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Instruction Manual

Accu500

Ultrapure and RO water system

USER MANUAL

This Manual Is Applicable to the Following Accu500 Models

15409699	ACCU500 Water System, 10L/H set
15429699	ACCU500 Water System, 15L/H set
15449699	ACCU500 Water System, 20L/H set
15469699	ACCU500 Water System, 30L/H set
15419699	ACCU500 Water System, 10L/H UV set
15439699	ACCU500 Water System, 15L/H UV set
15459699	ACCU500 Water System, 20L/H UV set
15479699	ACCU500 Water System, 30L/H UV set
15489699	ACCU500 Water System, 10L/H and 2-Pass RO set
15499699	ACCU500 Water System, 10L/H UV and 2-Pass RO set

Table of Contents

1 INTRODUCTION

This manual describes in detail about system performance characteristics, installation, operation, and routine maintenance. Please read this manual thoroughly for its instruction on installation, use and maintenance. Proper installation and maintenance guarantee the continuous flow of high quality pure water.

Please contact us or your local distributor if you encounter any issues during installation and use. Professional engineers are fully trained to support you.

Safety Information

WARNING!

To avoid electrical shock, always:

1) Use with a properly grounded electrical outlet of correct voltage and current handling capacity.
2) Replace fuses with those of the same type and rating.
3) Disconnect from the power supply prior to maintenance and service.
4) Refer servicing to qualified personnel.

1.1 Product Features

Accu500 lab water system is an integrated system which can produce ultrapure and reverse osmosis (RO) water from tap water directly. Quality of ultrapure water produced meets or exceeds ASTM, CLSI, CAP, and ISO Type I water standards.

This system has the following features:

- Electrical and water compartments are completely separated. Making the unit safer to operate.
- Pre-filtration pack removes most large particles, calcium and organic compounds to protect RO membrane to extend their usable life.
- System removes over 99% of large molecules and particles and 95% of ions in water.
- Fully automated control system has pre-rinse, RO membrane fouling preventing flush, RO membrane and cartridge life detection and many other functions.
- System automatically rinses a new RO membrane. User does not need to set special rinse program for a new RO membrane.
- Two sets of dual-column purification cartridges work sequentially to ensure thorough removal of trace ions and organics in water.
- Resistivity is measured by a high-precision resistivity meter (conductivity cell constant 0.01cm $^{-1}$).
- User can set water dispensing time for the ease of water collection.
- A 0.2 µm final filter or an ultrafiltration filter (optional) removes bacteria and final contaminants.
- A dual wavelength UV lamp (optional) kills bacteria and reduces organics to trace level.
- The PE tank with conical bottom ensures no dead space to prevent bacteria growth.
- Tank Sanitization Modules (optional) can effectively inhibit microbial growth by UV light.

- Tank vent filter has CO_2 scavenger to remove airborne contaminants, including carbon dioxide and keep stored water at best quality possible
- Built-in printer (optional) can be set to print various quality parameters.
- Fisher Scientific provides full document support to meet user's GMP, GLP, FDA and other certification requirements.

1.2 Main Applications

Pure water can be used in many areas. Here are some typical applications.

With Ultrapure Water	With RO Water
Important and critical applications	**Routine and non-critical applications**
• HPLC (high performance liquid chromatography) mobile phase preparation • Preparation of reagent blank solution • As sample diluents for GC, HPLC, AA, ICP-MS and other analytical techniques • Preparation of buffer and culture media for mammalian cell culture • Preparation of molecular biology reagents, etc.	• Glassware cleaning • Washing machine for glassware • Water bath • Autoclave • Feed water for laboratory animals

1.3 Specifications

Operating Voltage	110 V or 230 V
Power	< 150 W
System Dimensions Width × height x depth	12 × 19 × 20 in 30 × 48 × 51 cm
Tank Dimensions Diameter × height	16 × 26 in 39 × 65 m
Water Production Rate	Ultrapure water (Type I): 1.5 L/min
	RO water: typically 10 to 50 L/h (at 25℃)
Water Tank Capacity	30 L or 60 L (optional)
RO Rejection Rate	> 95%
Resistivity of Ultrapure Water	18.2 MΩ.cm
TOC of Ultrapure Water	< 10 ppb, or < 5 ppb (with a dual wavelength UV lamp)
Particles in Ultrapure Water (>0.2 µm)	<1 /mL
UV lamp (optional)	185/254 nm dual wavelength
Microorganism	< 0.1 cfu/mL
Pyrogen Content	< 0.001 EU/mL (with a final ultrafiltration filter)

1.4 Operation

Accu500 integrated water systems produce ultrapure water directly from tap water. Most particles, ions and organic compounds are removed through the RO membrane. Water is stored in the water tank. When in need of ultrapure (UP) water, RO water flows through H Pack for further de-ionization, through a UV ultraviolet light chamber (optional) to kill bacteria and destroy trace organic pollutants in water, through a polish cartridge to remove the last trace of ions, then a 0.2 µm final filter to the outlet.

After powering-up, system goes into operation mode when the START button is pressed. If RO water produced does not meet the preset quality requirements, the RO indicator light on the panel will blink. RO water is discharged to the drain until it meets quality standard, then into storage in the water tank. When the RO button is pressed, RO water from the water tank flows to the RO outlet. RO water flow stops when the RO button is pressed again. If the UP button is pressed, water from the water tank flows through the H Pack cartridge, UV lamp chamber (optional), the U Pack polishing cartridge to the UP outlet, then through a final filter to be dispensed.

1.5 The Control Panel

Main features of the control panel are:

- MCU technology is used to measure water conductivity with automatic temperature compensation to 25□.
- Backlit 12864 LCD displays RO conductivity, UP resistivity, temperature and system operation status.
- System is menu driven, and displays status of auto-run programs.

Technical Specifications

Measurement Range	Channel A (RO): 0 ~ 99.9 µS/cm; Channel B (UP): 0 ~ 18.2 MΩ·cm
Temperature Compensation Range	Automatic temperature compensation of readings Temperature compensation range: 0 ~ 60℃ to 25℃
Range of temperature compensation coefficient	A channel: compensation coefficient setting range：0 ~ 5% /℃ B channel: non-linear temperature compensation
Display	Dot-matrix backlit LCD display
Conductivity (or resistivity) alarm output	Can set output upper limit alarm for conductivity (RO) and lower limit alarm for resistivity (UP)
Communication Interface Output	Standard RS-232C serial port. System can be connected to devices with RS-232C interface to export data or print records
Power Supply	AC 230 V ± 10%, frequency (50 ± 0.5) Hz; or AC 110 V ± 10%, frequency (60 ± 0.5) Hz
Maximum working temperature for conductivity meter	60℃
Build-in Printer (optional)	Print on demand for water parameters
UV lamp	185/254 nm dual wavelength (optional)

2 INSTALLATION

2.1 Preparation for Installation

2.1.1 Power Supply

Power supply must be properly grounded

2.1.2 Feed Water

Water type	Municipal water TDS < 1000 ppm
Water temperature	5 - 35℃
Water pressure	1.0 - 6.0 bar (15 - 90 psi)

2.1.3 Tools Needed (Not Included)

Scissors or a box opener to open packages and cut water tubing.

A wrench to install prefiltration kit.

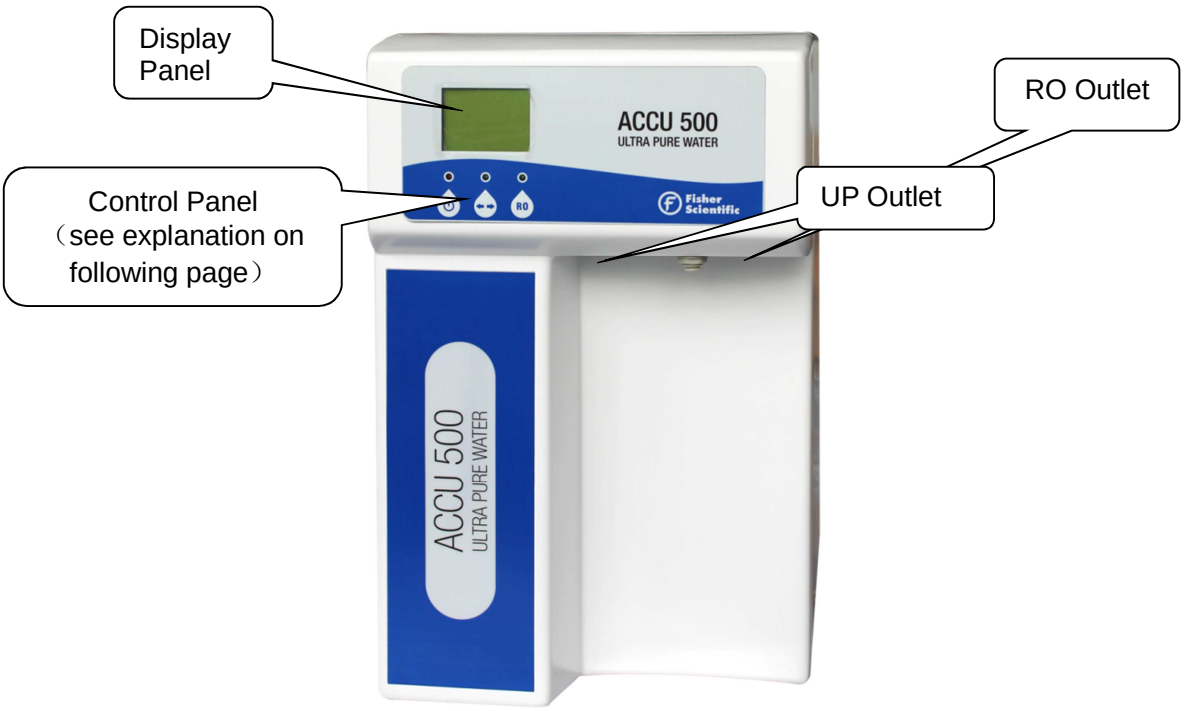
2.2 Items Included

Accu500 main system included the following items:

