



# VWR Purity TU 3/6

## INSTRUCTION MANUAL



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## Legal Address of manufacture

### **Belgium**

VWR International bvba  
Researchpark Haasrode 2020  
Geldenaaksebaan 464  
B - 3001 Leuven

Tel.: 016 385 011  
Fax: 016 385 385  
E-mail:  
customerservice@be.vwr.com

## Country of origin

### **Germany**



## Purity TU 3/6



## Preface

Dear Sir or Madam

With your decision to purchase this ultra pure water system from the **Puranity TU** series, you have selected a high-quality product.

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

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

Thank you for the confidence you have placed in us.

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## 1. Explanatory notes on the operating instructions



EU Mark of Conformity



This symbol indicates the presence of high voltage and warns the user to proceed with caution.



Important operating and/or maintenance instructions! Read the operating instructions with due care.

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



General information! Particularly important notes are marked with this information sign.



Protective conductor connection

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

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.



Please enter the serial number\* of your Puranility TU system in the space provided on the front page.

\* Read the serial number of your ultra pure 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 article number

## 2. Package contents

Each ultra pure water system is carefully checked and packed prior to dispatch, but damage could nevertheless still occur during shipment.

### 2.1 Examination on receipt

- Check the completeness of delivery against the delivery note.



#### Is the packaging damaged?

- Inspect the system for damage.

### 2.2 Complaints

If damage has occurred to the system during transport:

- Contact the post, railway or forwarding agent immediately\*.
- Keep the packaging including the outer cardboard box (for possible inspection and return shipment).

### 2.3 Packing of return

Whenever possible, use the original cardboard box and packaging material.

Should these no longer be available:

- Pack the system in packing film and a strong cardboard box, protected against damage from shock.



**\* The time limit for complaints is 6 days (after receipt of the goods).  
The right to claim for damages expires when this time has elapsed.**



### 3 Safety informations



**For your own safety, please observe the above safety precautions!**

- Each system of the Puranity TU series is a modern ultrapure through out water system, exclusively designed for the purification of tap water of drinking water quality.
- Please do not start to install and operate your system until you have read through the information given in these operating instructions.
- Please note that the manufacturer is freed from all liability when the system is used for other than the intended purpose and/or is improperly operated.
- Lifting and carrying the ultrapure water system, e.g. to the installation location, should be carried out by two people. To lift it, each takes hold of it under the base plate at two corners.
- The CE-mark is invalidated when constructional changes are made to the system or foreign products are installed in it.
- Protect the system from frost. The temperature at the installation area must be at least + 2°C.
- Observe all general rules and regulations that are valid at the installation location, including the current accident prevention regulations.
- The feedwater pressure must be min. 1 bar and max. 6 bar. An additional pressure reducer must be installed should it be higher.
- According to DIN EN 1717(for German and Europe) water purification systems must be equipped with a device that safeguards the tap water against contamination.
- A suitable electric socket must be made available for the system (refer to Technical Specifications).
- The installation area must have a gravity at floor level with at least DN (nominal diameter) 50 pipe and which allows free run off.
- When the system is to be wall-mounted, please previously check that the wall has a sufficient load-bearing capacity (refer to Technical Specifications for the weight).
- The maximum operating temperature of the system is 40°C.

- If neither a floor drain is not is available, then proceed as follows during longer system standstills (e.g. long holidays):
  - **Switch the system off (unplug the mains plug).**
  - **Shut off the supply of water to the ultra pure water system.**Do not re-start the system with the water supply still in the shut off condition, as the pump would then suffer damage. The manufacturer will not accept any liability should this occur. When restarting your system, please open the feedwater to the ultrapure system and follow our sanitization instructions to put your system into operation.
- When installing the ultra pure water system, ensure that there is sufficient working room around it for problem-free operation of it as well as for filter replacement, checking connections etc.
- The guarantee is valid for a period of 2 years.
- Never look directly at a switched-on UV-lamp, because UV light endangers eyesight!  
Never switch the UV-lamp on when is has been taken out of the metal cylinder!

### 3.1 Warning

- Installing the appliance incorrectly, making incorrect settings on it or modifying it can lead to damage, injury or even death.
- Do not put your fingers in socket of electrical connector because a electrical shock you can have.
- Do not swap any electrical parts of the unit when it is on and works, because there is a danger of electrical shock exist.

## 4. Use

### 4.1 Intended use

Continually increasing requirements on ultra pure water quality, ever stricter demands resulting from technological advances and increasingly lower detection limits in laboratories, together with the need for user-friendly systems and complete solutions, were decisive for the development of the novel Purity TU ultra pure water systems.

Purity TU systems have been specifically designed to produce sterile filtered ultra pure water which is free of particles, salts and organic compounds.

### Application areas

#### - Analytical techniques in laboratories:

- HPLC (High Performance Liquid Chromatography)
- IC (Ion Chromatography)
- ICP (Inductive Coupled Argon Plasma)
- AAS (Atomic Absorption Spectrophotometry)
- TOC analyzers (Total Organic Carbon)
- etc..

#### - Reagent and solution preparation:

- Cell culture media
- Tissue culture media
- Make up water for reagents used in on-line analytical systems

#### Ultraclean washing and rinsing processes in laboratories

### 4.2 Unintended use

It must be stated according to standard din en iso 12100.

## 5. Accessories & spares

The following versions of the Purity TU ultra pure water system series are available. Each of these versions is optionally available with a performance of 3 l/h or of 6 l/h:

Article no.: 171-1134	Purity TU 3	(Standard system)
Article no.: 171-1135	Purity TU 3 UV	(Standard system + UV-Photo-oxidation)
Article no.: 171-1136	Purity TU 3 UV/UF	(Standard system + UV-Photo-oxidation + Ultrafiltration module)
Article no.: 171-1137	Purity TU 6	(Standard system)
Article no.: 171-1138	Purity TU 6 UV	(Standard system + UV-Photo-oxidation)
Article no.: 171-1139	Purity TU 6 UV/UF	(Standard system + UV-Photo-oxidation + Ultrafiltration module)

(Please compare the article number of the version you ordered with the article number given on the delivery note)

1x Purity TU (according to version)	Article no. 171-xxxx
together with an assembly kit consisting of:	
Pretreatment cartridge	for a 3 l/h system Article no. 171-1142
	for a 6 l/h system Article no. 171-1143
Filter cartridge	Article no. 171-1141
Sterile filter capsule, 0.2 µm	Article no. 171-1105
Sterile vent filter	Article no. 171-1166
Feedwater connecting kit, R 3/4"	Article no. 171-1145
Connecting hose, o.d. 1/4", 6 m	Article no. 171-1146
Ball valve, dia. 1/4"	Article no. 171-1147
Tabletop power pack, 24 VDC	Article no. 171-1121
Universal adapter	Article no. 171-1129
Universal holder	Article no. 171-1130
Connecting cord (rubber connector to nema plug connector)	Article no. 171-1131
Connecting cord (rubber connector to british ST plug connector)	Article no. 171-1132
Connecting cord (rubber connector to euro plug connector)	Article no. 171-1133
Drop-in angle connector d1/4"	Artikel no. 171-1149
T – connector d1/4"	Artikel no. 171-1150
Connecting piece/ disinfection	Article no. 171-1148

## 5.1 Spares

Designation	Article no.
Ultrapure water tank	171-1170
Pretreatment cartridge consisting of prefilter / hardness stabilizer and RO membrane:	
for 3 l/h performance	171-1142
for 6 l/h performance	171-1143
Filter cartridge	171-1141
Sterile filter	171-1105
Sterile vent filter	171-1166
Ultrafiltration module	171-1106
Float switch	171-1167
Pressure booster pump	171-1107
Recirculation pump	171-1107
Pressure switch	171-1151
Ultra pure water conductivity measuring cell	171-1152
Temperature sensor	171-1111
Replacement UV-lamp	171-1108
UV-Booster	171-1153
Raw water solenoid valve	171-1154
Pressure hold valve	171-1155
Check valve	171-1156
Rinsing solenoid valve	171-1154
Ultra pure water dispensing valve	171-1114
Recirculation solenoid valve	171-1154
Sterile overflow	171-1170
Check valve	171-1157
Check valve	171-1157
Board with display	171-1158
System control board	171-1159
Fuse holder for glas tube fuse 5 x 20mm	171-1118
Glas tube fuse 5 x 20mm, 3,15 A, slow fuse	171-1119
Tabletop power pack	171-1121

## 5.2 Accessories

Designation	Article no.
Disinfection agent, MICRO-Chlor (pack of 12 cans, Europe only)	171-1123
Cleaning Solution, 1 syringe (US-market only)	171-1124
Printer	171-1160
Wall bracket	171-1125
Accessorie dispenser	171-1180

## 6. Specifications

Demands made on the feedwater	
Source	Drinking water acc. to DIN 2000.
Blocking index (SDI)	Max. < 3 for all versions. If the value is higher, a pre-filter must be installed upstream.
Free chlorine concentration	< 0.1 mg/l
Manganese content	< 0.05 mg/l
Iron content	< 0.05 mg/l
pH-Range	4 - 11
Temperature	2 - 35 °C
Pressure	1 - 6 bar

ASTM I Product water quality (at dispensing valve)			
	Standard	UV	UV/UF
Conductivity $\mu\text{S/cm}$	0.055	0.055	0.055
Resistance $\text{M}\Omega\text{cm}$ at 25°C	18.2	18.2	18.2
TOC ppb	5 - 10	1 - 5	1 - 5
RNase ng/ml	--	--	<0.003
DNase pg/ul	--	--	<0.4
Bacteria CFU/ml	< 1	< 1	< 1
Bacterial endotoxines EU/ml	--	--	< 0.005*
Particles > 0.2 $\mu\text{m}$	< 1/ml	< 1/ml	< 1/ml
Flow rate l/min	1.0	1.0	0.6
Typical amount dispensed	5 Litres per day		

\* Dependent on feedwater quality and disinfection

ASTM II Product water quality (in the tank)			
	Standard	UV	UV/UF
Conductivity $\mu\text{S/cm}$	0.067 – 0.1	0.067 – 0.1	0.067 – 0.1
Resistance $\text{M}\Omega\text{cm}$ at 25°C	10 – 15	10 – 15	10 – 15
Retention quota for bacteria and particles	Ø 99 %	Ø 99 %	Ø 99 %
Permeate performance l/h	3 or 6	3 or 6	3 or 6
Tank content l	approx. 6	approx. 6	approx. 6

Dimensions	
Height:	545 mm
Width:	305 mm
Depth:	400 mm
Weight:	
Purity TU	22 kg
Purity TU UV	22 kg
Purity TU UV/UF	22 kg

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

Water connections	
Feedwater	Hose, 1/4" o.d.
Concentrate	Hose, 1/4" o.d.
Tank water overflow	Hose, 1/4" o.d.
Pure water	Hose, 1/4" o.d.
Outlet/dispensing valve	Hose, 8 – 10 mm o.d.

