WARRANTY

Products sold by us, unless otherwise specified, are warranted for a period of one year from date of shipment or delivery to be free of defects in materials and workmanship. If any defects should occur in the product during this period of warranty, we will repair or replace the defects parts or product free of charge

This warranty shall not apply to defects resulting from following actions:

1) Improper or inadequate operation, maintenance, adjustment or calibration.
2) Unauthorized modification or misuse.
3) Use of parts that are not supplied by us.
4) Disaster.
5) Consumable parts such as fuse, battery and fittings.

The warranty period for all parts and repairs supplied under this warranty expires with the warranty period of the original product. For inquiries concerning repair service, contact your supplier after confirming the model name and serial number of your instrument. The contents of this manual are subject to change without notice in accordance with product improvements.

This operation manual describes the operation over the life of this instrument, carefully read this manual to obtain a through understanding of the operation of the unit before attempting to use it.

Special consideration and precautions for safe and efficient use are also described throughout the manual. These appear in the following forms;

WARNING ! : Warns potentially hazardous situations and outlines the correct procedures or practices required to prevent from personal injury.

CAUTION ! : Alert the operator to the correct operating or maintenance procedures required to prevent instrument failure, or damage.

NOTE ! : Provides additional information for operator to obtain the best performance from the instrument.

Pressurized and hazardous solvents are used in high performance liquid chromatography. Take care to follow proper laboratory procedures to insure operator safety. Always wear eye, skin and clothing protection when operating the instrument, especially during sample injection, the opening of values, etc.

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Chapter 1. Introduction

1-1. Introduction

The aquaMAX^{TM} Ultra 370 Series – Ultra Water Purification System produces ultra-pure water in resistivity 18.2 MΩcm and inorganics reduction up to 99.99%(TOC level to <10 ppb). The aquaMAX-Ultra can be easily upgraded by adding a UV (Ultraviolet) lamp for low TOC level (< 5ppb), and a UF (Ultrafilter) for Pyrogen free (lower than 0.06 Eu/ml). This system uses feedwater from R.O purification system and the produced ultrapure water complies with specification by ASTM/CAP/NCCLS to ideal for reagent or standard preparation for HPLC, IC, GC , AAS, ICP and ICP-MS applications.

The aquaMAX^{TM}–Ultra 370 Series is very easy and simple to install, use and maintain. It looks as below.

［ Fig. 1-1 ］ Ultrapure Water Purification System : aquaMAX^{TM} – Ultra 370

1-2. Principals

1-2-1. ULTRA-Pack

The ULTRA-Pack is the heart of the aquaMAX-Ultra water system designed to provide water that is virtually free of ions, residual chlorine and organic contamination. This special filter pack(Polypropylene shell) contains specially prepared activated carbon, high mixed bed ion exchange resin and specialized organic scavenging resin. This combination of high purified filter media makes the aquaMAX-Ultra system suitable for producing water in the resistivity 18.2MΩ·cm for extremely sensitive applications such as HPLC, Cell Culture, Semi-Conductors, pharmaceutical and other laboratory uses.

The most important property is to remove ion from an ion exchange resin. Ion exchange capable materials have week chemical combination. The materials have metathesis property a positive ion by a positive ion, negative ion by a negative ion.

Ion exchange resin is divided into two classes, which is a cation exchange resin and a anion exchange resin.

(1) a positive ion (a cation) exchange resin

$R\text{-}SO_3H + Na^+ \rightarrow R\text{-}SO_3Na + H^+$ (Strong Acid Cation exchange resin (SAC))
$R\text{-}COOH + Na^+ \rightarrow R\text{-}COONa + H^+$ (Weak Acid Cation exchange resin (WAC))

(2) a negative ion (anion) exchange resin

$RNOH + Cl^- \rightarrow RNCl + OH^-$ (Strong Base Anion exchange resin (SBA))
$RNH_3OH + Cl^- \rightarrow RNH_3Cl + OH^-$ (Weak Base Anion exchange resin (WBA))

A rule of ion exchange

(1) Generally in the case of low density, high atomic value ion is well exchange, absorption at normal temperature aqueous solution
(2) In the case of same atomic value ion small semi-diameter advantageous at low density aqueous solution.

