

Super-Q® Plus

Reagent-Grade Water Purification System



UP TO 10 LITERS PER MINUTE OF ULTRAPURE WATER ON DEMAND AT THE POINT-OF-USE

Ultrapure Quality

The Super-Q® Plus System is designed to provide the "final polish" to water which has been pretreated by reverse osmosis, distillation or deionization. Super-Q® Plus systems consistently produce up to 12 L/min of ultrapure water quality which exceeds Type 1 ASTM/CAP/NCCLS specifications.

• TP Cartridges Cartridges

Cartridges used in the system are of a thermoplastically welded construction. This avoids the use of glues and solvents which give rise to high T.O.C. (organics) levels in product water.

• Purification Media

Merck Millipore uses strict testing regimes to select resins and other purification media. Deionization resin is selected not only for high ion-exchange capacity and rapid rinse-up, but also for low extractables, both in terms of T.O.C. and particulate levels (resin fines).

• Continuous Development

Our manufacturing facilities utilize the latest developments in HPLC, Ion Chromatography and T.O.C. analysis to continuously make improvements in materials of construction and manufacturing processes.

• Automatic Recirculation

During periods when water is not required, the system can be set on "Standby". The integral pump automatically recirculates the water for 5 minutes every 1 hour 30 minutes to maintain high quality between uses.

Specifications

Flow Rate: 10-12 L/min; (2.6 to 3.0 gpm)

Product Water Quality:

Resistivity: 18 Ω .cm at 25 °C

(built in temperature compensated resistivity meter)

Organics (ppb): < 20 at T.O.C

(With Organex-Q™ TP cartridge and reverse osmosis feed water)

Bacteria (cfu/ml): < 10 (with the Durapore® TP cartridge)

T.D.S. (ppm): < 0.03

Silicates (ppm): < 0.01

Heavy metals (ppm): < 0.01

Feed Water Parameters

Temperature range: 5-40 °C

Pressure: 1 bar max., (15 psi),
0.03 bar min. (0.5 psi)

Operating Pressure: 5 bar max., (75 psi)

Plumbing Connections

Inlet/Outlet: 1/2" 'Fast+Tite' compression fittings to take 1/2" rigid tubing

Dimensions

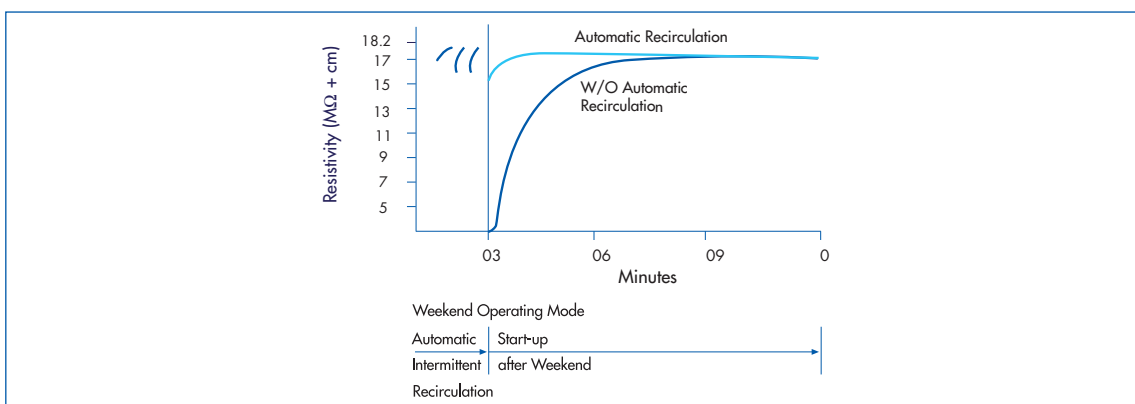
Width: 1150 mm, 45.25 inches

Height: 800 mm, 31.5 inches

Depth (Front-Back): 220 mm, 8.75 inches

Shipping Weight: 30 kg, 66 lbs.

Operating Weight (system filled with water): 63 kg, 40 lbs.



Comparison of resistivity recovery after weekend or overnight.

Applications

The Super-Q® Plus systems feature a modular design allowing cartridge selection to meet a variety of high volume Type 1 Ultrapure water applications, such as:

- Microbiological buffer and media preparation
- Reagent preparation
- Distribution loop polishing
- Electronics point-of-use rinsing

Super-Q® Plus Systems, Milli-RX™ Systems, and SDS Storage and Distribution Systems are offered as custom-engineered total water system solutions.

