

SINCE 1889



**AUTO PURE WATER PURIFIER
WA400 / WA200 SERIES**

MODEL

**WA401 / WA401UV
WA201UF / WA201UVUF**

INSTRUCTION MANUAL

- FIRST EDITION -

- Thank you for purchasing WA Series Auto Pure Water Purifier of Yamato Scientific.
 - To use this unit properly, read this "Instruction Manual" thoroughly before using this unit. Keep this instruction manual around this unit for referencing at any time.
- ⚠** **WARNING:** Carefully read and thoroughly understand the important warning items described in this manual before using this unit.

**Yamato Scientific America Inc.
Santa Clara, CA**

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You have a quality, world class water treatment system that will provide ultrapure water for many years of trouble-free operation. Years of engineering and experience went into the design and manufacture of this instrument which will dispense water exceeding Type I water purity standards.

HEALTH AND SAFETY

Installation and service of the equipment should be performed by authorized and trained personnel. Safety measures and local guidelines must be followed. Use good practices wearing personal protective equipment (PPE) during the installation and service of the equipment.

Electricity – Auto Pure lab water equipment should be powered by a grounded GFI electrical connection. Do not open the system unless the system is unplugged. Before any installation or service is performed on the equipment, make sure the power is isolated. To unplug the system, do not pull directly on the cord but grip the plug and remove it from the outlet.

Ultraviolet Light – Auto Pure lab water systems may include an ultraviolet light lamp in a stainless-steel housing. Make sure all power is removed prior to accessing the side panel to perform any UV maintenance. Make sure gloves are used when handling the UV bulb. (Gloves must be worn when handling the UV bulb. Which protects the integrity of the bulb) Do not look directly at the UV lamp while the system is operating.

Water Supply – Good piping practices should be followed feeding water to the lab equipment. Isolation valves, pressure gauges and bleed valves are recommended on the main water supply. Pressure should be regulated to meet the minimum and maximum specifications stated for the equipment.

