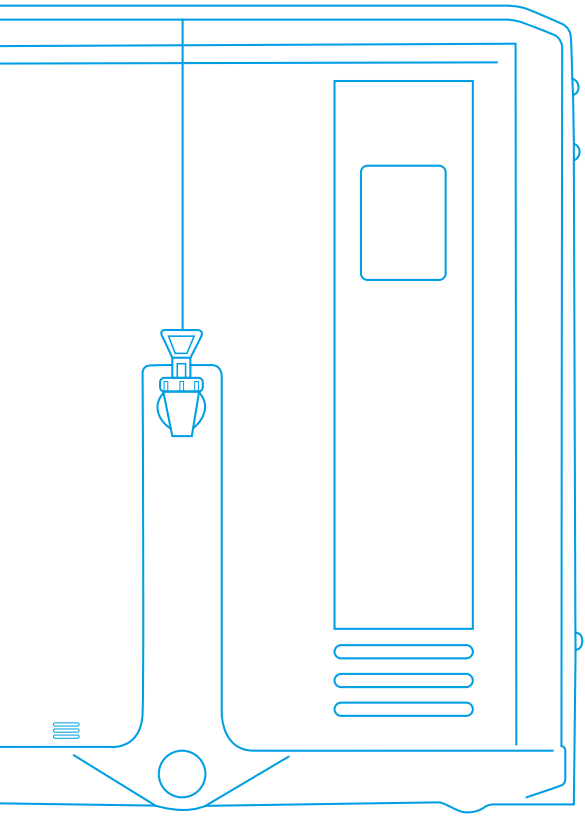

Operation Manual

PurA-Q2
Water Purification Systems

PurA-Q2 10 - WAT2228
PurA-Q2 10 UV - WAT2230
PurA-Q2 20 - WAT2408
PurA-Q2 20 UV - WAT2418

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1.0 Important Safety and Service Information

The customer should comply with their organisation's Electrical Safe Practices as recommended by the local and national safety regulations.

This equipment must be operated by qualified persons who are knowledgeable and trained in its operation, and the associated hazards.

This equipment must only be used for its intended purpose, any other use is considered misuse and could result in personal injury or equipment damage.

Use caution when operating or servicing this equipment. It is the user's responsibility to read and understand the content of this manual before operating or working on this equipment.

SAVE THESE INSTRUCTIONS

1.1 RoHS / WEEE Statement

All equipment is manufactured in compliance with EU Directive 2011/65/EU (RoHS 2) and EU directive 2012/19/EU (WEEE), and subsequent amendments.

1.2 Hazard and Special Safety Notice Definitions

Below is a list of definitions of symbols used on this product and within the accompanying documentation including these operating instructions.

1.2.1 WARNINGS AND CAUTIONS

This symbol is used to identify the potential risk of personal injury or death from electrical hazards or potential electrical hazards.

This symbol is used to identify a potential risk of personal injury or death or equipment damage due to other hazards or potential hazards.

This symbol is used to identify a potential risk of personal injury due to produced UVC light.

This symbol is used to indicate that an operation should not be performed upon the equipment until the instructions have been read and understood. Failure to read the instructions provided may result in personal injury, death, or equipment damage.

This manual may contain the following types of special notices:

***IMPORTANT:** Indicates information that is necessary to understanding a topic or performing a procedure.

***NOTE:** Indicates information that may be helpful in understanding a topic or performing a procedure.

1.2.2 Product warnings

Electrical shock.
Install this equipment on a ground fault interrupting circuit.

Follow all national and regional electrical safety codes and regulations during installation and commissioning.

Failure to do so could increase the risk of causing electrical shock resulting in severe personal injury or death from electrocution.

Disconnect the mains power supply from the mains supply when servicing this equipment to eliminate the risk of electric shock or electrocution.

Good housekeeping.
Caution should be taken to ensure the bench upon which the equipment is mounted to be clear of obstructions and is clean and dry.

Particular attention needs to be taken to ensure that the floor around the area where the equipment is being operated is clear of obstructions and dry to reduce the risks of tripping or slipping.

If the unit is to be wall mounted, ensure the wall is of solid construction and sufficiently able to support twice the weight of the unit and the weight of the water it is containing.

Never operate any electrically operated equipment when standing in water or upon a wet floor due to the increased risk of electrocution by electric shock.

1.2.3 Product cautions

Intended use:

The PurA-Q2 water purifier is intended to be bench or wall mounted and used to produce a supply of Type 2 water for laboratory use. Failure to use this product as intended could result in personal injury or equipment failure.

Caution:

- The PurA-Q2 water treatment equipment is for indoor use only
- Do not use this equipment as a step
- Do not store documents, paper or other incendiary materials on top of this unit
- Water produced from the PurA-Q2 equipment is not for human consumption
- This equipment is NOT to be 'washed down'
- Do NOT allow this equipment to be frozen
- Always ensure clear access to the mains isolator or mains disconnection device

1.3 Contact Information

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2.0 Introduction

The PurA-Q2 water purification system produces Type 2 (1 to 15 MΩcm) at a rate of 10 to 20 litres per hour with the option of ultraviolet sterilisation. The processed water is stored in a 35 litre reservoir (**A**) which can be dispensed with an included manual dispensing tap (**B**) as required.

All components are assembled around a reservoir chassis and are protected by a plastic housing designed for bench or wall-mounting. The plastic covers (**C**) can be removed for access to replaceable components.

Two threaded ports (**D**) on each side of the unit are for connecting equipment utilising the purified water. All water and power connections and pressure adjustment are located on the side of the unit (**E**).

All recorded data, warning messages and water quality information can be viewed from the controller display (**F**).

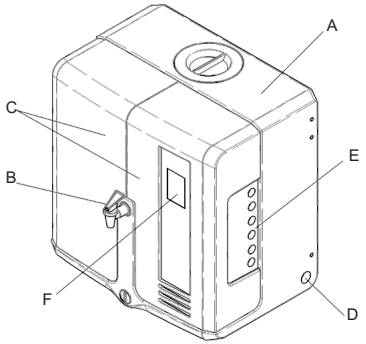


Figure 1. PurA-Q2 Water Purification System

2.1 PurA-Q2 Water Purification Models

The content in this manual applies to these models. Some models include an optional submersible ultraviolet (**UV**) light for sterilisation.