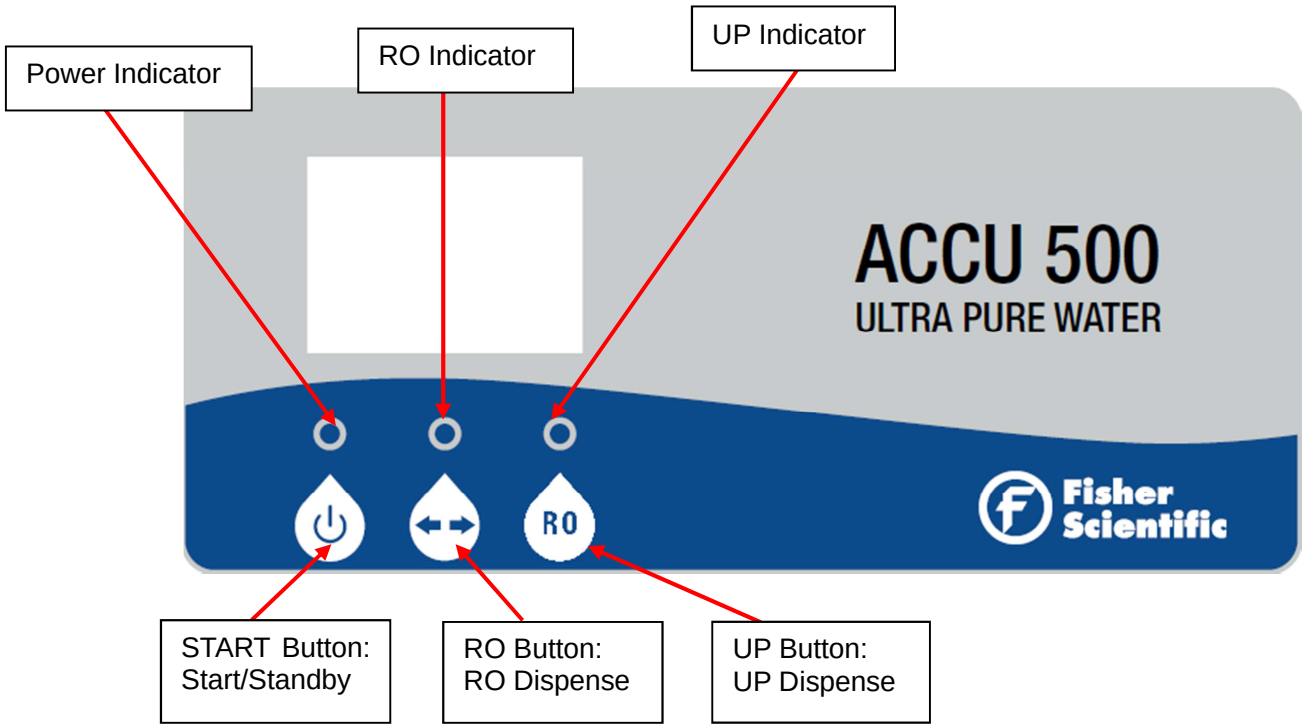
1) One User Manual
2) Quality Certificate
3) Accessories Pack, including one power cord, one 1/4 inch and one 3/8 inch PE tubing, water tank faucet, transparent tubing with a check valve, a 2-way ball valve for the water tank, one roll of Teflon tape

2.3 System Structure and Flow Diagrams

2.3.1 System Front View



2.3.2 System Control Panel



Main Buttons:

START: Start system. Push once after system power up to start the system. Push again to Standby.

RO: Controls RO water dispensing. Press once to dispense RO water, press again to shut RO valve off.

UP: Controls ultrapure (UP) water dispensing. Press once to dispense UP water, press again to stop dispensing.

Indicator Lights:

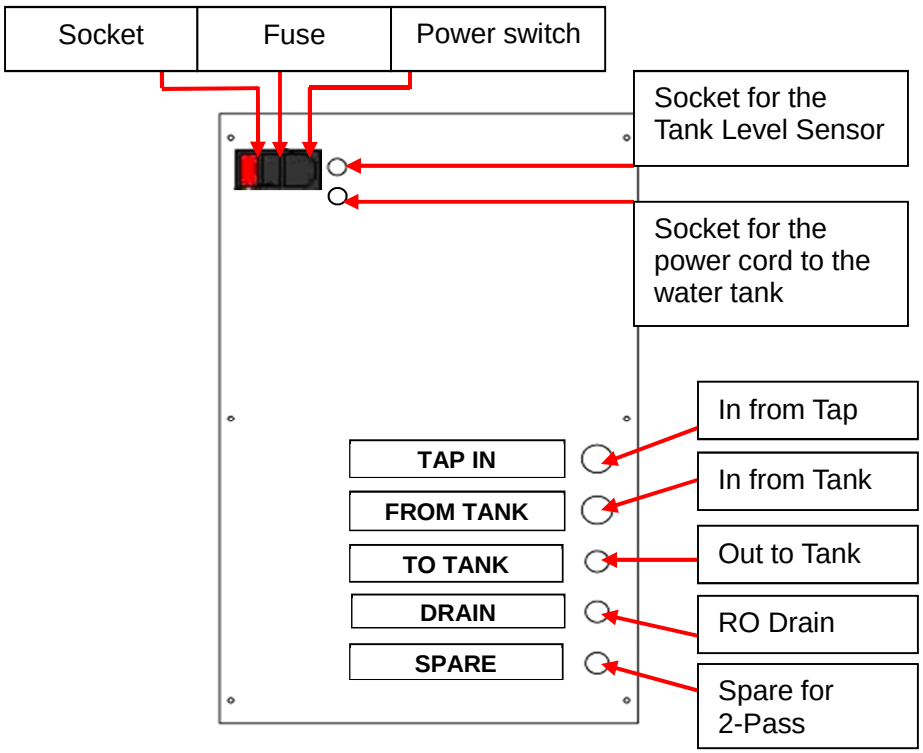
Power indicator: Above START Button. Turns RED after power is turned on.

RO indicator: Above RO Button. It turns solid GREEN when dispensing RO water.

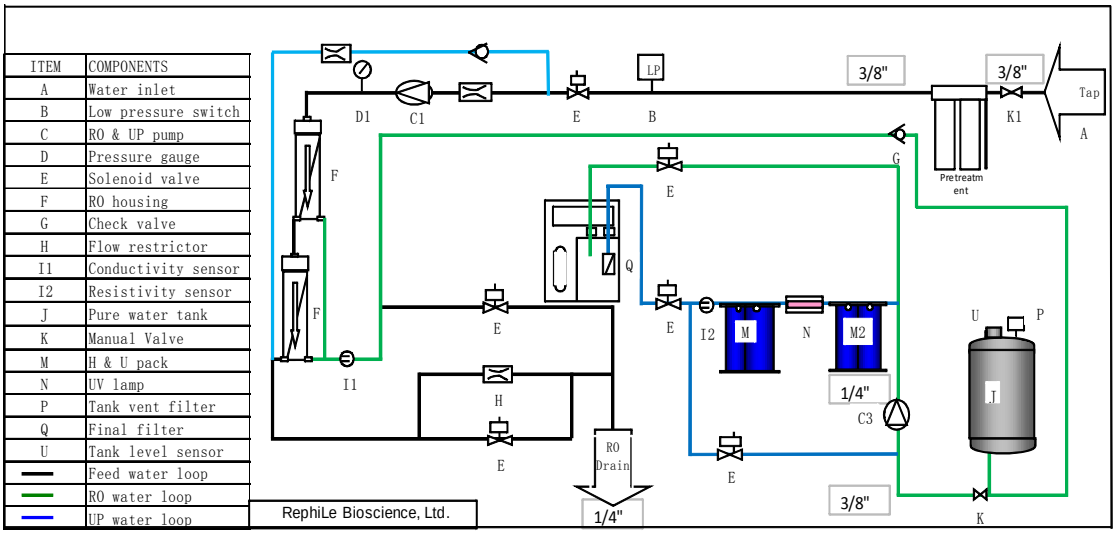
RO indicator light is also used to indicate whether RO water produced meets preset quality parameters. If RO water produced does not meet preset quality requirements, RO indicator light BLINKS. RO water produced goes to drain. This automatic operation is behind scene, thus does not interfere with RO dispensing from the water tank if there is water in the tank.

UP indicator: Above UP Button. It turns solid GREEN when dispensing ultrapure water. If UP water does not meet quality standards, this light BLINKS.