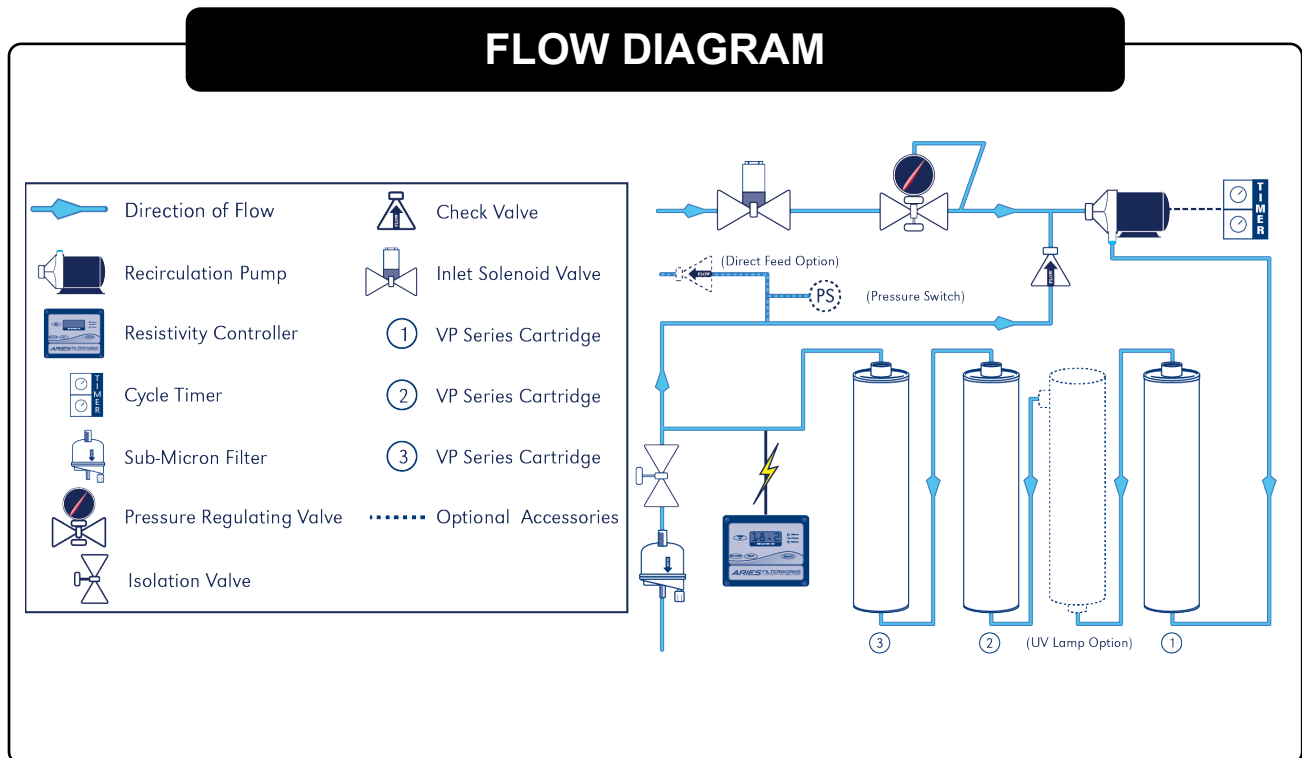


SYSTEM OVERVIEW

The Auto Pure Lab water system delivers Type 1, 18 MΩ quality water on demand. Water is purified in a staged process consisting of high-purity ion exchange resins to remove dissolved minerals and internal recirculation to maintain purity. At discharge, a final 0.2µm filter removes particulates and bacteria to attain CLSI / ASTM Type 1 water specifications. Additional optional technologies are incorporated depending on model. Resistivity monitor provides feedback of the final water quality.

The Auto Pure system is designed to recirculate through multiple technologies to maintain purity. A timer controller runs system automatically for 30 minutes every 2 hours to maintain the integrity of the system. As the system transitions from “Operating” mode to “Stand By” mode, the recirculation pump, solenoid, resistivity display and UV (if installed) will be automatically turned off via the timer. A WAKE button on the side of the system will reset the cycle timer back to “Operating” condition.

Options available with the Auto Pure lab system are UV, recirculating dispensing gun, secondary direct feed port, and wall mounting bracket.



MODEL TYPES

MODELS

WA401	AUTO PURE WATER SYSTEM WITH 0.2 MICRON CAPSULE FILTER
WA401UV	AUTO PURE WATER SYSTEM WITH 0.2 MICRON CAPSULE FILTER AND COMBINATION UV FOR BACTERIA AND TOC DISTRUCT
WA201UF	AUTO PURE WATER SYSTEM WITH 0.05 MICRON CAPSULE ULTRAFILTER
WA201UVUF	WATER SYSTEM W/ 0.05 MICRON CAPSULE ULTRAFILTER AND COMBINATION UV FOR BACTERIA & TOC DISTRUCT

MODEL OPTIONS

ARI-ARADG	Dispensing Gun with Final Filter – Factory Installed option. Recirculating gun mounted on the side of the unit with approximately 5 feet of span. User manually dispenses water.
ARI-ARADF	Direct Feed – Factory installed option. Secondary Port on the side of the system. Used to feed ancillary equipment such as analyzers and scientific equipment. Internal pressure switch automatically keeps the system operating during a water draw condition. Minimum flow of 0.1 lpm required. Note, there is no final filter on this port. A downstream final filter may be considered.
ARI-ARAWB	Wall Mounting Bracket – Factory Installed option. Wall mounting bracket supplied with additional support base plate to the main system.

* UV previously offered as an option with a separate part number

START UP CARTRIDGES*

ARI-VPK4010	RO Feed Start Up Cartridges – (3) High Purity Series Mixed Bed Cartridges
ARI-VPK3805	Tap Water Feed / Service DI – (1) Organics Pretreatment & (2) Mixed Bed Cartridges

* Sold separately

INFLUENT AND EFFLUENT SPECIFICATIONS

INFLUENT WATER SPECIFICATIONS

PARAMETER	REQUIREMENT
Source/Type	Reverse osmosis (RO) or Service deionization (SDI) preferred. 0.2µm particulate prefiltering is recommended for SDI and tap water feeds
Conductivity	RO: < 20µS/cm SDI: > 1 MΩ (Resistivity)
TOC (Using appropriate conditioning as necessary)	RO: < 50 ppb SDI: < 200 ppb
Temperature	20° F to 100°F (5° C to 38°C)
Pressure	20 PSIG minimum / 90 PSIG maximum (1.38 to 6.21 bar)
Fouling Index	Silt Density Index: < 3
Dissolved Carbon Dioxide	< 30 ppm
Free Chlorine	< .05 ppm

EFFLUENT WATER SPECIFICATIONS

PARAMETER	REQUIREMENT
Source/Type	Reverse osmosis (RO) or Service deionization (SDI)
Temperature	20° F to 100°F (5° C to 38°C)
Pressure	20 PSIG minimum / 90 PSIG maximum
Fouling Index	Silt Density Index: < 3
Dissolved Carbon Dioxide	< 30 ppm
Free Chlorine	< .05 ppm

INSTALLATION

It is recommended to review the pre-site requirements before proceeding with the installation. Read through the entire manual prior to the start of the installation. Review all paperwork of items that have been ordered and compare to the items that have shipped. If any parts are missing, notify the factory or your sales contact.