Electrical connections / external switched mode power supply	
Input voltage	AC 100 – 240 V, 50 – 60 Hz, 5 – 3.8 A
Output voltage	DC 24 V, 3.8 A
System connection	DC 24 V, 80 W
Serial interface	RS 232
Potential-free contact	max. 30V, 2A
Protection Class	Class II (external SMPS certified as Class I)

Ambient conditions (DIN EN 61010-1 (VDE 0411-1):2011-02)	
Usage	Indoor rooms
Height	Up to 2000 m
Temperature range	From 5° C to 40° C
Relative humidity	Maximum relative humidity 80 % at temperatures of up to 31° C, linearly decreasing to 50 % relative humidity at 40° C
Line-voltage variation	Not more than $\pm 10$ % of the line voltage
Transient overvoltages	As usually occur in the supply network (overvoltage category II acc. to IEC 60364-4-443). <u>Note:</u> 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 that contact water	
Pump head	Nylon with glass fibre
UV-Lamp	High-purity quartz
UV Housing	Stainless steel
Filter cartridge	PP
UF Housing	Polycarbonate
Raw water solenoid valve	PA
Recirculation solenoid valve	PA
Rinsing solenoid valve	PA
Pressure hold valve	Brass, chemically nickel-plated
Dispensing valve	POM
Conductivity measuring cell	PVC, stainless steel
Connectors	POM
Hoses	PE
Gaskets	EPDM
RO-Membrane	PA

## 7. Description of how the systems functions

Raw water solenoid valve V1 is closed during Stand-by and standstills to prevent a flow of raw water into the system when it is not in operation. It so protects external tank B1 from overflowing.

In normal operation, tap water at a maximum pressure of 6 bar flows into the system and is pumped by pressure booster pump P1 through the subsequent pretreatment F1 and reverse osmosis membrane F2. The latter retains all salts dissolved in the incoming water to the extent of the given retention quota and, because of the molecular size of the membrane pores, also retains up to Ø 99% of bacteria, pyrogens and particles.

The reverse osmosis permeate flows on through the downstream purification stages, such as UV-photooxidation UV1, the 185 nm and 254 nm wavelengths of which reduce organic compounds (only in Puranity TU versions UV and UV/UF), filter cartridge F3 and ultrafilter F6 with automatic rinsing (only in Puranity TU versions UF and UV/UF) to the tank.

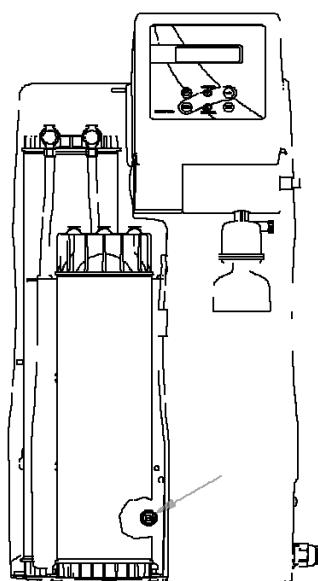
The water constituents which were retained by the reverse osmosis membrane flow away in the concentrate that remains.

The special conductivity measuring probe QISA 300 (with temperature compensation) and temperature probe TISA 500 permanently monitor the conductivity and temperature of the ultra pure water and the values of these are shown in the display.

The water in the storage tank is re-circulated at regular intervals by recirculation pump P2 to ensure the constant high water quality. Float switch LIS 100 monitors the water level inside the tank.



**Pressure hold valve V2 is factory adjusted. A change in this adjustment could lead to damage to the reverse osmosis membrane. Because of fluctuations in the temperature and pressure of the feedwater, however, Service or authorized personnel must carry out a check on the adjustment of it, as shown by the concentrate flow that is linked to it, and re-adjust it if necessary, after putting the system into operation and at regular intervals thereafter.**

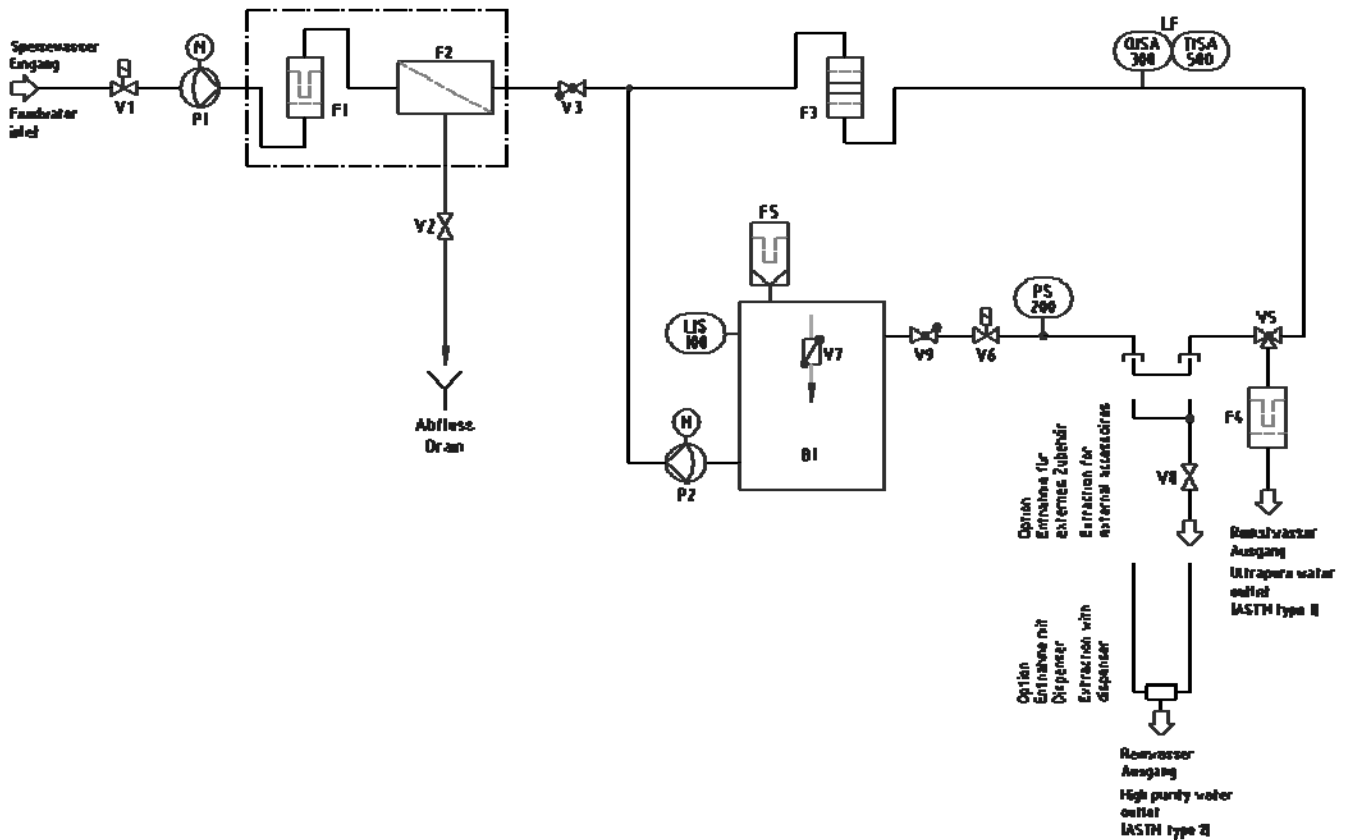


Druckhalteventil  
Pressure hold valve

Concentrate flow for Puranity TU to be checked/adjusted every 3 months		
System	Permeate flow [l/h]	Concentrate flow [l/h]
Purity TU 3	3	50
Purity TU 6	6	50