1-2-2. UV Sterilizing Filter

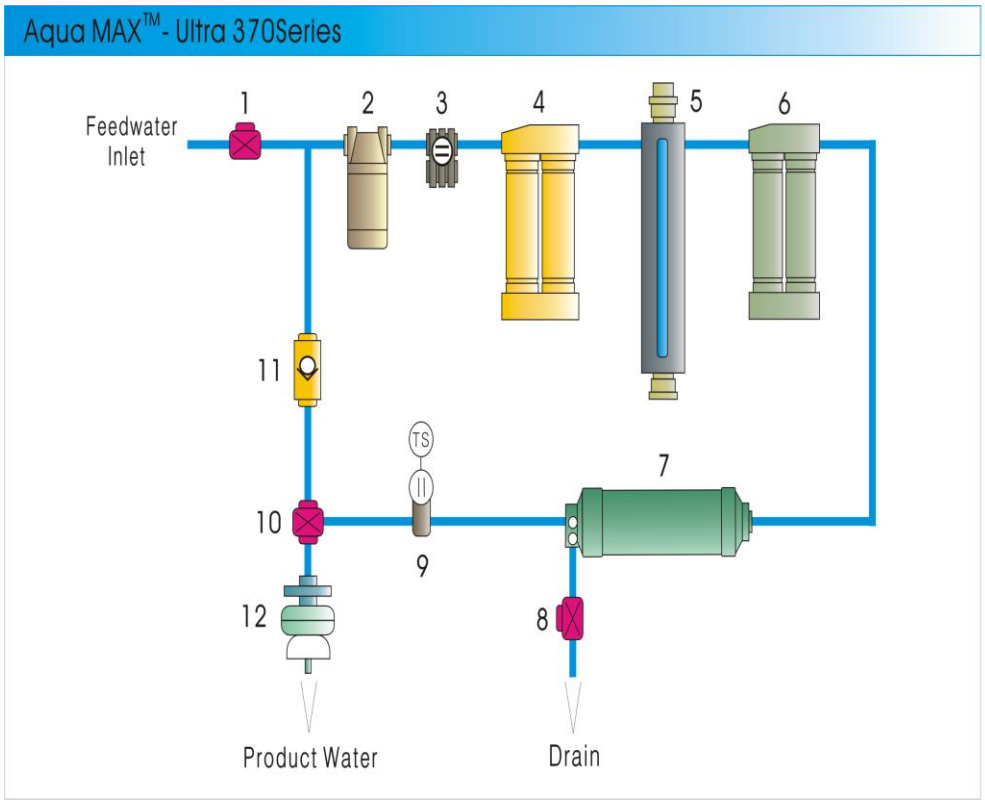
The UV lamp provides sterilization with ultraviolet rays. So, DNA and proteins absorb this ultraviolet rays to be deactivated. It generates 185 and 254 nanometer wavelengths simultaneously to photo-oxidize organic compounds and finally reduces TOC (Total Organic Carbon) level to 5 ppb.

1-2-3. UF Filter

UF filter, which is made from permeate hard and thin membrane, reduces almost of large molecular. It is also effective to reduce most particles and bacteria.(Pyrogen* level to be 0.06 Eu/ml.).

* Pyrogen : As a kind of fragment on the cell wall of bacteria, this can be tested by lipopolysaccharides. When it's inserted in the body of Mammalian, it can cause fever inside of body and substantially effect to the bio-test. For the use of medical-grade water(Type Ⅰ) to be applied to vaccines or drugs, it must be essentially removed.

1-3. Flow Diagram

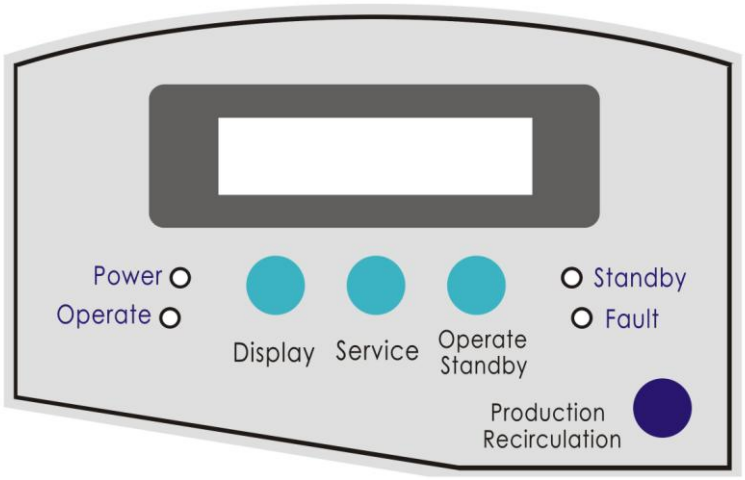


(UV lamp and UF filter are optional accessories.)