Table 1. PurA-Q2 Models

Model	Product Water Quality	Product Water Flow Rate
PurA-Q2 10	Type 2	10 Litres/hr
PurA-Q2 10 UV		10 Litres/hr
PurA-Q2 20		20 Litres/hr
PurA-Q2 20 UV		20 Litres/hr

2.2 Purification Process

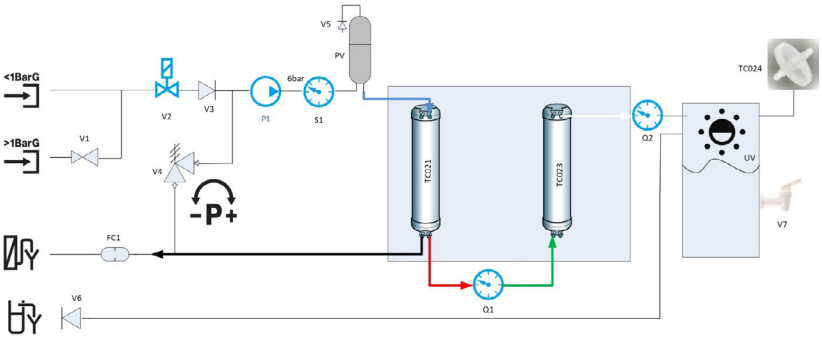


Figure 2. Purification Process

Inlet feed water at pressure *greater than* 1 Bar [15 psi] enters the unit through the >1BarG port and passes through the regulator (**V1**) before entering the inlet solenoid valve (**V2**).

Inlet feed water at pressure *less than* 1 Bar [15 psi] enters the unit through the <1BarG port and passes directly through the inlet solenoid (**V2**), bypassing the regulator (**V1**).

The operating pressure and temperature are monitored (**S1**). The operating pressure control valve (**V4**) can be adjusted from the screw -P+ on the side of the unit.

The untreated feed water is pumped through a carbon-based, combination pretreatment and RO module (**TC021/TC022**) to detain larger particles greater than 5 micron and chemicals such as insecticides, pesticides, herbicides and chlorides. The module will also reject almost all bacteria, viruses, heavy metal compounds and organics, as well as up to 98 percent of the salt content from the water. A percentage of the concentrate water is sent to a drain.

The quality of the permeate water is measured (**Q1**) before entering the DI (de-ionisation) cartridge (**TC023**) containing ion-exchange resins. The quality of the DI water is measured (**Q2**) before the now purified water is sent to the internal reservoir with an air vent filter (**TC024**) and an ultraviolet light (**UV**)[1] for sanitising.

An optical sensor monitors the water level in the reservoir. An overflow tube is connected from the tank to the drain. Water is drawn from the tap (**V7**) on the side of the unit.

2.3 Feed Water Requirements

The feed water used must meet these requirements.

Pressure: 0.6 to 6.0 bar [8.7 to 87 psi]
Minimum Flow: 60 litres per hour
Feed Water Conductivity: Less than 2000 µs/cm
Free Chlorine: Less than 0.1 mg/litre
Carbon Dioxide (CO_2): less than 15 mg/litre
Silica: less than 15 mg/litre
Silt Density Index (SDI): Less than 3
Langelier Index (LI): Less than zero
Iron: Less than 0.1 mg/litre
Manganese: Less than 0.05 mg/litre
pH: 3 to 9
Temperature: 5 to 40 degrees C [45 to 104 degrees F]

3.0 Initial Installation

3.1 Important Safety Information

Electrical shock.
Install this equipment on a ground fault interrupting circuit.

Follow all national and regional electrical safety codes and regulations during installation and commissioning.

Failure to do so could increase the risk of causing electrical shock resulting in severe personal injury or death from electrocution.

Disconnect the mains power from the mains supply when servicing this equipment to eliminate the risk of electric shock or electrocution.

***IMPORTANT:**

Do not obstruct access to the mains power switch/circuit breaker. Make all operators of this equipment aware of the location of the mains power switch/circuit breaker.

Good housekeeping.
Caution should be taken to ensure the bench upon which the equipment is mounted to be clear of obstructions, clean and dry.

Particular attention needs to be taken to ensure that the floor around the area where the equipment is being operated is clear of obstructions and dry to reduce the risks of tripping or slipping.

Never operate any electrically operated equipment when standing in water or upon a wet floor due to the increased risk of electrocution by electric shock.

Ventilation.
Please ensure the PurA-Q2 unit is located within a ventilated area, do not install within a cupboard or un-ventilated location.

3.2 Lifting and Carrying the Equipment

The PurA-Q2 unit without water weighs 20 kg [44 lbs]. With water the PurA-Q2 can weigh as much as 55 kg [121 lbs].

Follow these guidelines.

3.2.1 If you are not sure you can lift the unit alone, ask another person to help.

CAUTION! Personal injury. The storage tank must be empty when lifting or carrying the PurA-Q2 unit. Water adds extra weight that can result in personal injury when lifting or carrying the unit.

3.2.2 Every care has been taken to remove any sharp edges that may be present on the unit, unit packaging or packaging materials. It is advisable to wear protective gloves when lifting or unpacking the unit to prevent injury - no matter how minor.

3.2.3 If the unit is already in service, drain any water from the storage tank before lifting.

3.2.4 Be sure you have a secure grip on the unit.

3.2.5 Keep your back straight and lift straight up using your legs. Do not twist your body while lifting.

3.2.6 Keep the load close to your body while lifting and carrying the unit.

3.2.7 Place the unit on a bench without twisting your body. Move your feet to turn.

***IMPORTANT:** The bench or wall must be capable to support a minimum of 60 kg [132 lbs].

3.3 Unpack the PurA-Q2

Unpack the PurA-Q2 unit and inspect for damage. The package includes:

- The PurA-Q2 water purification system
- Installation kit

If any parts are damaged, contact SLS Ltd Technical Support, see Section 1.3 for more information.

Follow the procedures in the order in which they are presented.

3.4 Installation Kit

Figure 3 shows the components used in the installation of all PurA-Q2 models.

Figure 3. Installation Kit Components

Table 2. Installation Kit Components

Item	Description
A	Tubing: 3/8-inch Inlet with non-return valve, 2 meters [6.5 feet] long 1/4-inch Concentrate outlet-to-drain, 2 meters [6.5 feet] long 5/16-inch Permeate outlet, 2 meters [6.5 feet] long
B	Maintenance Keys for module and cartridge changes, and fittings
C	Straight and Elbow Fittings for tubing connections
D	Flash drive with the *PurA-Q2 Water Purification System Operation Manual*
E	Dispenser Tap
F	Plug with Washer Seal for unused tap port
G	Dishwasher connection hardware
H	Feed Water Tubing Fittings 1/2-inch, 1/4-inch, and 3/8-inch male NPT
I	Stickers for covering screw heads and unused connections
J	Allen Wrench (4 mm) to remove right panel
K	Green Flow Restrictor (PurA-Q2 10 / PurA-Q2 10 UV)
	Blue Flow Restrictor (PurA-Q2 20 / PurA-Q2 20 UV)

3.5 Mounting the System

The PurA-Q2 unit can be mounted to a masonry wall or placed on a sturdy bench. SLS Ltd recommends wall-mounting the unit to be sure that a connection to the lower dispenser-tap port is accessible. Refer to Section 3.8 *Install Dispenser Tap* for information on placement of the Dispenser Tap.

3.6 Bench Placement

The bench must be able to hold 60 kg [132 pounds] and located on a flat, level surface. The surface of the bench must be resistant to applied chemicals such as disinfectants, acids, dyes, and solvents.