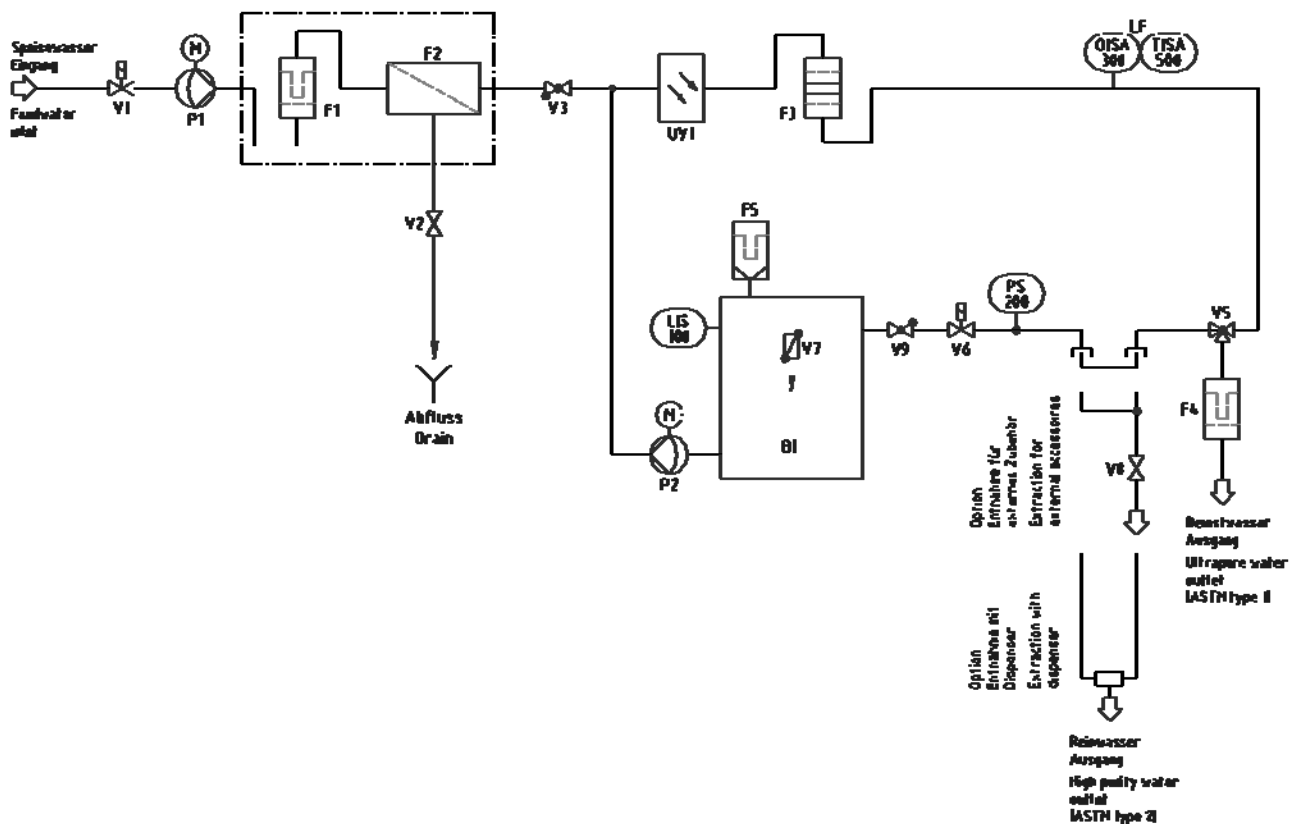


## 7.1 Flow chart, Purity TU



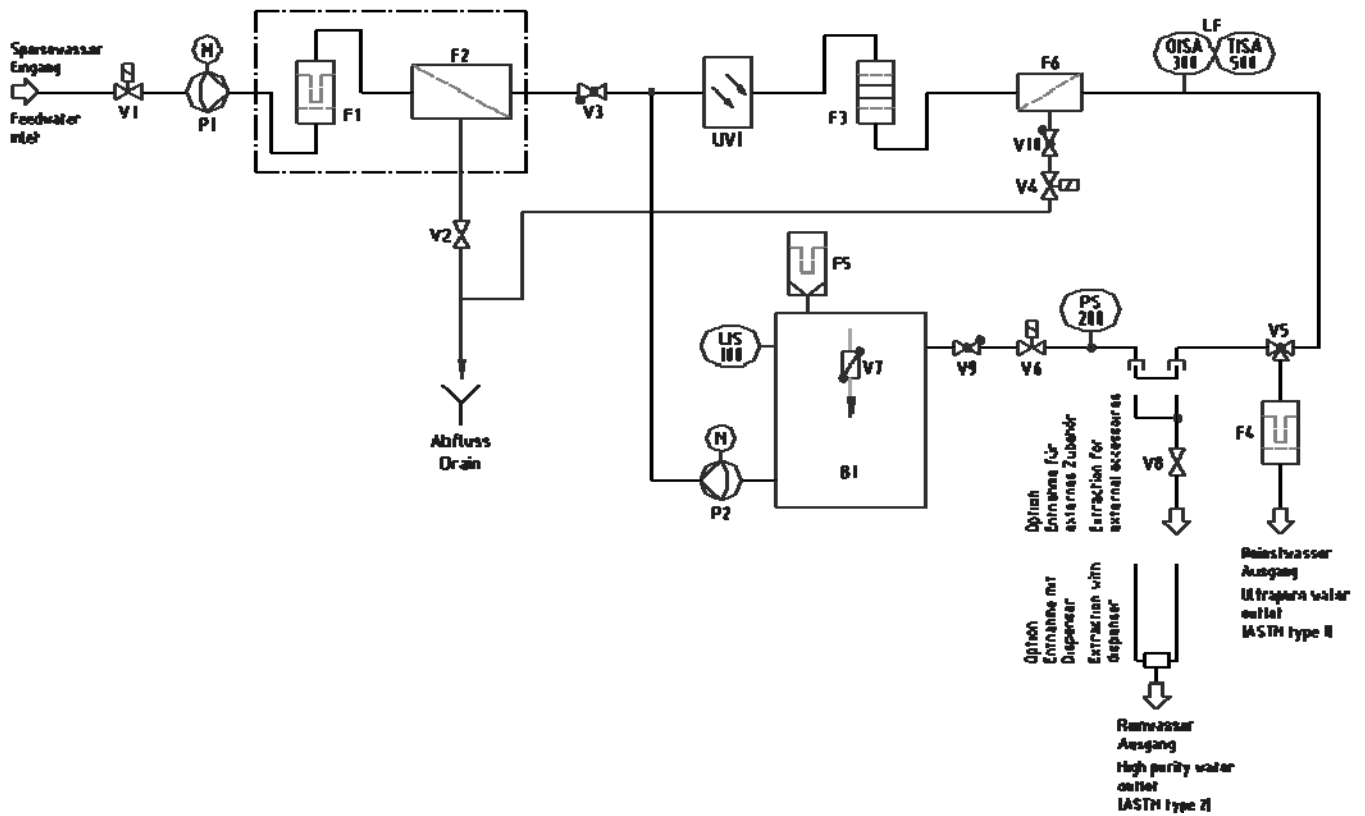
B1	Ultra pure water tank
F1	Pretreatment cartridge
F2	Reverse osmosis membrane
F3	Filter cartridge
F4	Sterile filter
F5	Sterile vent filter
LIS 100	Float switch
P1	Pressure booster pump
P2	Recirculation pump
PS 200	Pressure switch
QISA 300	Ultra pure water conductivity measuring cell
TISA 500	Temperature sensor
V1	Raw water solenoid valve
V2	Pressure hold valve
V3	Check valve
V5	Ultra pure water dispensing valve
V6	Recirculation solenoid valve
V7	Sterile overflow
V8	Pure water dispensing valve
V9	Check valve

## 7.2 Flow chart, Purity TU UV



B1	Ultra pure water tank
F1	Pretreatment cartridge
F2	Reverse osmosis membrane
F3	Filter cartridge
F4	Sterile filter
F5	Sterile vent filter
LIS 100	Float switch
P1	Pressure booster pump
P2	Recirculation pump
PS 200	Pressure switch
QISA 300	Ultra pure water conductivity measuring cell
TISA 500	Temperature sensor
UV1	UV Photo-oxidation
V1	Raw water solenoid valve
V2	Pressure hold valve
V3	Check valve
V5	Ultra pure water dispensing valve
V6	Recirculation solenoid valve
V7	Sterile overflow
V8	Pure water dispensing valve
V9	Check valve

### 7.3 Flow chart, Purity TU UV/UF



- B1 Ultra pure water tank
- F1 Pretreatment cartridge
- F2 Reverse osmosis membrane
- F3 Filter cartridge
- F4 Sterile filter
- F5 Sterile vent filter
- F6 Ultrafiltration module
- LIS 100 Float switch
- P1 Pressure booster pump
- P2 Recirculation pump
- PS 200 Pressure switch
- QISA 300 Ultra pure water conductivity measuring cell
- TISA 500 Temperature sensor
- UV1 UV Photo-oxidation
- V1 Raw water solenoid valve
- V2 Pressure hold valve
- V3 Check valve
- V4 Rinsing solenoid valve
- V5 Ultra pure water dispensing valve
- V6 Recirculation solenoid valve
- V7 Sterile overflow
- V8 Pure water dispensing valve
- V9 Check valve
- V10 Check valve

## 8. Installation

### 8.1 Installation area

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

- Feedwater pressure minimum 1 bar, maximum 6 bar.



**The feedwater pressure is not to exceed 6 bar. A pressure reducer must be installed if the pressure is higher.**

- Minimum temperature + 2°C.
- Level standing surface.
- If the system is to be wall-mounted, the wall must be smooth. Please check that the wall has sufficient weight bearing capacity (system weight, Technical specifications).
- A DN (nominal diameter) 50 gravity drain must be available.
- Free gravity flow to drain.



**Free gravity fall to drain must be ensured!**

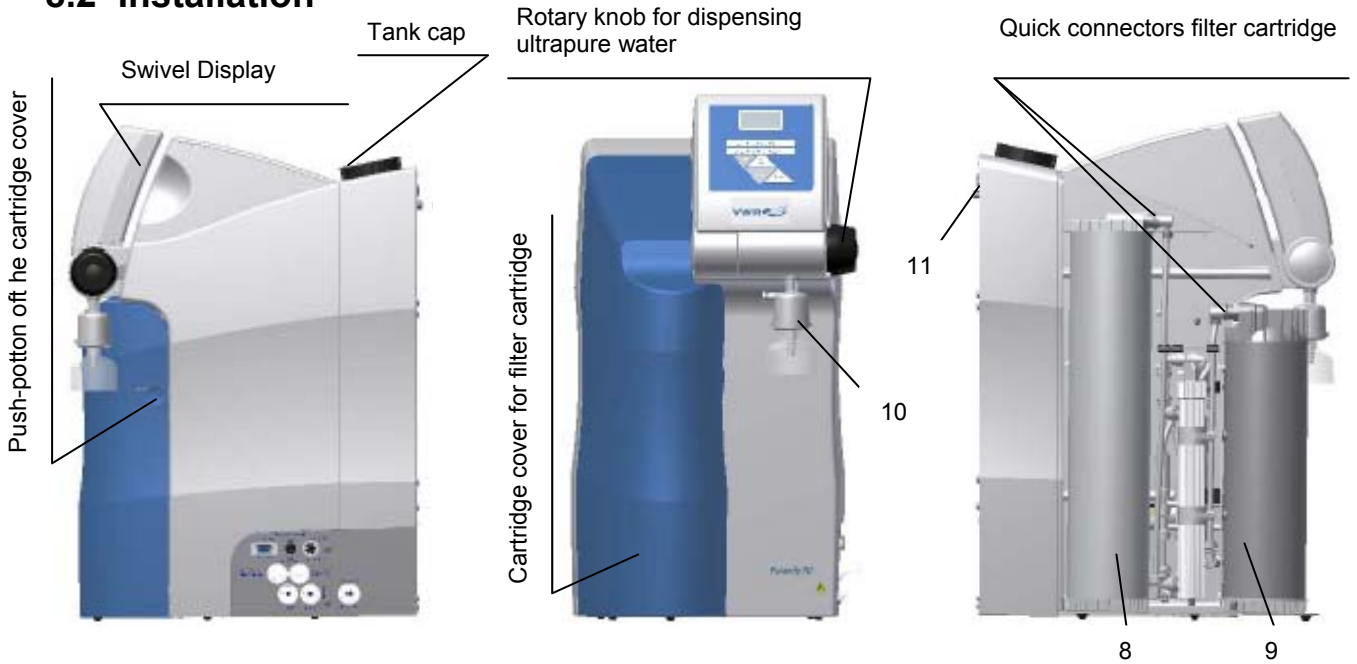
- An electric socket with protective conductor must be available for connection of the system to the voltage supply (see Technical specifications).



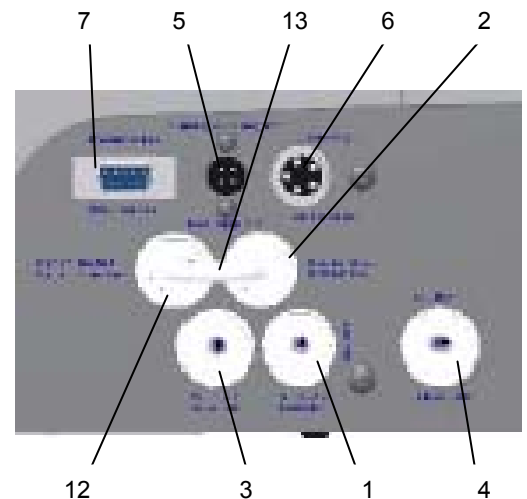
**Position the system so that there is no difficulty in separating the device from the electric mains.**

- There must be sufficient working space around the system (filter replacement etc.).
- The system must be easy to operate and check.
- R 3/4" pre-treated-water connection.

## 8.2 Installation



- |  |                 |
|--|-----------------|
| 1) Feedwater connector                     | Hose, 1/4" o.d. |
| 2) Dispenser flow connector                | Hose, 1/4" o.d. |
| 3) Concentrate connector                   | Hose, 1/4" o.d. |
| 4) Tank water return connector             | Hose, 1/4" o.d. |
| 5) Power supply connector, 4-pin, 24V DC   |                 |
| 6) Potential-free contact connector, 5-pin |                 |
| 7) Connector for optional printer          |                 |
| 8) Filter cartridge                        |                 |
| 9) Pretreatment cartridge                  |                 |
| 10) Sterile filter                         |                 |
| 11) Sterile vent filter                    |                 |
| 12) Dispenser back flow connector          | Hose, 1/4" o.d. |
| 13) Jumper hose                            | Hose, 1/4" o.d. |



**Proceed as follows to install your Puranitu TU ultra pure water system and put it into operation:**

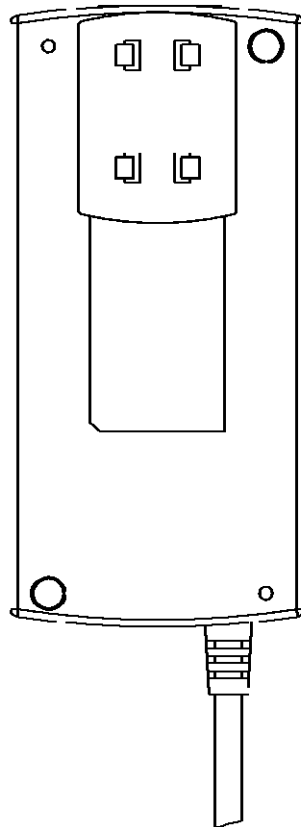
- Stand the system at the installation location or, if it is to be wall mounted, hang it to the wall using the wall holder that is available as accessory.
- Unlock the cartridge cover by pressing the push-button and take the cover off.
- Remove the stoppers from the filter cartridge and pretreatment cartridge which are supplied and keep the stoppers for return shipment.
- Fit the filter cartridge (8) in the free space at the back of the system and plug the 2 quick-connect couplings on the cartridge connectors so that they snap audibly into position.
- Now fit the pretreatment cartridge (9) in the free place at the front of the system and plug the 3 quick-connect couplings on the cartridge connectors so that they snap audibly into position.