[Fig. 1-2] Flow Diagram

1-4. Configuration

Front Panel



[**Fig.1-3**] **Front configuration**

LED

Power : Power Check

Operate : Light on Operating

Standby : Light on Standby

Fault : Light on errors such as no filters installed.

Membrane key

Display : Display of temperature during the production.

Service : Selectable among the Flush / Press down / Filter Change.

Operate/Standby : Change the operate/standby state.

Production/Recirculation : Change the Production/Recirculation state during operating.

Drain

0.2 μm final filter mounted ensures complete removal of microorganics and particles at the point-of-use.

In the case at the point-of-use hose, need to pay attention the quality of the hose.

Rear side

［ **Fig. 1-4** ］ **aquaMAXTM – Ultra 370 Series rear side**

Accessories

ULTRA-Pack　　Final Filter　　UF Filter　　UV Lamp

［ **Fig. 1-5** ］ **aquaMAXTM – Ultra 370 Series Accessories**

1-5. Comparison of Water Quality

[Table 1-1] Comparison of Water Quality according to Water Purification Method

	Tap Water	Distilled Water	Ion Exchange Water	Ultra Pure Water	aquaMAX	CAP/ASTM
Dissolved Inorganics ($CaCO_3$, ppm)	170	0.3	0.1～0.05	0.025	20	-
Resistivity (MΩ·cm, 25)	0.003	2	0.1～10	18.2	0.2～0.5	0.1～1.0
Silica(ppm)	1	0.05	<0.01	<0.01	0.1	<0.01
Heavy Metal(ppm)	1	0.05	<0.01	<0.01	0.1	<0.01
Dissolved Organics(ppm)	-	<1	<1	<1	<1	-
Bacteria(cfu/㎖)	>100	<10	>100	*	<10	-
Small Particles(>5㎛/㎖)	>10,000	<100	>10,000	*	<10	-

[Table 1-2] Water Classification According to CAP, ASTM Standards

Water Quality	Resistivity (MΩ·cm)	Conductivity (μS/cm)
AquaMAX Basic Standard	0.2～0.5	2.0～5.0
AquaMAX Basic Standard with Ion Exchange addition	1 ~ 15	0.03 ~ 1.0
AquaMAX Ultra Standard	18.2	0.056
Laoratory-Grade	0.1～1.0	1.0～10
Analytical-Grade	1.0～2.0	0.5～1.0
Reagent-Grade	10	～ 0.01

CAP : The College of American Pathologists

ASTM : American Society for Testing and Materials

1-6. Specifications

Product Name : Ultra-water Purification System

Application : Produce of Ultrapure Water for Regent or Standard Preparation

［Table. 1-3］ aquaMAX^{TM} – Ultra 370 Series Specification

System Composition	ULTRA-Pack (High purity) cartridge 0.2 μm Final filter					
Flow Rate	0.5~1.5 L /min (Depending on Water Pressure)					
Resistivity	18.2 MΩ·cm (25℃)					
Water Analysis Data	TOC	Pyrogen	Particle	Micro organic	Silicate	Heavy metals
	5~10 ppb (UV lamp installed <5 ppb)	- (UF filter installed <0.06Eu/ml)	<1/ml	<1	<0.1 ppb	<0.1ppb
Display	16 x 2 Characters Backlight LCD Digital Display					
Power	110/220V, 50/60Hz (Automatic Switch)					
Dimensions (W x D x H)	435 x 370 x 580mm					
Weight	30 kg					

Chapter 2. Installation

2-1. Packing

The aquaMAX^{TM} – Ultra standard model is consisted of following items.

［ **Fig. 2-1** ］ **The Configuration of the aquaMAX^{TM} – ultra 370 Series**

1. aquaMAX^{TM} – Ultra system (fuse 250V, 1A: mounted on the fuse holder)
2. ULTRA-Pack cartridge
3. 0.2 μm Final Filter
4. Tubings for the feed water φ10 , 2.5m
   Tubings for the production water φ10, 1.5m, Tubing for drain φ6 , 2.5m(optional)
5. Power cord(220V)
6. User Manual

2-2. Installation Guide

1. Unpacking

Carefully check the contents according to the packing list.