Cartridge Selection Guide

Cartridge	Function
Milligard® TP Cartridge	Prefiltration. High retention membrane filter cartridge removes high particle loads from feed water.
Super-C™ Cartridge	Organics removal. Activated carbon cartridge for highly efficient removal of organics using unique dry-packed carbon.
Ion-Ex® TP Cartridge	Inorganics removal. Mixed bed nuclear grade ion exchange cartridge for highly efficient removal of inorganic ions.
Organex-Q® TP Cartridge	Trace organic removal. Unique mixture of ion-exchanged resins and synthetic activated carbon for removal of trace organics.
Durapore® TP Cartridge	Removal of microorganisms and particles above 0.22 µm. Durapore membrane cartridge for the removal of all material larger than pore size of 0.22 µm.

Ordering Information

Description	Voltage	Qty/Pk	Catalogue No.
Super-Q® Plus Water Purification (4-bowl, with pump)	120 V/60 Hz	1	ZFSQ 115 P4
	230 V/50 Hz		ZFSQ 240 P4
Super-Q® Plus Water Purification (3-bowl, no pump)	120 V/60 Hz	1	ZFSQ 115 03
	230 V/50 Hz		ZFSQ 240 03
Super-Q® Plus Water Purification (4-bowl, no pump)	120 V/60 Hz	1	ZFSQ 115 04
	230 V/50 Hz		ZFSQ 240 04

Consumables	Qty/Pk	Catalogue No.
Milligard® Cartridge Filter, 20"	3	CWSC 02S 03
Super-C™ Carbon Cartridge	3	CDFC 022 03
Ion-Ex® Cartridge	2	CPMB 022 02
Organex-Q™ Cartridge	1	CPEX 022 01
Durapore® TPE Cartridge, 0.22 µm	1	CVDI 02T PE

Storage Tanks and Accessories

Storage with a Difference



Guarantee the purity of your stored water

Pure water requires a storage system to prevent the degradation of your water quality. Merck Millipore's 30-, 60-, and 100-liter polyethylene (PE) storage tanks are designed to maintain consistent purity of stored water and provide effective protection against airborne contaminants.*

Prevent contamination

Water stagnancy can cause bacterial proliferation. Our optimal Automatic Sanitization Module (ASM) provides the ideal solution for the prevention of bacterial growth and biofilm formation on the inner surface of the storage tank. In addition, our advanced vent filter protects pure water from airborne contamination.

Distribute your stored water where it is needed

To provide pure water for use with all of their applications, laboratories need to be able to distribute stored water from their water purification system storage tanks.

- For distribution of **non-pressurized pure water**, a valve is conveniently located on the front of the Merck Millipore storage tanks.
- For convenient **distribution of pressurized pure water** from the storage tank, an E-POD® point-of-delivery dispenser can be connected to an Elix® Advantage or Milli-Q® Integral water purification system.
- For **automatic feed** of pure water, distribution valves on the base of the storage tank allow connection to other laboratory equipment such as glassware washing machines. Distribution pumps are also available if needed.

** A complete line of storage tanks is available, ranging in capacity from a few liters to several hundred liters. Your nearest Merck Millipore office will be able to guide you in the choice of the tank best suited to your needs.*

Optimized pure water storage

The main concern when storing pure water is degradation of water purity over time. Only a strict choice of storage tank materials, associated with a careful design and appropriate protection against airborne contaminants, can ensure consistent water quality during storage.

Innovative storage tank design

Merck Millipore 30-, 60-, and 100-liter polyethylene storage tanks incorporate the latest technical developments and advanced features for stored water of consistent purity.

All tanks have a small footprint and are designed for wall-mounting if required. Underbench installation is also possible for some models.