2.3.3 System Back Side View

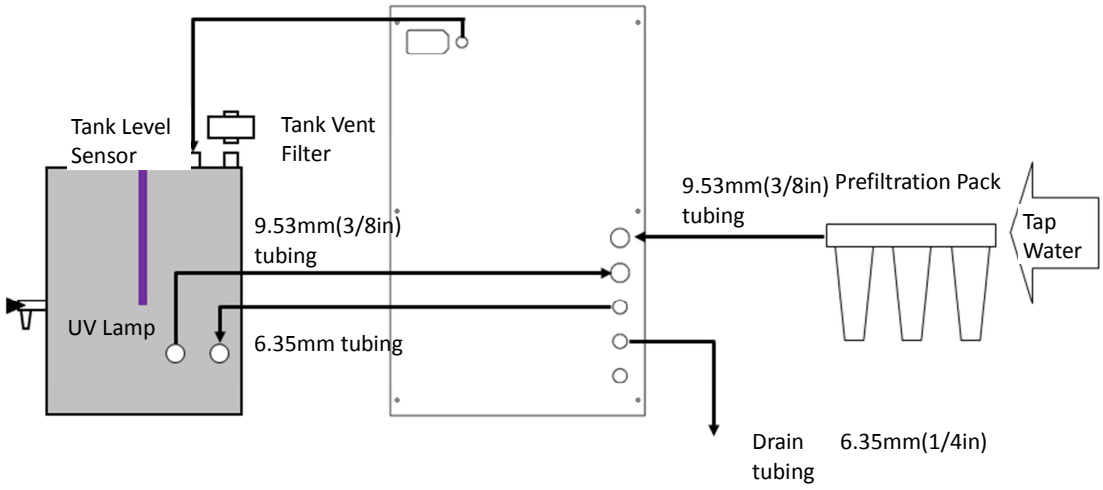


2.3.4 Accu500 Water Flow Diagram



ITEM	COMPONENTS
A	Water inlet
B	Low pressure switch
C	RO & UP pump
D	Pressure gauge
E	Solenoid valve
F	RO housing
G	Check valve
H	Flow restrictor
I1	Conductivity sensor
I2	Resistivity sensor
J	Pure water tank
K	Manual Valve
M	H & U pack
N	UV lamp
P	Tank vent filter
Q	Final filter
U	Tank level sensor
	Feed water loop
	RO water loop
	UP water loop

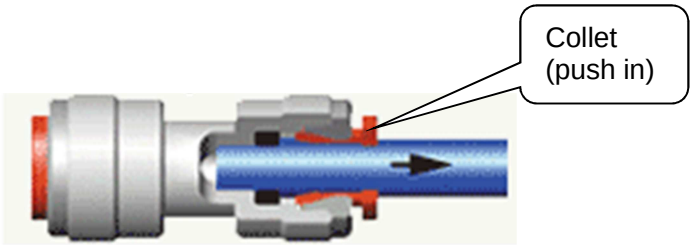
2.3.5 Accu500 External Connection Diagram



2.4 Installation

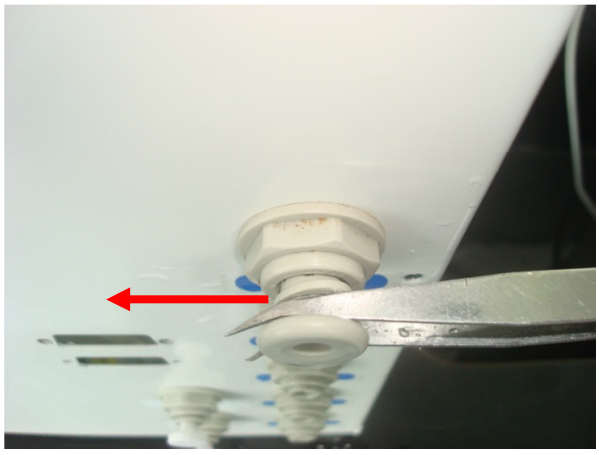
Attention

The connectors of the system are protected by stoppers. DO NOT attempt to pull the stoppers out from the ports without unlocking the connector first or use excessive force to pull the stoppers out as this will damage the connector, rendering it useless.



Please follow the instruction below to remove the stoppers

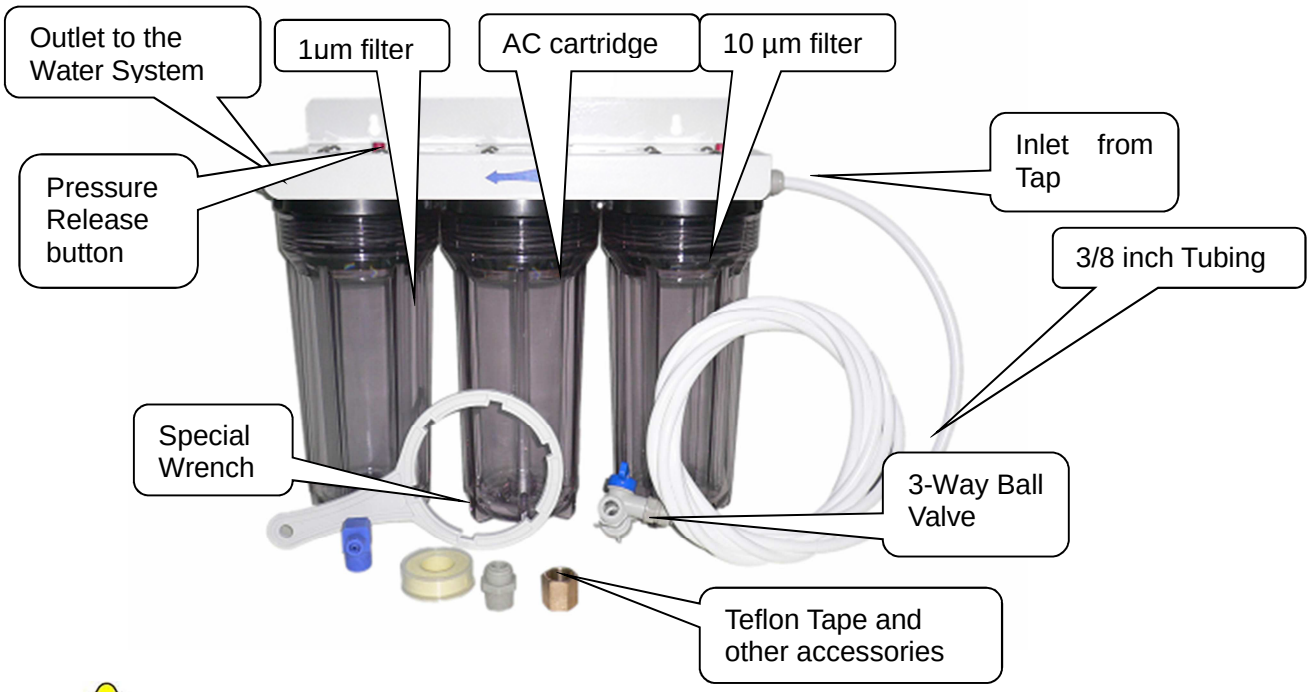
A. Insert the tweezer to the gap between the stopper and the collet.
B. Pinch the tweezer and push it as the picture indicated to remove the stoppers.



2.4.1 Installing the Prefiltration Module

Fisher Scientific provides two solutions for prefiltration, conventional three stage kit and prefiltration stand (cartridge based)

Conventional three stage kit installation



Attention!

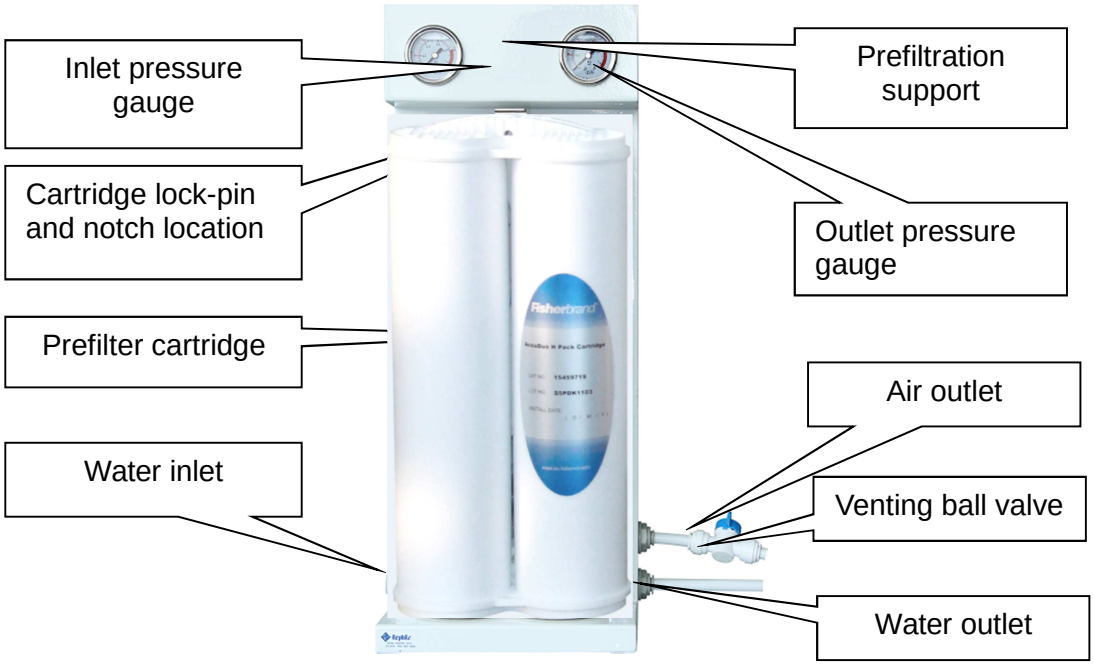
The Prefiltration pack is directional as indicated by the ARROW ( ). Tap water must connect to the right side of the pack and exit to system from the left side. NEVER reverse the order or the pack won't work.