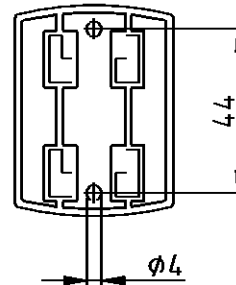
- Use the R 3/4" assembly kit that is supplied to make connection to the feedwater connector (1).  
Fit the dirt sieve that is provided in the assembly kit in the threaded feedwater hose connector before you fit this connector to a water tap that can be shut off.
- At the terminals dispenser flow (2) and dispenser back flow (12) can optionally be in the accessories available dispenser can be connected.  
Before connecting the dispenser, the jumper hose (13) must be removed.  
Alternatively, in the same way using in the supplied mounting kit contains the T-adapter, the hose 1/4" o.d and the stop cock to create one possibility for extracting Ultra pure water ASTM Type 2.
- Use the 1/4" o.d. hose to make a free gravity fall connection from the system (connector 3 and 4) to a waste water drain. The drain to the sewer must be max. Are 1 m above the rinsing water connector of the unit.
- Screw the sterile vent filter (11) on the back of the system in the G 1/8" in the tank which is intended for it.
- Open the feedwater tap and check that no connections leak.
- Put the cartridge cover back on, making sure that the lock on the right side of the cover locks in place.

### 8.3 Mounting the power pack (voltage supply)

Back view power supply



Universal adapter



Wall mount  
with screws

- 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.
- Stick the universal holder which is supplied in the assembly kit to the back of the power pack as shown in the above Figure.
- 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.
- When the universal holder and universal adapter have been fitted, hang the power pack in.
- Plug the connecting cable (appliance cable) in the power pack socket.
- Connect the power pack to the ultra pure water system (4-pin power supply connector, pos. 5).
- The system is now ready for use.

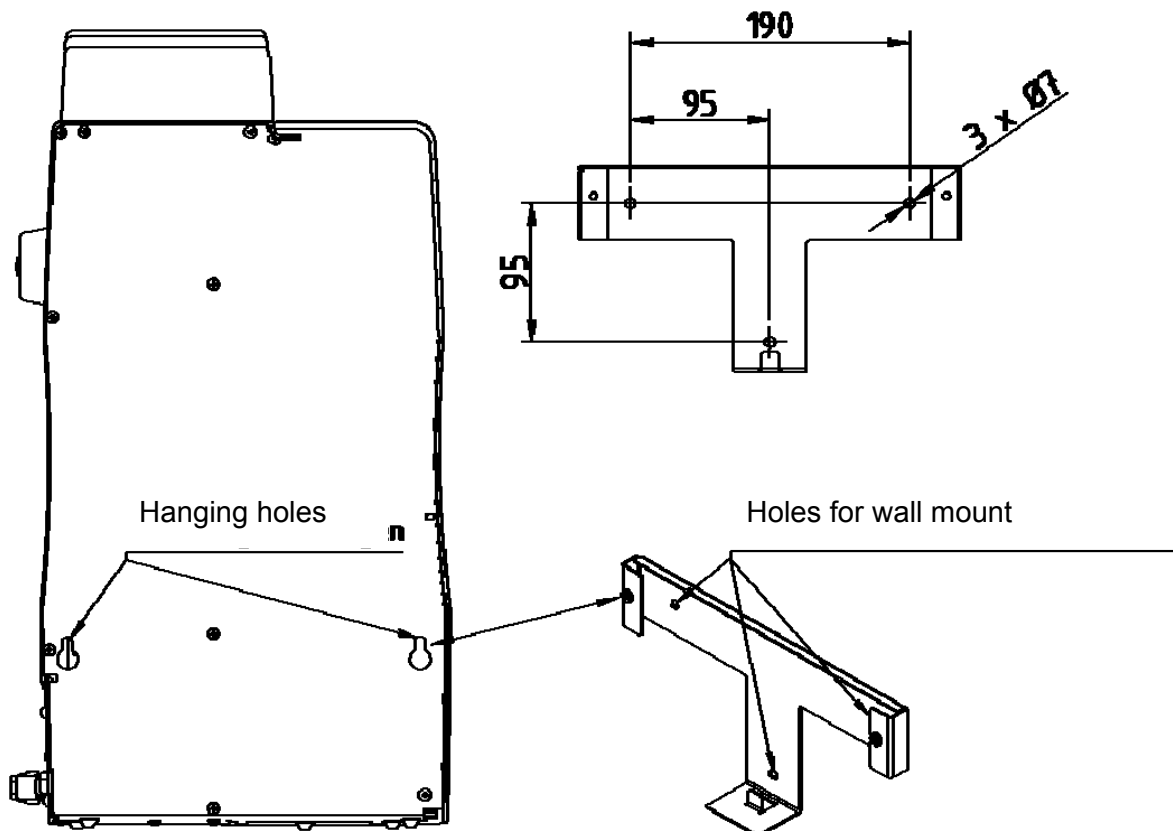
## 8.4 Wall mounting (option)

Please use the wall-mount (article number 171-1125) to mount the system on a wall. Fasten it to the wall by means of three screws.



The screws and dowels are supplied with the wall mount, are exclusively to fix the wall mount to a concrete wall or a solid masonry!

- Use the twist drill (8 mm or 5/16 inch) to make the three holes in the wall that required as shown in the diagram,
- Plug the nylon S8 dowels that are with supplied in the holes. Screw the 6 x 40 mm screws that are also with supplied in the dowels.
- Lift the Purity TU system (2 people are required for this) and hang the back side of it on the wall bracket.





## 9. Putting the system into operation

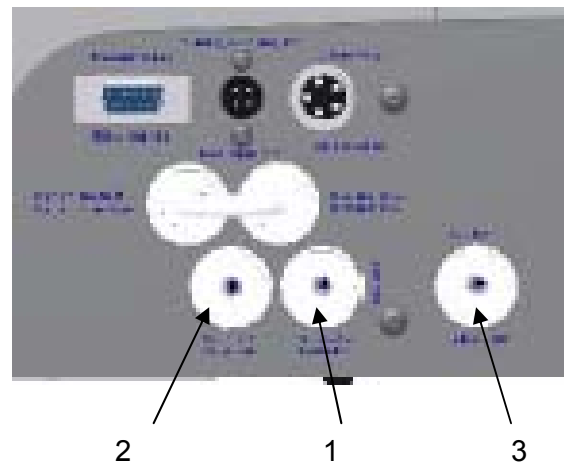


The system must have warmed up, or cooled down, to room temperature before start-up can be made.



Check that all hose connections have been correctly made as described in the "Installation" 8.2 section.

- 1) feedwater connector
- 2) Concentrate connector
- 3) Tank water return connector



Switch the system on by plugging the mains plug in a suitable electric socket with protective conductor.

After a brief self test the system begins to produce ultra pure water.

Wait until the first tank filling has been completed and discard this water. This could take approx. 1 or 2 hours according to the system type (6 or 3 l/h). Subsequently check the concentrate flow and adjust this as described in the "How Purity TU functions" section.

Withdraw at least 1 litre of water before you screw the sterile filter (10) that is supplied in the outlet of the dispensing valve.

Now set the wanted display mode, the limiting value for the conductivity and also the limiting value for the temperature as described in the "System control" section.

## 9.1. Brief operating instructions

The purity of the water produced is shown at the front of the system, either in  $\mu\text{S}/\text{cm}$  or in  $\text{M}\Omega\text{cm}$ . Ultra pure water can be withdrawn from the dispensing valve at the front of the system.

### Menu:

One press on the menu-key brings you to the first submenu, where you can select from the following choice:

1. Display of the water quality only in  $\mu\text{S}/\text{cm}$
2. Alternatively, the display can show the water quality in  $\mu\text{S}/\text{cm}$  and the temperature one after the other at 2 second intervals (dual measuring mode)
3. Display of the water quality in  $\text{M}\Omega\text{cm}$  (mono measuring mode)
4. Alternatively, the display can show the water quality and the temperature one after the other at 2 second intervals (dual measuring mode)

A second press on the menu-key brings you to the second menu, where you can set the limiting value for the conductivity of the ultra pure water (only in  $\mu\text{S}/\text{cm}$ )

A third press on the menu-key brings you to the third menu, where you can set the limiting value for the temperature.

- When a limiting value is exceeded, this is signalled by a buzzer. The alarm signal can be switched off by a press on the quit/up button.



Leave your Purity TU ultra pure water system in operation even at weekends and during holiday times. Only then can the automatic recirculation effectively protect against increasing conductivity values in the storage tank.

When the Purity TU ultra pure water system is to be out of operation for longer than 72 hours, the ultra pure water inside the system will take up carbon dioxide and so will not be able to immediately produce ultra pure water of 18.2  $\text{M}\Omega\text{cm}$  quality. To prevent this, the filter cartridge should be prematurely replaced, whereby the storage tank must be emptied so that fresh ultra pure water flows through the system.

## 10. Instruction for use

**Display**  
Indicates that the displayed value is conductivity ( $\mu\text{S}/\text{cm}$ ), resistance ( $\text{M}\Omega\text{cm}$ ) or temperature ( $^{\circ}\text{C}$ )

**Limit Value**  
Illuminates when alarm is triggered.

- Cond. Illuminates when limiting value of conductivity is exceeded.
- Temp.
- Status Sensor signals that an interruption has occurred between the system and the sensor

**Down**  
Enables a lower value to be set. Also triggers value output with optional printer.



**.060**  
Resistance in  $\text{M}\Omega\text{cm}$ . The display can also display

**Up/Quit**  
Allows a higher value to be set. Deactivates the acoustic alarm.

**Enter**  
Confirms changes in settings and shifts the cursor.

**Menu**

- Measurement mode – use up/down to select either: purity by itself (c) or flashing purity then temperature in 2 sec intervals (ct).
  - ct /  $\text{M}\Omega\text{cm}$  is resistivity and temperature
  - c /  $\text{M}\Omega\text{cm}$  is resistivity alone
  - ct /  $\mu\text{S}/\text{cm}$  is conductivity and temperature
  - c /  $\mu\text{S}/\text{cm}$  is conductivity alone
- Enables limiting value for conductivity to be set (red “Cond.” LED lights up). Use up/down keys to set value between 0.055 to 30  $\mu\text{S}/\text{cm}$ . Use Enter key to confirm. If value exceeds 30, then OFF appears in display and measurement is off.
- Set limiting value for temperature (red “Temp LED lights up). Choose from 10 to 40 $^{\circ}\text{C}$ .

## 11. The system control

### 11.1 Menu

The menu consists of three sub-points: Switching to dual mode together with selection of the measurement unit for the conductivity measurement. Setting the conductivity limiting value. Setting the temperature limiting value.

#### Mono / dual measurement mode:

**Mono measurement mode:** In this mode only the conductivity is displayed. The temperature can be read as long as the Enter-key is pressed.

**Dual measurement mode:** In this mode, temperature and conductivity are shown alternating in a 2-second takt. The LED for the unit switches with the display.

A single press on the menu-key brings the measurement mode that has last been set to display. Use the up- or down-key to switch between the permanent conductivity display and the alternating conductivity/temperature display. The display shows "c" for conductivity or "ct" for conductivity/temperature.

Switching between the measurement units  $\mu\text{S}/\text{cm}$  or  $\text{M}\Omega\text{xcm}$  can also be made here. The unit selected must be confirmed with Enter. The corresponding LED indicates which unit is operative.

