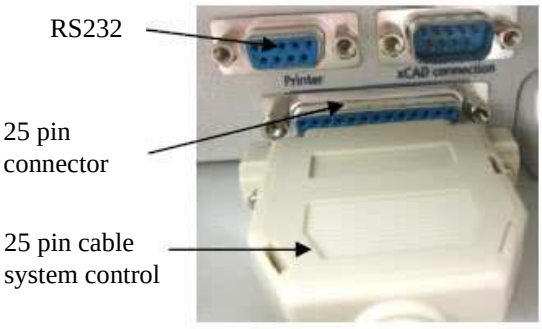
Installation of GenPure xCAD Plus system, wall version

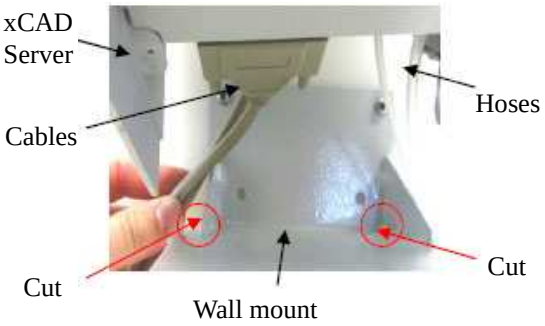
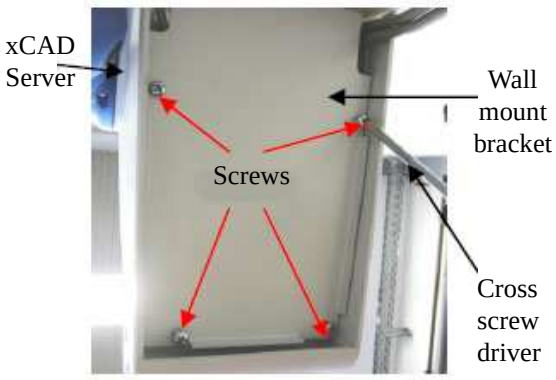
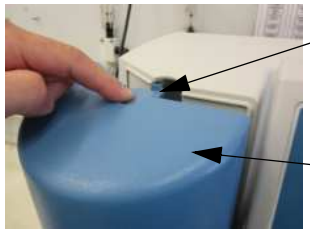
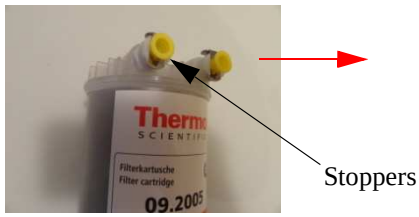
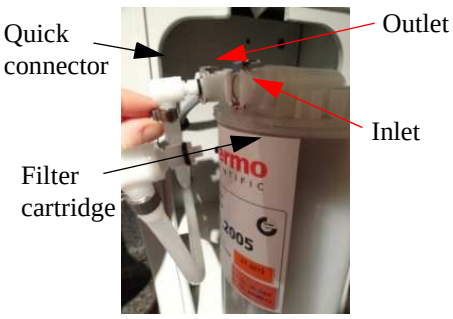
CAUTION

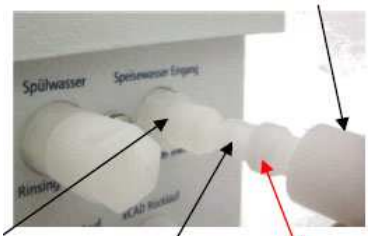
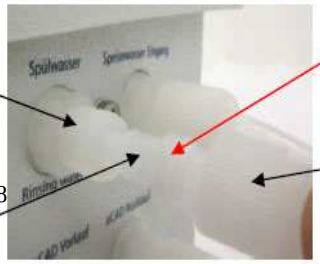
Before hanging the xCAD onto a wall make sure that the wall can support the weight of the system once it's full of water.

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 use the included wall mounting hardware.	**NOTE** Lift and carry out the xCAD Server and xCAD Client wall version by two people. It is easier to work and mount it onto a wall.
2	To wall mount the xCAD Server wall version unscrew the 4 screws (see red arrows in the picture) of the underside from the xCAD Server 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)  b) 1)  Dimensions boreholes of wall mount 2)  Wall mount Possible wall cut-outs for cable and hose taken out at
4	Connect the wall mount bracket to the wall by screwing in the 4 supplied screws with a cross screw driver into the wall where you installed the plugs before.	

Step	Action	Figure
5	a. Connect the one end of the 0.31” (8 mm) od hose to the xCAD flow connector on the system by unscrew 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. b. The other end of the 0.31” (8 mm) o.d hose you should connect to the xCAD flow connector of the xCAD Server. c. Connect the second 0.31” (8mm) o.d hose for the xCAD backflow in the same way where you have connected in action a) and b).	a)  b) 
6	a. Plug the cable with 25 pin socket into the socket of the GenPure system and screw it tight. b. Plug the other end of the 25 pin cable for the system control into the xCAD Server connector. NOTE If applicable use the RS232 connector (13) to connect the optional data printer.	a)  b) 

Step	Action	Figure
7	Place the xCAD wall version onto the mounted wall mount bracket. There are two cuts on the bracket (see red arrows) where you can lay down the cables and hoses. **NOTE** When you have made the possible wall cuts (see step 3) plug the cables and hoses throughout the wall.	
8	Screw in the 4 screws (see red arrows) which you have unscrewed in step 2 to attach the xCAD on the wall mount bracket.	
9	Release the cartridge cover by pressing the push button.	
10	Remove the two stoppers from the new ultrapure cartridge and fit the cartridge into the system.	
11	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.	

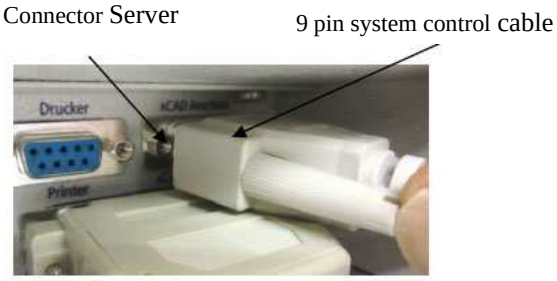
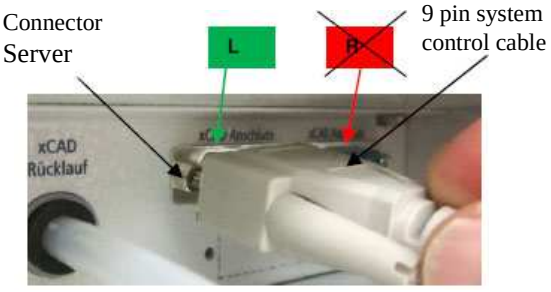
Step	Action	Figure
12	Mount the feedwater connecting kit together and connect it to the feedwater inlet line. Connect the other end of the hose to the feedwater connector of the system by unscrewing the fitting. After this put the hose through the fitting and mount the white O-ring on it. Screw the fitting 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 Fitting  Feedwater connector unit Hose 0.31“ 8 mm White O-ring
13	Connect the 0.31” (8 mm) o.d hose to the rinse water connection of the system (see step 11) and make a gravity fall (pressureless) connection from the system to the floor drain. The drain to the sewer must be max. are 1m (1.09 yards) above the rinsing water connector of the unit.	Rinse water connection  White O-ring Fitting Hose 0.31“ 8 mm o.d
14	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.	 1/4" female thread connection Final filter 0.2 µm

Step	Action	Figure
15	Assemble the power pack and make the voltage connection to the GenPure system.	NOTE See under "Mounting the power pack (voltage supply)" on page 48.
16	Open the feedwater supply and switch the system on. The system is now ready for use. CAUTION Only feedwater that has been pretreated by reverse osmosis, ion exchange or distillation is to be used.	 Feedwater

Installation of an additional xCAD Client, bench version (optional)

NOTE

You can connect a maximum of two additional xCAD Clients to the xCAD Server.

Step	Action	Figure
1	Installation the system (see “Installation of GenPure xCAD Plus system, bench version” on page 29). a. Connect the one end of the 0.31” (8 mm) o.d hose to the xCAD backflow connector of the xCAD Server. The other end of the hose you should connect it into the xCAD flow connector of the xCAD Client. Connect the hose 0.31” (8 mm) o.d into the xCAD backflow connector of the xCAD Client. The other end of the hose you should connect it into the xCAD backflow connector of the GenPure system. b. When you are finished action a) connect the 9 pin control system cable onto the 9 pin connector of the xCAD Server and screw it tight. The other end of the 9 pin system control cable should be put it onto the 9 pin connector of the xCAD Client and also screw it tight. **NOTE** In order to recognise the correct connectors of the cable on the xCAD Server connect the 9 pin control cable onto the right port of the xCAD Server and connecting the other end of the 9 pin control cable to the left port of the xCAD Client (see green rectangular). **NOTE** When the xCAD Client is finish connected to the xCAD Server the xCAD Server must be in operating mode (nonstop mode) in order to use the xCAD Client. You cannot use the xCAD Client only.	a)    b)  

Installation of an additional xCAD Client, wall version (optional)

NOTE

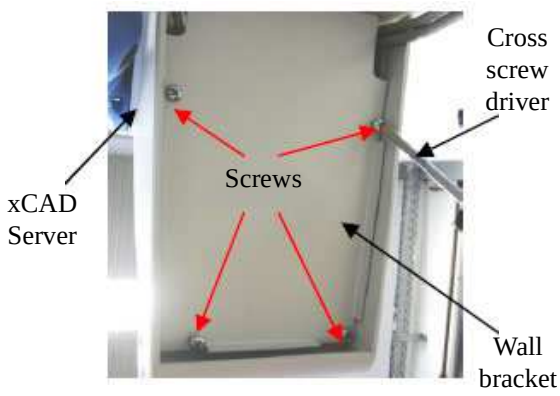
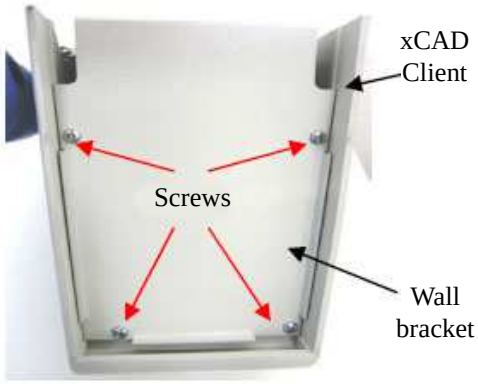
You can connect a maximum of two additional xCAD Clients to the xCAD Server.

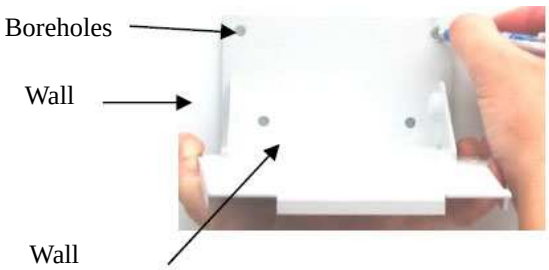
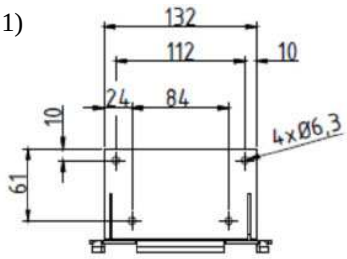
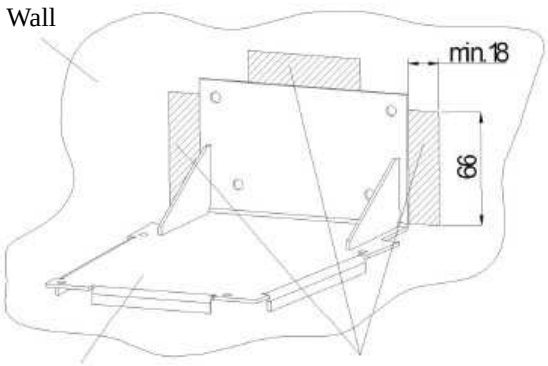
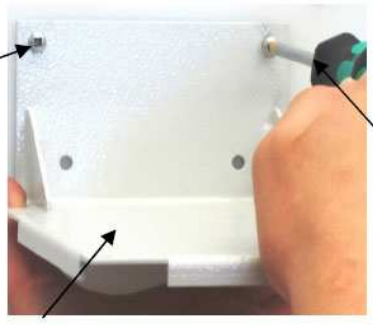
NOTE

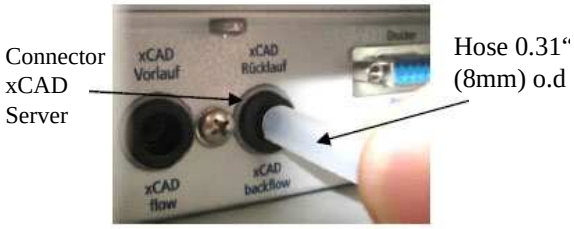
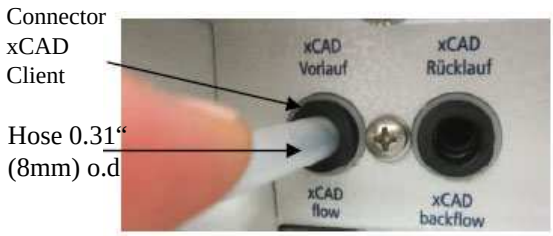
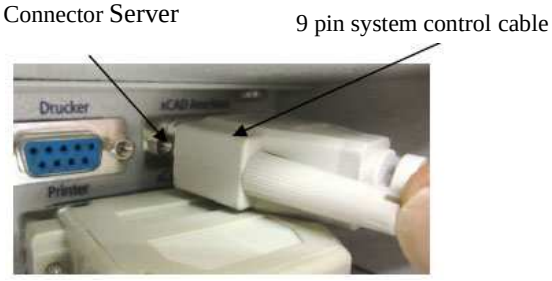
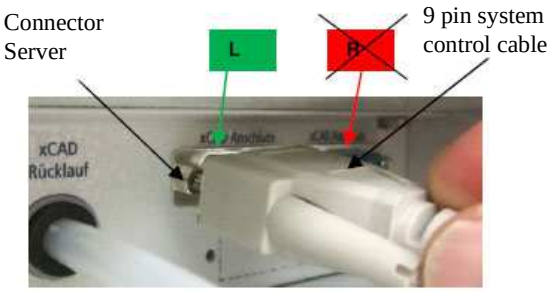
Lift and carry out the xCAD Server and xCAD Client wall version by two people. It is easier to work and mount it onto a wall.

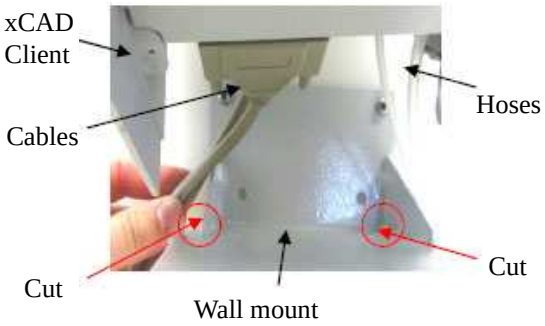
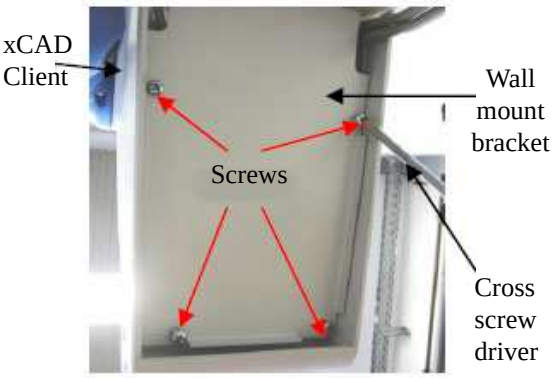
CAUTION

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	Installation the system (see "Installation of GenPure xCAD Plus system, wall version" on page 34). **NOTE** For connection of the hoses and control cable between xCAD Server and xCAD Client you must be remove the xCAD Server from the wall by unscrewing the four screws with a philips screw driver.	
2	To wall mount the xCAD Client wall version unscrew the 4 screws (see red arrows in the picture) on the bottom of the xCAD Client 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 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)  b) 1)  Dimensions boreholes of wall mount 2)  Wall mount Possible wall cut-outs for cable and hose taken out at
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.	