3.7 Wall Mounting

The wall-mounting kit is separate. Use the included instructions as a supplement to this procedure to mount the PurA-Q2 unit. In addition to the kit, these are the tools required to mount the PurA-Q2 Water Purification unit to a wall:

- Wall Mounting kit
- Pozi screwdriver
- Pen/pencil for marking wall
- Level
- Drill with 10 mm drill bit
- 4 mm Allen Head wrench/Hex key

CAUTION! Personal injury. The reservoir must be empty when mounting the PurA-Q2 unit. A reservoir with water adds extra weight that can result in personal injury when lifting the unit onto the mounting brackets.

IMPORTANT: It is recommended that at least two people assist in mounting the unit.

Follow this procedure. Refer to Figure 4.

3.7.1 Measure the width of the PurA-Q2 enclosure. This measurement (**A**) will be used as the spacing between mounting brackets.

3.7.2 Position and level the left mounting bracket (**L**) vertically at the desired mounting location. Mark the bracket location and the four mounting hole locations on the wall.

3.7.3 Using a drill with a 10 mm masonry bit, drill four mounting holes at the marked locations deep enough to insert wall anchors.

3.7.4 Insert the wall anchors.

3.7.5 Position the left mounting bracket (**L**) holes over the anchors and secure the bracket with four anchor screws.

3.7.6 Position the right mounting bracket (**R**) from the left bracket the width measurement (**A**) acquired in step 1.

3.7.7 Make sure the right mounting bracket (**R**) is vertically level and level with the left bracket. Mark the bracket location and the four mounting holes on the wall.

3.7.8 Using a drill with a 10 mm masonry bit, drill four holes deep enough to insert wall anchors.

3.7.9 Insert the wall anchors.

3.7.10 Position the right bracket (**R**) slots over the anchors and secure the bracket with four anchor screws.

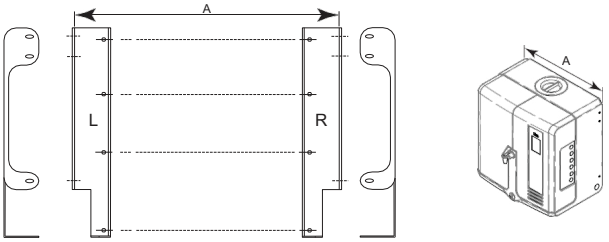


Figure 4. Align and Secure Left and Right Mounting Brackets

3.7.11 Use the level to be sure the brackets are aligned so the PurA-Q2 unit will be level when mounted.

3.7.12 Using two people, place the PurA-Q2 unit onto the mounting brackets. Be sure the mounting holes on the side of the unit align with the mounting slots on the brackets.

3.7.13 With one person holding the unit in place, secure the unit to the brackets with the 4 mm Allen head screws.

3.8 Install Dispenser Tap

The Dispenser Tap can be installed in either of two ports. Installation in the upper port is good for bench placement of the PurA-Q2 unit where a large container can be placed on the bench as it is filled, but there will be no access to the remaining water in the reservoir once the level drops below the dispense port.

Installing the port in the lower port is best if the unit is wall-mounted and all water in the reservoir will be accessible.

Follow this procedure.

3.8.1 Remove the Dispenser Tap from its packaging.

3.8.2 Determine which port on the reservoir to install the Dispenser Tap and remove the plug.

3.8.3 Place a washer over threaded end of the Dispenser Tap. Be sure the bevelled side of the washer faces the threads of the tap.

3.8.4 Insert the threaded-pipe end of the tap through the hole. Hand-tighten only.

3.8.5 Place a washer over the red plug with the bevelled side facing the threads and insert the plug into the unused port. Screw the plug into the hole until tightened. Make 1/4-turn past tight to ensure a proper seal.

3.9 Power and Water Connections

The power and water connections are located on the right side of the unit. The table below identifies the power, pressure adjustment, and water connections to the PurA-Q2 unit.

Figure 5. PurA-Q2 Connections

Table 3. Power and Water Connections for the PurA-Q2 Unit

24v	Power Inlet from external 24 VDC power supply unit
<1BarG	Feed water inlet. Low pressure, less than 1 bar [15 psi]
>1BarG	Feed water inlet, High pressure, greater than 1 bar [15 psi]
-P+	Pump pressure adjustment. Factory set to 5.5 to 6 bar [79 to 87 psi]
	Reservoir overflow connected to drain
	RO concentrate outlet connected to drain.

3.10 Fittings

The feed water, inlet and outlet tubing is inserted and secured through the fittings defined in Table 3. All fittings are plugged for shipping purposes. A plug must be inserted into any fitting that is not used.

To remove the plug, hold the plug in one hand and while pressing in the fitting collar using the maintenance keys (Table 5, Item B), pull out the plug.

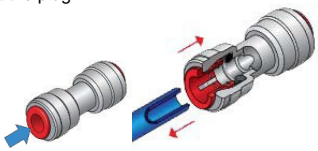


Figure 6. Fitting Collar (Left)

3.11 Tubing

These are general guidelines for connecting the tubing to the PurA-Q2 connectors:

- Use a tubing cutter or a sharp blade to cut the tubing
- Be sure the tube is long enough to allow for disconnecting and reconnecting during service
- Be sure tubing is clean and not cracked or scored
- Be sure there are no obstructions in the tube before connecting
- Do not use excessive force when inserting tubing. Excessive force may damage the tubing or fitting resulting in leaks
- Pull on the tube only once to be sure it is secured in the fitting
- After pulling once, insert the wrench under the collet and push the tube into the fitting once more for a secure fit

3.12 Connect High or Low Pressure Feed Water Tubing

NOTE: Use the provided elbow connectors as necessary.

The 5/16-inch feed water tubing can be connected to the high pressure or low pressure inlet fitting depending on the known feed water pressure. See Figure 5 in Section 3.9.

NOTE: If the pressure is not known, connect the feed water tubing to the high pressure fitting. A water pressure test will be conducted at the completion of the installation process to determine the required pressure.

Feed water inlet. Low pressure, less than 1 bar [15 psi]

Feed water inlet, High pressure, greater than 1 bar [15 psi]

Follow this procedure.

3.12.1 Measure and cut the length of the **5/16-inch** feed water tubing needed between the water source connection and the applicable feed water inlet fitting on the PurA-Q2 unit. Add extra length to accommodate removal and reconnection of the tube.

3.12.2 Install the filter / strainer into the 5/16-inch pipe and connect to the applicable inlet fitting'.

3.12.3 Insert a plug in the unused Feed Water Inlet connection. A plug will prevent the water from bypassing the inlet solenoid and exiting out the unused port.

3.13 Connect Reservoir Overflow and RO Concentrate Tubing

The 3/8-inch tubing is connected between the Reservoir Overflow fitting and the drain. A check valve, to prevent back flow, is installed in one end of the tubing. See Figure 5 in Section 3.9.

The 1/4-inch tubing is connected between the RO concentrate outlet fitting and the drain. See Figure 5 in Section 3.9.

NOTE: Use the provided elbow connectors as necessary.

Reservoir overflow connected to drain

RO concentrate outlet connected to drain.

Follow this procedure to connect the tubing to the applicable fitting.