2. Installation of the ULTRA-Pack(1,2) cartridge

: Follow the steps below.

1

2

3

[Fig. 2-2] Installation of Ultra Pack

- Take off caps for input and output from Ultra Pack 1,2 (The black cap in the picture above.)

Open the door in front and Press down the clip connected to the fitting making a sound like "click".

Insert the filter to fix into the marked fitting by making "click" sound. There is an indicating mark at the lower part of filter not to install the filter upside down. Slightly pull out the filters to make sure it has been fixed well.

3. Installation of the Final Filter

There is a holder on the left side of the door. Install the final filter to the holder. Connect the fitting under the final filter. Wind a reel with Teflon tape about 10 rounds.

[Fig. 2-3] Installation of Final Filter

4. Power Supply

Connect to 110/220V code depending on supplied power.
Both 110V and 220V power is available with free voltage support.

5. Operating Test

After Switch On, run “Self test” and check the display of the name of model and logo.
Press **Operate** key and check it turns to Ready mode.

6. Connection of feed water and reject water

Feed Water Connection Reject Water Connection Connection Completed

[Fig. 2-4] Tube connections for Feed Water and Reject Water

Use for R.O(Reverse Osmosis) grade water or D.I(Deionized) water as feed water.
Inside of reservoir tank should be organic-free. Put the reservoir tank higher place than the instrument.
After connecting the tubing (3/8” Teflon tubing) connect to feed water reservoir, fit into FEED inlet on the rear side. For the connection of Reject water, use 1/4” Teflon tubing. The other end of tubing needs to be placed where for drain or for wastewater.

2-3. Installation Requirements

2-2-1. Installation Requirements

Environmental conditions

- Indoor use only
- Altitude up to 2000m
- Temperature 5℃ to 40℃
- Maximum relative humidity 80% for temperature up to 30℃ decreasing linearly to 50% relative humidity at 40℃
- Pollution degree 2

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

2-2-2. Safety Indication

An explanation of symbols related to safety, which are used on the equipment.

a)  -> Protective Earth

b) and  -> Power On and Power Off

c)  -> Caution, risk of electric shock

2-2-3. WEED GUIDE

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Chapter 3. Operation

3-1.Key Operations

[**Display**]

- The resistivity of produced water is shown. Press **Display** key during operation to see the temperature. Press once more to get back the resistivity display.

[**Service**]

- This key has various functions up to 6 (or 7) on 「Standby Mode」. Press **Service** key to move to each function and press **Production/Recirculation** key to run. Press **Operate/Standby** key to return to 「Standby Mode」.

3-1-1. Stabilization

It is to remove air in filters and tubes at the first installation or replacement. The system produces the produced water for 1 min. (The REJECT valve is opened for 10 sec, and waste water will be drained through the REJECT line at the back-side.). Press **Operate/Standby** key to stop it.

■ SERVICE MODE ■ **S t a b i l i z a t i o n . .**

■ SERVICE MODE ■ **C o m p l e t e d . .**

3-1-2. Press Down

It's used to reduce inlet pressure when any parts of filters need to be replaced.(Waste water will be drained through the REJECT line at the back-side.

■ SERVICE MODE ■ **P R E S S D O W N**

Press **Production/Recirculation** key to run.

P R E S S D O W N
W A I T .....O K

PRESS DOWN is finished.

3-1-3. Display of Resistivity or Conductivity

Press **Service** key 3 times. To view the conductivity, run as follows.

■ SERVICE MODE ■
C H A N G E D I S P L A Y

Press Display key to select what to display.

C H A N G E D I S P L A Y
DISP. : RESIST.

C H A N G E D I S P L A Y
DISP. : CONDUCT.

Press **Product/Recirculation** Key to save the selected mode and exit to「Service Mode」.

3-1-4. Sanitize

It is to regularly wash or install a UF filter.

■ SERVICE MODE ■
S a n i t i z e U n i t

3-1-5. Purge Air

It is a function to purge air when there is air inside of system or output water is not produced as usual.