CONNECTIONS

- Inlet - 3/8" OD tubing
- Outlet – 1/4 FNPT
- Direct Feed Port – 3/8" CPC Female Bulkhead with CPC Male x 3/8" OD Tube Compression

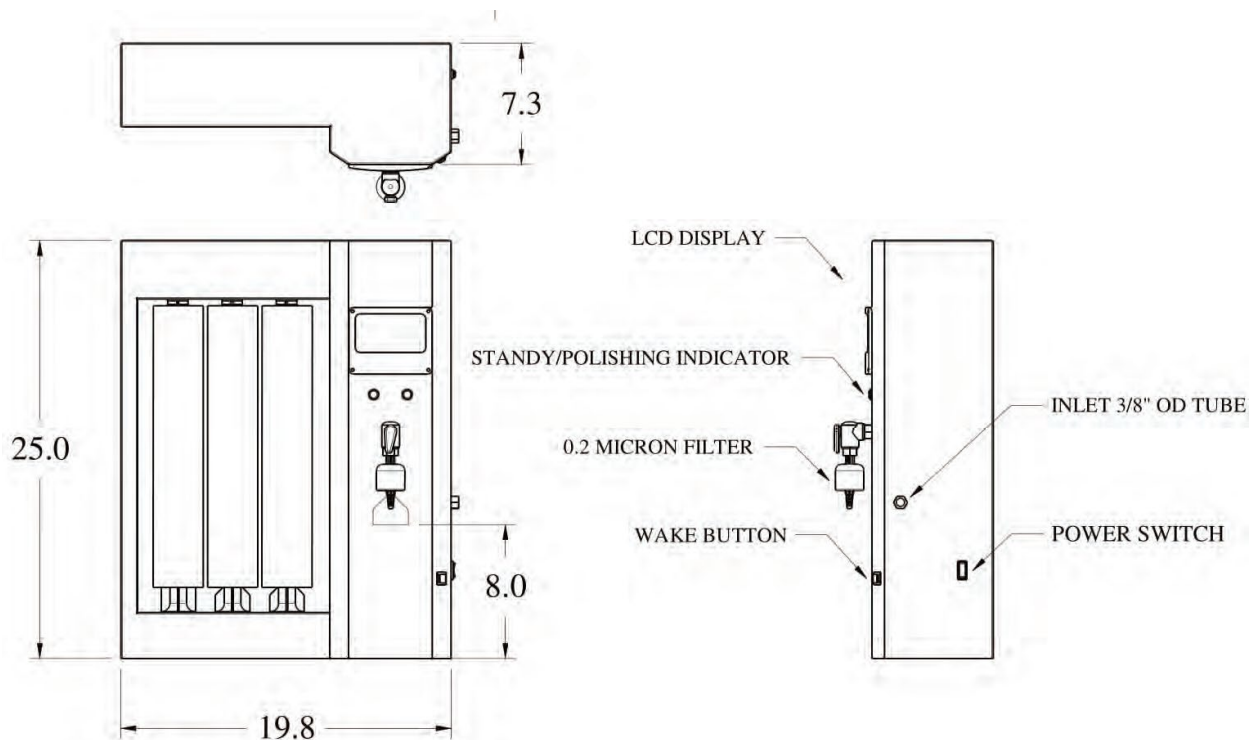
POWER REQUIREMENTS

- 110 VAC 60 Hz (1.0 amp), 220 VAC / 50 Hz (0.5 amp)
- Dedicated GFCI protected outlet six feet within the system

FEED WATER PRESSURE

20 – 90 PSIG regulated. If gravity feed water is used, an external delivery pump with auto shut off will be required (Part number: 1200109)

DIMENSIONS



SYSTEM CHECKLIST & UNPACKING GUIDE

Special care should be used for shipping and delivery of these systems. Similar care should be considered when removing the system from the box. Items should be inspected and itemized upon removal to ensure they have not been damaged in transit. Immediately report any noticeable damage to shipping carrier.