Step	Action	Figure
5	a. Connect the one end of the 0.31” (8 mm) o.d hose to the xCAD backflow connector of the xCAD Server. The other end of the hose you should connect it into the xCAD flow connector of the xCAD Client. Connect the hose 0.31” (8 mm) o.d into the xCAD backflow connector of the xCAD Client. The other end of the hose you should connect it into the xCAD backflow connector of the GenPure system. b. When you are finished action a) connect the 9 pin control system cable onto the 9 pin connector of the xCAD Server and screw it tight. Connect the other end of the 9 pin system control cable to the 9 pin connector on the xCAD Client and also screw it tight.	a)    b)  
	NOTE In order to recognise the correct connectors of the cable on the xCAD Server connect the 9 pin control cable onto the right port of the xCAD Server and connecting the other end of the 9 pin control cable to the left port of the xCAD Client (see green rectangular). NOTE When the xCAD Client is finish connected to the xCAD Server the xCAD Server must be in operating mode (nonstop mode) in order to use the xCAD Client. You cannot use the xCAD Client only.	

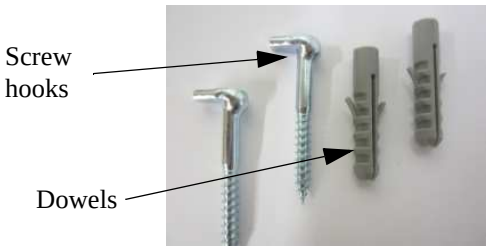
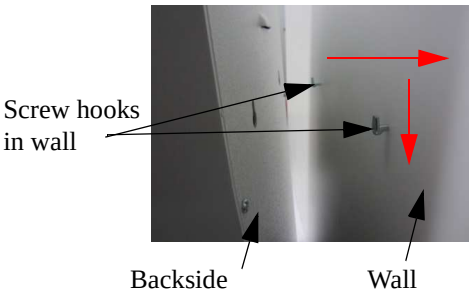
Step	Action	Figure
6	Place the xCAD Client wall version onto the mounted wall mount bracket. There are two cuts on the bracket (see red arrows) where you can lay down the cables and hoses. **NOTE** When you have made the possible wall cuts (see step 3) plug the cables and hoses throughout the wall.	
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.	

Wall mounting GenPure xCAD Plus 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 (8 mm 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 (supplied in the assembly kit) in the holes. Screw the 5.2 x 50 mm screw hooks 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.	

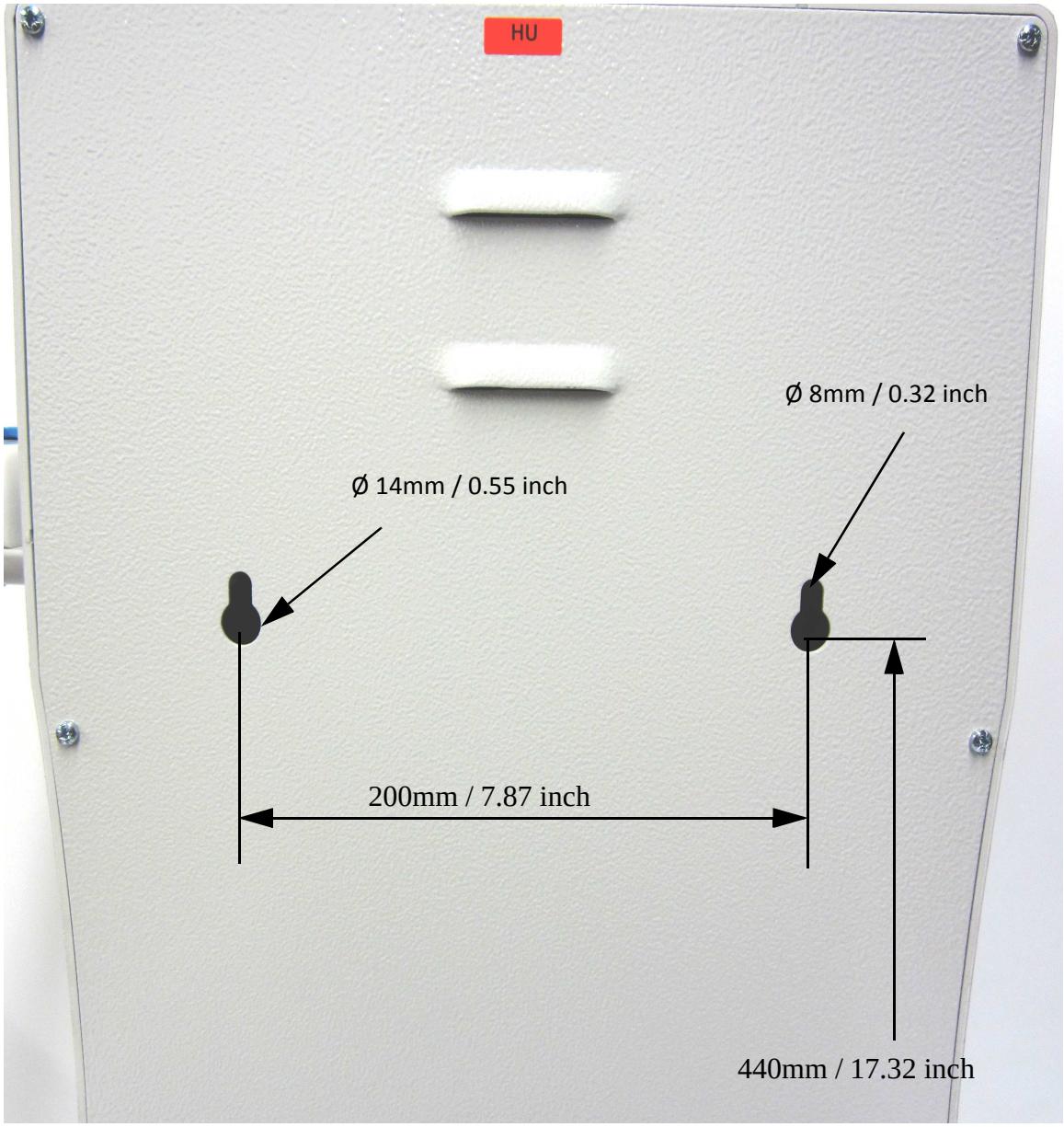
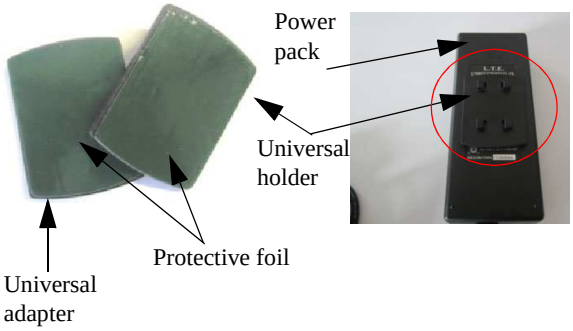
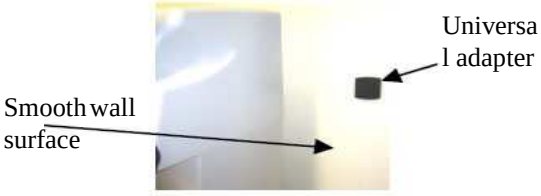
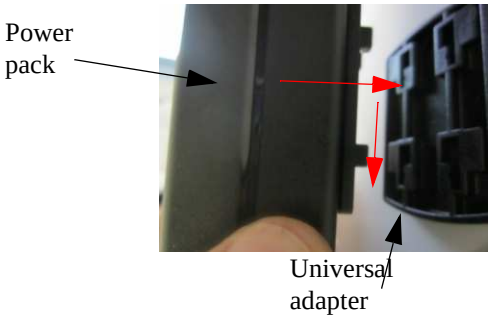
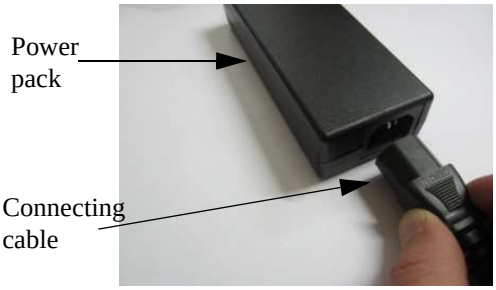


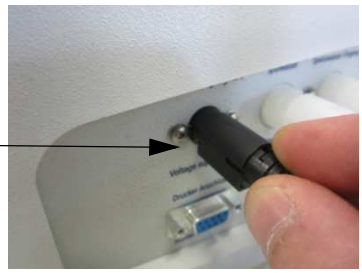
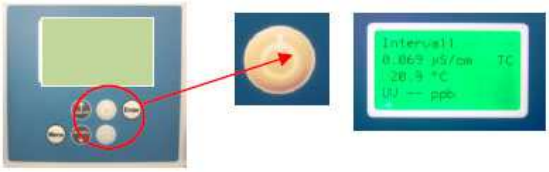
Figure 1. Holes for wall mounting

Mounting the power pack (voltage supply)

NOTE

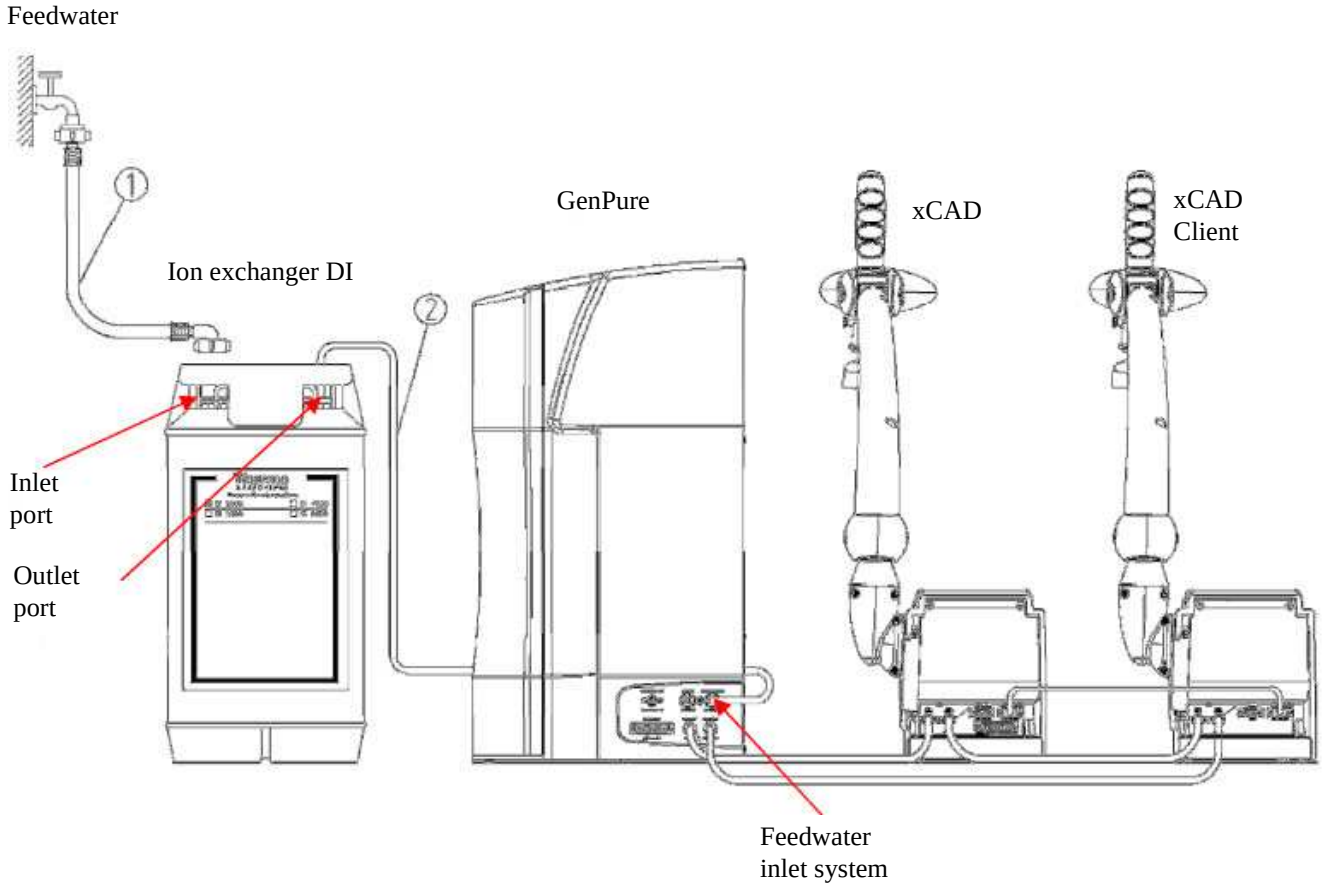
Whenever possible, mount the power pack on the wall to the left or right of the ultra pure water system where it is freely accessible and will not come in contact with water for get wet.

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 (48V 4-pin power supply connector, connector 8) and to an earthed 100 - 250V, 50/60Hz socket.	Power supply connector 
6	Switch 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 xCAD Plus 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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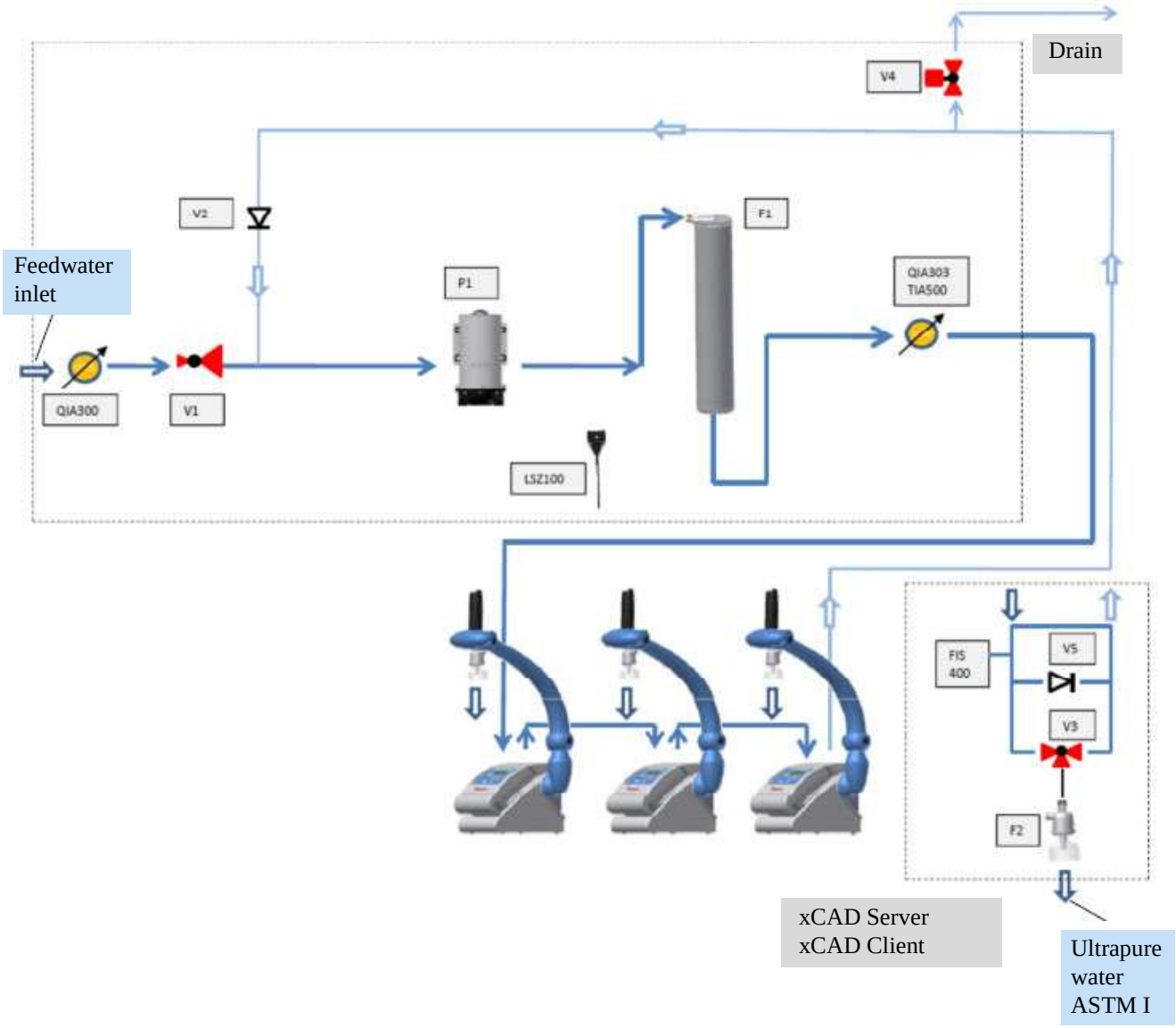
Flow charts