IMPORTANT: The tubing for both the reservoir overflow and the RO concentrate must be positioned downward toward the drain.

3.13.1 Measure and cut the length of the **3/8-inch tubing** needed between the **reservoir overflow** fitting and the drain. Add extra length to accommodate removal and reconnection of the tube.

3.13.2 Connect the check valve-end to the reservoir overflow fitting .

3.13.3 Measure and cut the length of the **1/4-inch tubing** needed between the **RO concentrate outlet fitting** and the drain. Add extra length to accommodate removal and reconnection of the tube.

3.13.4 Insert the applicable flow restrictor into the tube and connect the tubing to the fitting . Let the collar of the restrictor sit against the end of the tube as shown below.

NOTE: See item K in Table 2 in Section 3.4 for the specific Restrictor to install.

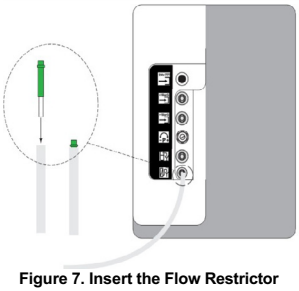


Figure 7. Insert the Flow Restrictor

3.13.5 Position the tubing downward and directed toward a drain.

3.14 Cover Screw Heads and Unused Connections

If desired, use the included stickers to cover exposed screw heads and connections that are not used.

3.15 Connect Power Supply

3.15.1 Secure the power supply cord to connector 24V on the PurA-Q2 unit.

3.15.2 Add the appropriate insert to the power supply unit to suit your local outlet – four types are provided.

3.15.3 Be sure the feed water inlet valve is closed.

3.15.4 Plug the power supply into the applicable power outlet.

3.16 Install Pretreatment/RO Module

The Pretreatment and RO module are combined in one cartridge.

IMPORTANT: A PurA-Q2 unit is shipped with a bypass tube connected between the **green** RO water outlet tube and the **white** reservoir inlet tube. The bypass tube is required for rinsing the Pretreatment/RO module before installing the DI cartridge. **Do not discard the bypass tube and elbow fittings**.

Follow this procedure.

3.16.1 Remove the left front cover of the PurA-Q2 unit.

3.16.2 Remove the combination Pretreatment/RO module from its packaging.

3.16.3 Insert the hooks of the canister into the slots located on the right side.

NOTE: The location is labelled **TC021** for a PurA-Q2 10 unit or **TC022** for a PurA-Q2 20 unit.

3.16.4 Connect the colour tubing (blue, red, and black) to the fitting with the corresponding colour label on the cartridge. See Figure 8.

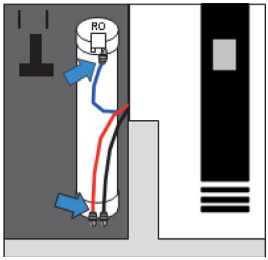


Figure 8. Pretreatment/RO Module Connections. Bypass Tube Not Shown for Clarity

3.17 Perform Water Pressure Test

NOTE: Refer to Section 4.1 *Menus* for the controller menu descriptions.

A water pressure test will assist in verifying that the feed water tubing is connected to the correct inlet fitting. Follow this procedure.

3.17.1 Be sure the bypass tubing is connected as shown in Figure 9.

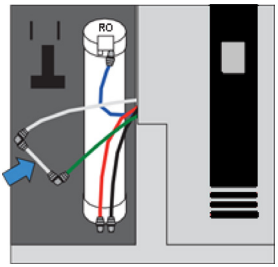


Figure 9. Bypass Tubing Connected

3.17.2 Connect the feed water tube to >1BarG.

3.17.3 On touch.

3.17.4 On the control display, press.

3.17.5 Press.

3.17.6 Press -P+. The inlet valve will open and begin flushing the unit.

3.17.7 When prompted to install TC021 or TC022 touch.

3.17.8 Allow the pressure to adjust and stabilise for approximately 3 minutes. If after 3 minutes the inlet pressure is:

- Less than 0.5 bar, continue to Step 3.17.9
- Greater than 0.5 bar, press **OK** (the internal pump will now operate) and then skip to Step 3.17.14

3.17.9 Close the inlet water valve to the PurA-Q2 unit.

3.17.10 When the displayed pressure is less than 0.1 bar, remove the feed water tubing from the high pressure inlet fitting and connect to the low pressure inlet fitting <1BarG.

3.17.11 Turn on water to the PurA-Q2 unit.

3.17.12 Check the pressure displayed on the screen. The pressure must be greater than 0.6 bar [8.7 psi].

3.17.13 Press **OK**. The internal pump will now operate.

3.17.14 Using a flat-blade screwdriver, adjust the pump pressure screw -P+ on the right side of the unit to **6.0 bar** (±0.2 bar).

3.17.15 Press **OK**.

IMPORTANT: Do not disconnect the bypass tube until the RO Pretreatment/RO module is rinsed.

3.18 Rinse Pretreatment/RO Module

The RO portion of the Pretreatment/RO module must be rinsed before first use. Follow this procedure.

3.18.1 Be sure the bypass tubing is connected as shown in Figure 10.

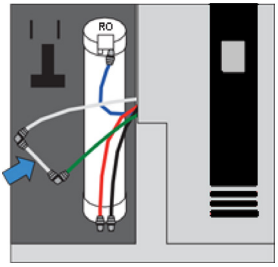


Figure 10. Bypass Tubing Connected

3.18.2 On the control display, press .

3.18.3 Touch

3.18.4 Select **TC021/TC022**.

3.18.5 When **Remove old TC021/TC022** appears, touch

3.18.6 When instructed to insert new TC021/TC022, touch . A timer counts down the rinse operation, in seconds, to completion.

3.18.7 When operation is complete, touch

3.18.8 If the bypass tube was connected, disconnect the bypass tube. Store the bypass tube in a safe location.

3.18.9 Disconnect the bypass tubing and continue to Section 3.19 *Install DI Cartridge*.

3.19 Install DI Cartridge

Follow this procedure.

3.19.1 On touch to stop the machine.

3.19.2 Let the concentrate water go to drain.

3.19.3 If necessary, remove the left front cover of the PurA-Q2 unit.

3.19.4 Disconnect the bypass tubing shown in Figure 11.

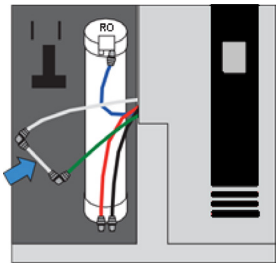


Figure 11. Bypass Tubing

3.19.5 Remove the DI cartridge from its packaging.

3.19.6 Insert the hooks of the cartridge into the open slots.

3.19.7 Connect the permeate water inlet (green) tube and DI water outlet (white) tube to the corresponding colour-labelled connection on the cartridge.