1) Install the 3-way ball valve to the tap water inlet.
   Note: Fitting is based on 1/2 inch diameter tubing. If the tap water outlet is not 1/2 inch, you need an adaptor to convert it to 1/2 inch.
2) Install the filters: a typical set-up is 10µm PP filter- AC -1µm PP filter. First, install the 10 µm filter into the upstream housing, the activated carbon (AC) cartridge in the middle housing, and the 1 µm filter into the downstream housing. Tighten the housing onto the Pack with the

special wrench.

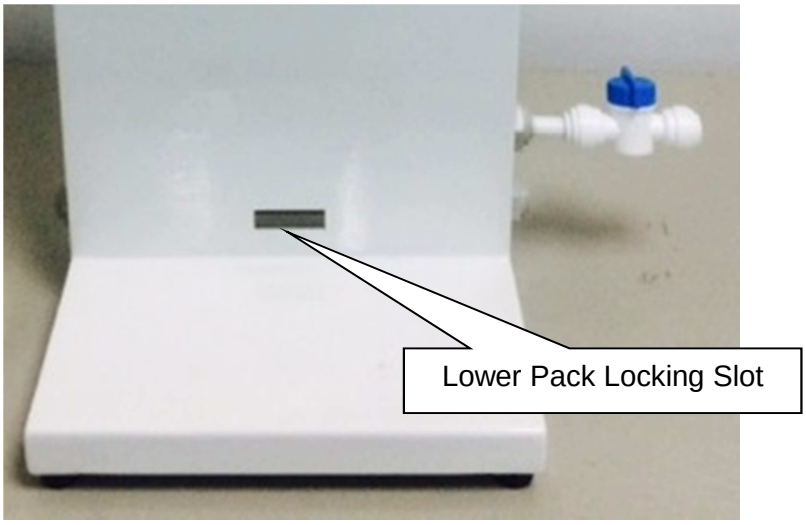
3) Cut the included 3/8 inch tubing into two appropriate length tubing for water inlet and outlet connections.
4) Connect one PE tubing from 3-way ball valve on the tap water outlet to the water inlet on the Pack (Refer to Illustration above). Connect the other PE tubing to the water outlet of the Prefiltration pack.
5) Put the outlet tubing into a sink. Turn on tap water and let it run for a few minutes to clean up impurities which might exist in the pack.
6) Block the water outlet with your finger during the process to check whether the assembly leaks.
7) Turn off the tap water. Connect the outlet PE tubing to the inlet of the water system to complete the installation.

Prefiltration stand (cartridge based) installation

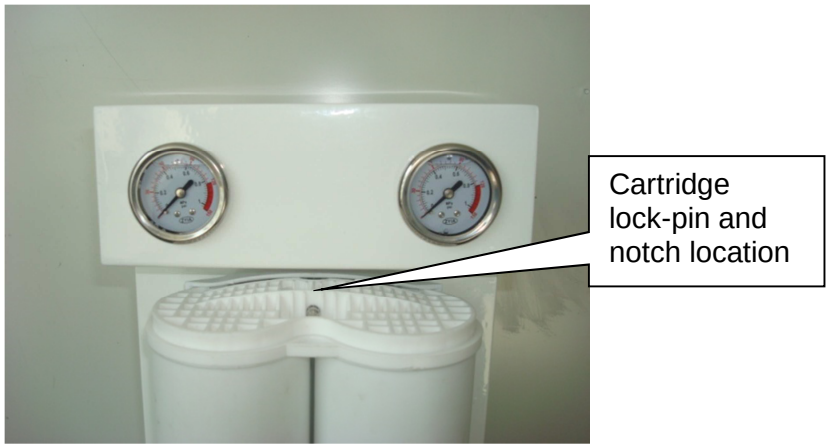


A. Take out the prefiltration system from the package and put it on a stable platform or firmly hang it on wall.
B. Connect the venting ball valve and the prefiltration system.
C. Connect tap water and water inlet of prefiltration support by 3/8 inch tubing with proper length.
D. Connect water outlet of Prefiltration System and pure water system by 3/8 inch tubing with proper length.
E. Remove the caps from the cartridges and ports of system. Wet the O-rings on the cartridge with pure water.

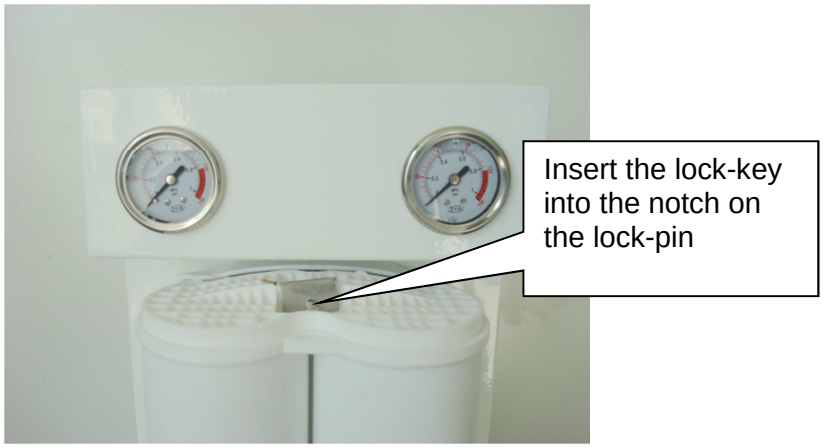
F. Gently insert the lower end first into the opening on the prefiltration support, then down to let the cartridge sit into its slot.



G. Push the upper part of the cartridge through the lock-pin till tight.



H. Lock the cartridge with the lock-key to the notch on the look-pin.



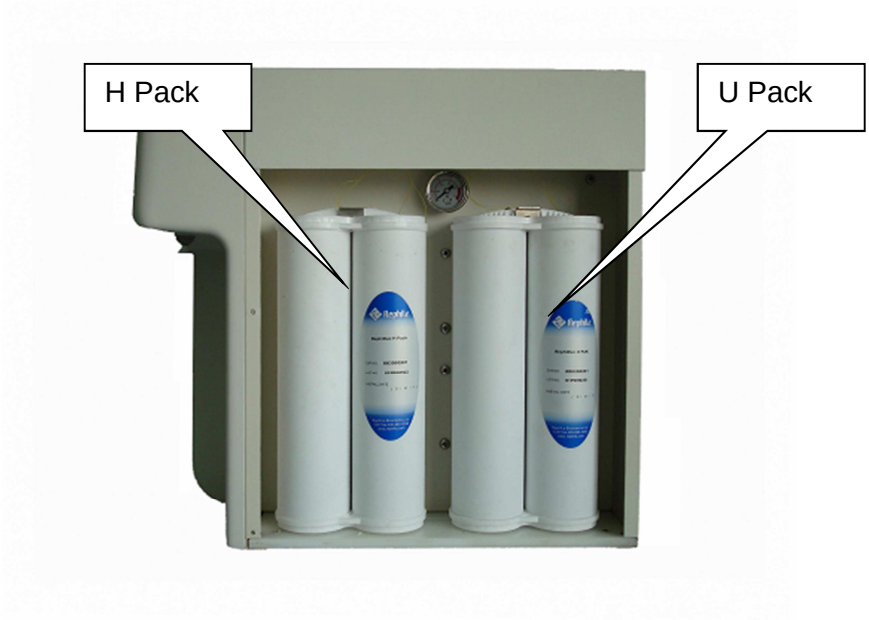
I. Pressure Relief: Open venting ball valve connected with air outlet; then turns the tap water on gently to flush out air in PreFilter Cartridge. Close venting ball valve after degassing.

2.4.2 Installing the AccuDuo H Pack and U Pack Purification Cartridges

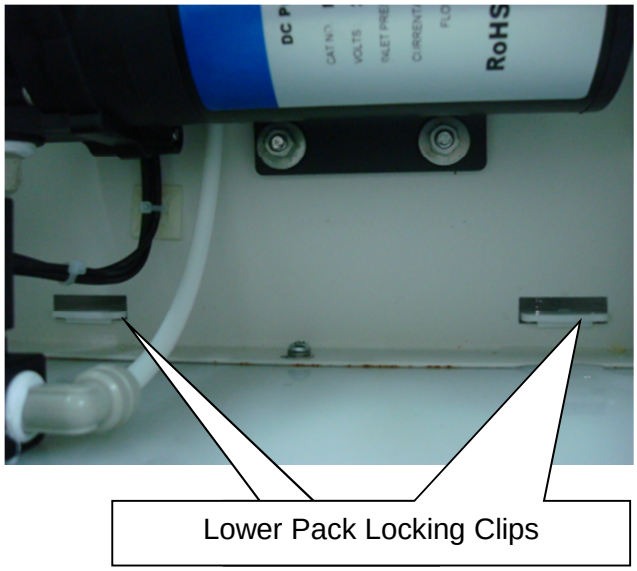
Attention!

These two cartridges work in sequel to ensure high quality of water.