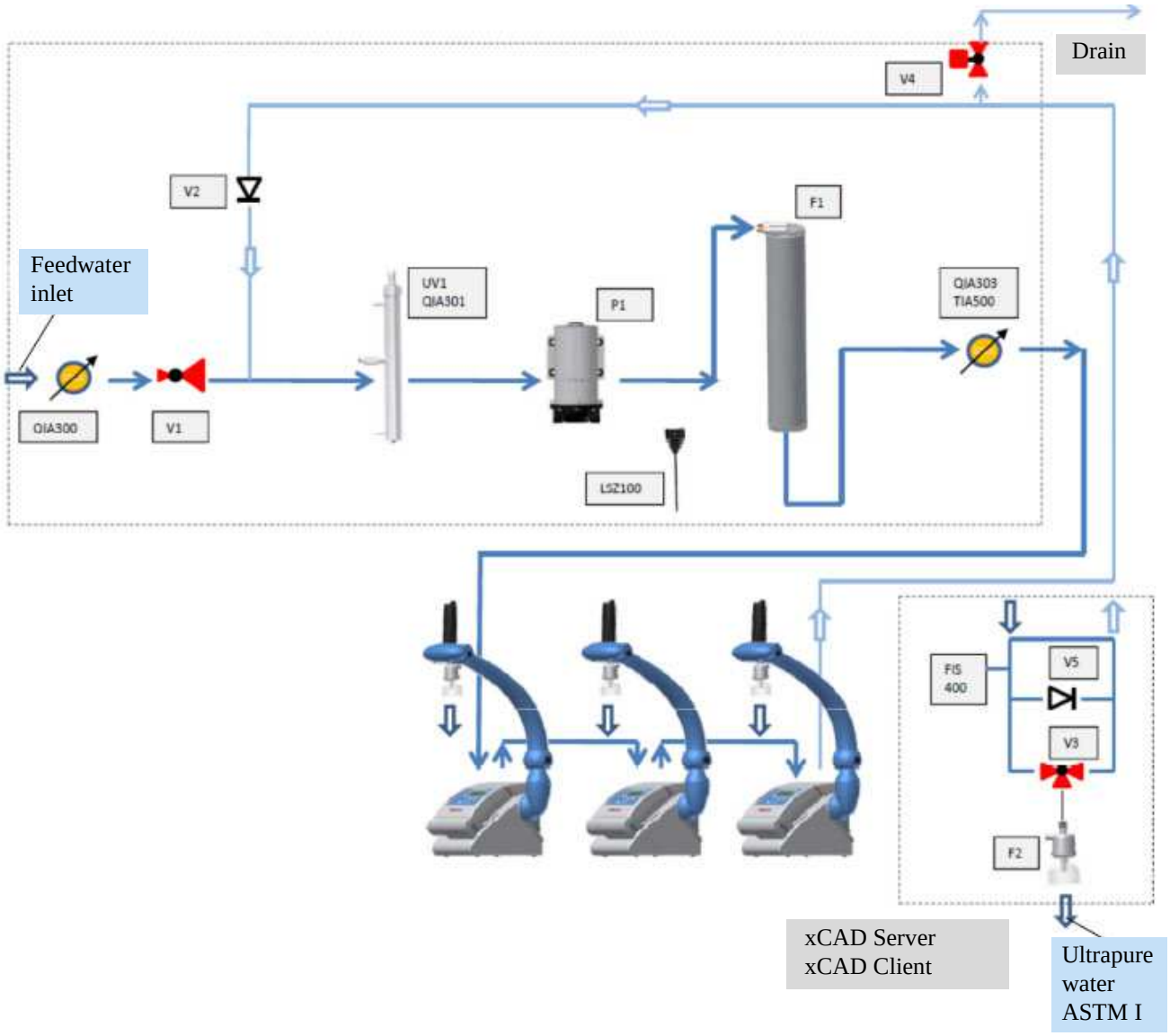
Contents

Flow chart GenPure standard xCAD plus



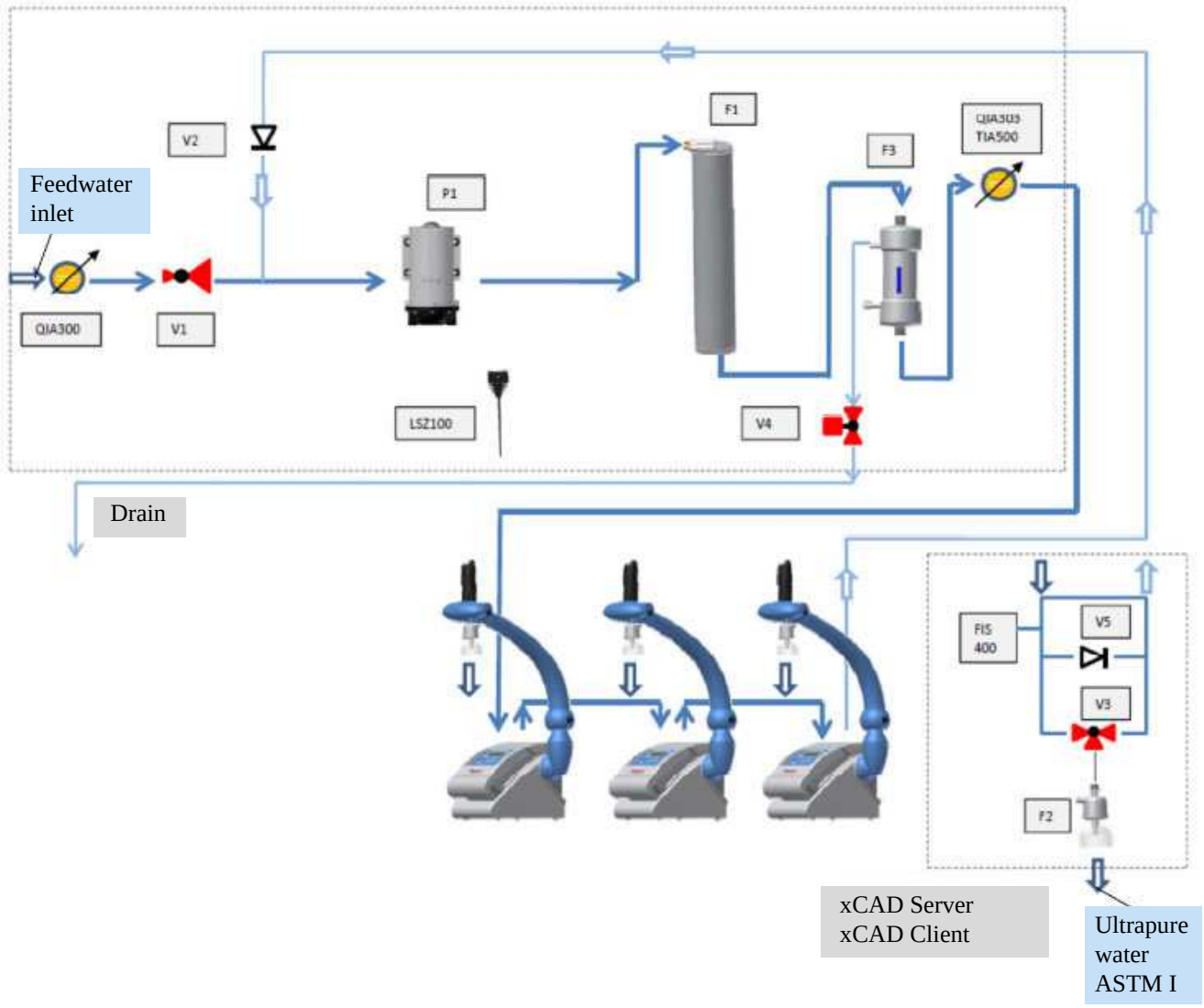
F1	Ultrapure cartridge
F2	Sterile filter
LSZ 100	Leakage sensor
P1	Circulation pump
FIS 400	Digital flow meter
QIA 300	Feedwater conductivity
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

Flow chart GenPure UV xCAD plus



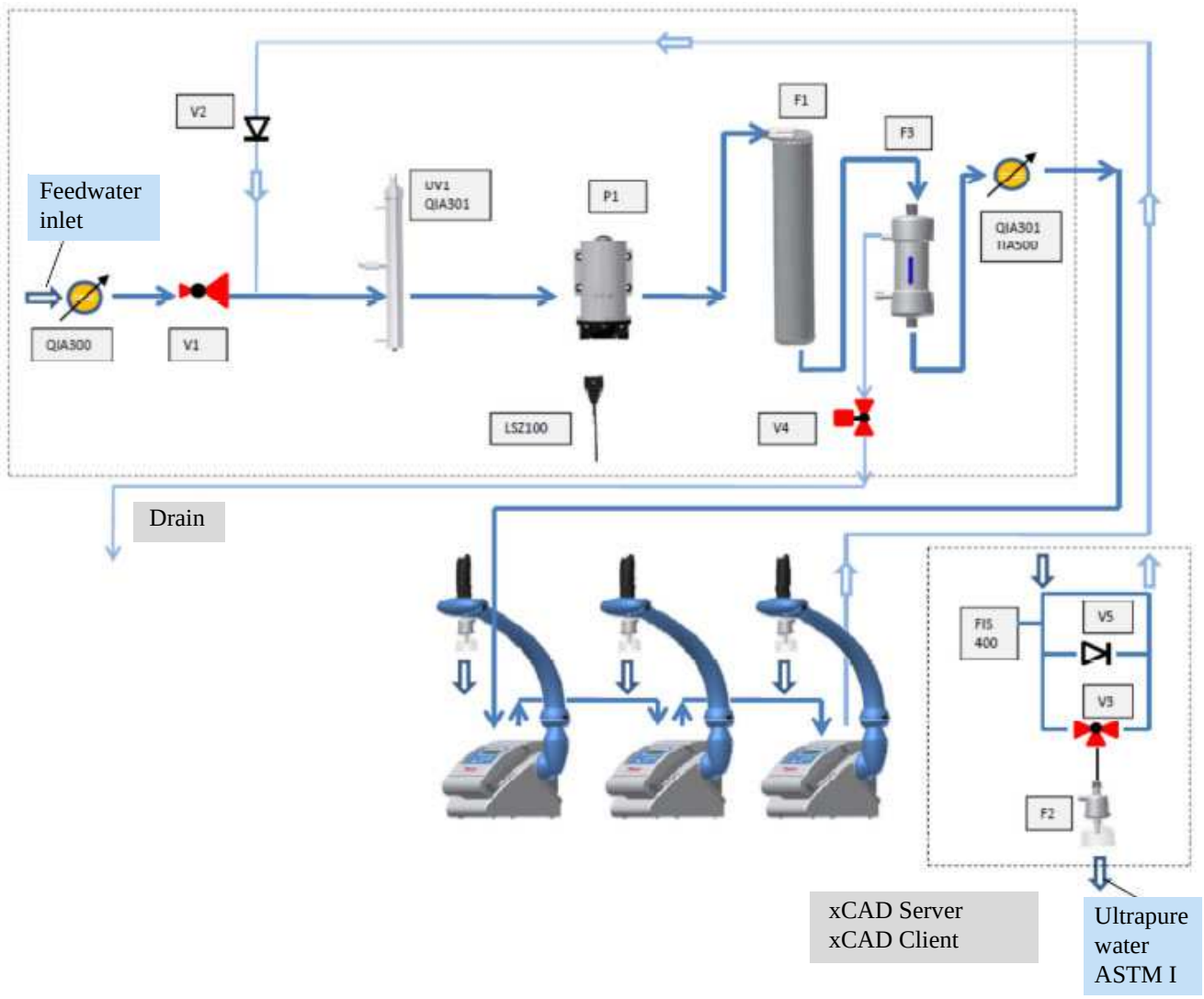
F1	Ultrapure cartridge
F2	Sterile filter
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
UV1	UV-photooxidation
QIA 300	Feedwater conductivity
QIA 301	UV-intensity
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

Flow chart GenPure UF xCAD plus



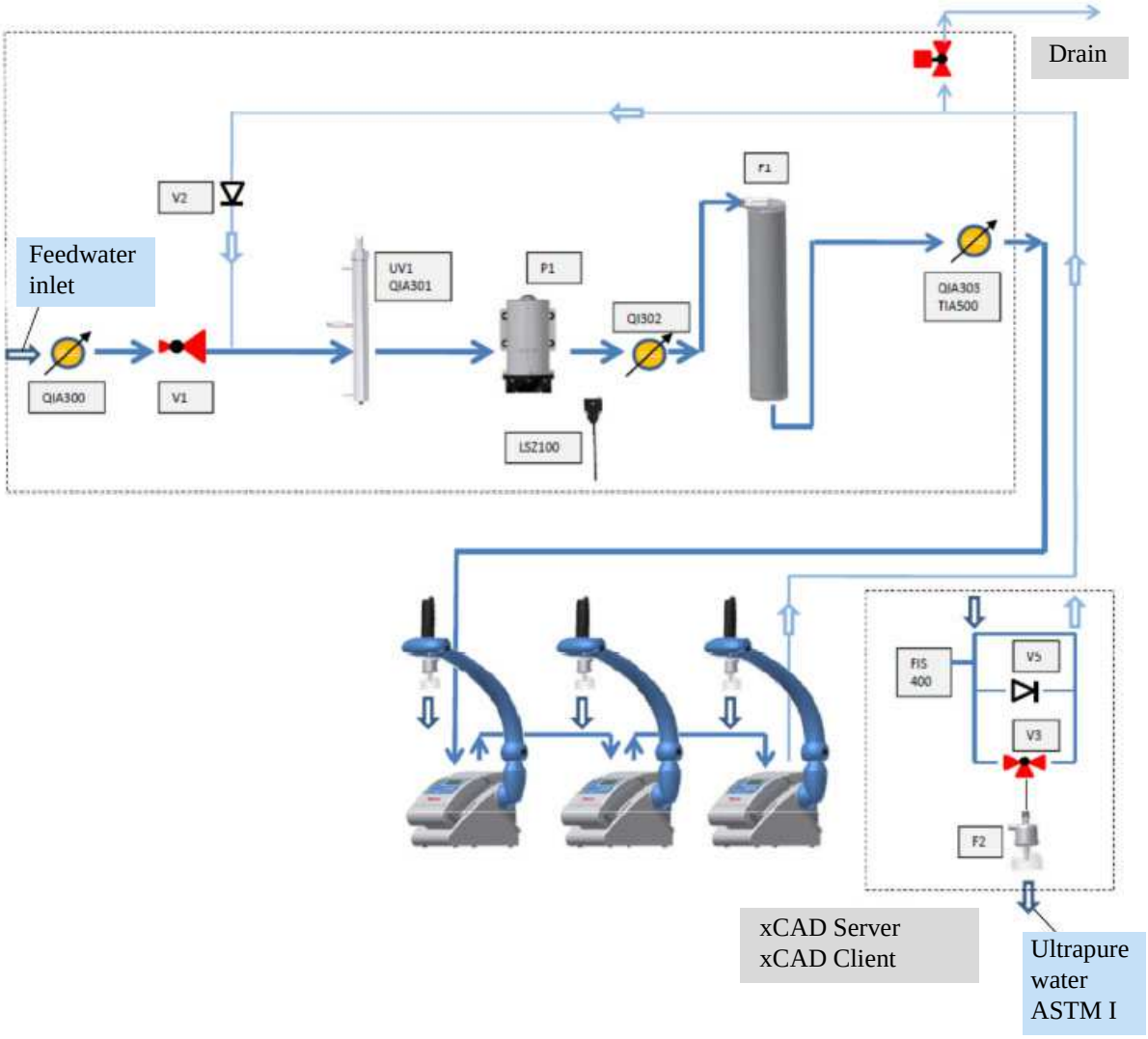
F1	Ultrapure cartridge
F2	Sterile filter
F3	Ultrafiltration module
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
QIA 300	Feedwater conductivity
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