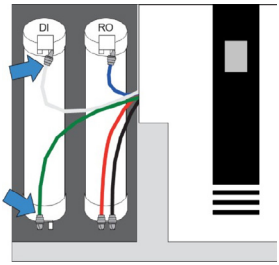


Figure 12. DI Cartridge Tube Connections

3.19.8 Secure the tubes into the clamps near the connections.

3.19.9 Replace and secure the left front cover of the PurA-Q2 unit.

3.19.10 Touch to stop the machine.

3.19.11 Let the concentration go to drain.

3.20 Rinse DI Cartridge

The DI cartridge must be rinsed before first use. Follow this procedure.

3.20.1 On the control display, press .

3.20.2 Press .

3.20.3 Select **TC023**.

3.20.4 When **Remove old TC023** appears, touch .

3.20.5 When instructed to insert new TC023, touch . The module will rinse for 10 minutes.

3.20.6 When operation is complete, touch .

3.20.7 Replace the left cover over the unit.

3.21 Empty the Reservoir Tank

Some water has accumulated in the reservoir during the setup process. Empty the reservoir to ensure optimum quality of the first batch of water.

3.22 Fill the Reservoir Tank

An optical sensor detects when the reservoir needs to fill and will issue a command to fill. Figure 13 shows the screen indicating the reservoir is filling.

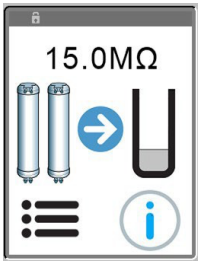


Figure 13. Screen Displayed When Reservoir is Filling

Figure 14 shows the screen indicating the reservoir is full.

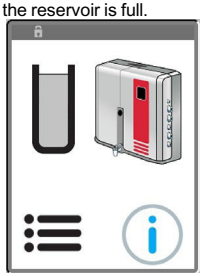


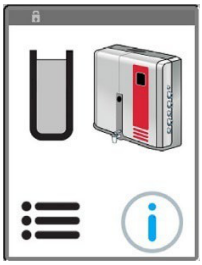
Figure 14. Screen Displayed when Reservoir is Full

4.0 Control Display Operation

These are the screens and functions of the Control Display.

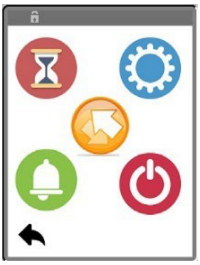
4.1 Menus

Below are the main control display function keys. Other functions are available within these functions.

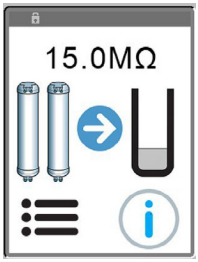


Reservoir is Filled

Menu

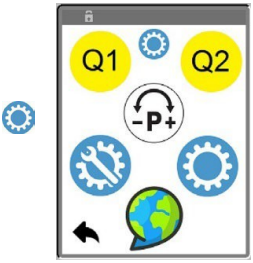


- Consumable Timer
- User Settings
- Replacement of Consumables
- Alarms
- Power On and Off



Reservoir is Filling

- Permeate Conductivity
- DI Water Quality
- Temperature
- Pump Pressure
- Software Version

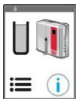
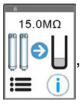


- Q1 — RO Water Quality Alarm Set Point
- Q2 — DI Water Quality Alarm Set Point
- -P+ — Feed Water Pressure Test and Operating Pressure Adjustment
- System Settings
  NOTE: Requires Technician password to access
- Language Selection

4.2 Change the Display Language

Follow this procedure.

4.2.1 If appears, touch

4.2.2 On  or 

, touch

4.2.3 On , touch

4.2.4 On

, touch

4.2.5 Touch

4.2.6 On , touch the flag representing the desired language.

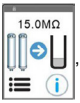
4.2.7 Touch

4.3 Set Display Backlight to Dim After Inactivity

When touched, the screen will return to full brightness. The dimness is set as a percentage of 100% brightness. The setting is made in increments of 10%, where 10% is the minimum setting.

Follow this procedure.

4.3.1 If appears, touch

4.3.2 On or 

, touch

4.3.3 On , touch

4.3.4 On

, touch

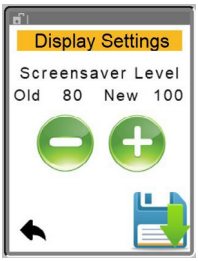
4.3.5 Enter password **1111**

4.3.6 On **Screensaver Time**, select or to dim the Display screen after **60 minutes** of inactivity or **Never**.

4.3.7 Touch

4.3.8 If the screen is to dim, on **Screensaver Level**, select and to set the percentage of the full brightness.

NOTE: New is the brightness percentage when the Display is active. **Old** is the current dimness setting during the time of inactivity. The **New** setting is changed to the desired dimness.



4.3.9 Touch

4.4 View Consumable Time in Service

Displays the number of hours a Consumable has been in use. Timer resets to **0 hr** when the consumable is installed.

4.4.1 On , touch

4.5 Alarm Descriptions

Below is a list of possible alarms. When an alarm condition is detected, an alarm screen appears similar to the screen below. The alarm screen will automatically appear from the Filling screen and the Idle screens.

Below are the possible alarms and their respective conditions.

Table 4. Alarms.

Alarm	Description
ALM30	Pump pressure is less than 3.5 bar for 30 seconds
ALM40	RO quality (µS) is greater than the set value (set point)
ALM41	DI Quality (MΩ) is less than the set value (set point)
ALM71	Pump pressure is greater than 7 bar for 5 seconds

To view alarm details and acknowledge the alarm,

4.5.1 On the alarm screen, select

4.5.2 Select to acknowledge the alarm.

NOTE: If there are additional alarms requiring acknowledgment, the main alarm screen will appear. If there are no more alarms, the screen that appeared before the alarm was displayed will appear.

4.6 Reset RO Quality Set Point (if applicable)

The RO Quality set point is set at the factory. Circumstances may require changing the setting.

IMPORTANT: Contact Avidity Science Technical Support before changing the setting.

Follow this procedure.

4.6.1 Touch

4.6.2 Touch

4.6.3 Touch

4.6.4 Touch + or - for the desired RO quality setting.

4.6.5 Touch

4.7 Reset DI Quality Set Point (if applicable)

The DI Quality set point is set at the factory. Circumstances may require changing the setting.

IMPORTANT: Contact Avidity Science Technical Support before changing the setting.

Follow this procedure.

4.7.1 Touch

4.7.2 Touch

4.7.3 Touch

4.7.4 Touch **+** or **-** for the desired DI quality setting.

4.7.5 Touch

5.0 Routine Maintenance

This section contains procedures for routine maintenance of the PurA-Q2 Water Purification System.

WARNING! Disconnect the main power before servicing any electrical components. Failure to do so can cause electrical shock resulting in personal injury.

WARNING! Electrocution. Never stand in water when handling electrical equipment. Water is a conductor of electricity. Standing in water while operating this equipment can cause electrical shock or electrocution resulting in severe personal injury.

WARNING! Equipment damage. do not open the enclosure unless you are trained in the operation and service of the electrical equipment. Failure to do so can result in equipment damage and personal injury.

Table 5 specifies the recommended service procedures and performance frequency.