MAIN CHECKLIST

System

WA401 – Main System with 0.2-micron capsule filter.

Or

WA401UV– Main System with UV module installed. Bulb shipped loose. 0.2 micron filter included.

WA201UF – Main System with 0.05-micron ultrafilter

WA201UVUF – Main System with UV module installed. Bulb shipped loose. 0.05 micron ultrafilter included.

Model Options

Wall Mounting Bracket Plate (ARI-ARAWB)

Installed Dispensing Gun (ARI-ARADG). Dispensing Gun Tubing connected to side system with bracket. 0.2-micron filter (ARI-PF006402) included with ARI-ARADG

Direct Feed Port (ARI-ARADF). Side port with CPC 3/8" Female panel mount

Included Accessories

Final Filter as offered with specific model

Outlet angle valve with Teflon tape

Certificate of Conformance

Hose nipple adapter for WA200UFB ultrafilter

UV bulb for UV option

Final filter for ARI-ARADG dispensing gun option

Quick connect CPC 3/8" Male x 3/8"

Compression fitting for direct feed option

SYSTEM CHECKLIST & UNPACKING GUIDE

Recommended Items needed for Installation

- (2) 3/8" Quick Connection Isolation Valve for upstream isolation and depressurization (not included)
- 0-100 psi pressure gauge (300 grade stainless steel) for diagnostics (not included)
- Tube Cutter
- #2 Phillips Head Screwdriver
- Teflon Tape
- Basic Hand tools (adjustable wrench, pliers, socket wrench, etc.)
- Tie-wraps

Optional Items

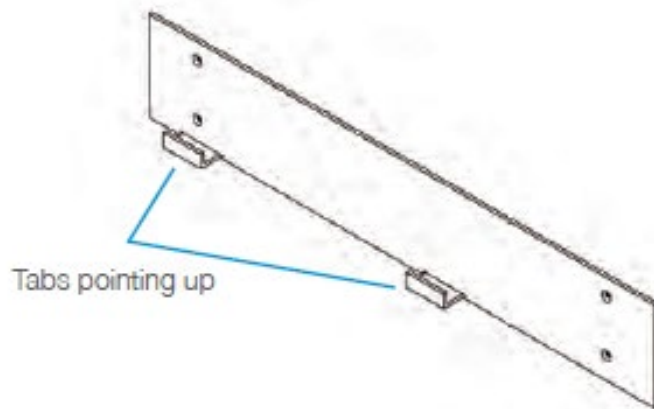
- Drill for Wall Mount
- Level for Wall Mount
- Measuring Tape
- Small electronics size flat screwdriver (Electronics diagnostics)
- 6 feet of 3/8" Hose for commissioning

INSTALLATION PROCEDURE

MOUNT INSTRUCTIONS

Wall mount must be capable of supporting a minimum weight of 50 lbs. (22.7 kg). The wall mount bracket has holes on 16" centers to be secured to studs. If studs are not available, a plywood sheet mounted to the wall is recommended. Make sure holes are level.

Mount bracket with small slots in tabs pointing up.



SETUP

Select a location for the unit which is near the water supply and electrical supply connections. If the water supply does not already have an isolation valve for servicing the Auto Pure Lab System, install one ahead of the unit connection.

Install right-angle valve into the front of the unit outlet.

Do not install the final capsule filter into the outlet valve until the final step of startup.

Using the tube fittings provided with the unit, connect the unit inlet to the water supply.

(DO NOT open the supply isolation valve at this time.)

INSTALLATION PROCEDURE

INSTALLING CARTRIDGES

There are three (3) cartridge positions. The water flows from left to right. Any pretreatment filters must be installed in position #1 (furthest from the display) and a polishing filter must be installed in position #3 (closest to the display).

Locate the water purifying cartridges selected for your system. Unwrap the filters, remove the shipping plugs and affix the labels.

Place the large opening at the bottom of the filter onto the plunger. Push the cartridge down and tilt back until the filter is aligned with the top post. Allow the filter to slide up over the upper fitting and gently rotate left and right to insure a good seal with the top and bottom O-rings.

Repeat above procedure for filters #2 and #3.

Filters should always be installed in the 1,2,3 order and removed in reverse – 3,2,1.