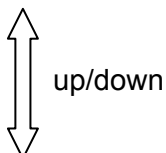
The following combinations are hereby possible:

ct /  $\text{M}\Omega\text{xcm}$

c /  $\text{M}\Omega\text{xcm}$

ct /  $\mu\text{S}/\text{cm}$

c /  $\mu\text{S}/\text{cm}$



### 11.2 Setting the limiting value for the conductivity

Setting range: 0.055 - 30  $\mu\text{S}/\text{cm}$

Basic setting: off

**Important note: The limiting value can only be entered in  $\mu\text{S}/\text{cm}$ .**

Two presses on the menu-key (the red "Cond." LED lights up) enable the limiting value for the conductivity to be set. Use the up- and down-keys to make the setting. The particular position that is to be changed can be selected with the Enter-key and is shown flashing in the display.

When the wanted value has been reached, it must be confirmed with Enter.

Should a value of 30.1  $\mu\text{S}/\text{cm}$  be set, then the word OFF appears in the display and limiting value evaluation is switched off.

If the limiting value of the conductivity is exceeded (Limit value Conductivity), the red "Cond." LED lights up and the buzzer sounds to signal a fault. The fault message can be given out via the optional printer.

### 11.3 Setting the limiting value for temperature

Setting range: 10 - 40°C  
 Basic setting: 35°C

Three presses on the menu-key (the red "Temp" LED lights up) enables the limiting value for the temperature to be set. Use the up- and down-keys to make the setting. The particular position that is to be changed can be selected with the Enter-key and is shown flashing in the display.

When the wanted value has been reached, this must be confirmed with Enter.

Should a value of 41°C be set, then the word OFF appears in the display and limiting value evaluation is switched off.

When the limiting value of the temperature is exceeded (Limit value Temperature), then the red "Temp" LED lights up and the buzzer additionally signals it. The fault message can be given out via the optional printer.

### 11.4 Communication

A printer can be connected to the RS 232 interface for the print out of measured values. The interface works at a transmission rate of 9600 bits/sec., 8 data bits, 1 stop bit and no parity. The resistance in MΩxcm and the temperature in °C are given out at the serial interface separated by a comma. The conductivity is automatically scaled to three significant places. Output is made 1x per hour.

When the system is in operation, a press on the down-key triggers a measured value output at the serial interface.

#### Print out:

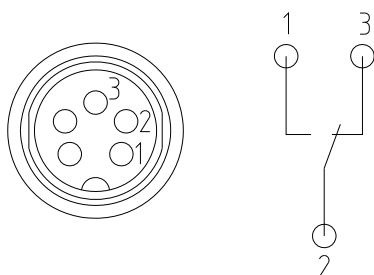
e.g.: 18.2 MΩxcm, 23.4 °C

The SUB-D socket has the following pin assignment:  
 PIN 2: RXD  
 PIN 3: TXD  
 PIN 5: GND

### 11.5 Potential-free contact

The system is equipped with a potential-free contact for the control of external equipment.  
 Max. connected load: 30V, 2A.

The PIN assignment of the 5-pin socket is as follows:



## 12. General maintenance

Regular maintenance of your system ensures that the value of it is maintained. We recommend that you select a service contract with a service company which has been expressly authorized. You then have the certainty of a high operational safety and reliability.

### NOTE!

To ensure that system will work reliably for a long time, it 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!

Any maintenance work which should become necessary during the validity of the warranty is only to be carried out by an expressly authorized service company.

The operating-staff assigned is committed to carry out the weekly checks. During the agreed term of validity of the guarantee, the maintenance record sheet supplied in the operating instructions should be properly kept by entry of the results of weekly checks.

### IMPORTANT!

For perfect functioning to be ensured, the ultrafiltration membrane should be replaced every 2 years, or as soon as a drop in performance is determined.

Cleaning and disinfection of your system is performed for reasons of hygiene and has no effect on the technical condition of the system. The system must be cleaned and disinfected at least once yearly.



**Control and maintenance work on electrical systems is only to be carried out when the system has been switched to a currentless condition at the mains and the switching off has been secured against inadvertent switching back on. Such work is only to be performed by appropriately trained, skilled electricians.**

## 12.1 Maintenance intervals

Consumable materials are to be replaced at the intervals given in the following Table or when there is a drop in performance:

Material	Flow chart no.	Article no.	Interval*
Pretreatment cartridge Puranity TU 3 Puranity TU 6	F1,F2	171-1142, 171-1143	12 Months <sup>1</sup> 12 Months <sup>1</sup>
Filter cartridge	F3	171-1141	12 Months <sup>1</sup>
0.2µm sterile filter	F4	171-1105	12 Months <sup>2</sup>
Ultrafiltration membrane	F6	171-1106	24 Months <sup>1</sup>
UV lamp	UV1	171-1108	24 Months <sup>3</sup>

\* Please keep in mind that the life of your consumables is directly dependent on the quality of the feed water and the amount of water used daily. The interval is contingent on the feedwater quality so that a shorter one may be necessary.

<sup>1</sup> Or when the ultrapure water limiting value is exceeded, whichever is shorter. Longer usage can be result in bacterial growth on the resin.

<sup>2</sup> Or flow rate is noticeably slow.

<sup>3</sup> Or unless system indicates the lamp needs to be replaced.

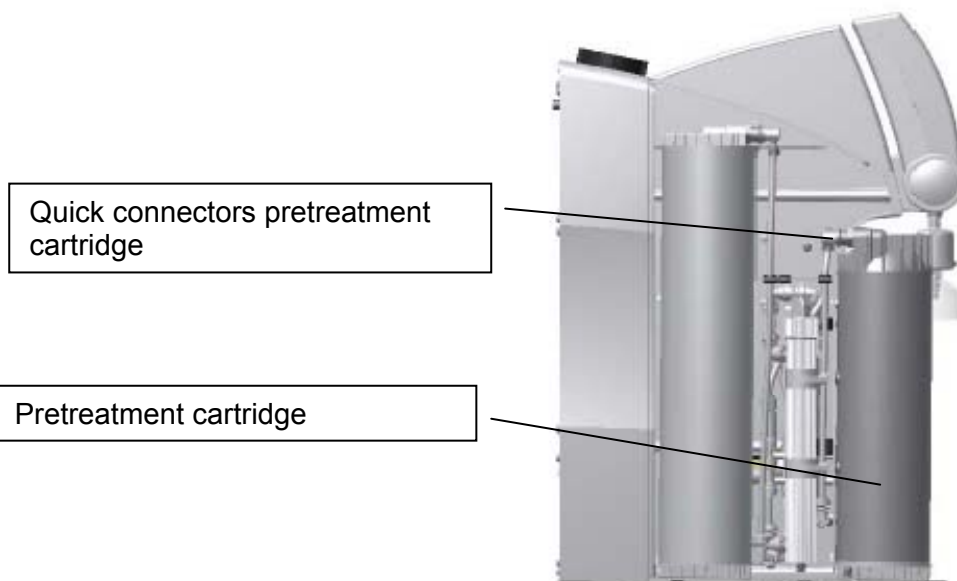
## 12.2 Replacing the pretreatment cartridge



The pretreatment cartridge must be replaced when operation of the system with insufficient preconditioning has led to module blockage and a corresponding drop in the stated capacity.

Proceed as follows to replace the pretreatment cartridge:

1. Empty the storage tank.
2. Separate the system from the mains by unplugging the mains plug.
3. Shut off the supply of feedwater.
4. Open the dispensing valve and close it when water no longer flows out.
5. Take the cartridge cover off.
6. Remove the three quick-connectors from the pretreatment cartridge and close the connectors of it with the stoppers that have been saved.
7. Draw the spent pretreatment cartridge out from the guide and replace it with the new pretreatment cartridge.
8. Remove the stoppers from the new pretreatment cartridge and save them.
9. Fit the quick-connectors on the pretreatment cartridge so that they audibly click into position.
10. Re-open the supply of feedwater.
11. Connect the system to the mains and check the plug connections for leakage.
12. Replace the cartridge cover.
13. Discard the first tank filling.





## 12.3 Replacing the filter cartridge



The filter cartridge must be replaced as soon as the maximum limiting value that is set for the ultra pure water is exceeded, and also after every disinfection of the system.

Proceed as follows to replace the filter cartridge:

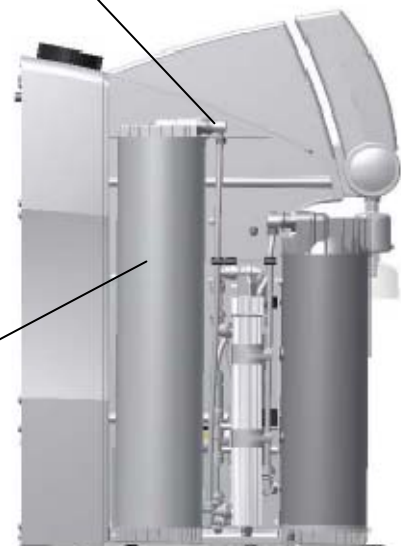
1. Empty the storage tank.
2. Separate the system from the mains by unplugging the mains plug.
3. Shut off the supply of feedwater.
4. Open the dispensing valve and close it when water no longer flows out.
5. Take the cartridge cover off.
6. Remove the two quick-connectors from the feedwater side and the ultra pure water side of the filter cartridge and close the cartridge connectors with the stoppers that have been saved.
7. Draw the spent filter cartridge out from the guide and replace it with the new filter cartridge.
8. Remove the stoppers from the new filter cartridge and save them.
9. Fit the quick-connectors on the filter cartridge so that they audibly click into position.
10. Re-open the supply of feedwater.
11. Connect the system to the mains and check the plug connections for leakage.
12. Replace the cartridge cover.
13. Discard the first tank filling.



Only use filter cartridges of article number 171-1141 in this system, as this type of cartridge is specifically designed for it. Use of any other type invalidates the warranty.

Quick connectors filter cartridge

Filter cartridge



## 12.4 Disinfection



**Your system should be cleaned and disinfected at least once a year to eliminate any bacteria that are possibly in the system. We recommend that you carry out cleaning and disinfection shortly before the time that the filter cartridge must to be replaced.**

Use cleaning solutions as follows:

MICRO-Chlor Granulate, 1 box, article no. 171-1123 (Europe only)

Cleaning Solution, 1 syringe, article no. 171-1124 (US-market only).