Unique features

- Polyethylene selected for its minimum release of extractables
- Opaque walls block sunlight to prevent algae development
- Smooth inner surface prevents biofilm formation
- Cylindrical shape minimizes surface area in contact with water
- Conical bottom allows complete draining for cleaning and rinsing
- Pure water smoothly fed in at the bottom of the tank prevents absorption of carbon dioxide
- Front valve enables manual dispense of pure water
- Distribution valves permit connection to other laboratory equipment
- Hermetically sealed lid blocks air from entering the tank
- Large top opening allows manual cleaning during sanitization procedure
- Compact space-saving design

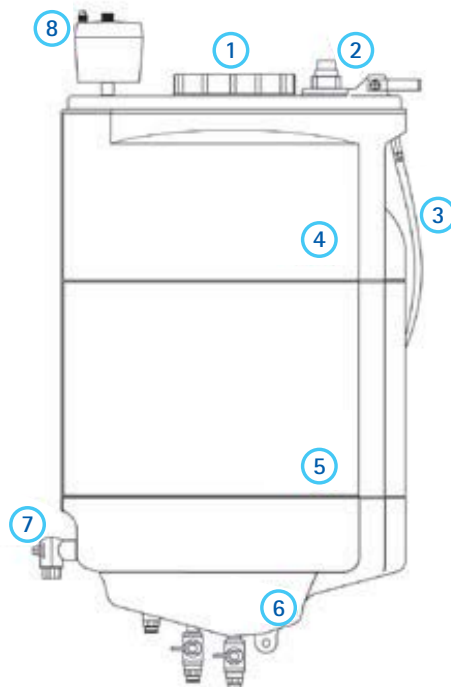
Fail-safe protection

- Sensor rod float switch system for automatic storage tank refill and indication of water level (% full)
- Overflow connected to the drain, in the unlikely event of a water system malfunction
- Direct display of stored water level on water purification system units
- Water sensor

Storage tanks designed for efficiency

Designed for efficiency

1. Hermetically sealed lid
2. Sensor rod float switch
3. Sanitary overflow
4. Blow-molded storage tank
5. Cylindrical shape
6. Conical bottom with distribution valves
7. Front dispensing valve
8. Advanced vent filter



For details of the tests performed during the storage tank development process, please request the publication "R&D Notebook 1: Optimizing the storage of purified water for laboratory applications" (Ref. No.: RDO01EN00) from your local Merck Millipore representative.

Storage Tank Accessories

In order to help ensure optimum purity and distribution of your stored water, Merck Millipore offers a range of accessories and connections for your storage tank, including the following items:

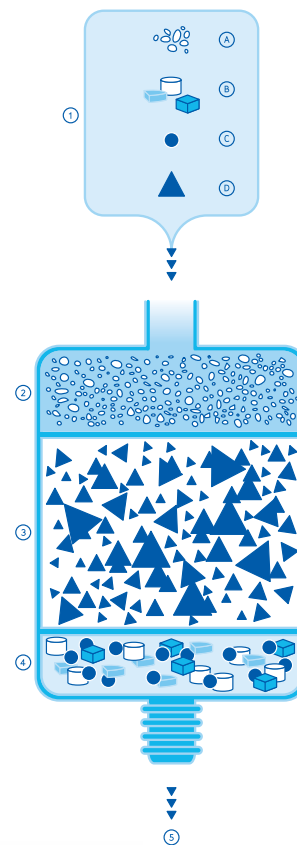
- Advanced Vent Filter
- Automatic Sanitization Module
- Air Gap Device
- E-POD® pure water remote dispenser
- Washer Distribution Kit
- Water Sensor
- Lab Close Kit

Advanced vent filter: important protection against airborne contaminants

Air is contaminated by carbon dioxide, particles, microorganisms, and volatile organic compounds that come mainly from the laboratory atmosphere. To protect pure water from all these contaminants, Merck Millipore has developed an advanced storage tank vent filter that includes:

- Activated carbon to adsorb volatile organics (including lab solvents such as acetone, chloroform, and methanol)
- A soda-lime bed to remove CO₂
- A Durapore® hydrophobic membrane for particle and bacteria retention

This advanced vent filter is recommended for the protection of high-resistivity water, such as Elix® product water, during storage. To protect RiOs™ reverse osmosis-quality water, a Durapore® 0.45 µm hydrophobic membrane vent filter is also available.