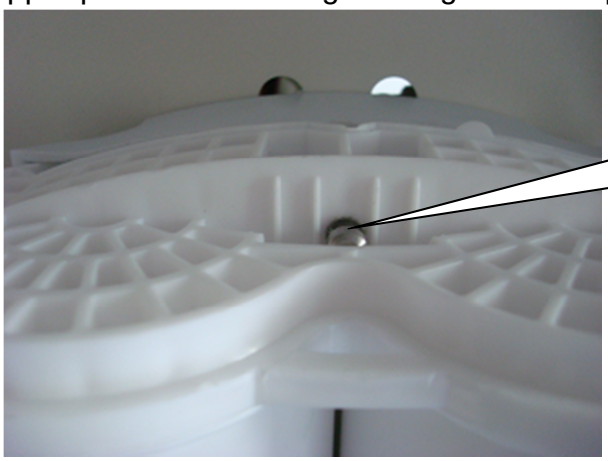
These two packs must be installed in a proper sequence as indicated in the picture below. **Never reverse the positions of these packs.**



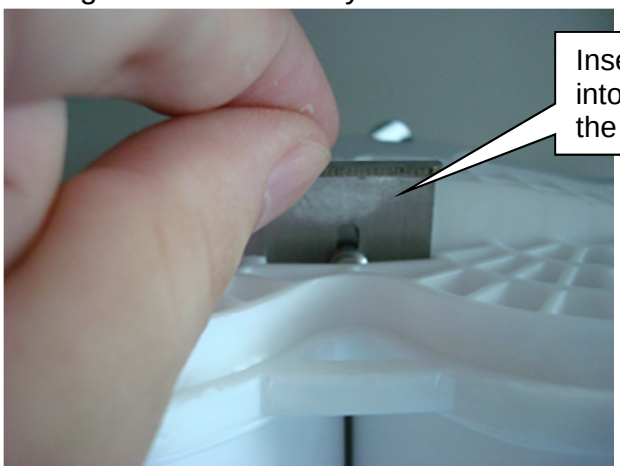
1) Open the right side panel of the system
2) Remove blue caps on the new cartridges
3) Install H pack to the **LEFT** side position, and the U pack to the **RIGHT** side
4) Wet the O-rings on the cartridge with pure water, gently insert the lower end first into the opening on the system frame, then down to let the cartridge sit into its slot



5) Push the upper part of the cartridge through the lock-pin till tight



6) Lock the cartridge with the lock-key to the notch on the look-pin



7) Install the U Pack cartridge to the **RIGHT** side of the H Pack in the same procedure as that for H Pack

2.4.3 Installing the Water Tank

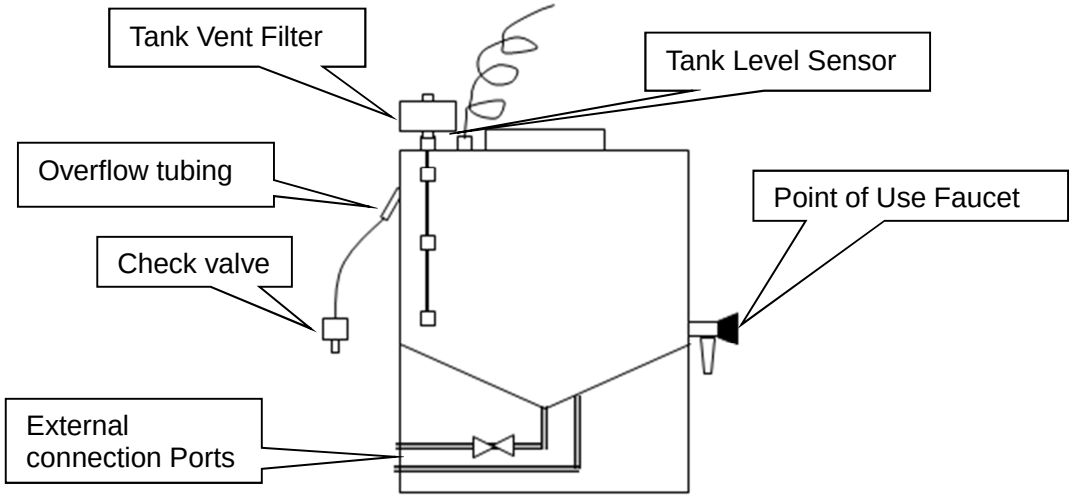
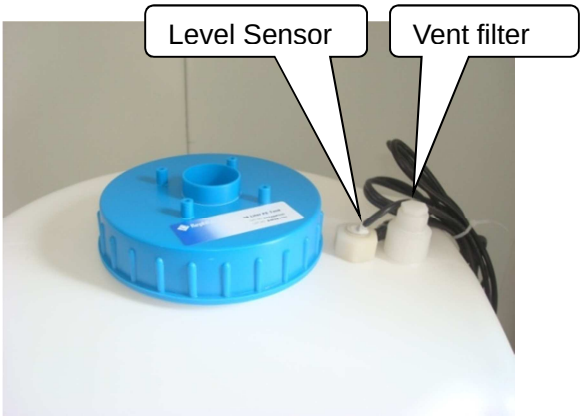


Illustration of the PE Water Tank Assembly



Tank Top View

Tank Base Backside View

1) Remove end caps on all ports
2) Take the 1/4 inch (6.35 mm) tubing and 3/8 inch (9.53) out from the system accessories bag, cut a piece in proper length of each tubing for the tank installation.
3) Connect 1/4 inch tubing to the "TO TANK" on the system and "INLET" at the base of the PE tank, and connect the 3/8 inch tubing to the "FROM TANK" on the system and "OUTLET" at the base of the PE tank.
4) Take the transparent tubing with check valve from the system accessories bag. Cut it to the appropriate length for your use. Connect it to the

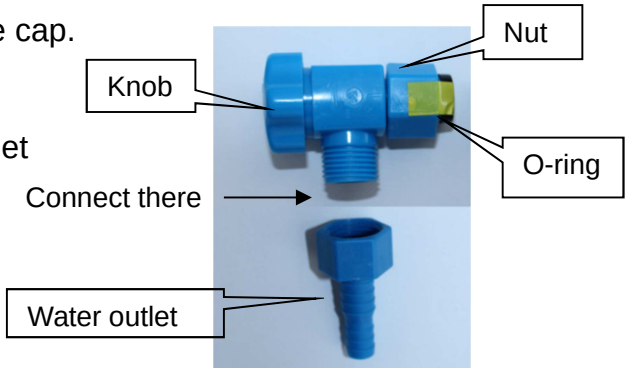
overflow sprout on the PE tank, and put the end with check valve into a sink. Tubing length should be just long enough so that the check valve end is hanging in the sink.

5) Screw the Tank Vent Filter to the top of the PE tank (see picture)

6) Plug the wire from the liquid level sensor on the tank to the Sensor inlet at the back of the system. Tighten the cap.

7) Install the faucet:

a) Remove the knob and water outlet from the package. Twist on the water outlet to the knob, then remove the yellow tape from O-ring.



b) Screw on the assembled faucet to the tank.

For the 2-Pass RO+UP systems

1) Cut another piece of the1/4 inch (6.35 mm) tubing; connect the “SPARE” port on the system and the "TO SPARE" port on the PE tank base.

2) Unwind the DC power cord in the base of the PE tank, and plug it into the DC power port on the back of the system.

2.4.4 Connecting the Tubing to the Drain

Cut appropriate length from the provided 1/4 inch tubing. Then connect it to DRAIN at the back of the system. Put the other end into a sink.

Note: DO NOT install the final capsule filter!

The attached final filter will be installed after system initial start-up and degassing in the next chapter.

End of System Installation

Proceed to "System Start Up and Operation"

3 SYSTEM START UP AND OPERATION

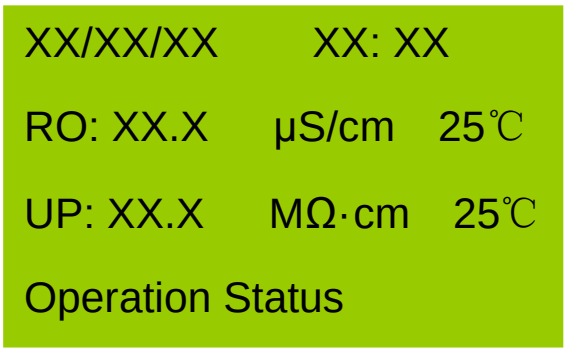
3.1 Check List Prior to System Start Up

Prior to system start up, use the table below to make sure all parts have been installed and connected, and quality of tap water meets minimal requirements.

Check List	Results
Water quality Municipal water: TDS < 1000 ppm, Water temperature: 5 - 35℃, Pressure: 1.0 - 6.0 bar / 15 - 90 psi If water hardness is greater than 100ppm, Fisher Scientific suggest you to use an external water softening device to protect the RO membrane	
Tap Water connected	
Prefiltration Kit installed and connected to the system	
RO membrane installed	
H Pack cartridge installed	
U Pack cartridge installed	
UV lamp installed	
Water Tank installed	
Drain tubing installed and laid to the sink	

3.2 System Start Up and Time Setting

3.2.1 Panel Display



System display panel shows four rows of information:

First row: Time.

XX / XX / XX XX: XX

In the following order: Year / Month / Day then Hours / Minutes

Second row: RO status.

XX.X µS /cm 25℃

RO Water conductivity compensated to 25℃

Third row: UP status.

XX.X MΩ·cm 25℃

Ultrapure (UP) water resistivity compensated to 25℃

Fourth row: System status.

It displays system operation information and error messages. All messages scroll in sequence.