Table 5. Recommended Service

Recommended Service	Parts Required	Frequency of Service
Preventive maintenance by trained SLS, Ltd Technical service personnel	As necessary. See section *Replacement Parts*	Every 12 months
Pretreatment/RO module replacement	See section *Replacement Parts*	Once a year
DI Cartridge replacement		No longer than six months. May be sooner depending on feed water quality and usage.
Ultraviolet (UV) Lamp replacement. **NOTE:** Applies to PurA-Q2 10UV and PurA-Q2 20UV models only.		Once a year
Tank Vent Filter replacement		Once a year

5.1 Replace Pretreatment/RO Module

The Pretreatment and RO module are combined in one cartridge. Once the Pretreatment/RO Module has been replaced it will have to be rinsed.

NOTE: **TC021** is the Pretreatment/RO Module for the PurA-Q2 10 Lph.
TC022 is the Pretreatment/RO Module for the PurA-Q2 20 Lph

CAUTION! De-pressurise the system before disconnecting the Pretreatment/RO module. Failure to do so can result in personal injury and equipment damage.

Follow this procedure.

5.1.1 Remove the left cover from the PurA-Q2 unit.

5.1.2 On the control display, press .

5.1.3 Press .

5.1.4 Select **TC021** or **TC022** according to the model installed.

5.1.5 Select **TC021** or **TC022** The pressure is relieved for 4 minutes.

5.1.6 When instructed to remove the Pretreatment/RO module, disconnect the **Blue** inlet tubing from the top of the module.

5.1.7 Disconnect the Red permeate and Black concentrate tubing from the module.

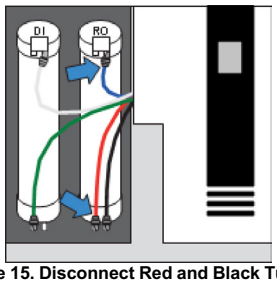


Figure 15. Disconnect Red and Black Tubing

5.1.8 Lift the module from the mounting slots on the back wall of the unit.

5.1.9 Touch .

5.1.10 When instructed to install the new Pretreatment/RO module, remove the new Pretreatment/RO module from its packaging.

5.1.11 Insert the hooks of the cartridge into the slots located on the right side.

5.1.12 Connect the colour tubing to the fitting with the corresponding colour label on the cartridge. See Figure 16.

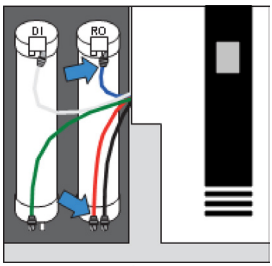


Figure 16. Pretreatment/RO Module Connections

5.1.13 Secure the tubes into the clamps near the connections.

5.1.14 Disconnect the **green** RO water outlet tube and the **white** reservoir inlet tube from the DI cartridge.

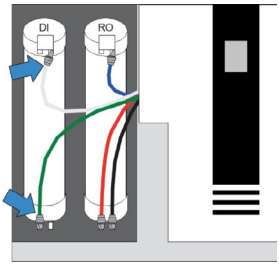


Figure 17. DI Cartridge Tube Connections

5.1.15 Connect one end of the bypass tubing to the open end of the **green** RO water outlet tube and the open end of the **white** reservoir inlet tube as shown in Figure 18. Use the provided elbow fittings.

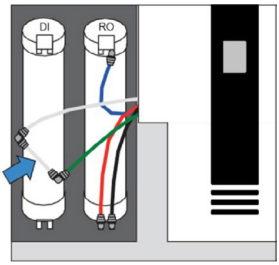


Figure 18. Bypass Tubing Connected

5.1.16 Touch . The rinsing of the new module begins. A timer counts down the rinse operation, in seconds, to completion.

5.1.17 When a message appears indicating rinsing is complete and to discard the tank contents, touch .

5.1.18 Empty the water from the storage tank.

5.1.19 Disconnect the bypass tube and reconnect the green and white tubes to the corresponding colour connection on the DI cartridge. See Figure 17.

5.1.20 Secure the left front cover of the PurA-Q2 unit.

5.1.21 Dispose of the used Pretreatment/RO Module according to local environmental disposition requirements.

5.2 Replace DI Cartridge

CAUTION! De-pressurise the system before disconnecting the DI cartridge. Failure to do so can result in personal injury and equipment damage.

Follow this procedure.

5.2.1 Remove the left cover from the PurA-Q2 unit.

5.2.2 On the control display, press

5.2.3 Press

5.2.4 Select **TC023** for the DI cartridge.

5.2.5 Select **TC023**. The pressure is relieved for 4 minutes.

5.2.6 When instructed to **Remove the old TC023**, disconnect the green tubing from the bottom of the cartridge.

5.2.7 Disconnect the white tubing from the top of the cartridge.

5.2.8 Lift the cartridge from the mounting slots on the back wall of the unit.

5.2.9 Remove the DI cartridge from its packaging.

5.2.10 Insert the hooks of the new DI cartridge into the open slots.

5.2.11 Connect the green and white tubes to the connector with corresponding colour label on the cartridge.

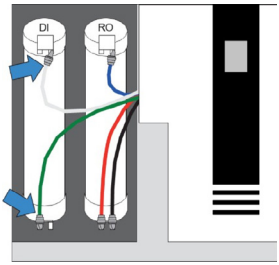


Figure 19. DI cartridge tube connections.

5.2.12 Secure the tubes into the clamps near the connections.

5.2.13 Touch

5.2.14 When instructed to install TC023, touch . The cartridge will rinse for 10 minutes.

5.2.15 When the rinsing complete, touch . The concentrate water will go to drain.

5.2.16 Empty the reservoir to be sure the next batch of water will be at optimum quality.

5.2.17 Replace and secure the left front cover of the PurA-Q2 unit.

5.2.18 Dispose of the used DI Cartridge according to local environmental disposition requirements.

5.3 Replace Ultraviolet (UV) Lamp (if applicable)

The UV lamp socket is located behind the right panel above the tap dispenser. The lamp is located in the tank. The water level must be lowered below the UV lamp for access.

WARNING! Disconnect the main power before servicing any electrical components. Failure to do so can cause electrical shock resulting in personal injury.

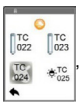
You will need this equipment.

- 4 mm Allen Head wrench
- UV lamp (see *Replacement Parts* for part number)
  - Latex, or similar-material Gloves

Follow this procedure.

5.3.1 On the control display, touch

5.3.2 On , touch

5.3.3 On  , select

5.3.4 On , select

5.3.5 When appears, disconnect power to the unit.

5.3.6 Remove the left panel from the unit.

5.3.7 Remove the right panel from the unit.

IMPORTANT: When removing the right panel, do not to pull the cables from the display circuit board.