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

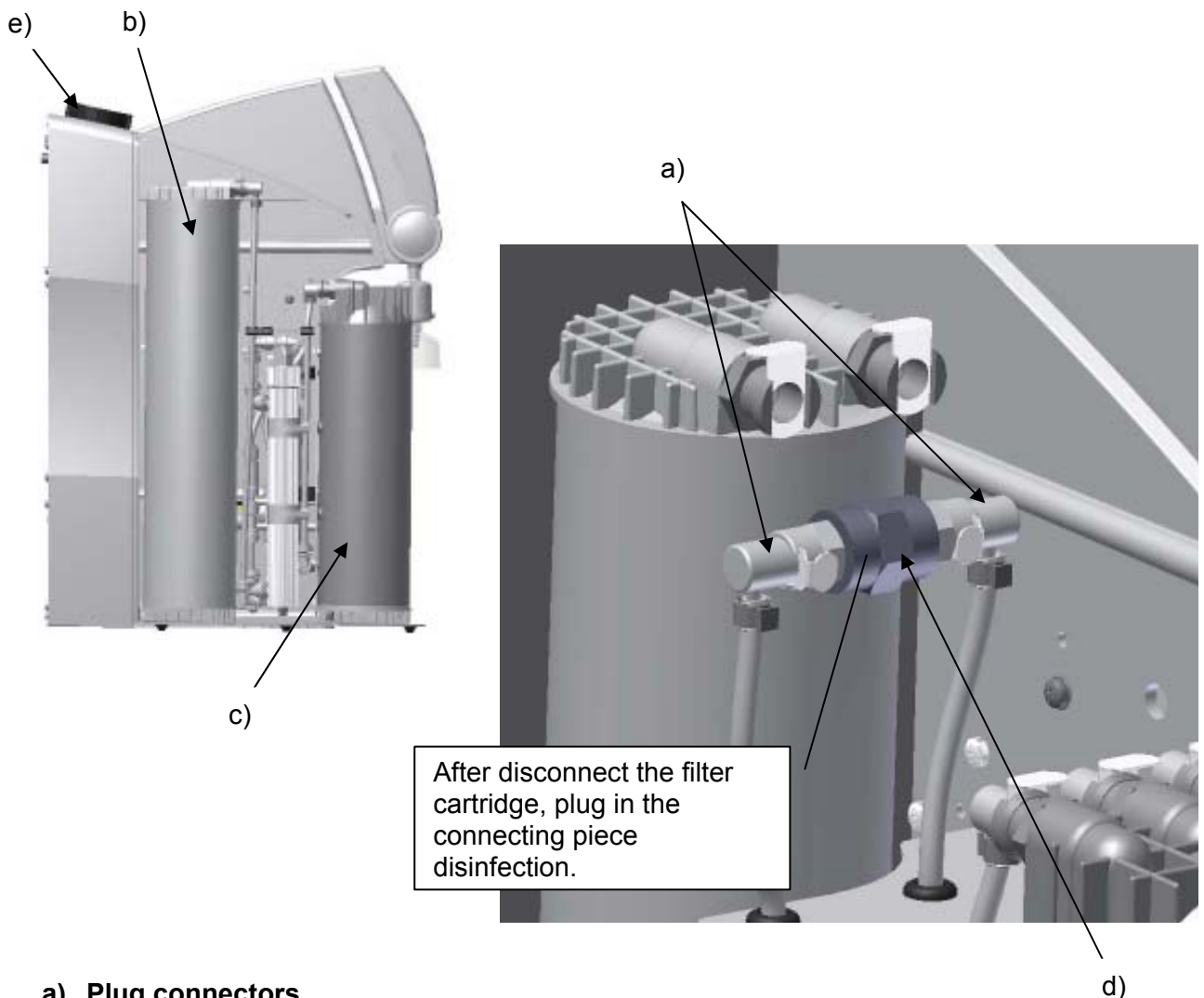
**Proceed as follows to disinfect your system:**

1. Disconnect the Purity TU from mains supply.
2. Replace the pretreatment cartridge (c) as is described in chapter 12.2 “Replacing the pretreatment cartridge.”
3. Undo and remove the plug connectors (a) of the filter cartridge (b). Briefly close the plug connections with the connecting piece / disinfection (d) from the assembly kit (article no. 171-1148).
4. Open the lid (e) of the storage tank, pour the contents of a box respectively a syringe of cleaning solution or a can of MICRO Chlor into the water-filled tank and then close the lid (e).
5. Connect the system with mains supply and let it run for 1 hour in normal operation to effective bacteria killing.
6. Discard two tank fillings of water.
7. Close the dispensing valve, disconnect the system from mains supply.

8. Change the filter cartridge (a) as described in chapter 12.3 “Replacing the filter cartridge”, with the system on if necessary the pre-treatment filter(c) and the sterile filter.
9. Connect the system with mains supply.
10. Fill the tank completely once and discard the water produced from this tank filling.



**Before dispensing water from the system, let water run out for approx. 15 minutes. The system is then ready for use.**

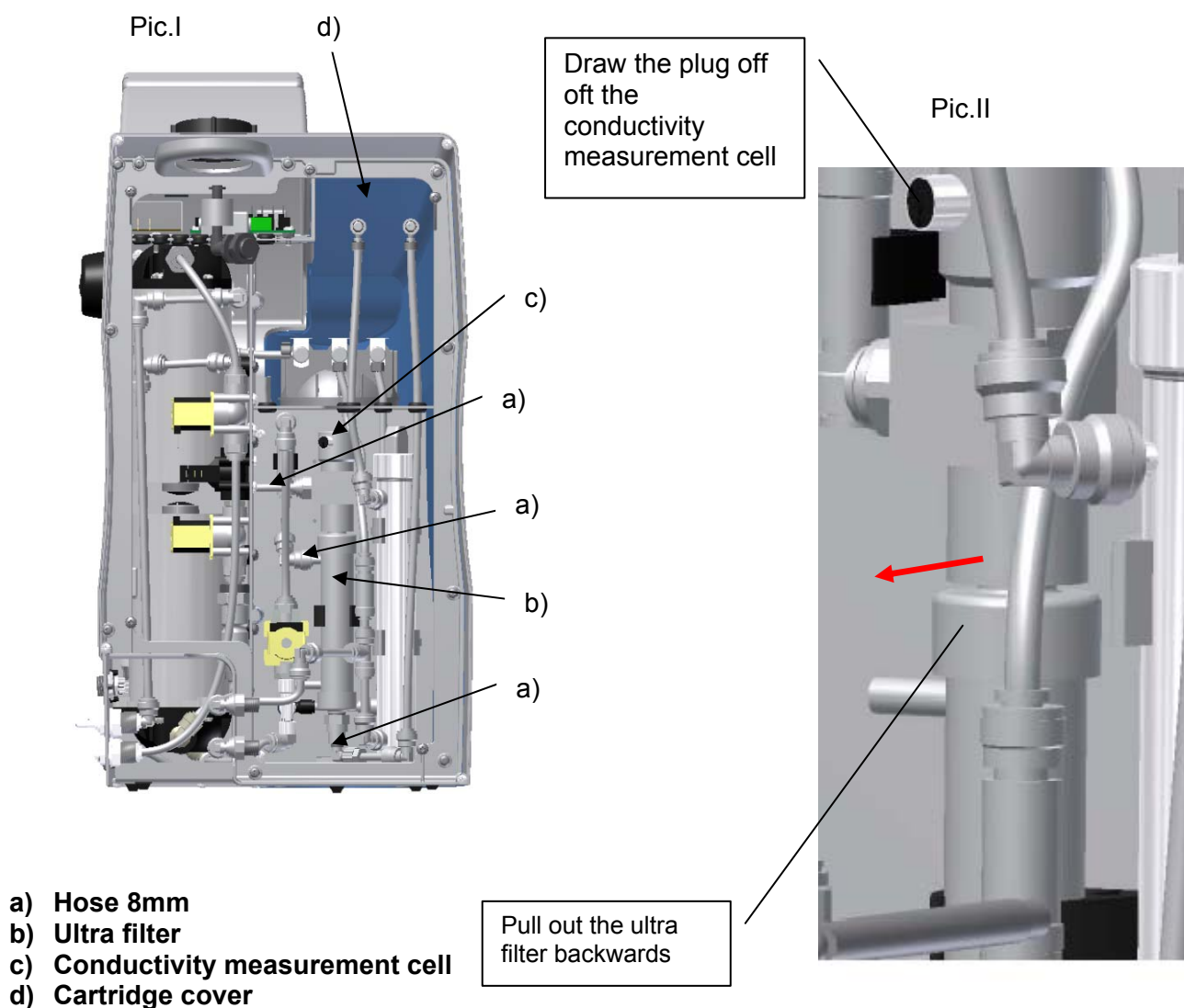


- a) Plug connectors
- b) Filter cartridge
- c) Pretreatment cartridge
- d) Connecting piece disinfection (included in assembly kit)
- e) Lid

## 12.5 Change the ultrafilter

Proceed as follows to change the ultra filter

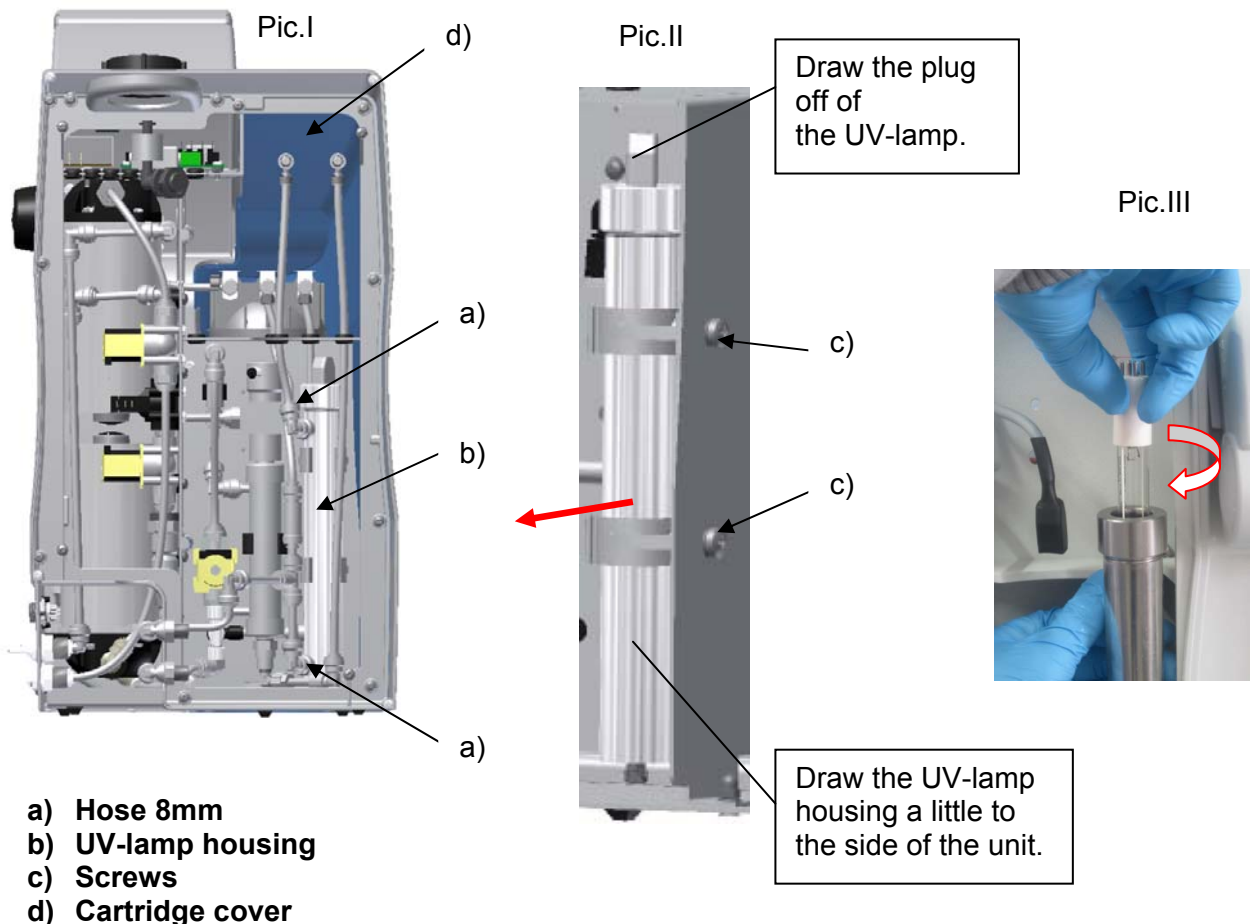
1. Switch the Purity TU system off.
2. Shut off the supply of feedwater to the system and open the dispensing valve so that pressure in the system is completely released.
3. Remove the cartridge cover (d) and the filter cartridge ( see under chapter 12.2 "Changing the filter cartridge) and draw out the hoses(a) from the ultra filter (b) (Pic.I). Then draw off the plug from the conductivity measurement cell. (c). After this procedure draw off the ultrafilter (b) backwards and change it.(Pic.II)
4. Build the hoses (a), filter cartridge, plug from conductivity measurement cell and the cartridge cover( d) back and switches the sytem on again.



