

# AFS<sup>®</sup> 8 / 16 / 24

## Water Purification Systems

Cost-effective solutions for clinical analyzers  
with pure water needs up to 480 L daily



# Cost-effective solutions for clinical analyzers with pure water needs up to 480 liters daily

| Your clinical water purification needs                                                                                                      | Our solution: the AFS® range of clinical water purification systems                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A reliable and constant source of clinical laboratory reagent water (CLRW) that complies with the CLSI® guideline*                          | In AFS® systems, complementary water purification techniques, including complete pretreatment, advanced reverse osmosis (RO), exposure to a bactericidal UV lamp, and final 0.22 µm filtration, provide <b>consistent water quality</b> meeting CLRW standards.                                                        |
| A cost-effective solution to your clinical water purification needs                                                                         | Optimized lifetimes for pretreatment and polishing packs, as well as low feed water use make AFS® systems a <b>cost-effective choice</b> .                                                                                                                                                                             |
| A water purification system that fulfills accreditation needs (e.g., CAP <sup>SM</sup> 15189 accreditation to the ISO® 15189:2007 standard) | AFS® systems have full monitoring and automatic water quality archiving capabilities. Up to six months of information can be stored for reliable <b>traceability</b> , and <b>Millitrack® software</b> provides easy access to data.                                                                                   |
| A robust water purification system requiring little maintenance                                                                             | An intuitive icon-based system display facilitates maintenance, and a new ergonomic pack locking system makes pack changes easier than ever. Reduced maintenance saves time and also means <b>less analyzer downtime</b> .                                                                                             |
| Professional, rapid service                                                                                                                 | AFS® systems are backed by a <b>responsive, professional service organization</b> providing <b>rapid intervention</b> . Watercare Pact service plans offer a range of support, including preventive maintenance visits.                                                                                                |
| An adaptable configuration that makes optimal use of lab space                                                                              | AFS® systems have a <b>small footprint</b> , allowing installation wherever it's convenient: on the wall, on or under the bench, or on a cart. A wide range of reservoirs handles a <b>variety of water storage needs</b> . Add <b>production capacity</b> to your AFS® system by installing a RiOs™ system in duplex. |
| Confidence in your water purification system supplier                                                                                       | As one of the top three R&D investors in the Life Science Tools industry and with <b>more than 50 years of experience</b> in water purification systems manufacturing, Merck Millipore is a partner you can count on.                                                                                                  |

\* Clinical and Laboratory Standards Institute, Inc. (CLSI®) guideline: "Preparation and Testing of Reagent Water in the Clinical Laboratory; Approved Guideline – Fourth Edition" (CLSI® C3-A4)

# Constant- and reliable-quality clinical laboratory reagent water (CLRW)

## Combined purification technologies for the best results

In biomedical laboratories, pure water is an essential reagent that is necessary for delivering consistent, high quality results, maximizing productivity and improving patient outcomes. Different types of contaminants may interfere with biomedical lab analyses and alter test results, which is why Merck Millipore AFS® systems employ a combination of purification technologies.

Water produced by AFS® systems has consistent quality meeting Clinical and Laboratory Standards Institute, Inc. (CLSI®) CLRW standards:

- ▶ Resistivity > 10 MΩ·cm @ 25 °C
- ▶ Bacteria level < 10 cfu/mL
- ▶ Total Organic Carbon (TOC) < 500 ppb
- ▶ 0.22 µm filtration