Press **Service** Key 5 times to display as below.

```
■ SERVICE MODE ■
Purge Air...
```

Press **Product/Recirculation** Key to run Purge Air, then the following LCD will be showed.

```
Purge Air...
PurgIng...
```

After purging air, it is finished automatically showing the following LCD. Press **Operate/Standby** Key to force-quit.

```
Purge Air...
PurgIng...      OK!
```

3-1-6. Change Filter

It is for a filter replacement. Follow the directions below in order.

```
■ SERVICE MODE ■
CHANGE FILTER
```

Press **Production/Recirculation** key, to move to the next page as below.

```
CHANGE FILTER
READY TO CHANGE
```

Press **Production/Recirculation** key, it reduces inlet pressure and turns back to the 「Ready」 mode. Then, change filters.

```
CHANGE FILTER
PRESS DOWN
```

```
CHANGE FILTER
WAIT.....OK
```

Cf.) If the filter has more life time to replacement, the time for filter used can't be initialized. The LCD below is indicated only if a filter needs to be replaced.

C H A N G E F I L T E R
U L T R A pack CHANGE

【OPERATE/STANDBY】

Press **OPERATE/STANDBY** key to start operating at the initial state(Ready mode). The system re-circulate its inside on Recirculation state.

If there is no output water for more than1 min. in resistivity 18.2 MΩ·cm, recirculation is finished (to protect a booster pump) and water quality is to be monitored. If the resistivity drops down under 10 MΩ·cm, the system re-circulates to improve water quality.

Even though recirculation is stopped, LCD still displays「Operate」mode, if the resistivity is higher than 13MΩ·cm, production is available any time by pressing **PRODUCTION** key.

Pressing **OPERATE/STANDBY** key during operation gets the mode back to「Standby」mode.

【PRODUCTION/RECIRCULATION】

If the resistivity is higher than 13MΩ, production is available any time by pressing **PRODUCTION** key.

While production, if you press **PRODUCTION/RECIRCULATION** key, it stops producing and get back to **Recirculation** state

3-2. LED Display

[Power]

Confirm if power is supplied normally.

[Operate]

Lights on「Operate」 or 「Service」.

[Standby]

Lights on「Standby」 or 「Service」.

[Fault]

Lights when normal operation is not possible.

3-3. Initial Operation

1. Turn on the power.

: LCD displays as below.

```
ULTRA Ver 4.10
ULTRA PURE WATER
```

```
aquaMAXU-370
Younglin Ins.
```

: Press **Operate/Standby** Key, LCD, then, displays as below.

```
■ STANDBY ■
Ready….
```

: On the Ready mode, the system runs Recirculation to prevent filter from contamination every 1 hour for 5 minutes.

```
■ STANDBY ■          5min
Recirculation…
```

< System configuration >

aquaMAX ultra 370 = Basic type(ULTRA-pack + final filter)

aquaMAX ultra 371 = Addition of UF filter (Basic type + UF filter)

aquaMAX ultra 372 = Addition of UV filter (Basic type + UV filter)

aquaMAX ultra 373 = Addition of UV/UF filter (Basic type + UV filter + UF filter)

2. Press the **Operate /Standby** key.

■ OPERATE ■
PRODUCT : 18.2 MΩ·cm

: On the Recirculation mode, it displays resistivity.

On the first operation, perform FLUSH for 20 min. If the resistivity is still lower than 15MΩ·cm, after FLUSH, run it again.

■ OPERATE ■
S Y S T E M C H E C K

3. Press the **Product/Recirculation** key to produce.

If the purified water quality does not reach to 15 MΩ·cm, following message is displayed and the system stops production.

■ OPERATE ■
Not stable!!

If the purified water quality reach to 15 MΩ·cm, it begins to produce water.

■ PRODUCT ■
PRODUCT 18.2 M·cm

Press **DISPLAY** key to check the temperature during production.

■ PRODUCT ■
TEMPERATURE 24℃

Error Message

-HIGH PRESSURE ERROR

If there is high pressure occurred in the system during OPERATE/PRODUCT, decompressing gets started with this message. If the high pressure still remains even though the decompressing, please check if there is anything wrong with the system and filters.

■ HIGH PRESSURE ERROR ■
S Y S T E M C H E C K

- Over used Filter Error

In case of overuse of filter life, the system stops the operation with FILTER time CHECK message when the power on and gets backs to「Standby」mode. Normal operation is still available, but To replace filters, run CHANGE FILTER function on Service menu. “CHANGE FILTER” message keeps popping up every 30 min.

■ STANDBY ■
F I L T E R T I M E C H E C K

■ O p e r a t e ■
U L T R A P A C K C H A N G E

Reset the filter time.

■ SERVICE MODE ■
C H A N G E F I L T E R

- If the resistivity is lower than 15MΩ·cm, the production is not possible and the system displays the message as below.