INSTALLING UV BULB (OPTION)

WARNING – ELECTRICAL SHOCK HAZARD. Make sure all power is removed from the system.

Remove the top cover by removing the Philips head screws that attach it. Gently lift the top cover up and set it aside. The UV chamber will be visible in the top of the lab unit. Unclasp the clamps that hold the stainless-steel body of the UV light. Gently lift the body up about 2 inches to allow clearance for bulb removal.

Unscrew the blue collar which is threaded into the stainless-steel body. Remove O-ring gasket and stainless-steel washer.

Hold the UV lamp by the plastic ends ONLY. To avoid oils and fingerprints, it is recommended to use gloves when handling the UV bulb. DO NOT touch the glass. If the lamp should become oily or dirty, clean it with a clean, soft tissue or cloth wetted with isopropyl alcohol.

First, slide the O-ring gasket of the male, pronged-end of the UV bulb until it seats. Second, place washer on top of gasket. Third, place the blue collar on top of the gasket.

INSTALLATION PROCEDURE

INSTALLING UV BULB (OPTION)

Connect the female wire connection to UV male prong until it is fully seated.

Install the bulb into the stainless-steel chamber. Gently thread the blue collar until hand tight.

Gently push UV body back into the bracket. Squeeze clamps until the click firmly about the UV body.

Replace the top cover and turn the unit on.

START UP PROCEDURE

Plug in the unit. The electrical outlet should be properly grounded and fused. It is recommended that the system run on its own dedicated electrical circuit.

Open outlet valve and place a container underneath.

Slowly turn on the water supply to the unit and correct any leaks at the supply connections.

Turn unit on at the power switch and allow water to flow. Water will be visible filling the cartridges up flow from the left to the right. Allow the air to bleed from the system through the outlet valve into the open container.

When all air has been purged from the system close the outlet valve.

Install the final capsule filter on the outlet valve. Open the outlet valve and bleed off any residual air in the filter by opening the thumb screw on the side of the filter. Close thumb screw when water is present and close the outlet valve.

Check connections and cartridges for leaks.

INSTALLATION PROCEDURE

“INITIAL POLISHING OF NEW CARTRIDGES

Cartridge may require up to 24 hours to rinse up to 18 Megohms.

4 liters of water should be run through the filters as an initial purge of the system.

We recommend a sample be collected in an appropriate sterile sample container and tested for water purity. Periodic laboratory water testing to confirm the effectiveness of the treatment process is the owners' responsibility.

DISPLAY AND KEYPAD FUNCTIONS

PRIMARY BUTTONS

Wake - Wakes the unit up from the Standby mode and initiates the 30 minute polishing cycle.

(NOTE: The Wake key must be pressed longer than 3 second or unit will not wake up.)

Power- Turns on the power, starts the timer controller.

Polishing - Green LED is on when the unit is running, Solenoid, pump and meter are on.

Stand By - Amber LED is on when the unit is in Stand By mode. Solenoid, pump, and meter are powered down.

RESISTIVITY MONITOR



MONITOR OPERATION AND PROGRAMMING

TO CHECK WATER TEMPERATURE

Press and Hold **TEMP**

- The water temperature is displayed while the button is pressed.
- The monitor returns to normal operation when released.
- The displayed temperature can be toggled from C to F by repeated pressing.

TO CHECK SET POINT

Press and Release **SET-POINT**

- LO**- will be displayed momentarily, followed by the current stored value.
The Low set-point value is the point where the relay will energize.
- HI**- will then be displayed followed by the High setpoint value.
The High set-point value is the point where the relay will de-energize.
- The monitor will automatically return to normal operation.

TO ADJUST SET-POINT

Press and Hold **SET-POINT** then also press **ADJUST**

Release both buttons

-**LO**- will be displayed momentarily, followed by the current Low set-point value with the LCD's highest digit flashing.

- To skip this digit, Press and Release **ADJUST** again OR, Press **SET-POINT** repeatedly until the desired number is achieved.

Then Press and Release **ADJUST**

- The next lowest digit will begin flashing.

MONITOR OPERATION AND PROGRAMMING

- Press **SET-POINT** to adjust the digit

- Press **ADJUST** to Skip.

Continue this sequence until all the digits are set and press **ADJUST**

-HI- will be displayed momentarily, followed by the current High set-point value with the LCD's highest digit flashing.

- Press **SET-POINT** to adjust the digit

- Press **ADJUST** to Skip.