Flow chart GenPure UV/UF xCAD plus



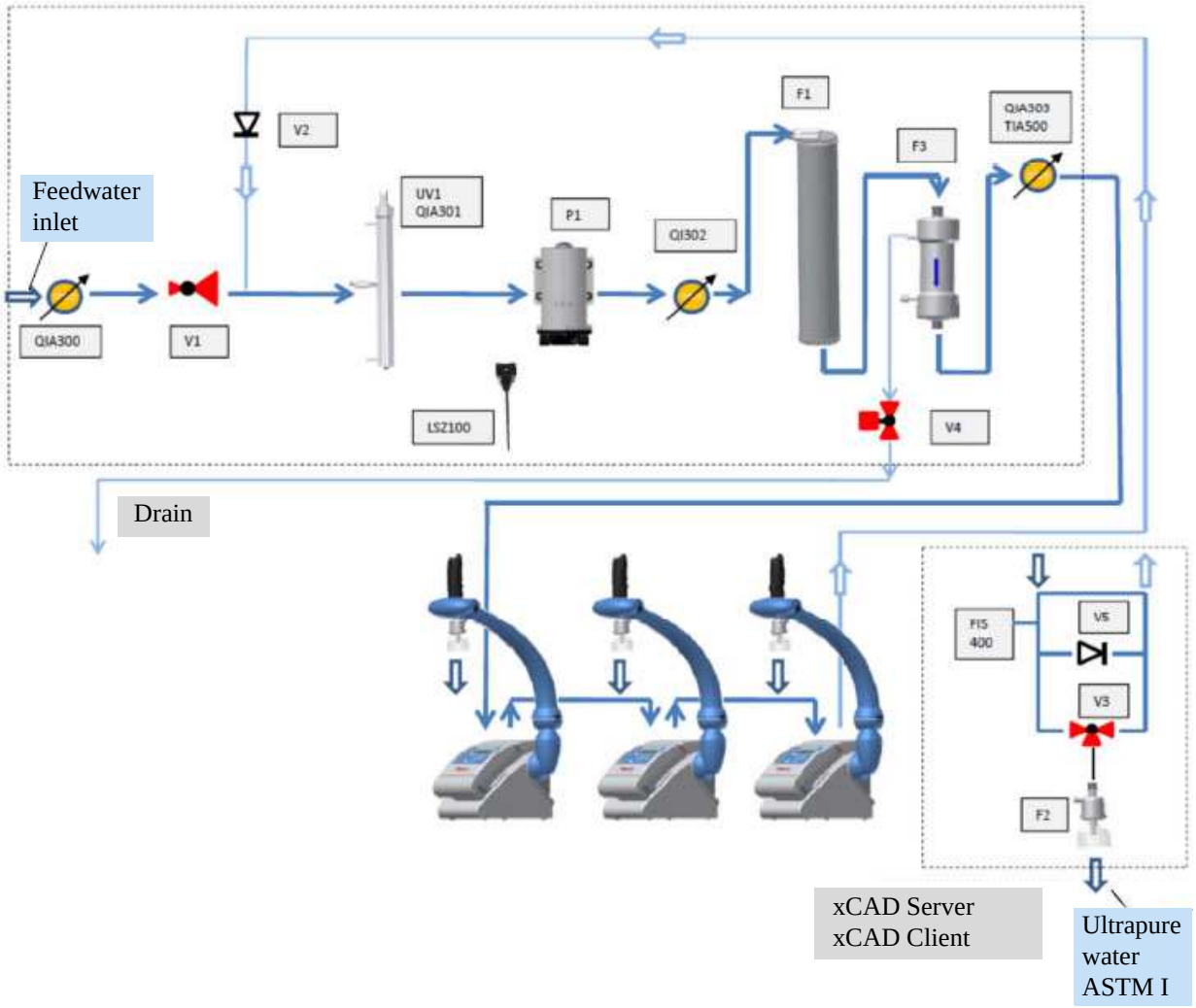
F1	Ultrapure cartridge
F2	Sterile filter
F3	Ultrafiltration module
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
UV1	UV-photooxidation
QIA 300	Feedwater conductivity
QIA 301	UV-intensity
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

Flow chart GenPure UV-TOC xCAD plus



F1	Ultrapure cartridge
F2	Sterile filter
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
UV1	UV-photooxidation
QIA 300	Feedwater conductivity
QIA 301	UV-intensity
QI 302	TOC conductivity measurement
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
TE 501	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

Flow chart GenPure UV-TOC/UF xCAD plus



F1	Ultrapure cartridge
F2	Sterile filter
F3	Ultrafiltration module
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
UV1	UV-photooxidation
QIA 300	Feedwater conductivity
QIA 301	UV-intensity
QI 302	TOC conductivity measurement
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
TE 501	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

8 Flow charts

Flow chart GenPure UV-TOC/UF xCAD plus

How the system functions

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 an 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 an 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.

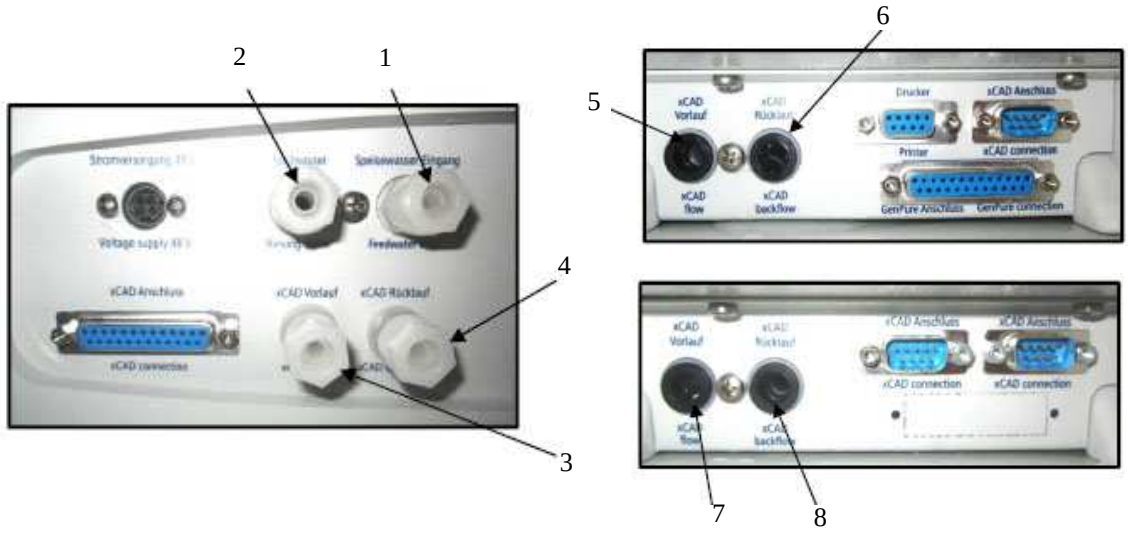
Putting system into operation

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 0.31“ (8 mm) o.d
2. Rinse water connection system 0.31“ (8 mm) o.d
3. Connection 0.31“ (8 mm) o.d xCAD flow (to Server)
4. Connection 0.31“ (8 mm) o.d xCAD back flow (from server or Client)
5. Connection 0.31“ (8 mm) o.d xCAD flow (Server)
6. Connection 0.31“ (8 mm) o.d xCAD back flow (Server)
7. Connection 0.31“ (8 mm) o.d xCAD flow (Client)
8. Connection 0.31“ (8 mm) o.d xCAD back flow (Client)

Press this button to switch the system on. After a compulsory rinse, the system switches into the “Interval” 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“. The system switches automatically into “Interval” mode after a predetermined time (factory setting 10 min.). Factory setting can be changed through the OEM-Menu by a service technician.

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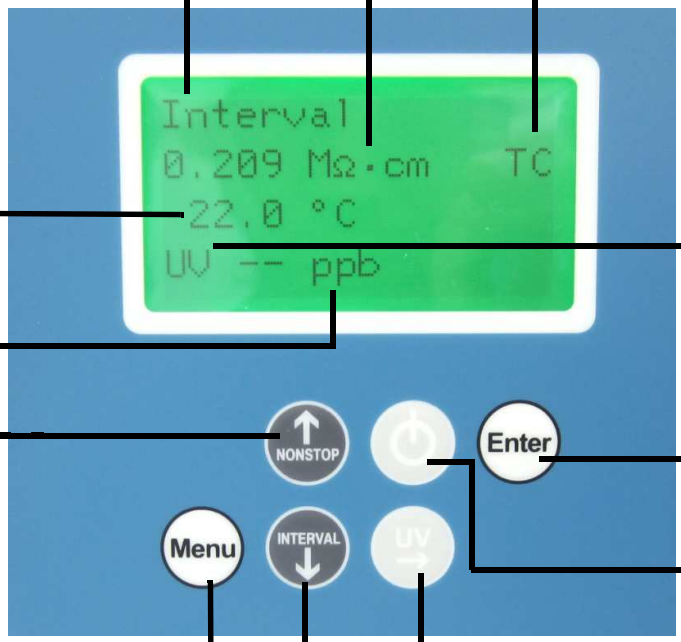
Operating elements xCAD Server

Contents

Display description xCAD Server



Shows actual operating mode of the system.

Display of the ultra pure water resistance or conductivity.

Shows that the temperature compensation is switched on.

Temperature measurement

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

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

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

Confirms prompts and selections.

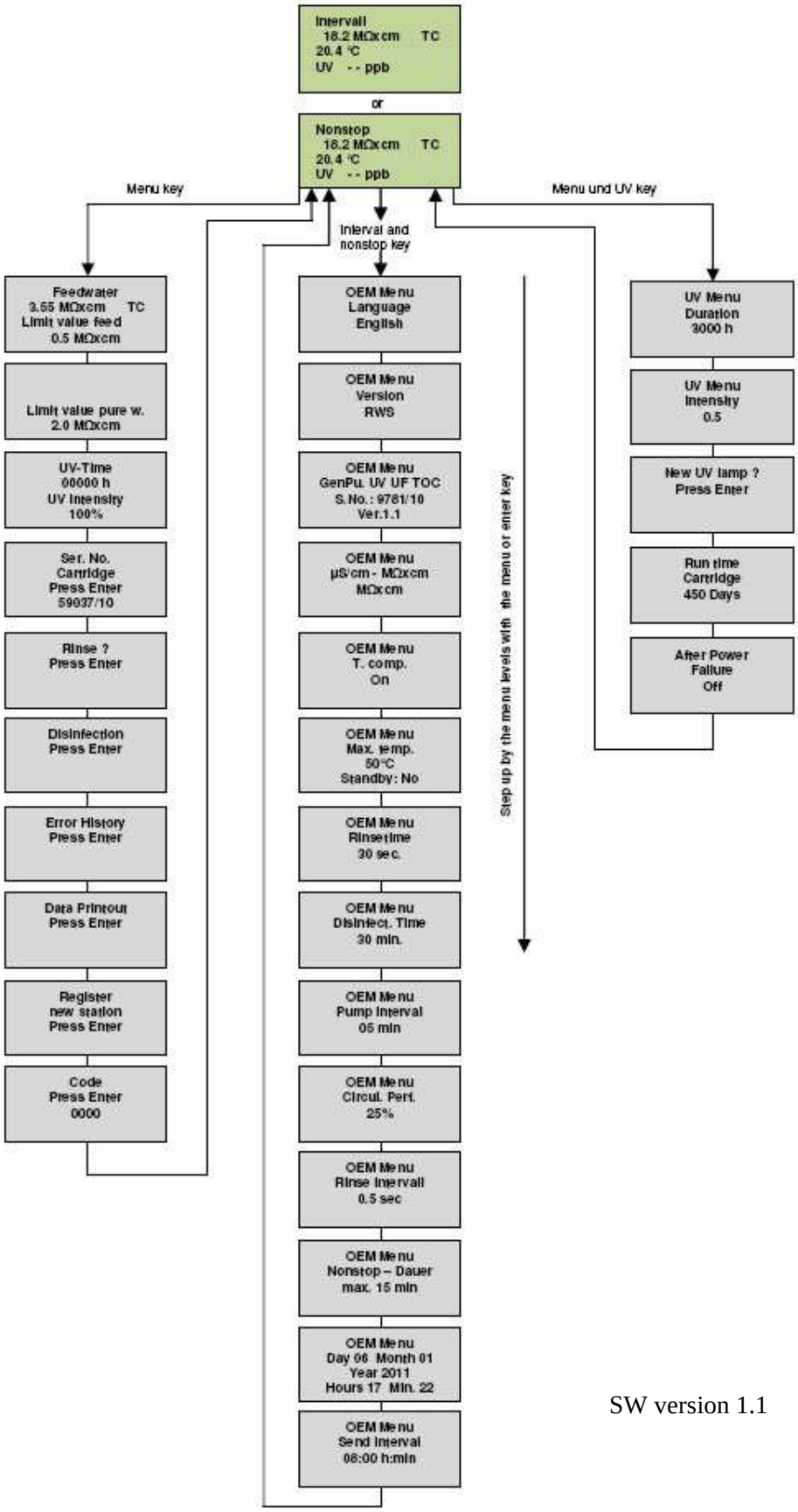
ON/OFF switch

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.

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 control unit xCAD Server



SW version 1.1

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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.
When a error occurs, the display backlighting changes from green to red and the error message is shown in clear text in the first line of the display in alternation with the operating mode message.

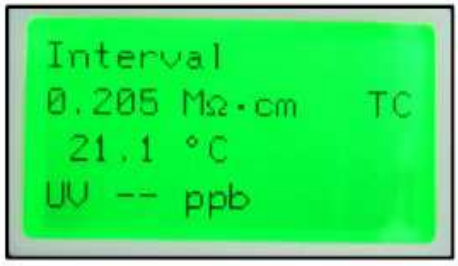
Green display: operation of the system is

Red display: There is a error in the system.

Operating modes

Interval operating mode after switching on

Following a press on the ON/OFF button, system control first brings the system version, the system serial number and the software version number to display for 3 seconds. The system then automatically goes to the Interval operating mode (see “Interval operation” on page 71), whereby the green backlighting of the display is switched on and remains on 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 which the system will continuously recirculate water to keep the water ready for use. The circulation pump starts to run, the (UF) rinsing solenoid valve opens for the set “Intv.rinse time”.Non-stop operation is stopped automatically after 10 minutes. The system operates in the “Interval”-Mode. The message *UV* is shown

in the display when the UV lamp is switched on, but switching on of it is only made in Non-stop mode (see “UV lamp” on page 71). The TOC value is additionally shown in the display whenever the UV lamp is switched on.
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 the water system isn't needing to be in non-stop mode. This mode helps 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 standstill 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 a half-hourly rhythm. The TOC value is not shown in this operating mode.
The display shows:

UV lamp

A press on the UV-button brings *UV* to view in the display. The UV lamp is only switched on, however, when the system is in Nonstop operation or when the system circulates. The UV lamp is switched off at the end of Nonstop operation (settable). When Nonstop operation is manually ended by a press on the “Nonstop” button, the UV lamp is switched off after it has been operating for 0.5 hours. During the time that the UV lamp is burning, the UV light intensity is monitored and is displayed in Menu (only applicable to systems with optional TOC monitoring). Should the limiting value for the UV-intensity (OEM menu / Menu) go below, 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 also carried out during the time that the UV lamp is burning.
The display shows:

Water dispensing via volumetric control

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 3 of the display. This is the volume of ultrapure water that was last dispensed.
A single press on the Enter-key enables this volume value to be changed within the range from 0.01 to 65.5 liters by means of the arrow-keys. The UV-key can be used to position the cursor at the particular digit that you wish to change.

A second press on the Enter-key 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-key. This enables small volumes to be dispensed by two successive presses on the Enter-key. One press starts dispensing and, when the wanted amount has been dispensed, a second press stops dispensing. The button on the dispenser has the same function as the Enter-key.

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

OFF mode

A second press on the ON/Off-button causes the display to go dark and all text output on the display to be extinguished. No outputs are now switched.

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

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

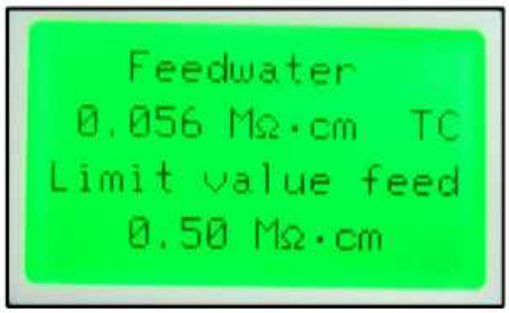
Feedwater measured value and limiting value

Under this menu prompt, the feedwater conductivity can be read and the limiting value for it can be set (LF2). The error message "*Limit value feed*" is shown flashing in line 1 of the display when the feedwater limiting value is exceeded. Should several error messages occur simultaneously, then they are alternately shown.