■ O p e r a t e ■
N o t S t a b l e ! !

If the resistivity drops down under 10 MΩ·cm during operation , the system stops producing to re-circulate.

If the resistivity is higher than 15MΩ·cm, production is available any time by pressing **PRODUCTION** key.

■ O p e r a t e ■
N o t S t a b l e ! !

Chapter 4. Maintenance

1. The aquaMAX^{TM}-Ultra maintenance
2. Filter safekeeping
3. Filter replacement
4. Temperature resistivity data acquisition by RS232C
5. Service
   - Resistivity cell calibration at the filter replacement

4-1. The aquaMAX^{TM}-Ultra maintenance

- To keep the water quality of feed water

: Feedwater for Ultrapure water system should be R.O(Reverse Osmosis) grade water or D.I(Deionized) water. Therefore, to use filter longer, the feedwater needs to be fresh and kept in good condition.

- Periodic operation

: If the system keeps power on, it can increase the time of use because recirculation runs every 1 hour.

4-2. Filter safekeeping

For Ultra Pack or UF Filter : If the system is not used for a long time, keep the water inside of filter and close the input and output with the cap. Keep the air out of filters. When it comes to using again, run " stabilization" on service menu a few times to remove air or contaminants. Keep the UV lamp in the safe place.

4-3. Filter replacement

4-3-1. ULTRA-Pack replacement

① Press **Service** key on the standby mode

② Press **Service** key once and **Product** key to run Pressure Down.

③ Press **Service** key 6 times, and Product key 2 times to perform CHANGE FILTER.

④ After it displays OK, it turns to Standby mode, then, open the front door.

⑤ Hand-press down the clip connecting the installed filter and fitting as following Fig 4-1-(b). Once hearing the "click" sound from the clip, grab the filter and slowly pull it out.

(a) Ultra Pack Installed

(b) Ultra Pack removal

(c) After the filter removal

［ **Fig. 4-1** ］ **Ultra Pack Replacement**

⑥ After the filter removal, hand-press down the clip as following Fig 4-1-(c) by making a “click” sound to install new one. There can be small amount of water leaking during the filter replacement.

⑦ Remove the cap (The cap for input and output of filters) ,then, install Ultra Pack 1 and 2 each by no.

on the instrument. Insert it to fix into the fitting until you hear “click” sound.

⑧ Slightly pull out the installed filter to make sure it’s fixed.

⑨ Press **Operate** button to run "System Check"(Flushing Ultra Pack). The flushing runs for 20 min.
If the resistivity is still lower than 13MΩ·cm, run it again.

⑩ The system checks the resistivity on recirculation after System Check is done.

⑪ Once the product data gets to 13MΩ at operate mode, you may press **Production/Recirculation** button to produce water.

4-3-2. UV lamp replacement

① Press **Service** key on the standby mode

② Press **Service** key 2 times first and **Product** key to run Pressure Down. (Make sure to have O.K sign)

③ Perform the process above 2~3 times to remove inside pressure.

④ Turn off the system. Loosen a captive screw on the up-side of a UV lamp support and pull forward as following Fig.4-2-(a)

⑤ Detach the power connector as following Fig. 4-2-(b).

⑥ Take off the tightener to separate a connecter cap connected to a lamp power code on the upside of UV chamber. See the Fig. 4-2-(c)

⑦ Carefully lift up the cap in straight with UV chamber as following Fig. 4-2-(d)

⑧ Grab the connector cap with one hand and carefully detach the UV lamp with the other hand.

⑨ Get a new UV lamp and insert it to the connect inside of cap. Try not to leave any finger prints or contaminants on the UV lamp body.

⑩ There is a glass tube inside of UV chamber, and keep it our of produced water. If there is water in it, dry it out.

⑪ Make sure a UV lamp firmly connected, and insert the UV chamber back, and follow the above ⑤~⑦ in reverse. Carefully install all back with no produced water leakage .

(a) UV lamp support

(b) Detachment from power connector

(c) Detachment of a cap from UV chamber

(d) Taking out of UV lamp

[Fig. 4-2] UV lamp chamber

⑫ Press **Service** key and select “Stabilization”. Press, then, **Product/Recirculation** key to run it.

- Get a reservoir tank for produced water.
- Perform it 2~3 times to remove air completely.

⑬ Check for the leakage during “Stabilization”.