System status messages:

Message	Meaning
OPERATE	Normal operation mode. 60-minute interval RO flush, countdown
STANDBY	System at standby
FLUSH	In RO flush mode, 180 seconds countdown
LOW PRESSURE	System feed water pressure is too low to operate
TANK FULL	RO water storage tank is full
TANK EMPTY	Water level inside the PE tank is below the minimum set-point. Water cannot be dispensed through the system
RO DISPENSE	RO water dispense mode, time displayed is the preset time of dispensing (if set), countdown
UP DISPENSE	UP water dispense mode, time displayed is the preset time of dispensing (if set), countdown
RO > SET POINT	RO conductivity is above preset level (failure). RO water is discharged to the drain. The green light above the RO button will blink
Exch. RO Cart	RO membrane has reached its expected useful life. Check RO water quality or exchange membrane
Exch. UP Cart	H Pack and U Pack cartridges reached their expected useful life. Check ultrapure water quality or replace cartridges

This water system has the following alarms. If the system is not working properly, the corresponding warning message will appear at the fourth row on the display panel.

- **Low Water Pressure:** System monitors inlet water pressure at all time. If system water inlet has no water, or water pressure is below 0.05 MPa, system displays **"Low Pressure"**, and automatically goes to **Standby** to protect the system.
- **RO Failure:** When RO water conductivity is above a preset upper limit, system displays **"RO > Set Point"**, and automatically discharges failed RO water to the drain instead of the water tank. The **RO indicator light blinks**. It is normal that RO water is above the upper conductivity limit at system start up. It usually lasts a few seconds before the conductivity drops. This message disappears after RO reaches quality standard, and the green light stops blinking.
- **UP Failure:** When UP water resistivity is below the set limit, **UP indicator light blinks**. You can continue to dispense water from UP outlet, albeit not at 18.2 MΩ·cm.
- **Cartridge Life Reminder:** System has preset cartridge usage timers (countdown) for both RO and purification cartridges. System reminds you to replace cartridges when these cartridges are about to run out or have been exhausted.

3.2.2 System Start Up

3.2.2.1 Plug in the Power Cord, Turn on Power

After turning on the power, system displays system type, serial number (S / N) for 5 seconds. At this point, system runs self-testing programs in the background.

System automatically checks water pressure, determines the water supply situation. If no water supplied, or inlet pressure is too low, monitor displays "**Low Pressure**" as shown below, and system goes to standby.

3.2.2.2 Start Up the System

When the START button is pressed, system enters operational mode after an automatic flush of the RO membrane for 180 seconds. The System automatically detects the quality of the RO water, discharges it to the drain if not meeting quality parameters, or sends it to the water tank if it passes quality parameters. At system initial start-up, or after installing a new RO membrane, allow system to run at least one hour to clean up the RO membrane.

a. After the initial installation of a new system, it may take 2 hours or

longer before you can dispense water as system is conducting initial RO rinsing and filling the water tank.

b. System automatically runs a rinsing process for a newly installed RO membrane to clean up its preservative solution. You may not be able to dispense water during rinsing. RO indicator light blinks, indicating water quality has not reached preset quality standards. Once the new RO membrane is thoroughly rinsed, water production will return to normal.

c. System goes to standby automatically once the water tank is full. System displays "**Tank Full**". When water is being dispensed, system will automatically restart production of water.

d. If an excessive amount of water is dispensed, water level inside the PE tank may fall below the minimum set-point. Water dispensing is stopped automatically. System will display "**Tank Empty**" on the display panel. Once water tank is refilled sufficiently, water can be dispensed again.

3.2.3 System Degassing

1) Press the **UP** button to dispense UP water **for 3 - 5 minutes**.
2) System displays resistivity of the UP water. At initial start-up, UP light may blink for a few seconds, indicating UP water not to preset standards. **Continue to dispense ultrapure water until the light stops blinking and no air bubbles come out the ultrapure spout.**
3) Check system leakage. Should there be a leak, reconnect tubing or parts.
4) Reinstall the system cover and tighten screws.
5) Press the **UP** button again to stop dispensing.
6) **Install system side panels if no visible leakage from connections inside the system.**

3.2.4 Installing the Final Filter

1) Open the attached 0.2 um final filter package.
2) Screw the final filter onto the ultrapure water (UP) outlet till finger tight (no leaking at dispensing). Do not over tighten it as it may damage threads.
3) Press the **UP** button to flush out gas in the filter.
4) Press the **UP** button again to stop dispensing.

If a final ultrafiltration filter for pyrogen removal is needed, please install the device the same way as the final filter.

3.2.5 Setting Up System Time

System default time is preset. If you need to change the system time, please follow the procedure below.

1) Press down the **START** and **UP** buttons simultaneously to display system time. Format is Year - Month - Day, and Hour : Minute : Second

2) Press the **RO** button to enter editing mode.
3) Press the **RO** button to move the cursor position, the corresponding number will blink. Press the **UP** button to increase, and press the RO and UP buttons simultaneously to decrease values.
4) After editing, press the **START** button twice to exit the editing mode.

3.3 Routine Operation

1. Turn on the power switch.
2. When the screen displays "Press Start", press the **START** button. Booster pump starts to run to fill the RO tank. Once it is full, system will go to standby mode and panel displays “Tank Full”. System will automatically restart once water is being dispensed.
3. Dispensing Water
   1) RO Water: Press the **RO** button. Press once to dispense RO water, press again to shut RO valve off.
   2) UP Water: Press the **UP** button. Press once to dispense UP water, press again to stop dispensing.

Suggestion:

To preserve the system, Fisher Scientific suggests you to completely power off the water system when not in use for a long period of time.

4 MAINTENANCE

Recommended replacement frequency is listed in the table below.

Consumables		Replacement Frequency	Performance Indicator
185/254 nm UV lamp		12 months	Increase in TOC
Final Filter	Remove bacteria and particles	Change with the U Pack cartridge	Reduce in flow rate
		When needed	Flow rate is less than 0.5 liter per minute
H Pack & U Pack	Protects the system	12 months	Reduce in resistivity of ultrapure water
Polypropylene (PP) Prefilter	Remove particles	2 - 4 weeks	Reduced feed water flow
Softening Cartridge	Remove Ca and Mg ions	2 - 4 weeks	Scaling and clogging of the RO membrane, reducing RO production rate
Activated Carbon Prefilter	Remove chlorine and organics	2 - 4 weeks	Oxidation and clogging of RO membranes, reducing RO production rate and rejection
Prefilter Cartridge	remove particles and other contaminate	3 months	pressure of water from outlet less than 0.1 MPa.

4.1 Replacing the Prefilters

Prefilters are used to protect RO membrane. Their useful lives depend on the amount of water used, tap water quality and how often prefilters are changed.

For three stage kit

These filters typically need to be replaced every 2 - 4 weeks or when indicated.

1. Shut the tap water off.
2. Disconnect the inlet and outlet of tubing from the assembly.
3. Put the assembly into the sink.
4. Use the provided special wrench to dismount the filter housing, remove the depleted filters.
5. Install new filters: the 10 μm filter in the upstream housing, the activated carbon (AC) cartridge in the middle housing, the 1 μm filter in the downstream housing.
6. Mount the filter housing back onto the pack head.
7. Use the special wrench to tighten the filter housing.
8. Turn on the tap water feed, check for water leakage.

For cartridge based

The cartridge typically needs to be replaced every 3 months. It's necessary to replace a new cartridge when the pressure of water from outlet less than 0.1 MPa.

1. Shut the tap water off.
2. Press the "**Start**" Button to let system into Standby mode. Power-off the system.
3. Install the new cartridge as described in 2.4.1 Two stage kit (cartridge based) installation from E to I.

4.2 Replacing the AccuDuo H Pack, U Pack Cartridges and the Final Filter

Attention!

These two cartridges work in sequel to ensure high quality of water. These two packs must be installed in a proper sequence as indicated in the picture below. **Never reverse the positions of these packs.**

1. Press the **START** button to put system into standby. Power off the system.
2. Remove the system right side panel.
3. Remove the used cartridges by lifting up the lock chip, then pull the cartridges out.
4. Remove the blue caps on the new cartridges.
5. Install H and the U pack as the procedures described in **2.4.2**.
6. Check system leakage
    1) Screw off the used final filter from the UP outlet.
    2) Power up the system, then press START button.
    3) Check system leakage. If there is a leak, reconnect the cartridge.
    4) Press the START button to put system into Standby.

5) Install the system side panel.

7. Press **UP** button to degas the system. The UP indicator light will blink. Continue to dispense UP water **for 3 - 5 minutes** until the UP indicator light stops blinking and no bubbles come out of the spout.
8. Press **UP** button again to stop dispensing.
9. Screw a new final filter to the UP terminal till finger tight. Do not over tighten it.
10. Press **UP** button to flush out gas in the filter.
11. Press **UP** button again to complete the installation.