Advanced storage tank vent filter

1. Airborne Contaminants
 - A. Volatile Organics
 - B. Particles
 - C. Bacteria
 - D. CO₂
2. Volatile Organics absorption
3. CO₂ removal
4. Particle and Bacterial retention
5. Storage tank inlet
Purified air enters the storage tank

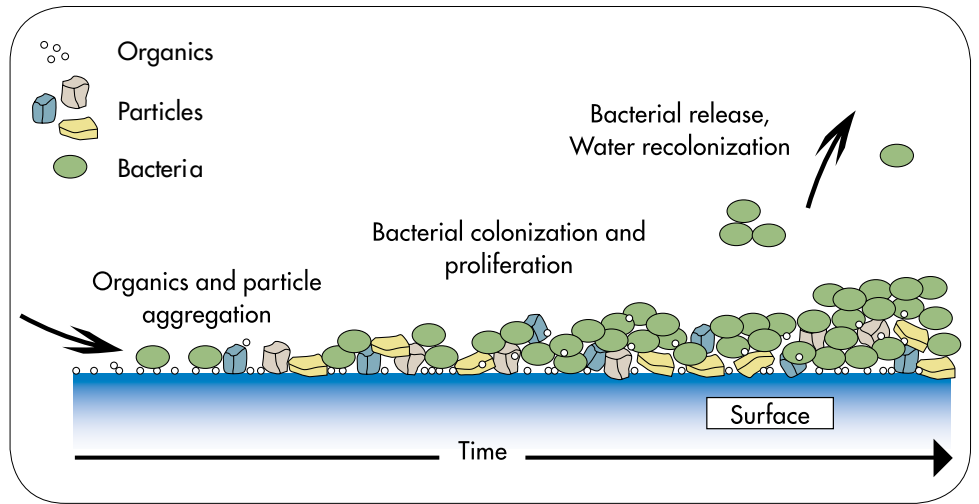


Complete Merck Millipore water purification chain with the ASM and water sensor

Automatic Sanitization Module (ASM):
say "No!" to bacterial proliferation

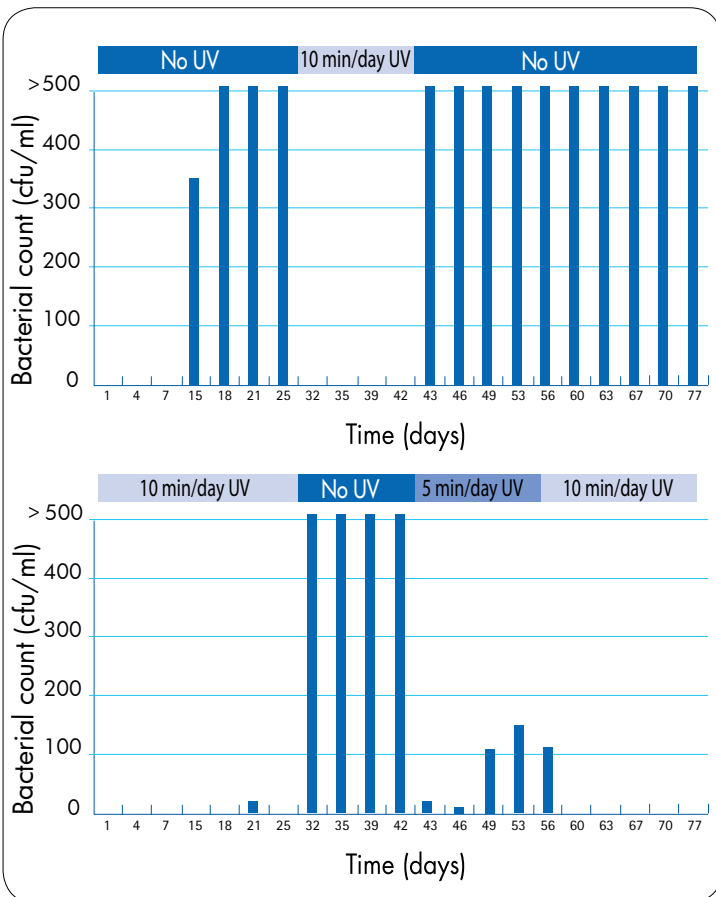
Maintaining high purity water with low bacteria levels during storage is critical. If left to proliferate, trace levels of microorganisms present in pure water compromise water purity. This bacterial contamination is responsible for the formation of a biofilm – an accumulation of organic material made up of active and dead organisms, on the inner walls of the storage tank.

Even though chemical sanitization and mechanical scrubbing may be periodically performed, this biofilm is difficult to remove and is a frequent source of recontamination in stored water.