⑭ After checking all functions work well, start to produce water.

- Make sure the resistivity of produced water gets 18.2M Ω·cm

4-3-3. UF Filter Replacement.

① Press **Service** key on the standby mode.

② Press **Service** key 6 times, and Product key 2 times to perform CHANGE FILTER.

③ After it displays OK, it turns to Standby mode, then, open the front door.

[Fig. 4-3] UF Filter

④ Detach 2 tubes from inlet and outlet of UF filter. There could be produced water left in tubes.

⑤ After detaching all tubes connected to the filter, take off the filter from the holder.

⑥ Install a new one, then connect tubes to inlet and outlet.

⑦ Press **Service** key and select “Stabilization”. Press, then, **Product/Recirculation** key to run it.

- Get a reservoir tank for produced water. Get another tank for REJECT water.
- Perform it 2~3 times to remove air completely.

⑧ Check for the leakage during production. Make sure the resistivity of produced water gets 18.2M Ω·cm

4-4. Data acquisition by RS232C

It’s available to acquire data such as temperature and resistivity through RS232C connector. In the case of request to YL Instruments, receive data on txt cable(Part No. ___) connect to external computer by Terminal(VT100).

Data form is following.

```
========================
AQUAMAX ultra   ver 4.00

TEMP   RESISTIVITY
--------------------
24.3        18.4
24.4        18.5
 .           .
 .           .
 .           .
 .           .
25.0        18.2
 .           .
 .           .
```

4-5. Resistivity cell calibration

The initial cell calibration for resistivity is finalized before release from YL factory.

- The resistivity of Ultrapure water is 18.2 MΩcm at 25℃.
- The resistivity should have 18.2 MΩcm at 25℃ at first use or filter replacement. If not, the calibration is needed.

Get ready for calibration

- Resistivity meter, screwdriver, RS232C connection cable

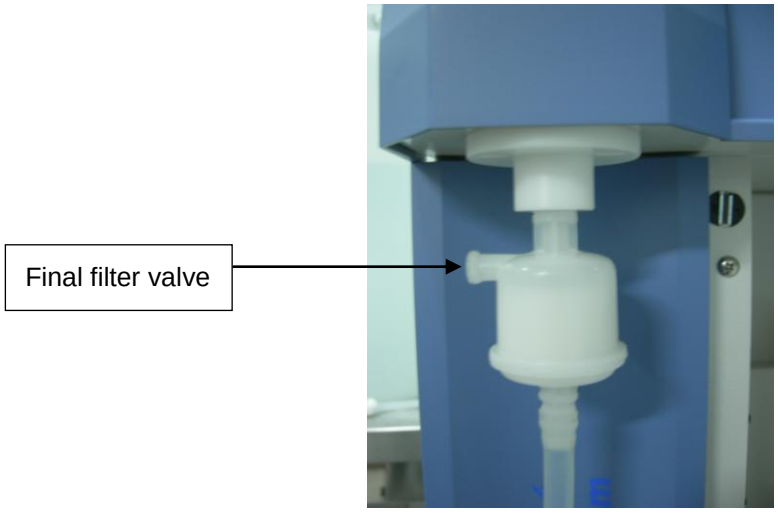
How to calibrate

- On the Recirculation/Production mode, display Resistivity/Temperature.
- Data acquisition by connecting with external computer is available.
- Measure the resistivity measurement by resistivity meter.
- Adjust a variable resistivity(VR1), to have resistivity measurement values as same as display values.

  Remove an ION cell cable connected to JP22, then shot the strip pin(J3) with a jumper pin. Turn the VR2 and measure TP9 through DVM, them make sure you get 0~3.6 V. Take off the jumper pin and connect an ION cell cable again. Adjust the value displayed on LCD as same as the value from produced water.

Note1. Installation of 0.2 μm final filter

1) Insert and tighten the final filter
2) Run the “stabilization”, and then water get drained through the final filter on “production” or “ Purge air” mode
3) Open the valve of final filter to remove air inside on “Production” mode.
4) After 10ml of water drained, close the valve.



[Final Filter Installation]

Note 2. Sanitization procedure for UF filter

For UF version (aquaMAX™-*Ultra*) or UV/UF version(aquaMAX™-*Ultra*), it is the best to perform periodic cleansing procedures every six month for longer life of UF filter and good water quality. To sanitize the UF filter, it is necessary to use more than 60L feed water(R.O grade water of Deionized water).