## 12.6 Change the UV lamp

Proceed as follows to change the UV-lamp

1. Switch the Purity TU system off.
2. Shut off the supply of feedwater to the system and open the dispensing valve so that pressure in the system is completely released.
3. Remove the cartridge cover (d) and the filter cartridge (not shown, see under chapter 12.2 "Changing the filter cartridge) and pull out the hoses (a) (Pic.I). Then draw the plug off of the UV-lamp, unscrew the screws (c) and draw the UV-lamp housing (b) a little to the side of the unit (Pic.II).
4. Now carefully draw the UV-lamp upwards while lightly turning it clockwise (Pic.III). 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. We therefore recommend that clean gloves be worn.
5. Carefully introduce the new UV-lamp under a slight turning motion as before but in the anticlockwise direction. Plug the plug on the lamp and push it back in the unit.
6. Build the screws (c), the hoses (a), the filter cartridge and the cartridge cover (d) back and switches the system on again.



### 13. Waste disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

## 14. Trouble shooting

Fault	Cause	Remedy
System does not start	<ul style="list-style-type: none"> <li>- No supply of current</li> <li>- Power pack or system control defect</li> </ul>	<ul style="list-style-type: none"> <li>- Supply current</li> <li>- Replace the power pack or system control</li> </ul>
Water cannot be dispensed	<ul style="list-style-type: none"> <li>- Feedwater supply is off</li> <li>- The feedwater and rinse water connectors are mixed up</li> <li>- Feedwater pressure &lt; 1 bar</li> </ul>	<ul style="list-style-type: none"> <li>- Open the feedwater tap</li> <li>- Reverse the connections</li> <li>- Increase feedwater pressure</li> </ul>
Resistance < 18.2 MΩxcm	<ul style="list-style-type: none"> <li>- Air in the UF-module because of empty tank</li> <li>- Spent exchanger capacity</li> </ul>	<ul style="list-style-type: none"> <li>- Wait until the tank is again filled and a rinse is triggered</li> <li>- Insert new filter cartridge</li> </ul>
System control no longer reacts but LED's light up	<ul style="list-style-type: none"> <li>- Improper operation</li> <li>- Voltage fault</li> </ul>	<ul style="list-style-type: none"> <li>- Unplug the mains plug for 5 seconds</li> </ul>
Water leaks out	<ul style="list-style-type: none"> <li>- Leaky hose connection</li> <li>- Feedwater pressure &gt; 6 bar</li> <li>- Component defect (e.g. UV-quartz tube)</li> </ul>	<ul style="list-style-type: none"> <li>- Check and seal the hose connection</li> <li>- Install an upstream pressure reducer</li> <li>- Replace the component</li> </ul>
Volume that can be dispensed is too small	<ul style="list-style-type: none"> <li>- UF-Module blocked</li> <li>- Sterile filter blocked</li> <li>- Air in the sterile filter</li> <li>- Tank is not yet sufficiently filled</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the UF-module</li> <li>- Replace the sterile filter</li> <li>- Vent the sterile filter</li> <li>- Wait until the tank is full</li> </ul>

<p>Fault message: Red LED is lit up <i>"Limit value Cond."</i></p>	<ul style="list-style-type: none"> <li>- Spent filter cartridge</li> <li>- Limiting value set too low</li> </ul>	<ul style="list-style-type: none"> <li>- Replace with new filter cartridge (art. no.: 09.1006)</li> <li>- Check, match the limiting value setting</li> </ul>
<p>Fault message: Red LED is lit up <i>"Limit value Temp."</i></p>	<ul style="list-style-type: none"> <li>- Temperature in the system is too high</li> <li>- Limiting value is set too low</li> <li>- Feedwater temperature too high</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce temperature by letting water flow out</li> <li>- Check and match the limiting value setting</li> <li>- Reduce the feedwater temperature</li> </ul>
<p>Fault message: Red LED is lit up <i>"Status Sens."</i> Anzeige im Display "---"</p>	<ul style="list-style-type: none"> <li>- Interruption in cable to the conductivity measuring cell</li> <li>- Measuring cell defect</li> </ul>	<ul style="list-style-type: none"> <li>- Check the cable and the plug connection.</li> <li>- Replace the measuring cell</li> </ul>
<p>Fault message: Red LED is lit up <i>"Status Sens."</i> The display shows "---", and buzzer simultaneously sounds an acoustic message</p>	<ul style="list-style-type: none"> <li>- Interruption in cable to the conductivity measuring cell</li> <li>- Temperature sensor defect</li> </ul>	<ul style="list-style-type: none"> <li>- Check the cable and the plug connection.</li> <li>- Replace the measuring cell</li> </ul>

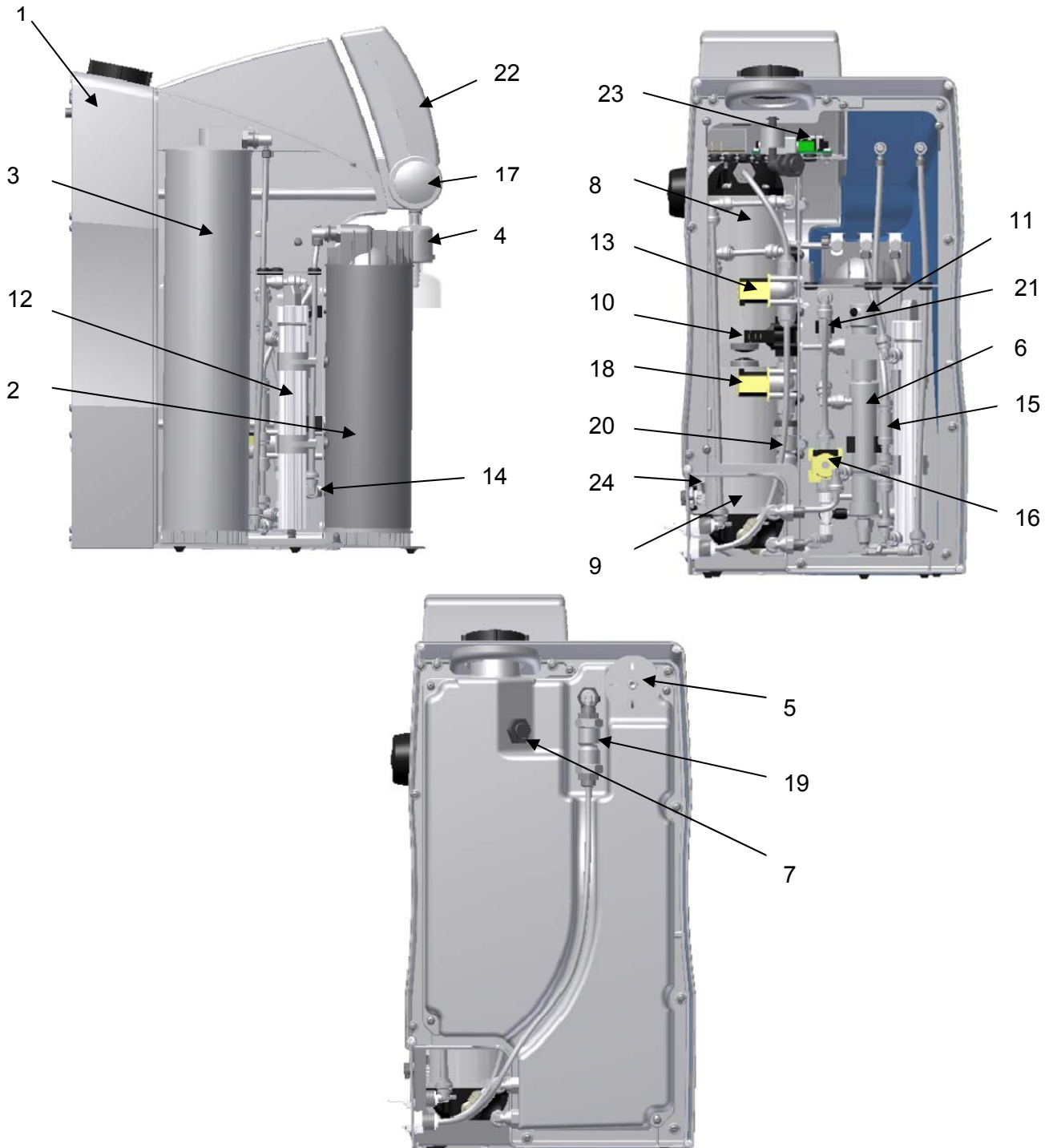


## 15. Technical service

Visit the VWR's website at [www.vwr.com](http://www.vwr.com) for:

- Complete technical service contact information
- Access to VWR's Online Catalogue, and information about accessories and related products
- Additional product information and special offers

**Contact us** For information or technical assistance contact your local VWR representative or visit. [www.vwr.com](http://www.vwr.com).



No	Designation	Article no.
1	Ultra pure water tank	171-1170
2	Pretreatment cartridge consisting of prefilter / hardness stabilizer and RO membrane:..... for 6 l/h performance	171-1142 171-1143
3	Filter cartridge	171-1141
4	Sterile filter	171-1105
5	Sterile vent filter	171-1166
6	Ultrafiltration module	171-1106
7	Float switch	171-1167
8	Pressure booster pump	171-1107
9	Recirculation pump	171-1107
10	Pressure switch	171-1151
11	Ultra pure water conductivity measuring cell Temperature sensor	171-1152 171-1111
12	Replacement UV-lamp UV-Booster	171-1108 171-1153
13	Raw water solenoid valve	171-1154
14	Pressure hold valve	171-1155
15	Check valve	171-1156
16	Rinsing solenoid valve	171-1114
17	Ultra pure water dispensing valve	171-1114
18	Recirculation solenoid valve	171-1154
19	Sterile overflow	171-1170
20	Check valve	171-1156
21	Check valve	171-1157
22	Board with display	171-1158
23	System control board	171-1159
24	Fuse holder for glas tube fuse 5 x 20mm Glas tube fuse 5 x 20mm, 3,15 A, slow fuse	171-1118 171-1119