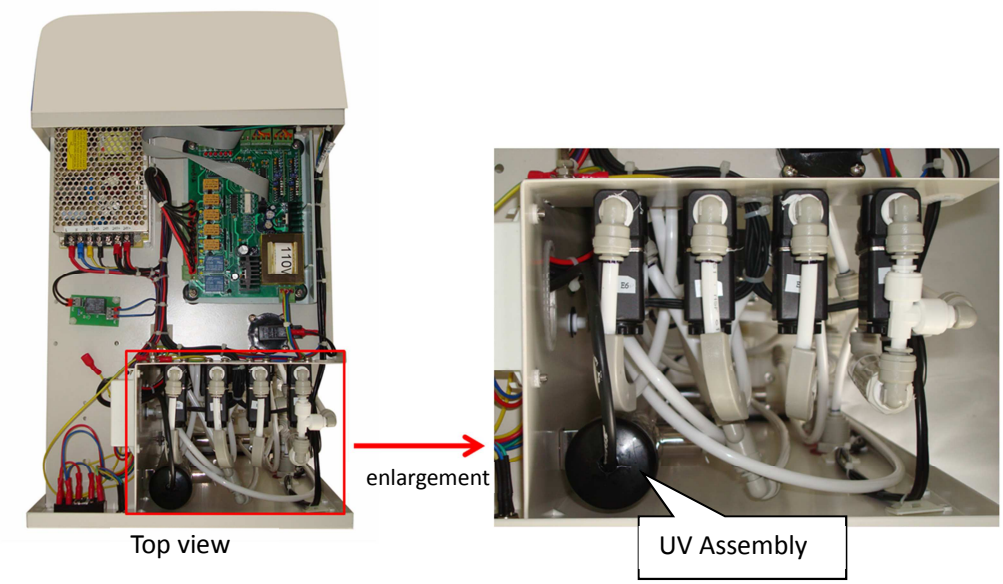
4.3 Replacing the UV Lamp (For UV Models)

Warning!

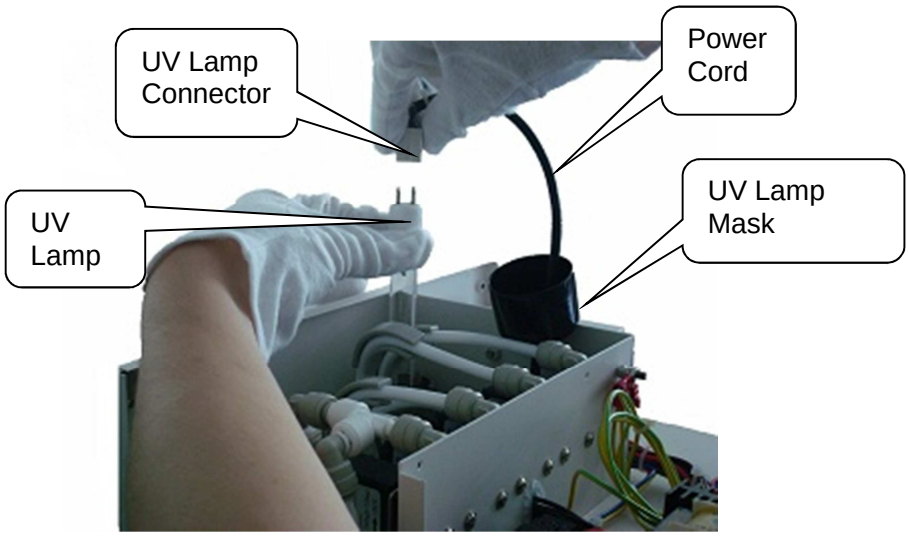
Ultraviolet (UV) radiation is harmful to the eyes and skin. Do not observe the lamp directly when it is illuminated. This system is equipped with a lamp cover to prevent UV light leakage. This cover must be on at ALL TIMEs when a UV lamp is installed.

Caution!

Keep the UV lamp straight in and out of the stainless steel chamber during its installation to avoid any action that could cause the lamp to break.



1. Press the **START** button to switch the system to standby mode.
2. Switch off the system power, unplug the power cord.
3. Remove the system top cover.



4. Find the UV lamp chamber (see picture). Remove the UV lamp cover to expose the UV lamp.
5. Unplug the UV lamp from its power cord. Carefully remove the old UV lamp.
6. Wear gloves included in the new UV lamp package. Avoid direct skin contact with the quartz glass of the UV lamp.
7. Carefully insert the new UV lamp into its chamber. When about 2/3 of the lamp is inserted, hold the UV lamp and connect it to the ballast cable connector (4-pin connector) as shown in the picture, and then gently insert the UV lamp completely into the chamber.
8. Cap the UV chamber with the black mask (see picture).
9. Reinstall the system top cover and tighten the screws.

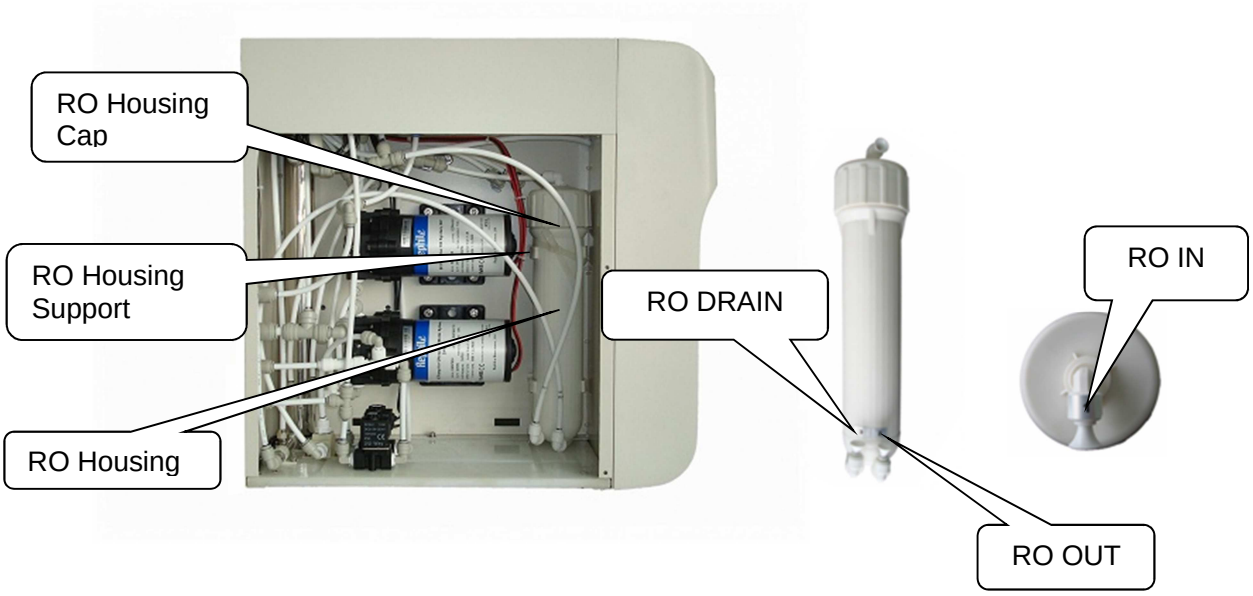
4.4 Replacing the RO Membrane

Warning!

RO membrane contains $NaHSO_3$ as preservative. It may cause irritation to the mucus membrane. Be careful not to get it into the eyes! If the solution inadvertently gets into the eyes, immediately flush eyes with a large amount of water. If you still feel uncomfortable, please seek medical attention!

Caution!

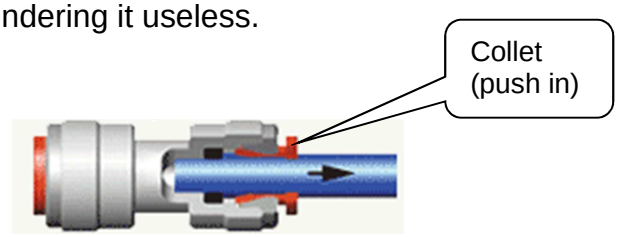
RO reverse osmosis membrane should be replaced by a fully trained professional technician.



1. Press the START button to switch the system to Standby mode.
2. Switch off the system power, unplug the power cord.
3. Remove the system left side panel. RO membrane housing is indicated in the picture above.
4. Remove the RO membrane housing from its support.

Attention!

DO NOT attempt to pull the tubing out from the RO housing without unlocking the connector first or use excessive force to pull the tubing out as this will damage the connector, rendering it useless.

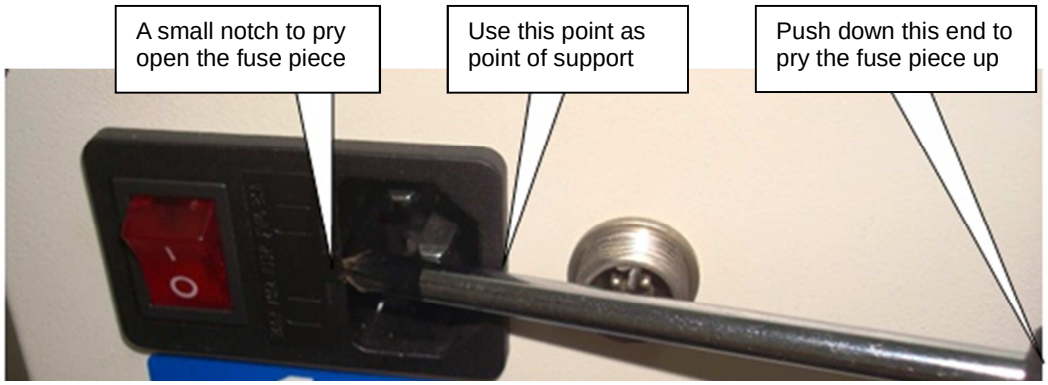


5. Press down the collets at joints with water tubing and then pull tubing out in a gentle manner.
6. Connect labeled tubing inside the system to the matching labels (RO IN, RO OUT and RO DRAIN) on the new membrane housing
7. Install the assembled RO membrane onto the support rack.
8. Power up the system, then press START button.
9. Check system leakage. If there is a leak, reconnect the cartridge.
10. Press the START button to put system into Standby.
11. Install the system side panel.