Measurement range, feedwater:	10.0 - 0.010 MΩxcm
Setting range, limiting value:	0.1 - 49.9 µS/cm
Basic setting:	**0.5 MΩxcm**

Set the limiting value using the arrow keys (see Settings with the arrow keys).
With settings above 50 µS/cm, the limiting value is switched off and the word off appears in the display.

Press the menu-key once then the display shows:



Ultrapure water limiting value

The limiting value for the ultrapure water conductivity can be set here. When the entered limiting value is exceeded, "*Lim. val.pure w.*" is displayed (LF1).

Setting range for the limiting value: 0.055 - 5.000 µS/cm

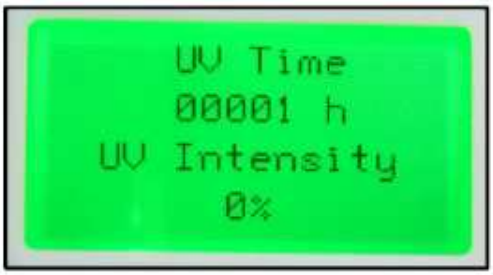
Set the limiting value using the arrow keys (see Settings with the arrow keys).
With settings above 5.000 µS/cm, the limiting value is switched off and "*Off*" is shown in the display.

Press the menu-key twice then the display shows:

UV Intensity and operating time

In this menu, the UV lamp operating time is displayed and the UV-sensor input is evaluated. The UV lamp operating time counter counts the hours that the UV lamp has been burning. The "*UV-time*" error message is triggered when the maximum operating time is reached. The UV-sensor measures the actual intensity of the UV lamp. The display shows the % of this compared to the maximum value. The *UV-Intensity* error message is issued when the limiting value is gone below. The limiting value is set in the OEM-menu. The error message for the UV intensity is first displayed after a settable error time to avoid error message display during the start-up phase.

Press the menu-key 3 times then the display shows:



NOTE

For more details see under chapter „Chapter change the UV Lamp on page 115“.

Ultrapure cartridge serial number

The operating time counter for the ultrapure cartridge is set back on entry of a valid serial number.

Press the menu-key 4 times then the display shows:

NOTE

For more details see under chapter „Chapter change the Ultrapure cartridge on page 104“

Rinsing the ultrafilter

In this menu, a press on the Enter-key allows rinsing to be carried out whenever it is necessary or the ultrafilter has been replaced. The pump is started and the rinsing solenoid valve (V4) is opened for the rinsing time set in the OEM-menu.
Neither error messages nor measured values are displayed during rinsing.
When rinsing has finished, the system returns to the last operating mode (Interval or Nonstop).
The remaining rinsing time is counted down and displayed during rinsing.

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

Disinfection

In this menu prompt, the query asks if there is a need of disinfection. Confirmation with Enter brings the *Disinfection cartridge*. Install one prompt to display. When this is also confirmed with Enter, disinfection begins and the pump runs for the whole of the disinfection time. When half of the disinfection time has expired, the rinsing solenoid valve (V4) is additionally opened until the end of disinfection. When disinfection has been completed, the *New filter cartridge*. Install one message is shown. Confirmation with Enter returns system control to the last used operating mode. The disinfection time can be set in the OEM-menu.
The remaining disinfection time is counted down and displayed during disinfection.

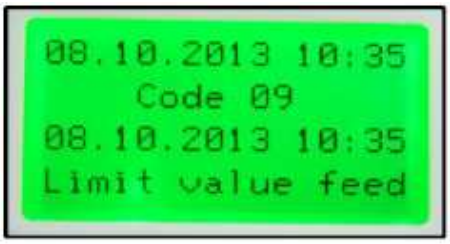
Step	Action	Figure
1	Press the menu-key 6 times then the display shows:	
2	Confirm disinfection by pushing the enter button. Change the filter cartridge with the disinfection cartridge (see under chapter „Disinfection on page 106“.	
3	Confirm with enter. The Disinfection is started for 30 min.	

NOTE

The completely process is described under “Disinfection” on page 105.

Error history

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

Step	Action	Figure
1	Press the menu-key 7 times then the display shows:	
2	Confirm error history by putting the enter button. Now you can see two last saved errors with date and time.	

Print out of Data

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

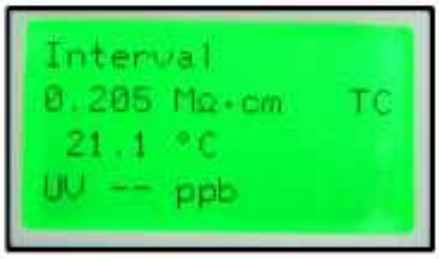
Press the menu-key 8 times then the display shows:

Registering the xCAD Client to the xCAD Server

In this menu, the xCAD Client units can be registered at the server.

NOTE

Maximum two xCAD Clients you can registered to the xCAD Server.

Step	Action	Figure
1	Press the menu key 9 times on the **xCAD Server** then the display shows:	
2	Confirm with enter. After you confirm this you have time to 90 sec to register the **xCAD Client**.	
3	Switch the **xCAD Client** on. The display shows station not registered. Confirm with enter. After this the display shows "**Station is registered**".	 NOTE After registered the xCAD Client the color of the Client display changes to the same color of the xCAD Server display.
4	When the **xCAD Client** is registered the both display on the **xCAD Server** and **xCAD Client** jumps automatically to the display message "**Interval or Nonstop mode**".	

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 “Code lock” on page 87

Press the menu-key 10 times then the display shows:

OEM Menu

Basic settings and limiting values can be changed in this menu. To be able to make changes in the OEM menu, system control must be previously unlocked by entering a code number.

NOTE

You need the right code to do this transaction.
You can find the code under “Code lock” on page 87.

Accessing the OEM menu.

After system control has been unlocked, simultaneous presses on the Enter-key and the Nonstop-key call the OEM menu. Following this, the "OEM menu Press Enter" prompt is displayed. When this is confirmed with Enter, the first menu prompt can be worked on. To simplify changing settings, press the UV-key to select the individual number in the numerical value which you want to change. Now use the arrow keys to enter the wanted number from 0 to 9 at that selected position.

A press on the menu-key takes you to the next menu prompt.
The setting can be changed with the arrow keys.

Language selection

The language can be changed in this menu.
The choice is between English, French and German.
The setting can be changed with the arrow keys.

Basic setting: **English**

After entering the OEM menu press the menu-key once then the display shows:

Program selection

The program according to which system control operates is set in this menu.
The following possibilities are given:
Basic setting:
RWS (Ultrapure water system)

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

Entering system version and serial number

The system version and system serial number can be entered in this menu. The two are then printed out as header on each print-out. Use the arrow keys to enter the settings. The number of the software version is given in the bottom line of the display.

The following system versions can be set here:

GenPure Standard, GenPure UV, GenPure UF, GenPure UV/UF, GenPure UV/TOC, GenPure UV/TOC/UF, LabTower EDI, LabTower TII.

The serial number consists of six numerals and a slash. Use the arrow keys to enter the settings, as for other settings.

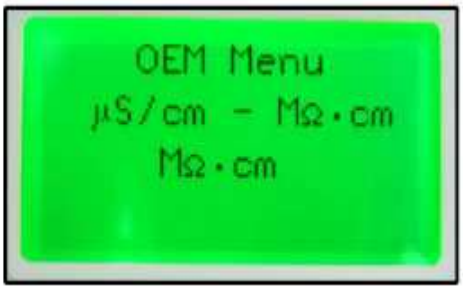
After entering the OEM menu press the menu-key 3 times then the display shows:

Switching units

In this menu, a choice is given as to whether measured values are to be displayed in the conductivity unit or the specific electric resistance unit.

Basic setting: Conductivity

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



Switching temperature compensation off

Temperature compensation can be switched off or on in this menu. TC is shown in the display when it is switched on, NTC is shown when it is switched off.

Basic setting: Temperature compensation on

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

Setting the limiting value for temperature

The maximum temperature which the system is to be allowed to reach is set in this menu. The *max. Temp.* error message is triggered when this limiting value is exceeded. A setting can also be made here to have the system automatically switched over to the Stand-by operating mode to avoid further heating up.

Setting range: 1 - 50 °C

Basic setting: 50 °C
Basic setting: Standby: No

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

Rinsing time

The rinsing time can be set in this menu. The system is rinsed automatically every 20 min. when it is works in the “Interval” mode. Additional in chapter “Rinsing the ultrafilter” on page 75 you can rinse the system manually.

Step width: 1
Setting range: 10 - 60 sec.

Basic setting: 30 sec.

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

Changing the disinfection time

The disinfection time can be set in this menu.

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

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

Setting the interval pump time

The interval pump time is the amount of time the pump is working to recirculate water in the system. The standard setting is 5 min of pump recirculation for every 30 min that the system stands still during Interval mode. The majority of systems do not need this setting to be changed.

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

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

Circulating pump performance

NOTE

GenPure xCAD Plus systems do not have the option of changing this basic setting.

This setting is to determine the performance of the pump during Interval mode and the duration of the ramp-up for volumetric dispense in Nonstop mode. Only a authorized person should change these values.

Specification of the voltage in % of the maximum supply voltage value.

Basic setting for Interval mode: 20 % (for recirculation)
Basic Setting for Nonstop mode: 45 % (for dispensing ultrapure water)

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

Setting the interval rinse time

In this menu, setting can be made of the time for which the rinsing solenoid valve is opened for ultrafilter rinsing at each start of the Interval cycle or on changing from Interval to Nonstop.

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

After entering the OEM menu press the menu-key 11 times then the display shows:

Nonstop duration

The system will automatically switch from Nonstop mode to Interval mode to ensure the system has adequate recirculation during periods of down time. This protects the system against bacterial growth. The standard setting is after 10 min of inactivity when the system is in Nonstop mode, it will automatically switch to Interval mode. You can update to set the time from 10 to 120 min.

Setting range: 10 - 120 min.
Basic setting: 10 min.

After entering the OEM menu press the menu-key 12 times then the display shows:

Setting the real-time clock

The real time clock can be set in this menu.

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

After entering the OEM menu press the menu-key 13 times then the display shows:

Setting the sending interval

In this menu the sending interval between transmissions of measured values and error messages to the RS 232 is set. This is only important when a printer is attached to the system.

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

After entering the OEM menu press the menu-key 14 times then the display shows:

Data transmission via the RS 232 interface

All measured values are issued to the interface complete with date and time in the rhythm of the set sending interval. Should a error occur, this is issued to the interface as text with date and time. Each unlocking of system control is also registered by issue to the printer with date, time and the abbreviated code number.
In Nonstop operation, a set of data is issued to the printer once only.
The interface has a transmission rate of 9600 bits/sec., 8 data bits, 1 stop bit and no parity.

The SUB-D socket assignment is: PIN 2: TXD
PIN 3: RXD
PIN 5: GND

Printer output

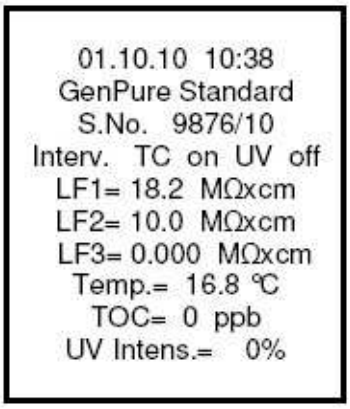
Various parameters are documented by the printer. It differentiates between three types of message:

- Standard message
- Code message
- Error message

Standard message:

A record of all measured values is printed out according to the sending interval.
A print out is also made of a complete set of data in Nonstop operation.

Print-out:
e.g.:

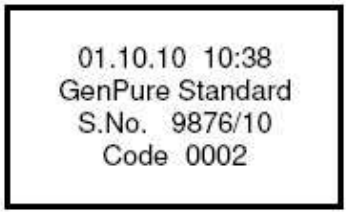


The standard record documents all measured values. With systems without TOC measurement and UV-intensity, 0 is entered in place of measured values for these functions!

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 “Code lock” on page 87).

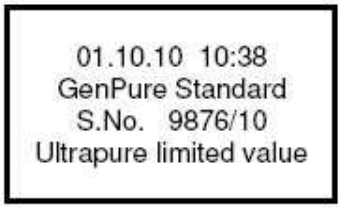
Print-out:



Error message:

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

Print-out:



Measuring cell error recognition

Minimum and maximum limiting values for each of the conductivity measuring cells and the temperature sensor are fixed. Should measured values go below or above these respectively, then it must be assumed that a cable break has occurred. The appropriate error message "*Measuring cell LF1*", "*Measuring cell LF2*", "*Measuring cell LF3*" or "*Measuring cell Temp*" is then issued in line 1.
When resistances are in a region below 50Ω or above 20MΩ, then a cable break or a shortcircuit can be assumed.
These basic settings cannot be changed in any menu.

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 programs, 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 display shows:

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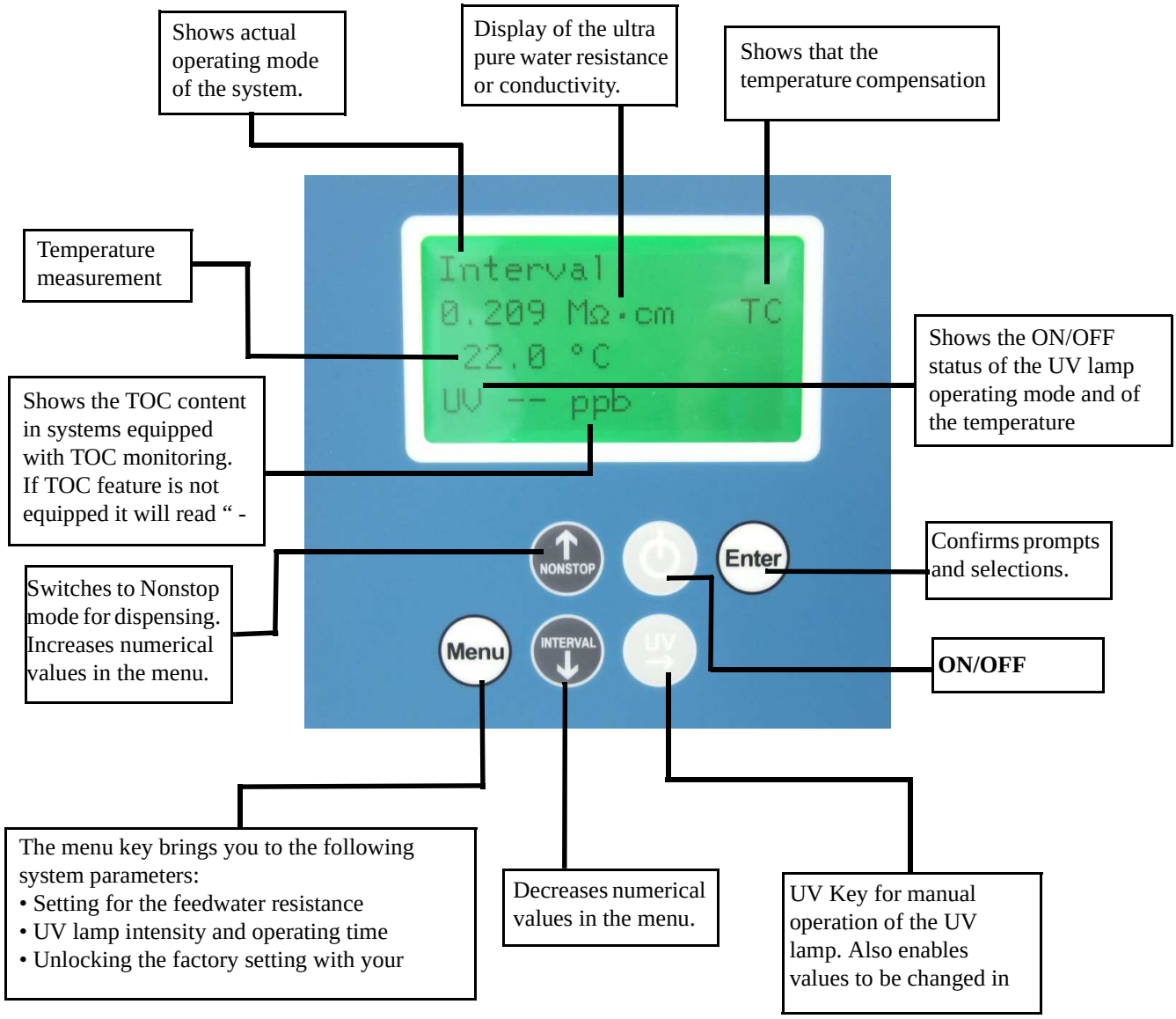
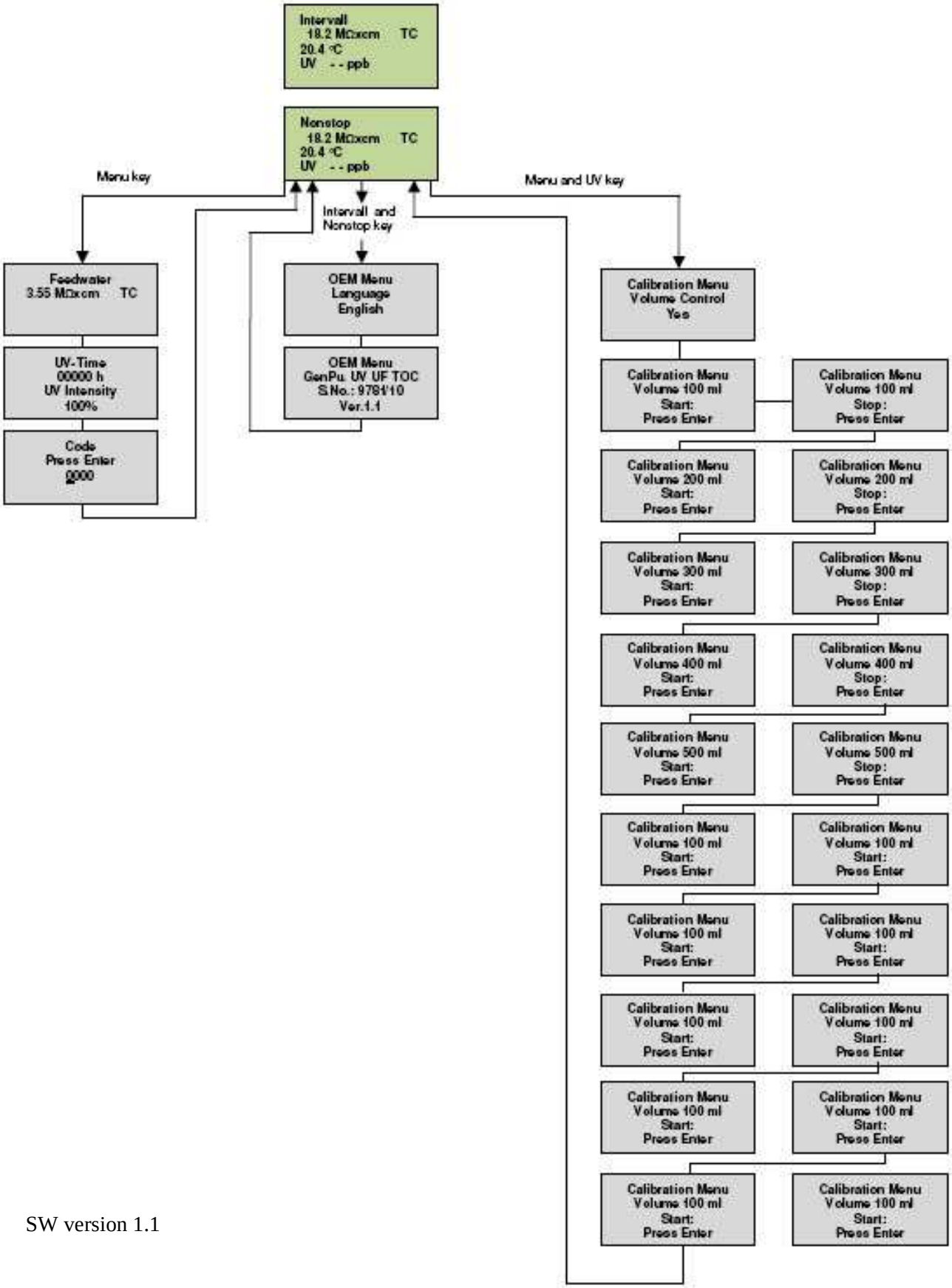
Operating elements xCAD Client

Contents

Description display xCAD Client



Flow chart control unit xCAD Client



SW version 1.1

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xCAD Client 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.
When a error occurs, the display backlighting changes from green to red and the error message is shown in clear text in the first line of the display in alternation with the operating mode message.

Green display: operation of the system is

Red display: There is a error in the system.

Operating modes

Interval operating mode after switching on

Following a press on the ON/OFF button, system control first brings the system version, the system serial number and the software version number to display for 3 seconds. The system then automatically goes to the Interval operating mode when the xCAD Client is registered on the xCAD Server (see “Registering the xCAD Client to the xCAD Server” on page 77), whereby the green backlighting of the display is switched on and remains on 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 also the mode which the system will continuously recirculate water to keep the water ready for use. The circulation pump starts to run, the (UF) rinsing solenoid valve opens for the set “Intv.rinse time”.Non-stop operation is stopped automatically after 10 minutes. The system operates in the “Interval”-Mode. The message *UV* is shown

in the display when the UV lamp is switched on, but switching on of it is only made in Non-stop mode (see “UV lamp” on page 95). The TOC value is additionally shown in the display whenever the UV lamp is switched on.
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 the water system isnt needing to b in non-stop mode. This mode helps 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 standstill 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 a half-hourly rhythm. The TOC value is not shown in this operating mode.
The display shows:

UV lamp

A press on the UV-button brings *UV* to view in the display. The UV lamp is only switched on, however, when the system is in Nonstop operation or when the system circulates. The UV lamp is switched off at the end of Nonstop operation (settable). When Nonstop operation is manually ended by a press on the “Nonstop” button, the UV lamp is switched off after it has been operating for 0.5 hours. During the time that the UV lamp is burning, the UV light intensity is monitored and is displayed in Menu (only applicable to systems with optional TOC monitoring). Should the limiting value for the UV-intensity (OEM menu / Menu) go below, 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 also carried out during the time that the UV lamp is burning.
The display shows:

Water dispensing via volumetric control

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 3 of the display. This is the volume of ultrapure water that was last dispensed.
A single press on the Enter-key enables this volume value to be changed within the range from 0.01 to 65.5 liters by means of the arrow-keys. The UV-key can be used to position the cursor at the particular digit that you wish to change.

A second press on the Enter-key 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-key. This enables small volumes to be dispensed by two successive presses on the Enter-key. One press starts dispensing and, when the wanted amount has been dispensed, a second press stops dispensing. The button on the dispenser has the same function as the Enter-key.

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

OFF mode

A second press on the ON/Off-button causes the display to go dark and all text output on the display to be extinguished. No outputs are now switched.

User menu

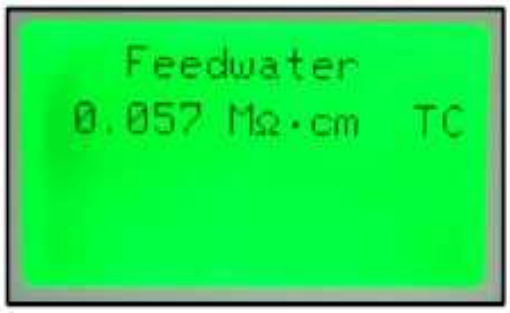
All measured values, operating times and limiting values which are relevant for the user can be set and read in this menu.
A press on the menu-key brings you to this menu. Each further press on the menu-key moves you further from one menu prompt to the next.
Settings can be changed with the arrow keys. When you confirm a value by pressing on the Enter-key, you are taken to the next menu prompt. Settings can only be made when system control has been previously unlocked by entering a valid code number.

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

Feedwater measured value

The feedwater conductivity can be read under this menu prompt (LF2).

Press the menu-key once then the display shows:



UV Intensity and operating time

The operating time of the UV lamp and the value measured by the UV-sensor are displayed in this menu.

Press the menu-key twice then the display shows:

Entering a code number

To prevent unauthorized access to system control, 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.

Press the menu-key third times then the display shows:

OEM Menu

Basic settings and limiting values can be changed in this menu. To be able to make changes in the OEM menu, system control must be previously unlocked by entering a code number.

NOTE

You need the right code to do this transaction.
You can find the code under chapter “Code lock” on page 87.

Accessing the OEM menu.

After system control has been unlocked, simultaneous presses on the Enter-key and the Nonstop-key call the OEM menu. Following this, the "*OEM menu Press Enter*" prompt is displayed. When this is confirmed with Enter, the first menu prompt can be worked on. To simplify changing settings, press the UV-key to select the individual number in the numerical value which you want to change. Now use the arrow keys to enter the wanted number from 0 to 9 at that selected position.

A press on the menu-key takes you to the next menu prompt.
The setting can be changed with the arrow keys.

Language selection

The language can be changed in this menu.
The choice is between English, French and German.
The setting can be changed with the arrow keys.

Basic setting: English

After entering the OEM menu press the menu-key once then the display shows:

Entering system version and serial number

The system version and system serial number can be entered in this menu. The two are then printed out as header on each print-out. Use the arrow keys to enter the settings. The number of the software version is given in the bottom line of the display.

The following system versions can be set here:

GenPure Standard, GenPure UV, GenPure UF, GenPure UV/UF, GenPure UV/TOC, GenPure UV/TOC/UF, LabTower EDI, LabTower TII.

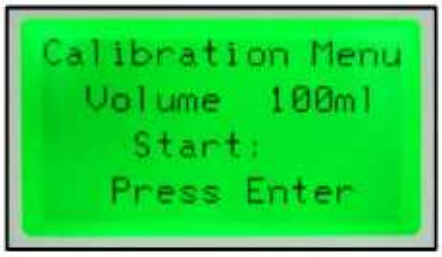
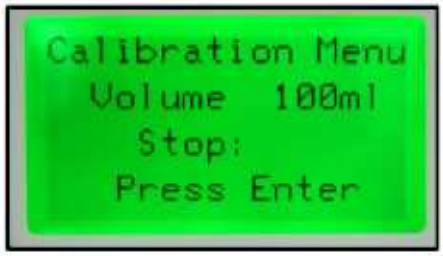
The serial number consists of six numerals and a slash. Use the arrow keys to enter the settings, as for other settings.

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

Client calibration menu

NOTE

Only the xCAD Client volume control can be set and calibrated in this xCAD Client calibration menu.

Step	Action	Figure
1	NOTE You need the right code to do this transaction. You can find the code under chapter "Code lock" on page 87. Press the UV-key and the Interval key simultaneously to call the calibration menu of the xCAD Client. The Display shows:	
2	After confirm the volume control with the enter key the display switches to the calibration mode for the volume. A vessel is to be used for measure out a one liter volume in several steps. Position the vessel under the xCAD dispenser and start dispensing of water with a press on the enter key.	
3	Each time as shown volume is reached, press the enter button again. The water flow run is stopped from the dispensing valve of the xCAD Client.	
4	When step 3 is finished confirm the next Volume amount with enter. NOTE You must make this procedure 10 times in row to complete the calibration mode of the xCAD Client. When the calibration is finished the display switches automatically to the Nonstop mode.	

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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.

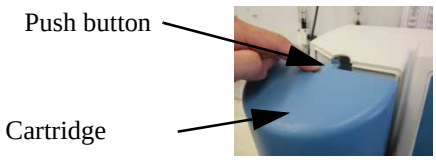
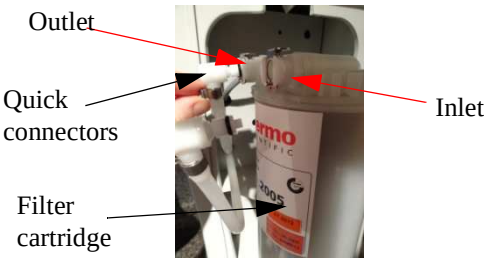
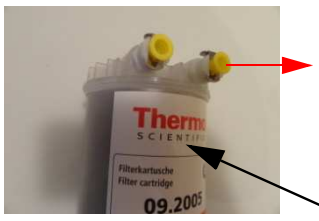
Material	Flow chart no.	Catalog no.	Interval	Other problems
Ultrapure cartridge	F1	09.2005	12 Months	Or when the ultrapure water limiting value is exceeded, whichever is shorter. Longer usage can result in bacterial growth on the resin.
Sterile 0.2 micron filter	F2	09.1003	12 Months	Or flow rate is noticeably 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.

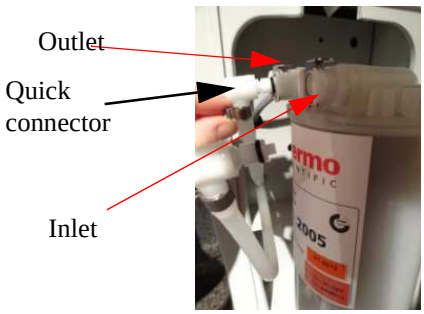
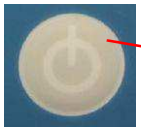
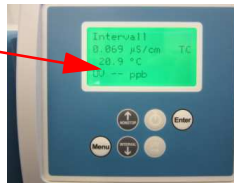
*Please keep in mind that the life of your consumable is directly dependent on the quality of the feed water and the amount of water used daily.

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 filter cartridge please sanitize your system.	**NOTE** For sanitize your system see under chapter “Disinfection” on page 105.
5	Remove the yellow stoppers from the new filter 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 87“. You need a level one code. a. Go in the Menu to the point „change filter 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 filter 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).

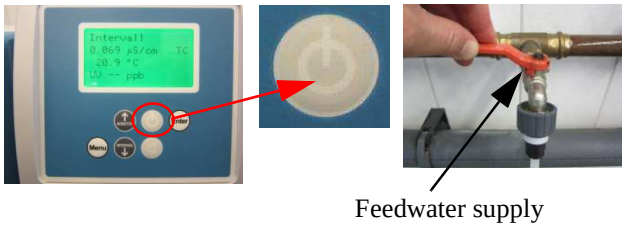
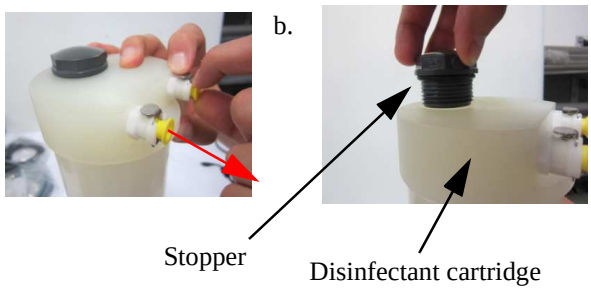
NOTE

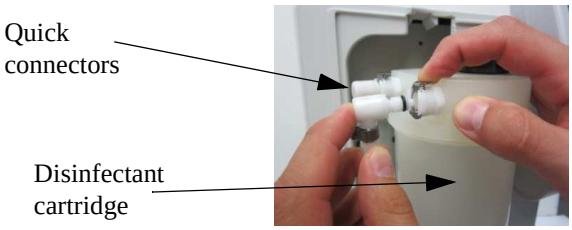
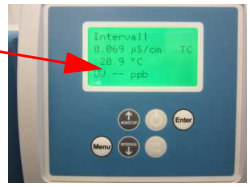
For effective disinfection the cartridge must be completely filled with distilled water.

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!

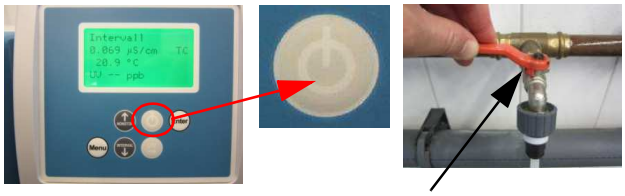
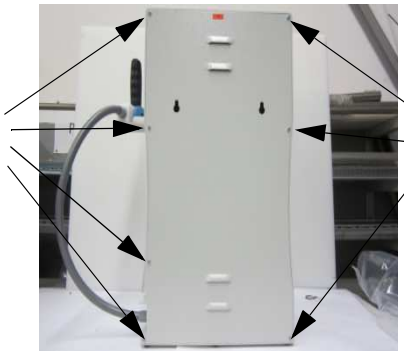
Step	Action	Figure
1	Switch the GenPure xCAD Plus System off and shut off the supply of feedwater. After this remove the filter cartridge. **NOTE** See under chapter "Change the ultrapure cartridge" on page 103.	
2	a. Remove the yellow stoppers. b. Unscrew the stopper from the disinfectant cartridge. 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.	a. b. 