5.3.8 Let the concentrate go to drain.

5.3.9 Drain the reservoir to less than 50 percent.

5.3.10 Unplug the UV power cable from the UV power socket shown in Figure 20.

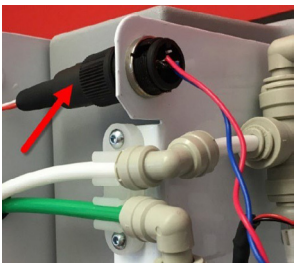


Figure 20. UV Power Cable Connection

5.3.11 Unscrew the cap from the top of the reservoir.

5.3.12 While holding the UV lamp with a gloved hand inside the reservoir, unscrew the backing nut from the outside of the reservoir. See Figure 21.

CAUTION! Equipment damage. Do not touch the glass surface of the UV lamp with a bare hand. Wear latex or similar-material gloves while removing the lamp. Failure to do so will damage the lamp.

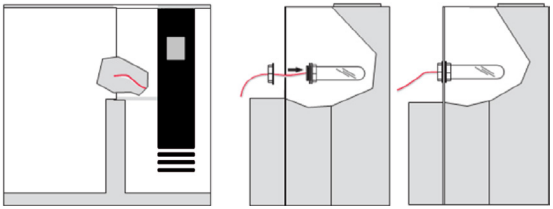


Figure 21. Replacing the UV Lamp

5.3.13 Pull the lamp from the hole and disconnect the cable plug.

5.3.14 Pull the cable out of the tank through the side hole.

5.3.15 Remove the lamp through the top of the reservoir. Place the lamp in a safe location.

5.3.16 With a gloved hand, remove a new lamp from its packaging.

5.3.17 Place the new UV lamp into the tank through the top of the reservoir.

5.3.18 Bring the cable plug end through the hole on the side of the reservoir and connect the plug to the new UV lamp.

5.3.19 Place the plug end of the lamp through the hole from the inside of the reservoir and press the gasket seal against the inside of the tank wall.

5.3.20 Holding the lamp in place, from the outside, secure the backing nut to the threaded end of the lamp. Hand-tighten only.

5.3.21 Connect the other end of the UV power cable to the UV power socket shown in Figure 20.

5.3.22 Reconnect power to the unit.

5.3.23 On , touch to start the machine.

5.3.24 When the water level in the reservoir rises above the UV lamp, check for leaks at the UV lamp connection.

- If a leak is NOT present, skip to Step 5.3.32
- If a leak IS present, continue to Step 5.3.25

5.3.25 Touch to stop the machine. The controller displays

5.3.26 Disconnect the UV power cable from the UV power socket shown in Figure 20.

5.3.27 Drain the reservoir until the water level is below the UV lamp socket.

5.3.28 While holding the lamp from inside the tank, loosen the backing nut on the outside the tank.

5.3.29 Re-seat the cable plug gasket and secure the plug with the backing nut.

5.3.30 Connect the UV power cable to the UV power socket shown in Figure 20.

5.3.31 Repeat Steps 5.3.22 through 5.3.24.

5.3.32 Secure the cap to the top of the reservoir.

5.3.33 Place and secure the right cover to the unit.

5.3.34 Place and secure the left cover to the unit.

5.3.35 Dispose of the used UV lamp according to local environmental disposition requirements.

5.4 Replace Tank Vent Filter

The tank vent filter is located in a compartment on the left side of the back wall of the unit. The filter is located behind the DI cartridge if installed.

Figure 22. Tank Vent Filter

Follow this procedure.

5.4.1 Remove the left cover from the PurA-Q2 unit.

5.4.2 On the control display, press .

5.4.3 Press .

5.4.4 Touch **TC024**.

5.4.5 Touch **TC024**. Wait for the pressure to be released which will take approximately 4 minutes.

5.4.6 When **Remove TC023** appears, carefully lift the DI Cartridge out of the way to expose the tank vent filter.

5.4.7 Touch

5.4.8 When instructed to remove the tank vent filter, pull the tank vent filter from the silicone tube.

5.4.9 Touch

5.4.10 When instructed to **Install new TC024**, remove a new tank vent filter from its packaging.

5.4.11 Insert the barbed fitting of the tank vent filter into the silicone tube and place it in the slot.

5.4.12 At **Install new TC024**, touch

5.4.13 When instructed to **Refit TC023**, carefully mount the DI cartridge back into its mounting slots. Be sure all tubing and fittings are secure.

5.4.14 Touch . The DI cartridge will rinse for 10 minutes.

5.4.15 While the DI cartridge is rinsing, replace the left cover over the unit

5.4.16 When **Change Complete** appears, touch

5.4.17 Dispose of the used Tank Filter according to local environmental disposition requirements.

5.5 Recording Monthly Operating Data

This section describes the parameters that are to be monitored monthly and recorded on the *PurA-Q2 Water Purification System Monthly Log Sheet* located at the end of this chapter. Copy the log sheet as necessary and post it near the system.

IMPORTANT: To view the parameter readings, the system must be operating.

Permeate (Conductivity)

The conductivity of water that has successfully passed through the membrane and before de-ionisation. Permeate water conductivity is measured in micro-Siemens per centimeter (µS/cm). To view the permeate water conductivity, press (i) from the power display.

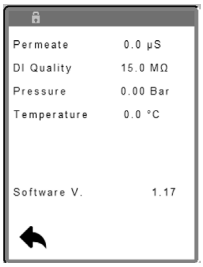


Figure 23. Information Screen

DI Quality

DI Quality is the quality of the water after passing through the De-ionisation cartridge. To view the DI water quality, press (i) from the power display.

Pressure (Operating)

The pressure of the feed water after it exits the pump and before it enters the PurA-Q2. To view the operating water pressure, press (i) from the power display.

Temperature (Operating)

The temperature of the feed water after it exits the pump and before it enters the PurA-Q2. A rapid increase in operating water temperature may damage the membrane. To view the operating water temperature, press (i) from the power display.

Feed Water Conductivity

Feed water conductivity is the conductivity of the facility supply water. The reading can be checked by using a hand-held conductivity meter.

Concentrate Water Conductivity

Conductivity of the concentrate water can be determined by drawing a sample of the water before it goes to drain and measuring using a hand-held conductivity meter.

Percent Rejection

A percent rejection setting of 95 percent is used to rate the performance of a reverse osmosis water machine. A noticeable decrease in the percent of rejection is an indication that a membrane should be replaced. Membrane fouling and/or scaling, hydraulic plugging, membrane hydrolysis (degradation), and mechanical failures can plug up the membrane and the percent of rejection can increase.

Membrane fouling and/or scaling is the presence of organic or biological foulants and/or mineral scale buildup directly on the membrane surface.

Hydraulic plugging is the presence of material (foulant, scale or particles) that obstructs the flow-channel spacing between the membrane leaves of a spiral wound membrane.

Table 6 lists some of the issues that can be identified by a change in the percent rejection rate. In addition to these issues, a drop in the percent of rejection may be a sign of an improper pH level, a sign the percent recovery rate is set too high, or a sign the composition of the feed water has changed.

Table 6. The Effect of Various Problems on Percent Rejection.