## **16. Warranty**

**VWR International** warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

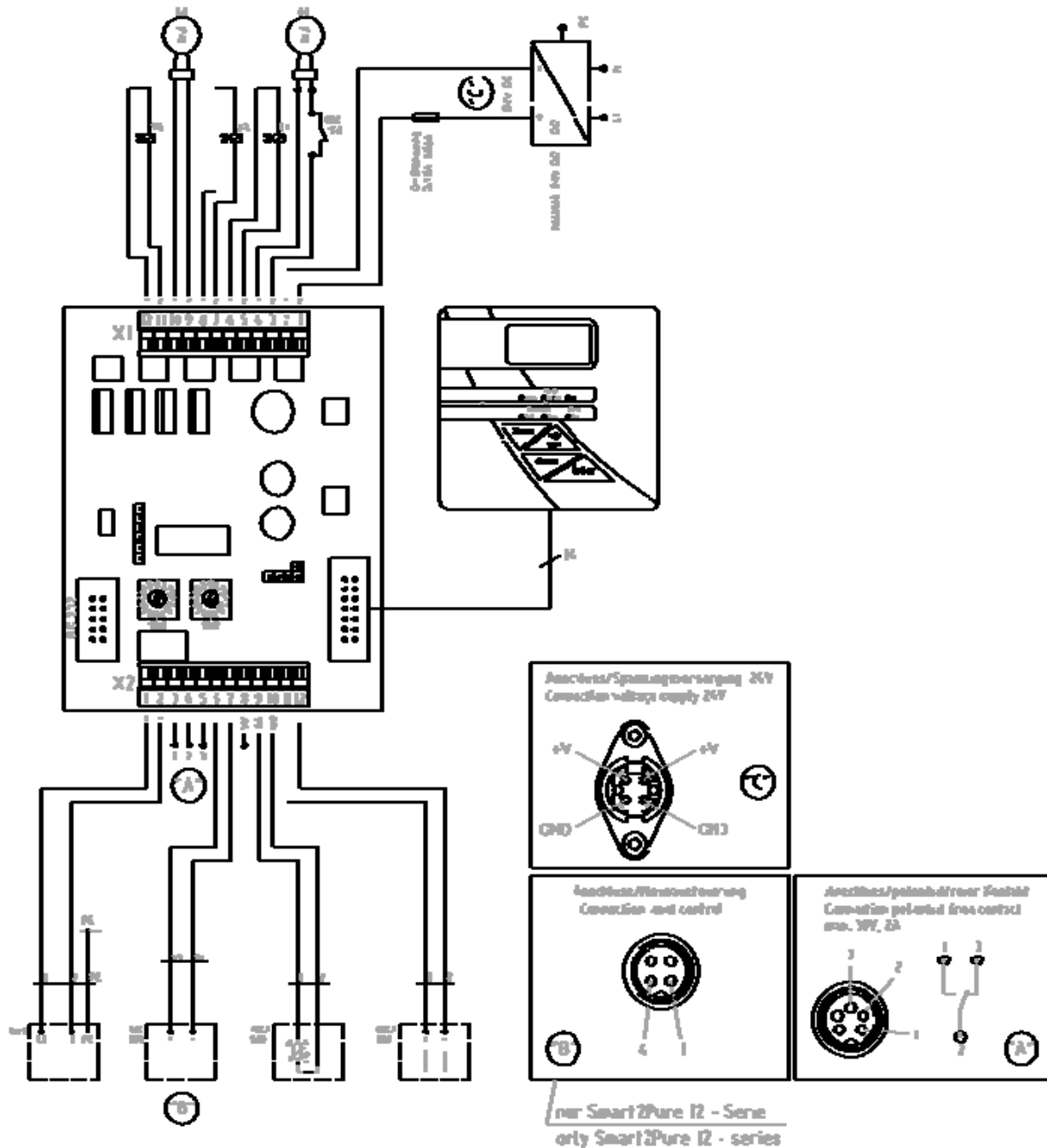
Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

### **16.1 Compliance with local laws and regulations**

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

# 17. Appendix

## 17.1 Terminal assignment



X 1	1,2	Spannungsversorgung 24V
	3,4	Beobachtungspumpe (IP2), Bruchschalter (PS200)
	5,6	Beobachtung-Rückstromventil (RV)
	7,8	Spannungssensitiv 3V4
	9,10	Druckfühlerpumpe (IP1)
X 2	11,12	Reinigungs-Hauptventil GND
	1,2	UV-Fotometer (UV1)
	3	Pol. freier Kontakt
	4	Pol. freier Kontakt
	5	Pol. freier Kontakt
	6,7	Wasser-Turbide (LCS100)
	8 (NO)	
	9 (NO)	Temperaturgeber (TAS100)
	10 (NO)	Temperaturgeber (TAS100)
	11,12	Leitfähigkeitssensitiv Beobachtung (ISA300)

X 1	1,2	Power supply 24V
	3,4	Observation pump (IP2), Pressure switch (PS200)
	5,6	Observer return valve (RV)
	7,8	Pressure sensitive valve (IP4)
	9,10	Observer pump (IP1)
X 2	11,12	Reinjection solvent valve (GND)
	1,2	UV-photometer (UV1)
	3	Pol. free contact
	4	Pol. free contact
	5	Pol. free contact
	6,7	Lead contact (LCS100)
	8 (NO)	
	9 (NO)	Temperature sensor (TAS100)
	10 (NO)	Temperature sensor (TAS100)
	11,12	Conductivity sensitive cell (ISA300)

## 17.2 Maintenance record

(Please keep this carefully updated, as correct keeping of this maintenance record is a condition of the guarantee)

**Customer address:**

**Location:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Type of system:**

\_\_\_\_\_

**Serial no.:**

\_\_\_\_\_

**Year made:**

\_\_\_\_\_

Date	Resistance, ultra pure water [MΩxcm]	Temperature, ultra pure water [°C]	Flow rate of ultra pure water ASTM Type I [L/min]	Resistance, permeate [MΩxcm]	Flow rate of permeate [L/h]	Flow rate of concentrate [L/h]

Pretreatment cartridge replaced yes/no	Filter cartridge replaced yes/no	Cleaning, disinfection yes/no	Remarks	Signature

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

**The following times are to be observed to assure the quality of the system:**

- 1x weekly, record measured values
- 1x yearly, replace the pretreatment cartridge
- 1x yearly, replace the filter cartridge

## Local VWR offices in Europe and Asia Pacific

### Austria

VWR International GmbH  
Graumannsgasse 7  
1150 Wien  
Tel.: 01 97 002 0  
Fax: 01 97 002 600  
E-mail: [info@at.vwr.com](mailto:info@at.vwr.com)

### Belgium

VWR International bvba  
Researchpark Haasrode 2020  
Geldenaaksebaan 464  
3001 Leuven  
Tel.: 016 385 011  
Fax: 016 385 385  
E-mail:  
[customerservice@be.vwr.com](mailto:customerservice@be.vwr.com)

### China

VWR International China Co., Ltd  
Suite 1802 - 1803,  
Xing Ye Bank Mansion, No 168,  
168 Jiangning Road  
Shanghai 200041, China  
Tel.: +86- 21 521 388 22  
Fax: +86- 21 521 33 933  
E-mail: [sales\\_china@vwr.com](mailto:sales_china@vwr.com)

### Czech Republic

VITRUM VWR s. r. o.  
A VWR International Company  
Pražská 442  
CZ - 281 67 Strábrná Skalice  
Tel.: +420 321 570 321  
Fax: +420 321 570 320  
E-mail: [info@vitrum.cz](mailto:info@vitrum.cz)

### Denmark

VWR - Bie & Berntsen  
Transformervej 8  
2730 Herlev  
Tel.: 43 86 87 88  
Fax: 43 86 87 90  
E-mail: [info@dk.vwr.com](mailto:info@dk.vwr.com)

### Finland

VWR International Oy  
Valimotie 9  
00380 Helsinki  
Tel.: +358 9 80 45 51  
Fax: +358 9 80 45 52 00  
E-mail: [info@fi.vwr.com](mailto:info@fi.vwr.com)

### France

VWR International S.A.S.  
Le Périgares – Bâtiment B  
201, rue Carnot  
94126 Fontenay-sous-Bois cedex  
Tel.: 0 825 02 30 30 (0,15 EUR  
TTC/min)  
Fax: 0 825 02 30 35 (0,15 EUR  
TTC/min)  
E-mail: [info@fr.vwr.com](mailto:info@fr.vwr.com)

### Germany

VWR International GmbH  
Hilpertstrasse 20a  
D - 64295 Darmstadt  
Tel.: 0180 570 20 00\*  
Fax: 0180 570 22 22\*  
E-mail: [info@de.vwr.com](mailto:info@de.vwr.com)  
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### Hungary

VWR International Kft.  
Simon László u. 4.  
4034 Debrecen  
Tel.: (52) 521-130  
Fax: (52) 470-069  
E-mail: [info@hu.vwr.com](mailto:info@hu.vwr.com)

### India

VWR Lab Products Pvt Ltd  
2nd Floor, Front Wing, 135/12,  
Brigade Towers  
Brigade Road  
Bangaluru 560025 India  
Tel: +91-2522-647911/922 (Mumbai)  
Tel: +91-80-41117125/26  
(Bangalore)  
Fax +91-80-41117120  
E-mail: [vwr\\_india@vwr.com](mailto:vwr_india@vwr.com)

### Ireland / Northern Ireland

VWR International Ltd / VWR  
International (Northern Ireland) Ltd  
Orion Business Campus  
Northwest Business Park  
Ballycoolin  
Dublin 15  
Tel.: 01 88 22 222  
Fax: 01 88 22 333  
E-mail [sales@ie.vwr.com](mailto:sales@ie.vwr.com)

### Italy

VWR International PBI S.r.l.  
Via San Giusto 85  
20153 Milano (MI)  
Tel.: 02-3320311/02-487791  
Fax: 02-332031307/02-40090010  
E-mail: [info@it.vwr.com](mailto:info@it.vwr.com)  
[info@internationalpbi.it](mailto:info@internationalpbi.it)

### The Netherlands

VWR International B.V.  
Postbus 8198  
1005 AD Amsterdam  
Tel.: 020 4808 400  
Fax: 020 4808 480  
E-mail: [info@nl.vwr.com](mailto:info@nl.vwr.com)

### Norway

VWR International AS  
Haavard Martinsens vei 30  
0978 Oslo  
Tel.: 02290  
Fax: 815 00 940  
E-mail: [info@no.vwr.com](mailto:info@no.vwr.com)

### Poland

Labart Sp. z o.o.  
A VWR International Company  
Limbowa 5  
80-175 Gdansk  
Tel.: 058 32 38 200 do 204  
Fax: 058 32 38 205  
E-mail: [labart@pl.vwr.com](mailto:labart@pl.vwr.com)

### Portugal

VWR International - Material de  
Laboratório, Lda  
Edifício Neopark  
Av. Tomás Ribeiro, 43- 3 D  
2790-221 Carnaxide  
Tel.: 21 3600 770  
Fax: 21 3600 798/9  
E-mail: [info@pt.vwr.com](mailto:info@pt.vwr.com)

### Singapore

VWR Singapore Pte Ltd  
18 Gul Drive  
Singapore 629468  
Tel: +65 6505 0760  
Fax: +65 6264 3780  
E-mail: [sales@sg.vwr.com](mailto:sales@sg.vwr.com)

### Spain

VWR International Eurolab S.L.  
C/ Tecnología 5-17  
A-7 Llinars Park  
08450 - Llinars del Vallès  
Barcelona  
Tel.: 902 222 897  
Fax: 902 430 657  
E-mail: [info@es.vwr.com](mailto:info@es.vwr.com)

### Sweden

VWR International AB  
Fagerstagatan 18a  
163 94 Stockholm  
Tel.: 08 621 34 00  
Fax: 08 621 34 66  
E-mail: [info@se.vwr.com](mailto:info@se.vwr.com)

### Switzerland

VWR International GmbH  
Lerzenstrasse 16/18  
8953 Dietikon  
Tel.: 044 745 13 13  
Fax: 044 745 13 10  
E-mail: [info@ch.vwr.com](mailto:info@ch.vwr.com)

### UK

VWR International Ltd  
Customer Service Centre  
Hunter Boulevard  
Magna Park  
Lutterworth  
Leicestershire  
LE17 4XN  
Tel.: 0800 22 33 44  
Fax: 01455 55 85 86  
E-mail: [uksales@uk.vwr.com](mailto:uksales@uk.vwr.com)