Biofilm formation over time

Merck Millipore's ASM is designed to prevent the growth and proliferation of bacteria and the resulting biofilm on the inner surface of Merck Millipore PE storage tanks. The ASM makes use of the germicidal properties of an ultraviolet (UV) light at 254 nm, which is fitted inside the tank.



Germicidal effectiveness of the UV lamp

The ASM provides full flexibility for guaranteed results

- 254 nm UV lamp; selected for its germicidal effectiveness
- Pre-programmed intervals of 10-min / day automatic UV illumination for optimized efficiency
- Additional programmable and manual UV exposure possible to meet critical application requirements
- Up to 45 min /day of UV exposure for total flexibility
- Program daily time settings, UV cycles, and UV lamp operation displayed on the Millitrack® e-Solution dashboard
- UV lamp exchange alarm for easy maintenance
- Compact design allowing installation on top of the storage tank

10 minutes of daily UV exposure is sufficient

During development of the ASM, the UV lamp exposure cycles were optimized by examining the resulting bacterial reduction after exposure.

Two 60-liter storage tanks were fed by an intentionally contaminated reverse osmosis water purification system. The tanks were then emptied and refilled each day and alternately equipped with an ASM into which variable illumination times were programmed.

As shown in the graphs, 10 minutes per day of UV exposure were enough to make the tanks return to their original low bacterial levels.

Air gap device for protection against bacteriological contamination

Water purification systems and storage tanks sometimes require a connection to the drain.

Drains are typically dirty environments contaminated by microorganisms, and in particular, bacteria. Therefore, when the outlet of the water system reject tubing is pushed into the drain, there is a risk that bacteria could contaminate the inside of the reject tubing, and then progressively move to the water system.

One way to prevent this from occurring is to install an air gap device on the reject tubing. This allows the reject water flow to move through the tubing without touching the inside of the contaminated drain environment. Installing an air gap device is an easy and safe way to prevent the development of bacteria above the air gap level.



Air Gap Device

E-POD® pure water remote dispenser: pure water where you need it

The E-POD® Elix® water point-of-delivery unit can be connected to an Elix® Advantage pure water system or Milli-Q® Integral pure and ultrapure water system to dispense pure water wherever it is needed in the lab.

Advantages of the E-POD® remote dispenser include:

- Improved bacterial water quality (less than 0.1 cfu/mL, with final filter)
- Versatility enabling use for multiple applications or users when a Millipak® or Biopak® polisher is fitted to the dispenser outlet

- Volumetric dispensing to save time
- Ergonomic design and ease of use
- Flexibility, with installation of up to three E-POD® units per system
- Information at a glance thanks to the color backlit screen on the dispenser base
- Space-saving small footprint



E-POD® pure water remote dispenser



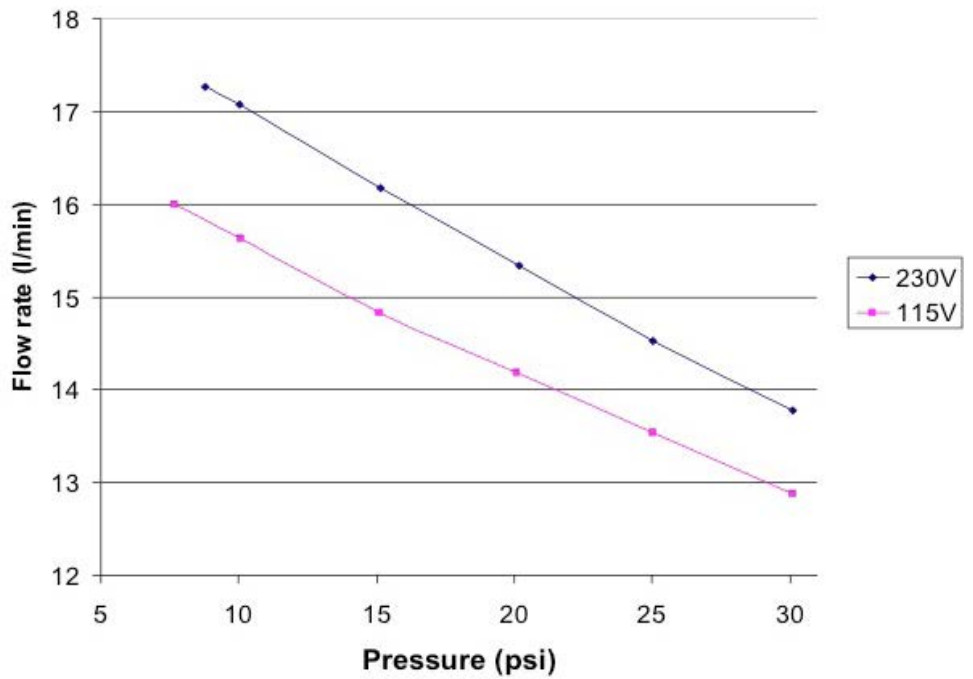
Distribution pumps to meet increased demands