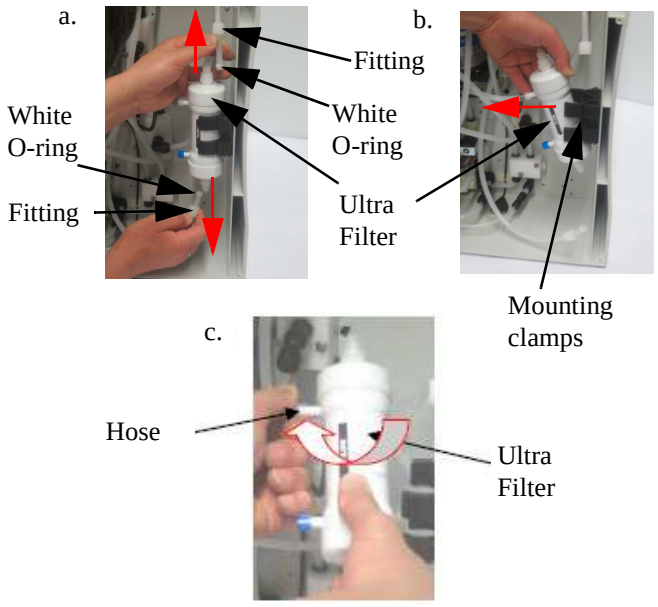
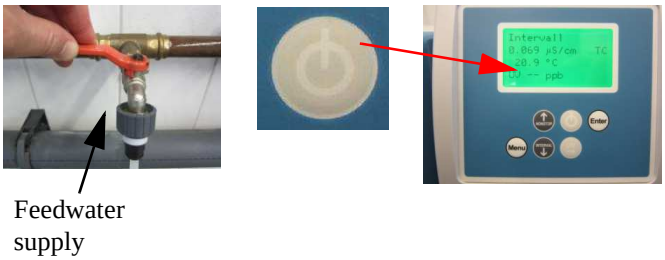
Step	Action	Figure
3	Screw the stopper back on the disinfectant cartridge and connect the cartridge into the system. NOTE See under chapter "Change the ultrapure cartridge" on page 103 to put in the filter cartridge in to the system.	
4	Re-open the feedwater supply, switch the system on again.	  
5	Push 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 87". 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.

Step	Action	Figure
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 103.
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

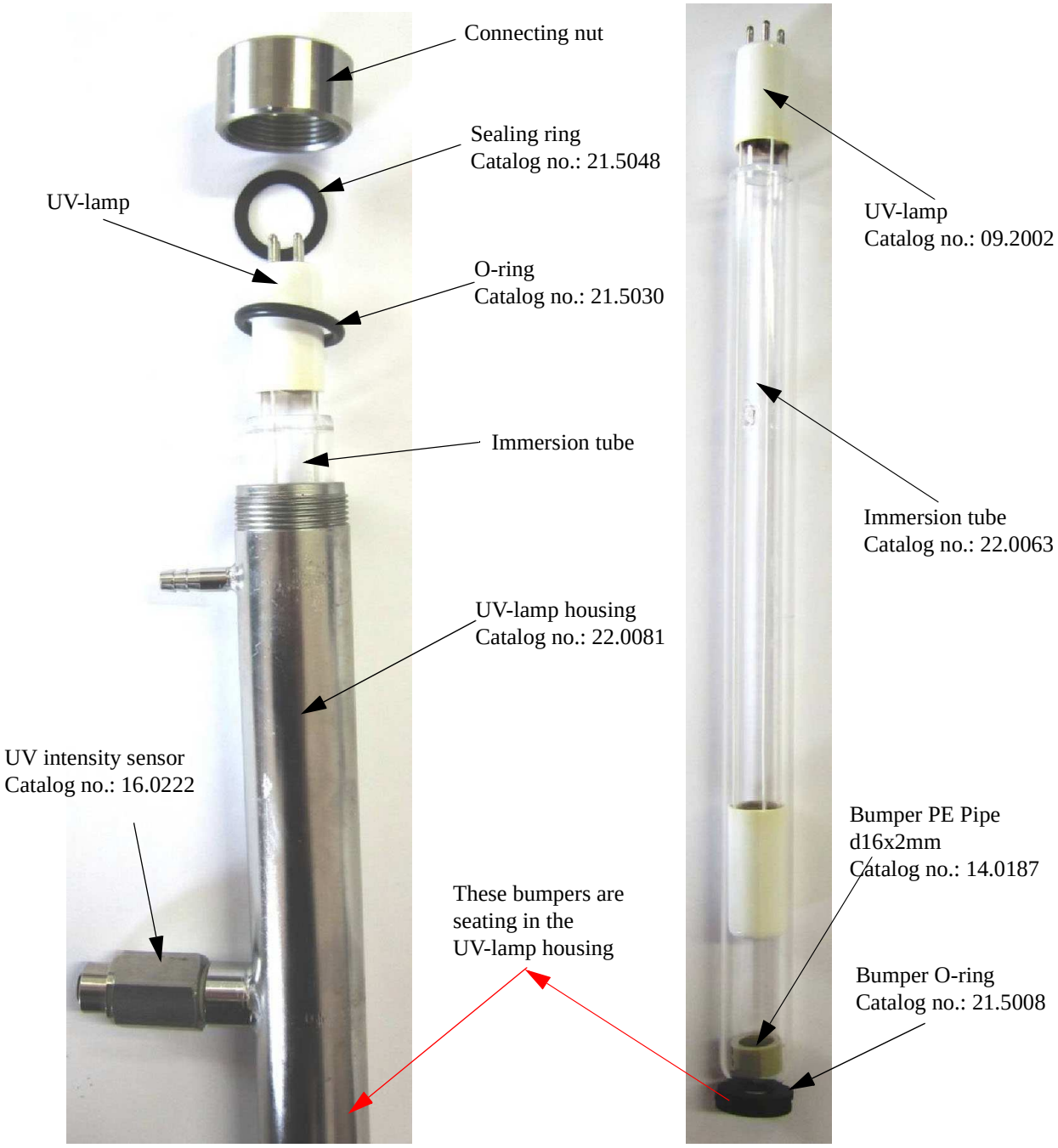
(applicable only for systems with UF)

Step	Action	Figure
1	Switch the GenPure Pro System off and shut off the supply of feedwater.	 Feedwater supply
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.	Screws  Screws

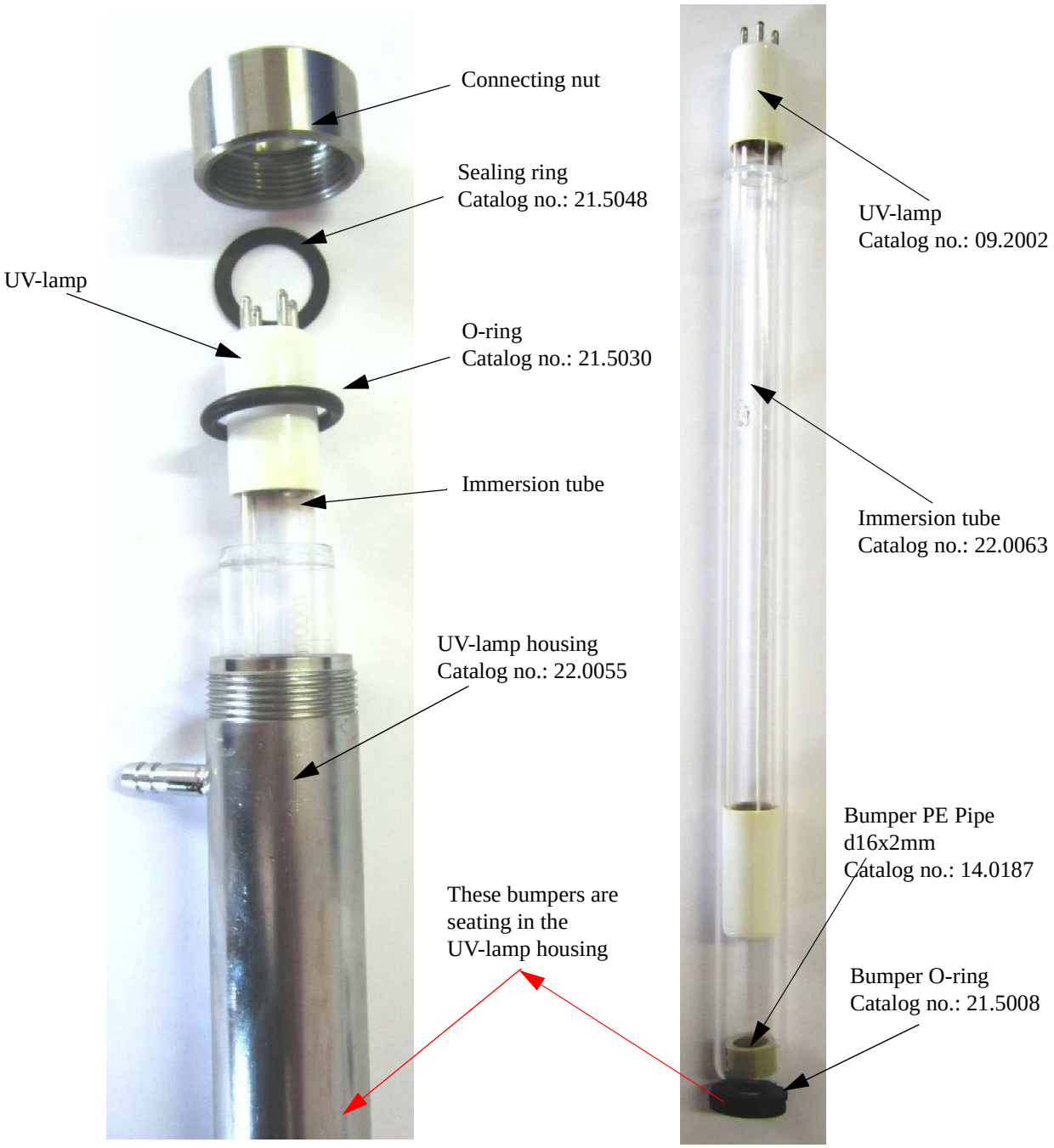
Step	Action	Figure
3	a. Pull out the hoses 8 mm by unscrew the two fittings (see red arrows). b. After this procedure draw out the ultrafilter from the mounting clamp (see red arrow). c. Hold with one hand the hose and with the other hand turn in clockwise direction the ultrafilter to unscrew the hose 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

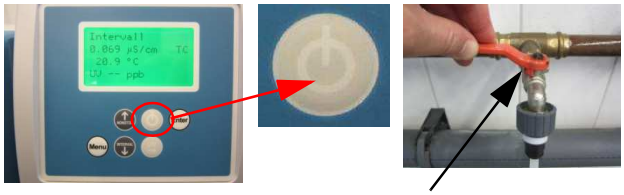
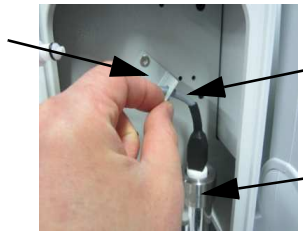
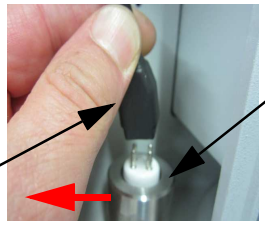


Change the UV-lamp

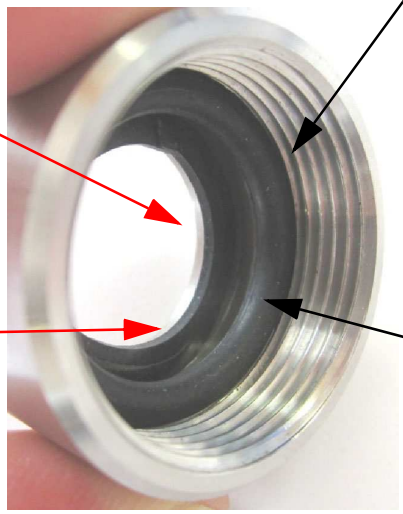
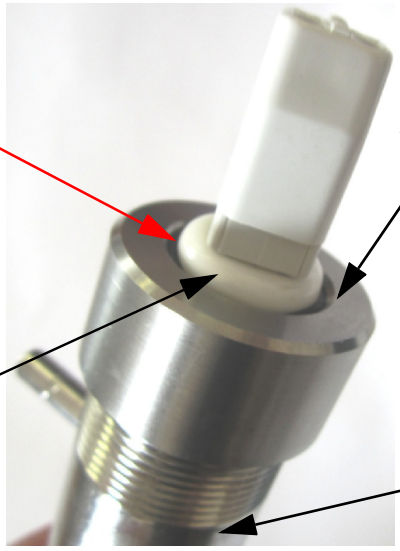
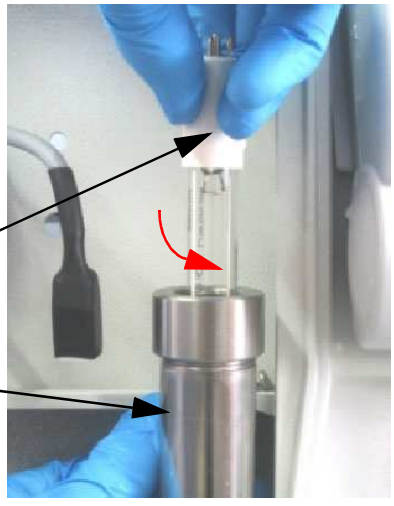
WARNING

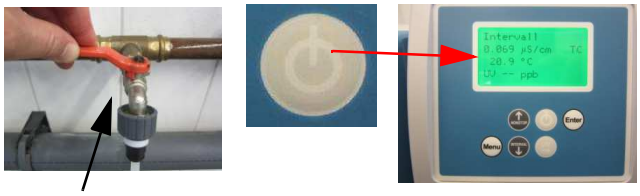
Never look directly into a switched-on UV-lamp, as UV-light endangers eyesight!

(applicable only for systems with UV lamp)

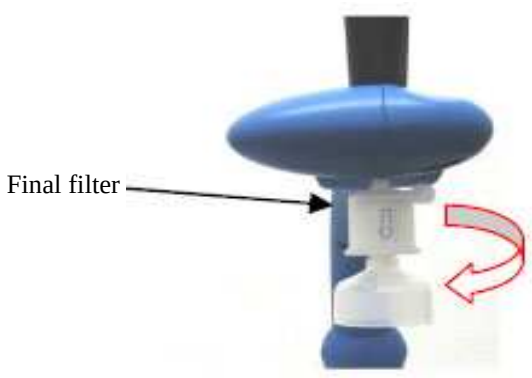
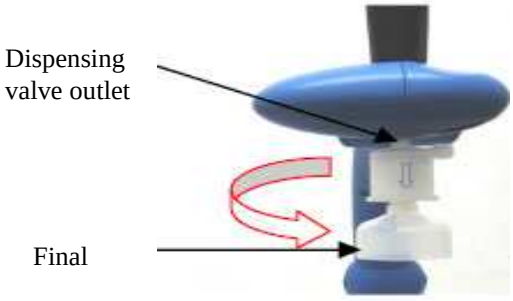
Step	Action	Figure
1	Switch the GenPure Pro System off and shut off the supply of feedwater.	
2	Remove the cartridge cover and take off the filter cartridge.	**NOTE** See under chapter "Change the ultrapure cartridge" on page 103.
3	Unscrew the bracket from the mounting plate and take it up over the 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 110 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 103), re-open the feed water supply and switch the system on again.	
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 87“. You need a level 3 code. a. After entering the code und 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.	
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 dispensing valve outlet (see chapter “Change and autoclave the Final filter” on page 116). 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 121“or change with a new one.	

Change and autoclave the Final filter

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.