Continue this sequence until all the digits are set and press.

- The Monitor will automatically return to its normal operating mode.

This unit was designed and manufactured to have the ability to produce the purest water that can be obtained for laboratory usage. It purifies water that meets or exceeds the specifications recommended by CLSI, ASTM, for Type I Reagent Grade Water when it is operated and maintained according to these instructions.

- The ultraviolet lamp (if installed) must be changed once each year.
- The resin cartridges must be replaced when the purity meter indicates the water purity is below your requirements or every 6 months.
- The exterior surfaces may be wiped clean with a mild detergent and a soft cloth to keep the unit clean and new looking.

REPLACING FILTER CARTRIDGES AND FINAL FILTER

The cartridges are expendable items which have a finite capacity to deionize and polish the water. When the digital display indicates the purity is less than your minimum requirements, the DI resin cartridges have exhausted their capacity to perform. Cartridge should be replaced every 6 months as a matter of routine maintenance. The final filter should be changed every time the cartridges are replaced.

- Turn the unit off using the power switch.
- Close feed water valve to the system.
- Place a container under the outlet valve to drain water from the system, which releases pressure. Open the outlet valve and leave open until water stops draining from the system

Before removing DI cartridges, wrap the bottom of each plunger with paper towels or a towel to absorb the small water that will drain from the bottom of the filter once it is disengaged from the plunging apparatus. Quickly place cartridge filled with water into a local basin or sink. Covering the bottom cartridge with your hand will help minimized the excess water.

- Remove the three cartridges starting with Cartridge #3. Push down on the cartridge gently and tilt forward. Quickly remove the filter and discard in the trash. There will be some residual water inside the filter. Water will come out the outlet valve (still open) when the cartridge is depressed.
- Remove cartridges #2 and #1 in this order using the same procedure above. When the plunger is depressed some water will come out of the upper fitting next to the filter.

REPLACING FILTER CARTRIDGES AND FINAL FILTER

- Dry the unit and replace the cartridges as described in Section 5.2, Installing the Cartridge.
- The used cartridges may be disposed of in the same manner as any water filter cartridge.
- Replace the Final Filter with a new one each time the filter cartridges are replaced.

- Use Sanitization Kit HPA-010.
- Turn off system and disconnect power plug.
- Open dispense valve.
- Remove cartridges.
- Remove 0.2-micron final filter.
- Insert sanitization cartridges in the following order:

CARTRIDGE 1 - SANITIZER, ARI-VP170001
CARTRIDGE 2 - BLANK, ARI-VP170000
CARTRIDGE 3 - BLANK, ARI-VP170000

- Insert power plug into electrical outlet and turn on system.
- Draw off about two to liters of water from system, then close dispense valve.
- Allow the system to remain in recirculation for 45 to 60 minutes. *Note: The unit must remain in the Polishing Mode while sanitizing. The “WAKE” button will need to be pressed once within the first 30 minutes of the sanitization interval so that the water remains in recirculation. Pressing the “WAKE” button interrupts system standby to start 30-minute run cycle.
- After 15 minutes, open dispense valve draw off approximately 250 ml and use test strips to verify a minimum chlorine residual of 5 ppm.
- After 45 to 60 minutes, dispense about 20 liters to drain.
- After flushing the system, open the dispense valve draw off 250 ml and use test strips to ensure chlorine is removed.
- Turn off system and disconnect power plug.
- Open dispense valve.
- Remove cartridges.
- Please refer to “Installing the Cartridge” and “Start Up Procedure” sections

CONSUMABLES & SPARE PARTS

PART NUMBER	DESCRIPTION
ARI-1200014	Outlet Angle Valve
ARI-1200102	Resistivity Calibration Cell Block
ARI-ARAWB	Wall Mounting Bracket
ARI-HPA003	UV Bulb for Combination UV System
ARI-HPA008	220 Volt Operation Step Down Converter
ARI-HPA010	Sanitization Kit (includes Blank Filters, Sanitization Cartridge, Gloves & Test Strips)
ARI-HPA011	O-ring Repair Kit for Upper Outlet and Plunger (3-sets)
ARI-HPA013	Lower Fitting Repair Kit (Includes 3-sets of plunger, cup, springs, o-rings, and fittings)
ARI-HPA014	Upper Repair Kit (Includes 3-sets of upper fittings)
ARI-PF006402	0.2-micron capsule filter - 1/4" MNPT x 1/4" hose barb
ARI-PF006505HN	0.05-micron ultrafilter - 1/4" MNPT x 1/4" hose barb
ARI-PF007101	POU 0.2-micron Endotoxin Removal Capsule Filter - 1/4" MNPT x 1/4" hose barb
ARI-PX110001	Sanitization Cartridge Only
ARI-VP170001	Single Sanitization Cartridge
ARI-VPK3805	VP Series Cartridge Kit for Tap Water Feed (1-Organics Pretreatment & 2 Mixed Beds)
ARI-VPK4010	VP Series Cartridge Kit for RO Feed (3 Mixed Beds)