Problem	Percent of Rejection	Rate of Change
Biofouling	initial increase, decrease after cleaning	gradual
Chemical scale	decrease, especially in last membrane	rapid
Colloidal fouling	initial slight decrease, much greater later	gradual
Aluminum sulfate scale	little to no change	gradual
Leaking o-rings	decrease	immediate
RO unit pump pressure too low	decrease	immediate

Below are the formulas required to calculate the Percent Rejection.

$$AverageConductivity = \frac{FeedWaterConductivity + ConcentrateConductivity}{2}$$

$$Percent\ rejection = \frac{AverageConductivity - PermeateConductivity}{AverageConductivity} \quad x\ 100$$

NOTE: Operating data descriptions are located in Section 5.5 *Recording Monthly Operating Data*.

PurA-Q2 Operating Data	Normal	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Permeate Conductivity µS/cm **Touch** ⓘ	0 to 80							
DI Quality **(Type 2 water only)** **MΩ/cm** **Touch** ⓘ	1 to 15							
Operating Temperature[a] C [°F] **Touch** ⓘ	5° to 35° [45° to 90°]							
Operating Pressure bar [psi] **Touch** ⓘ	5.5 to 6.0 [14.5 to 87]							
Feed Water Conductivity µS/cm *Obtain from hand-held meter using a sample drawn from the feed water sample valve.*	Less than 1400							
Percent Rejection *See* Percent Rejection in Section 5.5 for more information.	Greater than 95							

a. For every one degree below 15° C [5° F], expect a 3 percent reduction in the permeate production.

Appendix 1 – Unit Specification

Environmental:

Intended location	Dry / Inside
Altitude (ASL)	2000m max
Ambient temperature	2°C - 40°C
Relative humidity	0% - 80% (Non condensing)
Pollution degree	II

Electrical (Power supply unit Ratings):

Input Voltage	100Vac – 230Vac ±10%
Input Frequency	50hz – 60hz ±5%
Input Current	1.5A
Output Power	65W
Output Voltage	24Vdc
Output current	2.7A
Output Ripple Voltage	<300 mV pk-pk

Electrical:

Input Voltage	24Vdc
Power usage	35 VA

Water:

Feedwater Temperature	5°C - 40°C (45°F to 104°F)
Feedwater Pressure	0.6 - 6 bar (8.7 – 87 psi)
Feedwater TDS	1000
Feedwater Silt Density index (SDI)	<3
Feedwater Conductivity (As $CaCo_3$)	<2000 µs/cm
Feedwater flow rate	60 l/h (Minimum)
Feedwater pH	3 - 9
Feedwater Free Chlorine	<0.1 mg/l
Feedwater Carbon Dioxide (CO_2)	15 mg/l (Maximum)
Feedwater Silica	15 mg/l (Maximum)
Feedwater Iron	<0.1 mg/l
Feedwater Manganese	<0.05 mg/l
Product Water flow Rate	10 / 20 l/h (Type II / Type III water)
Product Resistivity @ 25°C	1-15 MΩ/cm (Type II Model)
Membrane Rejection rate for Bacteria	>98%
Membrane Rejection rate for particles	>98%

General:

Sound level	<55db
Height / Width / Depth	495 mm x 480 mm x 330 mm
Dry weight	20 Kg
Operating weight	55 kg
Internal tank capacity	35 litre
IP rating	IP 20

Appendix 2 – Replacement Parts

Below are the replacement parts for the PurA-Q2 Water Purification Systems.

CAUTION! Use only original factory-supplied replacement parts. Failure to do so can result in equipment damage and will void product warranty.

Description	Model	Part Number	SLS Code
Combination Pretreatment/RO module (10 lph)	PurA-Q2 10 PurA-Q2 10 UV	TC021 / TC068	WAT2437
Combination Pretreatment/RO module (20 lph)	PurA-Q2 20 PurA-Q2 20 UV	TC022 / TC069	WAT2436
Ultraviolet (UV) Lamp	PurA-Q210 UV PurA-Q2 20 UV	TC025 / TC072	WAT2442
Flow Restrictor (green)	PurA-Q2 10 PurA-Q2 10 UV	REST00002	
Flow Restrictor (blue)	PurA-Q2 20 PurA-Q2 20 UV	REST00003	WAT2528
DI Cartridge	All	TC023 / TC070	WAT2438
Tank Air Vent		TC024 / TC071	WAT2440
Power Supply Unit		POWE00002	POWE00002
Pump Assembly		PUMP00006	WAT2524
Pressure and Temperature Sensor w/ T-fitting		SENS00013	
Wire Harness		LOOM00010	
Tank Level Sensor		SENS00011	
DI Quality Sensor		SENS00003	WAT2538
Check Valve		VALV00002	WAT2552
Inlet Solenoid Valve		VALV00004	WAT2556
Operating Pressure Control Valve		VALV00005	WAT2558
Permeate Water Conductivity Sensor		SENS00005	WAT2540
Non-Return/Over Flow Valve and Tubing		SECT00075	
Strainer		STRA00001	WAT2548

Annual Consumables Kit	PurA-Q2 10	TC074	WAT1136
Annual Consumables Kit	PurA-Q2 10 UV	TC075	WAT1138
Annual Consumables Kit	PurA-Q2 20	TC078	WAT1144
Annual Consumables Kit	PurA-Q2 20 UV	TC079	WAT1146

Declaration of Conformity

CE

AVIDITY™
SCIENCE

EC Declaration of Conformity

Manufacturer: *Avidity Science LTD*
Address: *Unit 1A Drakes Park, Long Crendon Ind Estate, Long Crendon, Buckinghamshire, HP18 9BA, United Kingdom*

Authorised Representative: *ATS Automation Tooling Systems GmbH*
Address: *ATS Automation Tooling Systems GmbH, Steinbeisstrasse 8, 73660 Urbach, Germany, Email: europeanservicecenter@atsautomation.com, Telephone: +49(0)15202784899*

This declaration of conformity is issued under the sole responsibility of the manufacturer, Avidity Science LTD:

Product Description:
Laboratory Water Purification Equipment

Product:
PurA-Q2 10, PurA-Q2 10 UV, PurA-Q2 20, PurA-Q2 20 UV

Product Identification:
See serial plate on device

Are compliant with all provisions with the following EC Directives
European Directive 2014/30/EU and associated amendments with regards to Electromagnetic Compatibility
European Directive 2014/35/EU and associated amendments with regards to Low Voltage Safety
European Directive 2002/95/EC - Restriction of hazardous substances (RoHS)
European Directive 94/62/EC - Packaging and packaging waste directive
European Directive 2012/19/EU - Waste electrical and electronic equipment (WEEE)

This declaration is based upon designing the product according to these standards:
EN 61010-1:2010/A1:2019 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory use.
EN IEC 61326-1:2021 EMC requirements for Electrical Equipment for Measurement, Control and Laboratory use.

H Mason

Holly Mason,
Managing Director - EMEA
For and on behalf of Avidity Science
Unit 1A Drakes Park, Long Crendon Ind Estate, Buckinghamshire, HP18 9BA
United Kingdom

12th November 2024

LAB PRO

Operation Manual
PurA-Q2
Water Purification Systems

Brought to you by

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