4.5 Replacing the Fuse

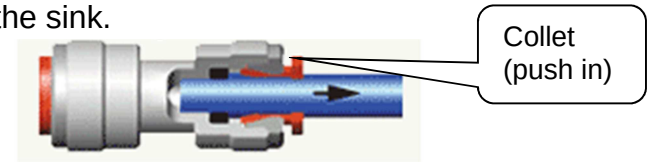
The fuse is located in-between the power switch and the power cord receptacle. The fuse housing has a small notch in the middle of the housing piece. Use a small head screw driver to pry open the housing. A spare fuse is inside the fuse housing as indicated in the picture below.

1. Unplug the power cord from the system
2. Put the head of a small-head screw driver in the notch
3. Use the back wall of the power cord receptacle as the point of support to pry the housing open
4. Slide the fuse out
5. Replace the blown fuse with the spare fuse located inside the fuse housing
6. Slide the fuse housing back into its original place



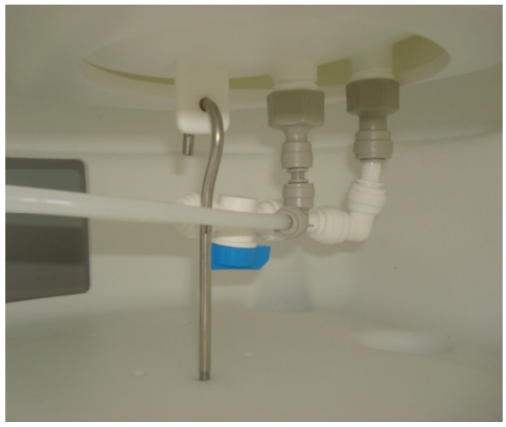
4.6 Cleaning the PE Tank

1. Put the system into standby by pressing the START button when the tank is Full.
2. Turn the blue valve underneath the tank (see picture below) 90º to close the valve.
3. Prepare 0.1 M NaOH using analytical grade NaOH (120 g NaOH for the 30-L tank, and 240 g for the 60-L tank). Dissolve in 1 L pure water, and then pour into the water tank. Gently mix.
4. Soak the tank overnight.
5. Press down the collet to remove the tubing connected to the "From Tank" port, put it into the sink.



Note: Please check local regulations on how to properly discharge 0.1 M NaOH.

6. Open the blue valve underneath the tank, drain all solution.
7. Close the valve by turn it 90º. Press the START button to put system into operation mode to fill half the tank. Put system into Standby.
8. Gently tilt the tank and swirl, then open the blue valve to drain all water.
9. Repeat Step 7 and 8 for two more time.
10. Take a water sample from the tank. Use a pH paper to check its pH. If water is basic, repeat Step 7 and 8 one more time.
11. Plug the tubing back to the system. Press START to put the system into Operate mode.



5 BASIC TROUBLESHOOTING

Problem	Possible Cause	Solution
System Inactive (pump and the control panel not operating)	No electrical power	Ensure the power cord is connected to a live power source
	Main fuse blown.	Replace the main fuse
RO Indicator Light Blinks	Inlet water exceeds	Add additional pretreatment
	RO Membrane damaged	Replace the RO membrane
UP Indicator Light Blinks	UP cartridges exhausted	Replace AccuDuo H and U Pack cartridges
Low Pressure Alarm	No inlet water	Check tap water faucet
	Prefilter clogged	Replace prefilters in the Prefiltration pack
	Pressure at the tap water too low	Call service to have an external booster pump installed by a professional engineer
No Water	Water supply stopped	Restore water supply
	Water tank is empty	Wait until water tank is filled
	RO water failure	Wait till RO water passes quality parameter. If RO indicator light blinks for a long period of time, then RO membrane needs to be replaced.
	Booster Pump not working	Contact a ULS agent
	Prefilter clogged	Replace prefilters in the Prefiltration pack.

No Water	upper TDS limit for the system	steps to remove particles
	Pressure at the tap water too low	Call service to have an external booster pump installed by a professional engineer
	Solenoid valve RO dispensing failure	Replace solenoid valve. Contact a ULS agent
Water flow slow	Pre-filter filter clogged	Replace pre-filters
	Reverse osmosis (RO) membrane clogged	Replace RO membrane
	Final filter clogged	Replace final filter
	Water tank empty	Wait till the water tank is filled
UP Resistivity dropped at dispensing	AccuDuo H Pack and U Pack cartridges are exhausted	Replace AccuDuo H Pack and U Pack cartridges
	Resistivity sensor or meter failure	Replace relevant parts
Water leakage	Leak from connections	Shut off power and water supply. Remove system side panels, turn on water supply and check leaking points. Reconnect or replace leaking parts.

6 PARTS AND ORDER INFORMATION

Accu500 Systems

Catalog Number	Accu500 System
15409699	ACCU500 Water System, 10L/H set
15429699	ACCU500 Water System, 15L/H set
15449699	ACCU500 Water System, 20L/H set
15469699	ACCU500 Water System, 30L/H set
15419699	ACCU500 Water System, 10L/H UV set
15439699	ACCU500 Water System, 15L/H UV set
15459699	ACCU500 Water System, 20L/H UV set
15479699	ACCU500 Water System, 30L/H UV set
15489699	ACCU500 Water System, 10L/H and 2-Pass RO set
15499699	ACCU500 Water System, 10L/H UV and 2-Pass RO set

Commonly Used Consumables

Catalog Number	Product Name	Description	Unit
15429759	Prefiltration Kit	Prefiltration kit (2-stage)	Set
15439759	Prefiltration Kit	Prefiltration kit (3-stage)	Set
15449759	Prefiltration stand	Prefiltration Support	Set
15479639	Prefiltration cartridge	AccuDuo Pre Filter Kit (4/pk）	Pack
15419649	Prefilters	10μm PP, 10 in, 12/pk	Pack
15409649	Prefilters	1μm PP, 10 in, 12/pk	Pack
15489639	Activated carbon cartridge	Activated carbon cartridge, 10 inches, 12/pk	Pack
15499639	Softener cartridge	Cation softener cartridge, 10 inches, 12/pk	Pack
15469669	Reverse osmosis membrane with housing	RO membrane for Accu500 10/20 systems, 1/pk	Each
15449669	Reverse osmosis membrane with housing	RO membrane for Accu500 15/30 systems, 1/pk	Each
15459669	Reverse osmosis membrane with housing	RO membrane for Accu500 50 systems, 1/pk	Each
15479669	Reverse osmosis membrane with housing	RO membrane for 2-pass RO system, 1st stage, 1/pk	Each
15459719	High Pure Water Cartridge	AccuDuo H Pack cartridge	Each

15489729	Ultrapure Water Cartridge	AccuDuo U Pack cartridge	Each
15499729	Ultrapure water Cartridge and final filter	AccuDuo U Pack cartridge with a 0.2 µm final capsule filter	Set
15409739	Ultrapure Water Cartridge	AccuDuo U Pack cartridge (Low TOC)	Each
TBD	Ultrapure water Cartridge and final filter	AccuDuo U Pack cartridge with a 0.2 µm final capsule filter (Low TOC)	Set
15469689	UV lamp	185/254 nm dual-wavelength UV lamp	Each
15409659	Final filter	0.2 µm final capsule filter, 1/pk	Each
15409689	Tank vent filter	Tank Vent Filter with CO2 Remover	Each
15419669	Leak Protector with Auto Water Shutoff Valve	Leak Protector with Auto Water Shutoff Valve	Set
15409669	Tank Sanitization Module	Tank Sanitization Module with UV lamp, 230V	Set
15439639	Tank UV Lamp	Tank UV Lamp 254nm	Each
15479679	30L PE Pure Water Tank	30L PE Pure Water Tank with tank level sensor	Each
15489679	60L PE Pure Water Tank	60L PE Pure Water Tank with tank level sensor	Each

Other Maintenance Spare Parts

Please contact Fisher Scientific for ordering information.

Main control panel (230V, 50 Hz)
Main control board (110V, 60 Hz)
RO Booster Pump for Accu500 10
RO Booster Pump for Accu500 20
RO Booster Pump for Accu500 30
UP circulation pump
Resistivity Sensor
Conductivity Sensor
Low Pressure switch
Pressure Gauge
Commonly Used Connector Package
Check Valve
Flow Restrictor
UV lamp ballast
RO membrane housing (with connectors)
Power Switch
Fuse
3/8" PE tubing (5 meters)
1/4" PE tubing (5 meters)

7 WARRANTY INFORMATION

Conditions of Sales

Conditions of Sales

Thermo Fisher Scientific is committed to improve its products and services. As a result, the information contained in this manual may change without further notice.

Thermo Fisher Scientific assumes no responsibility for any errors that may appear in this manual.

The plant's quality management system where this Accu100 water system was manufactured has passed the ISO9001:2008 quality management system certification.

System Limited Warranty

Thermo Fisher Scientific warrants the water system against defects due to materials and workmanship when used in compliance with instructions and operating conditions specified in this manual. Thermo Fisher Scientific warrants the system for 24 months from the earlier of

1. The date of installation, or
2. The 183th day of shipment from the manufacturing warehouse.

Within the warranty period, Fisher Scientific will provide replacement for the defected parts at no charge. Such service must be conducted by Fisher Scientific or its authorized distributor.

This warranty does not include cartridges.

Other than the warranty expressed above, Thermo Fisher Scientific disclaims any other warranty, express or implied, including marketability and suitability of use. Thermo Fisher Scientific shall under no circumstance be liable for incidental or consequential damages.

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Norway: +47 22 95 59 59 **Portugal:** +351 21 425 33 50 **Spain:** +34 902 239 303
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