1. Put 3g NaOH(Sodium hydroxide) into 50ml bottle and dissolve NaOH with ultra-pure water.
2. Push **SERVICE** key two times, then select **PRESSURE DOWN** mode.
   - Confirm OK signal.
3. Power off the unit.
4. Open the door.
5. Remove 0.2μm final filter and insert the tube(∅6) in use of sanitization into where the final filter has been installed in counter-clock wise. The other end of tubes should be placed at drain.
6. Power on the unit.
7. Push the **SERVICE** key four times, then Push the **Production** key to select the Sanitize Unit.
8. "**Inject solution**" state will be displayed, then open the UF sanitization port.
9. Fill syringe with NaOH solution and inject NaOH solution into UF sanitization port.(NaOH should be used after cooling down.)
10. After injection of NaOH, close the UF sanitization port.
11. Close the door.
12. Push the **Operate** key, and ,then, "First Sanitize(20min)" is diplayed.
    - After the First Sanitizing is operated for 20 minutes, and then "**Feed water"** is displayed.
    - If PE reservoir is filled feed water more than 20L, push the **Operate** key.
    - After the Second Sanitizing is operated for 20 minutes, and then "**Feed water"** is displayed.
    - If PE reservoir is filled feed water more than 20L, push the **Operate** key.
    - After the Third Sanitizing is operated for 20 minutes, and then display "**Check Resist**".
    - Push the **Operate** key,

Resist.	State
15 MΩ·cm	Stable

    - If resistivity of more than 15 MΩ·cm, state has "**stable**" value.----------(1)
    - If resistivity of less than 15 MΩ·cm, state is "**reject**" value.----------(2)

13. If the state shows “**reject**” value(2), the entire sanitization procedure is not complete.
    - Push the **Operate** key to enter “**feed water**” state, and then push the **Operate** key to enter to try again the “**first sanitize**”.
14. The sanitizing procedure must be continued until the state has “**stable**” value
15. If the state shows “**stable**” value(1), the entire sanitization procedure is now complete.
    - Push the **Operate** key to enter “ready”.

(a)

(b)

[Sanitization procedure for UF filter]

1) Open the cap for UF sanitization port as fig (a)
2) Insert NaOH into UF sanitization port

Note 3. Initial Cleaning of UF filter

When the system is new or whenever a new UF filter is installed, the system should be cleaned. The entire initial cleaning procedure will take approximately 1 hour to complete. To clean the UF filter, it is necessary to use more than 60L feed water.

1. Power on the unit.
2. Push the **SERVICE** key four times, then Push the **Production** key to select the Sanitize Unit.
3. Confirm "**Inject solution**" state.
4. And then push the **Operate** key, and confirm "First Sanitize(20min)".
   - After the First Cleaning(Sanitizing) is operated for 20 minutes, and then "**Feed water"** is displayed.
   - If PE reservoir is filled feed water more than 20L, push the **Operate** key.
   - After the Second Cleaning(Sanitizing) is operated for 20 minutes, and then "**Feed water"** is displayed.
   - If PE reservoir is filled feed water more than 20L, push the **Operate** key.
   - After the Third Cleaning(Sanitizing) is operated for 20 minutes, and then "**Check Resist**" is displayed.
   - Push the **Operate** key,

Resist.	State
15 MΩ·cm	Stable

   - If resistivity of more than 15 MΩ·cm, state has "**stable**" value.----------(1)
   - If resistivity of less than 15 MΩ·cm, state is "**reject**" value.----------(2)

5. If the state shows "**reject**" value(2), the entire sanitization procedure is not complete.
   - Push the **Operate** key to enter "**feed water**" state, and then push the **Operate** key to enter to try again the "**first sanitize**".
6. The cleaning(sanitizing) procedure must be continued until the state has "**stable**" value

7. If the state shows "**stable**" value(1), the entire cleaning procedure is now complete.

Push the **Operate** key to enter "ready".

Part List

Part Descriptions and Numbers

aquaMAX - ULTRA 370	3701011000
aquaMAX - ULTRA 371	3701011001
aquaMAX - ULTRA 372	3701011002
aquaMAX - ULTRA 373	3701011003

Accessories

ULTRA Pack	3501012070
0.2μm Final Filter	1604023641
UV Sterilizing filter	1604023660
UV lamp	1604023620
UF filter	1604023651
Tubings for feedwater /produced water	35030100
Power code	54040050

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