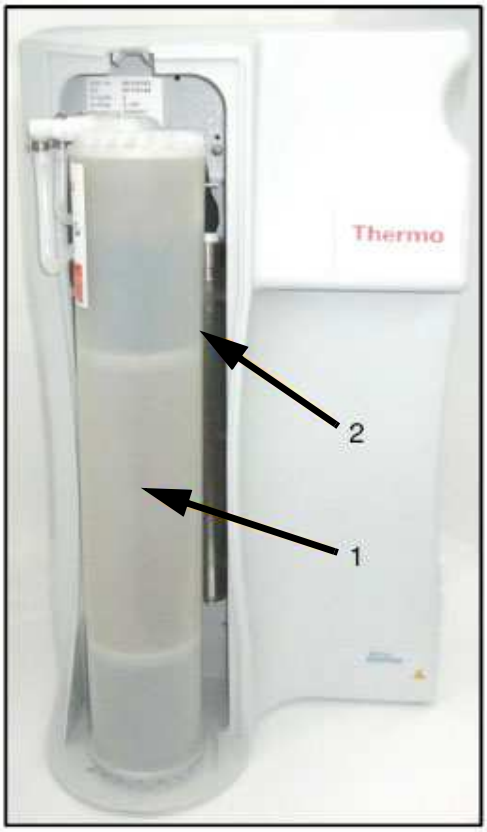
Error	Cause	Remedy
The system does not start	• No supply of power	• Provide power
Dispensing not possible	• Feedwater tap is closed	• Open the feedwater tap
	• Feedwater and rinse water connections are mixed up	• Correct the connections
	• Feedwater pressure < 0.1 bar	• Increase the feedwater pressure
	• Final Filter is blocked	• Change with a new one
Resistance < 18.2 MΩxcm	• Ion exchange capacity is exhausted	• Replace filter 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

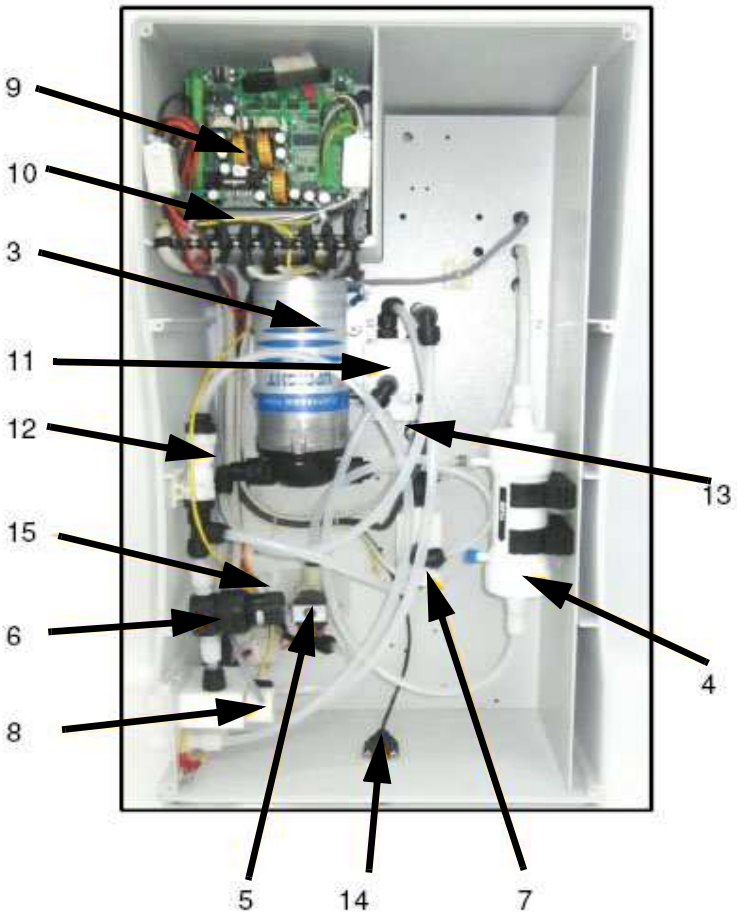
Error	Cause	Remedy
Wrong time or date	• Time zone • Summer/winter time	• Reset time and date
Wrong language	• Wrong language set	• Correct the language setting
Error message: *„Limit value feed“*	• Feedwater conductivity too high • Limiting value set too low • TOC selected on non-TOC units	• Check the 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.“*	• Filter cartridge exhausted • Limiting value set too low	• Replace with new filter 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 MWxcm” on page 121
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 122

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

Replacement parts

GenPure

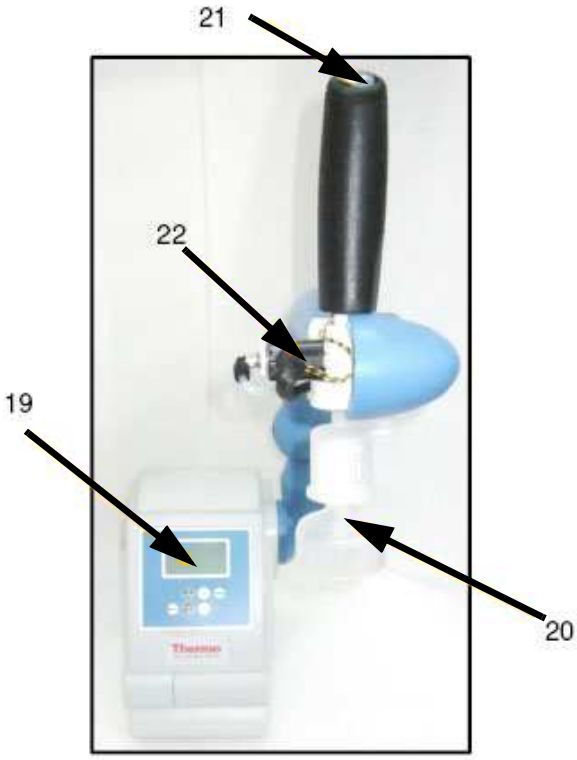


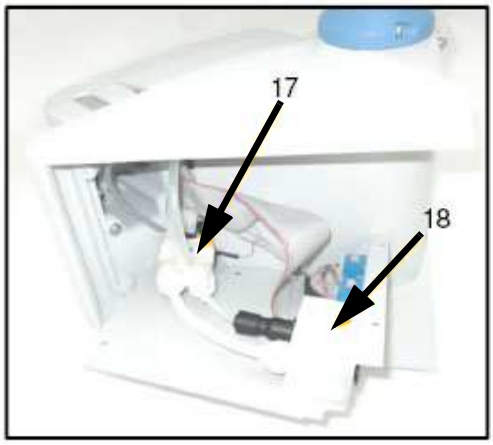


Parts marked with an „x“ are wear parts.

Pos.	Flow chart no.	Designation	Catalog no.	
1	F1	Ultrapure cartridge	09.2005	
2	UV1	UV lamp complete Replacement UV lamp	26.0063 09.2002	
3	P1	Circulation pump	19.0050	x
4	F3	Ultrafiltration module (only UF)	50133980	
5	V4	Rinsing solenoid valve	15.0062	x
6	V1	Pressure reducer	15.0109	
7	QI302 TIA501	TOC conductivity measuring cell Temperature sensor (only UV - TOC)	26.0014	
8	QIA300	Feedwater conductivity measuring cell	16.0126	
9		Interface board	16.0408	
10		UV Ballast unit (only UV, not shown)	22.0088	
11	QIA303 TIA500	TOC conductivity measuring cell Temperature sensor	26.0014	
12	V2	Check valve 1 bar	15.0019	
13	QIA301	UV-Intensity sensor (only UV - TOC)	16.0222	
14	LSZ100	Leakage sensor	16.0389	
15		G fuse holder 5 x 20 mm G fuse, 5 x 20 mm, 2.0 A, fast active	50137055 50134191	
16		Table top power pack (not shown)	50134184	

xCAD Server, xCAD Client





Parts marked with an „x“ are wear parts.

No.	Flow chart no.	Designation	Catalog no.	
17	FIS400	Flow meter	15.0100	
18	V5	Check valve	15.0130	
19		Server: CPU Board with display Client: CPU Board with display	16.0409 16.0410	
20	F2	Sterile filter capsule 0,2 µm	09.1003	
21		Press button	16.0370	x
22	V3	Dispensing solenoid valve	15.0101	x
23		Extension cable SUB-D, 25-pin, GenPure / xCAD (not shown)	16.0375	
24		Extension cable SUB-D, 9-pin, xCAD / Printer (not shown)	16.0378	

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.

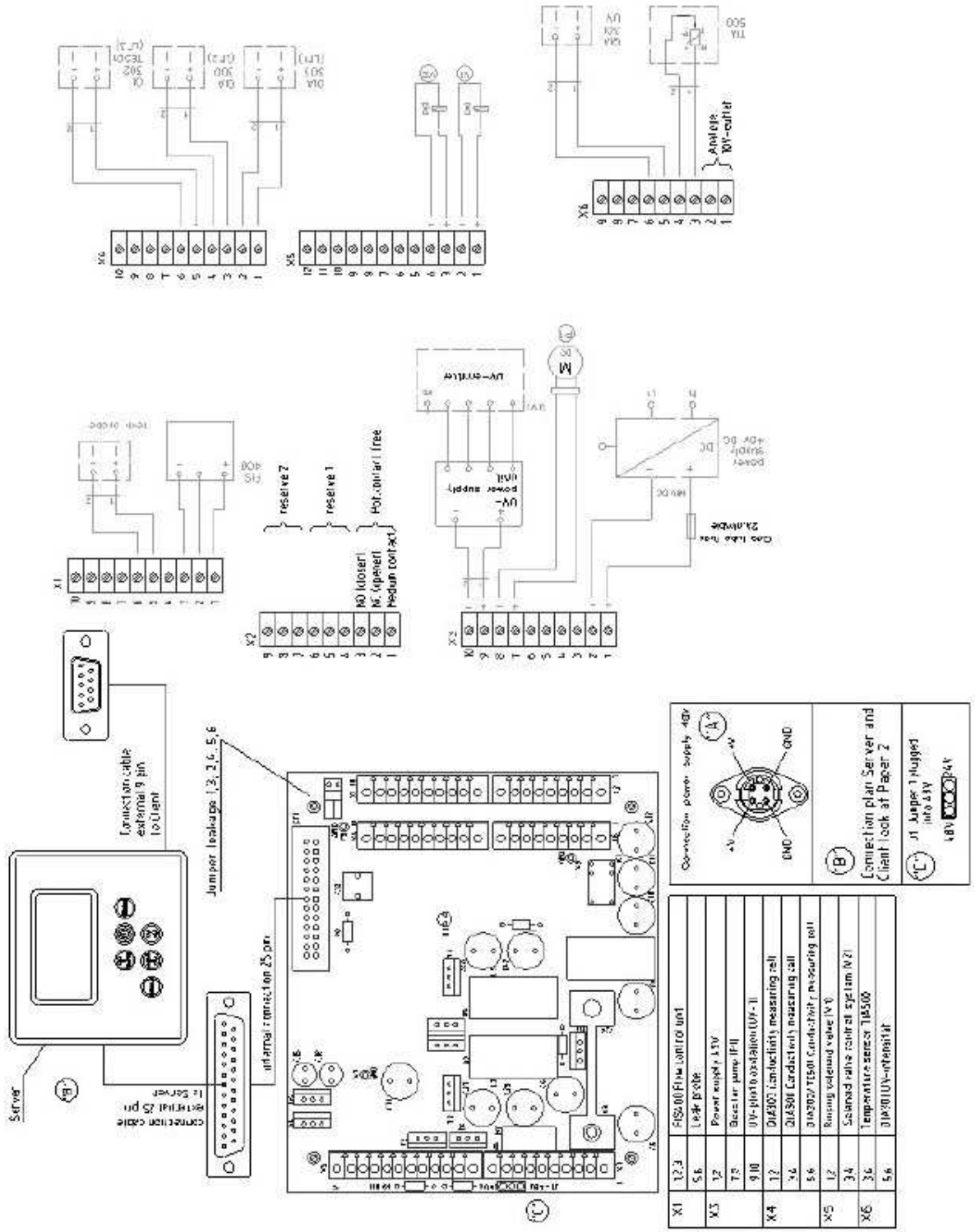
Consumable materials

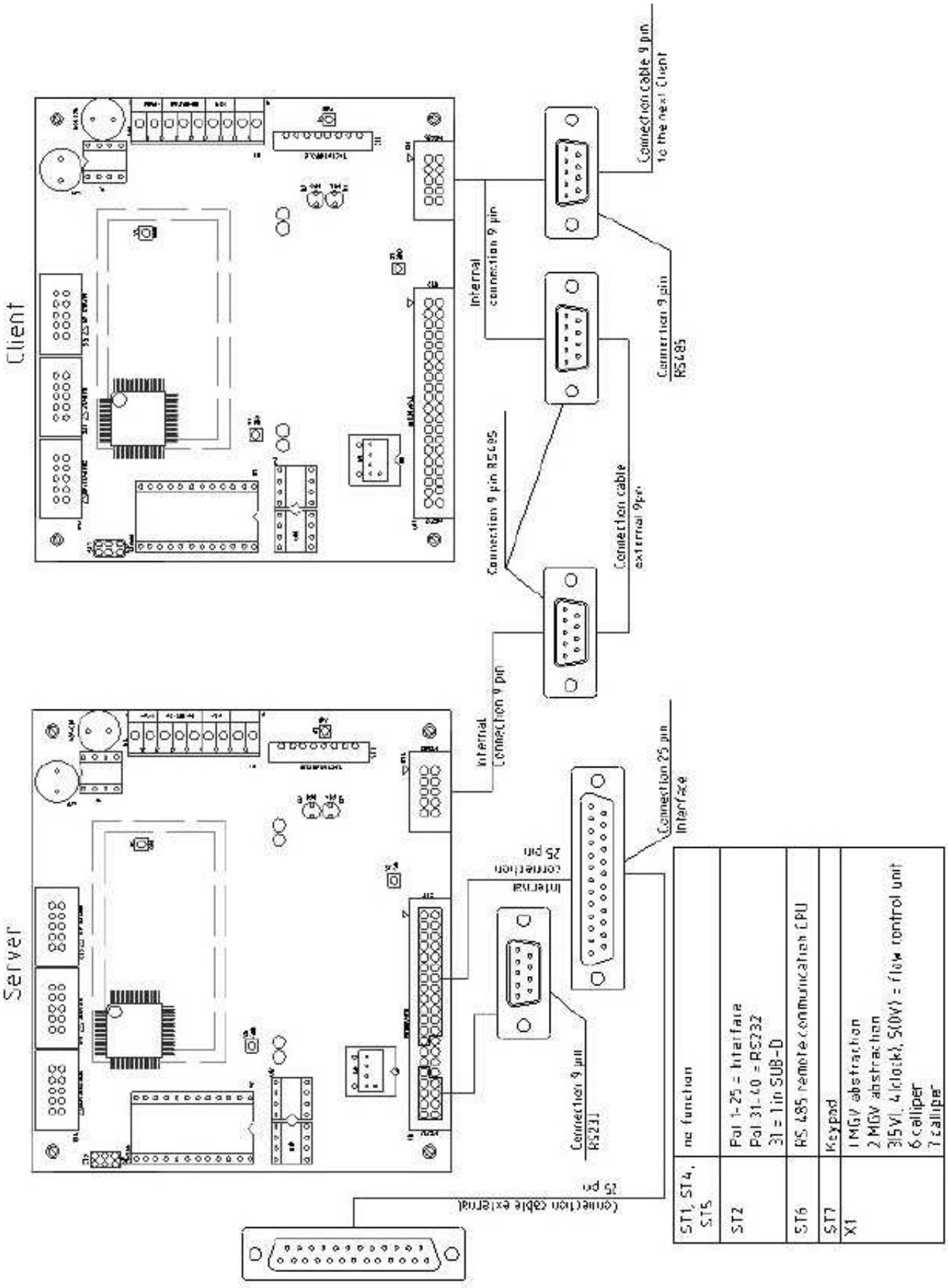
Designation	Catalog no.
Ultrapure cartridge	09.2005
UV-Lamp	09.2002
Ultrafiltration module	50133980
Final filter 0.2 µm	09.1003

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 assignments




Client
Server
Internal connection 9 pin
Connection 9 pin RS485
Connection cable external 9per
Connection 9 pin RS485
Connection cable 9 pin to the next Client
Internal connection 25 pin
Connection 25 pin Interface
Connection 9 pin RS232
15 pin (connection cable external)
ST1, ST4, ST5 | no function
ST2 | Pol 1-25 = Interface Pol 31-40 = RS232 31 = 1in SUB-D
ST6 | RS 485 remote communication CPU
ST7 | Keypad
X1 | 1 MGV abstraction 2 MGV abstraction 315V1, 4(clock), 5(0V) = flow control unit 6 calliper 7 calliper

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 filter 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
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Service: +1 866 984 3766

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Enquiries from the Rest of Asia/Australia/New Zealand
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Enquiries from Countries not listed / Rest of EMEA
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