Washer Distribution Kit

A key use of pure water is as feed to laboratory appliances such as glassware washers, autoclaves, sterilizers and weathering devices.

The Merck Millipore Washer Distribution Kit provides cost-effective and convenient distribution of pure water to common laboratory appliances, with flow rates between 12.5 – 13.5 L/min (at 2 bar or 30 psi, depending on voltage).

Installation of the small-footprint kit is fast, easy, and universal, with bench, underbench, or wall-mounted options. Users profit from a silent, automatic supply of pure water when required.



The graph shows characteristics of Merck Millipore distribution pumps. Pumps provide a long service lifetime and quiet operation.



Washer Distribution Kit

Water sensor for control over feed water supply

If there is water on the floor, the water sensor enables shutdown of the feed water supply in order to prevent a lab flood.

Lab Close Kit keeps your system in top condition when you're away

When your facility is closed for an extended time – such as vacation periods – the Lab Close Kit will avoid water purification system standstill during these long periods. The Lab Close Kit intelligently optimizes the consumption of water and electricity by your system, preventing the negative effects of nonuse, such as bacteria buildup. Your water purification system remains in top condition, ready for immediate use upon your return.

Specifications & Ordering Information

Specifications for Polyethylene Storage Tanks

There are several different storage tank sizes available in this range:

30-liter Storage Tank*

Diameter	380 mm (14.82 in.)
Height	600 mm (23.4 in.)
Maximum Usable Capacity	25 L
Weight (full)	30 kg (66.14 lb)

60-liter Storage Tank

Diameter	380 mm (14.82 in.)
Height	840 mm (32.76 in.)
Maximum Usable Capacity	54 L
Weight (full)	59 kg (130.07 lb)

100-liter Storage Tank*

Diameter	380 mm (14.82 in.)
Height	1255 mm (48.95 in.)
Maximum Usable Capacity	91 L
Weight (full)	98.5 kg (217.15 lb)

* For 30-liter and 100-liter storage tanks, underbench models are also available.

Ordering Information

Description	Catalogue No.
Polyethylene Storage Tanks	
30-liter PE tank	TANKPE030
30-liter PE underbench tank	TANKBI030
60-liter PE tank	TANKPE060
100-liter PE tank	TANKPE100
100-liter PE underbench tank	ZBITANK01

Description	Catalogue No.
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Accessories

Advanced Vent Filter

Advanced vent filter (for Elix® water purification systems)	TANKMPK01
Standard vent filter (for RiOs™ water purification systems)	TANKMPK02

Automatic Sanitization Module

Milli-Q® Integral; Milli-Q® Direct, Elix® Advantage, and Elix® Reference water purification systems	TANKASMIN
ASM for RiOs™ / Elix® / AFS® Essential water purification systems	TANKASMES

Air Gap Device

Air Gap Device	AIRGAP001
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E-POD® Pure Water Remote Dispenser

E-POD® pure water dispenser	ZRXSP0D01
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Washer Distribution Kit

Washer Distribution Kit (Left) 230 V	ZWDK5L100
Washer Distribution Kit (Left) 115 V	ZWDK6L100
Washer Distribution Kit (Right) 230 V	ZWDK5R100
Washer Distribution Kit (Right) 115 V	ZWDK6R100

Water Sensor

Connection from the system	ZFWATDET4
Connection from the tap water source	ZFWATDET1 (120 V) or ZFWATDET2 (230 V)
Water sensor with cable	TANKLK002

Lab Close Kit

Milli-Q® Integral; Elix® Advantage; Elix® Reference; and Milli-Q® Direct water purification systems	LABCLOSE1
RiOs™ / Elix® / AFS® Essential water purification systems	Included, setting to be activated



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Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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