TROUBLESHOOTING

SYMPTOM	CAUSE	REMEDY
Unit will not WAKE up	Wake button pushed too quickly.	WAKE button must be pushed at least 3 second to initiate the polishing mode.
Display is off	No power to the unit or unit in Stand By mode.	Check the unit is plugged into a live outlet. Check the unit's fuse - replace it if it is blown. Press the Wake switch to initiate the polish cycle.
Unit blows fuses	An electrical short exists in the unit.	Return the unit to the factory for repairs or have unit serviced by an authorized dealer.
Unit will not dispense water	Supply water is not on. Bad Solenoid. A filter cartridge is loaded with particles and clogged. No flow	Confirm that the supply water is turned on. Have unit serviced by an authorized dealer or return to factory. Replace the filter cartridge. Capsule filter is bound with air. Open bleed valve.
Display indicates water purity is below set point.	Supply water is improperly treated. Resin cartridges are not seated. Resin is exhausted.	Test the supply water TDS and add additional treatment. Open cartridge housing and reseal cartridge. Install fresh cartridges.
Resin cartridges exhaust quickly.	Supply water is improperly treated.	Test the supply water TDS. Add additional pretreatment to obtain higher quality.
Submicron filter plugs rapidly.	Supply water has colloids and is improperly treated.	Perform a Silt Density Test. If it is higher than 1 add additional pretreatment.

AFTER SERVICE AND WARRANTY

WARRANTY POLICY

Yamato Scientific America warrants, from the date of shipment from warehouse in Camden, New Jersey, U.S.A., for a period of one (1) year. All products, parts and materials shall be free of defects in material and workmanship under normal use consistent with the product instructions. This product warranty does not apply to products purchased from unauthorized resellers/distributors.

Yamato reserves the right to inspect the product under claim before having an obligation to repair or replace the defective unit covered by this warranty. All costs of shipping to Yamato for inspection shall be borne solely by the purchaser. Products repaired or replaced under the terms of the warranty may be refurbished or new product will be provided at the discretion of Yamato.

Warranty Conditions

This warranty does not apply to equipment or parts which fail because of abuse, accident, alteration, misuse, erosion, improper installation, or improper replacement of a repaired item.

The buyer assumes all risks for results obtained from these products, whether used alone or in combination with other items. It is expressly understood that we are not responsible and will not be held liable for damage and/or injury caused using our products.

Product Return Policy

If you are not satisfied with your purchase and wish to make a return, contact our customer service to inquire about a Return of Merchandise Authorization Number (RMA). Merchandise returned without an RMA number will not be accepted and will be returned to the sender. Return requests must be made within 15 days of the customer's receipt of the merchandise.

All returns must be unused and in unopened original packaging and include all items and manuals originally shipped.

AFTER SERVICE AND WARRANTY

WARRANTY POLICY CONTINUED

The purchaser is responsible for the shipping cost of return shipment. Insurance on the return shipment is required. Damage or loss of merchandise during shipping is the responsibility of the sender. Returned shipments that arrive damaged will be returned to the sender, and credit will not be rendered.

All returned products, parts and materials are subject to a 25% restocking fee. Shipping and handling cost are non-refundable. All retrofitted, customized, and special order item sales are final and non-returnable.

In Case of Request for Repair

If the failure occurs, stop the operation, turn OFF the power switch, and unplug the power plug. Please contact the sales agency that this unit was purchased, or Yamato Scientific's sales office.

< Check following items before contact >

- ◆ Model Name of Product
- ◆ Serial Number
- ◆ Purchase Date
- ◆ Issue (as detailed as possible)

Responsibility

Please follow instructions in this document when using this unit. Yamato Scientific has no responsibility for accidents or breakdown of device due to failure to comply. Never conduct what this document forbids as unexpected accidents or breakdown may result.

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