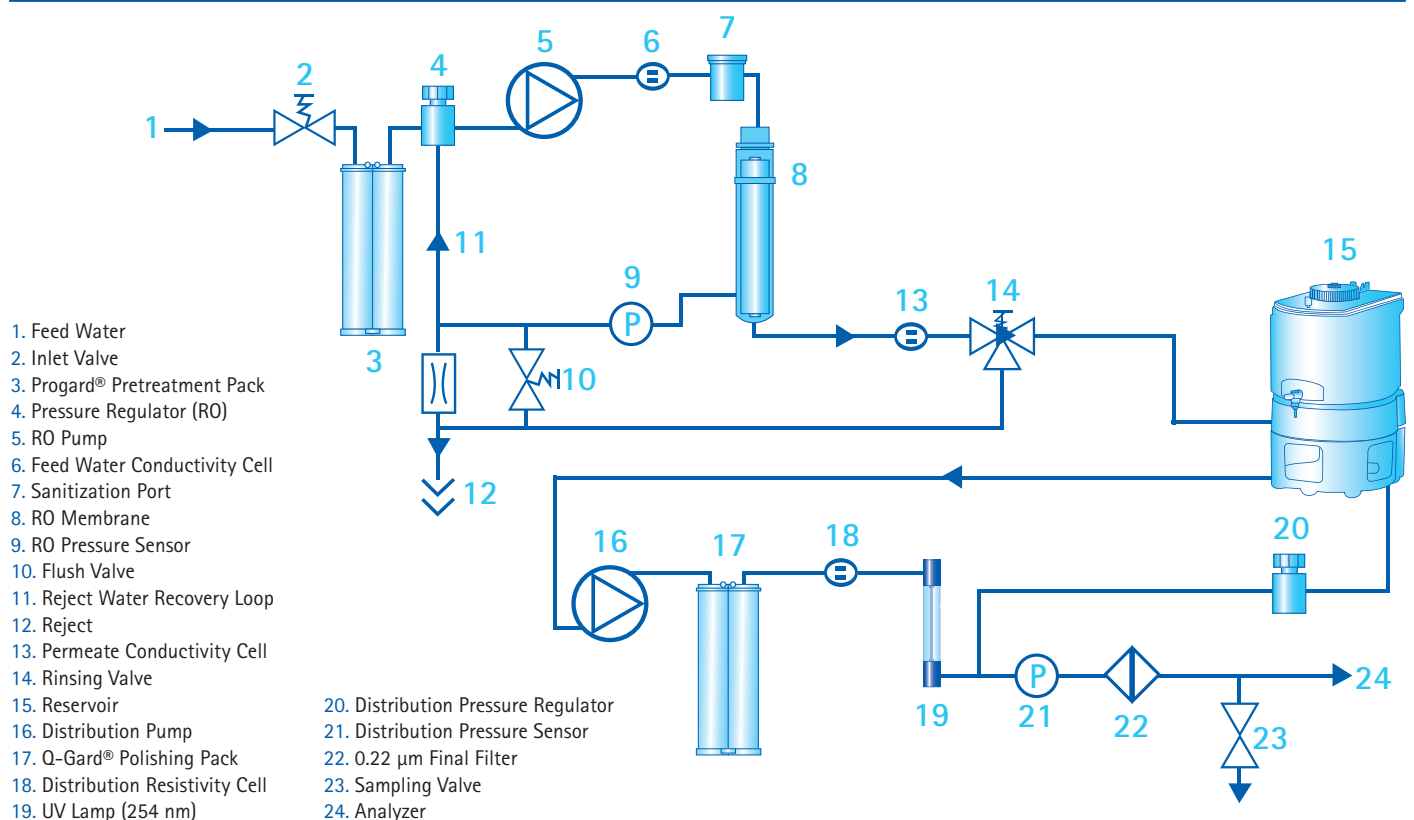
In the AFS® system water purification sequence, potable tap water is first treated with a Progard® cartridge, and then purified by advanced reverse osmosis to remove up to 99 % of contaminants. Regardless of seasonal temperature changes, the AFS® system produces a constant flow of RO water, ensuring there is always enough pure water.

## Optimized control over water quality for low bacterial levels

The RO water is stored in a reservoir. To ensure optimal water quality, stored water is automatically recirculated through a Q-Gard® polishing pack and a built-in 254 nm bactericidal UV lamp. As a last step, the pure water is sent through a sterilizing-grade filter before entering the analyzer. This helps to limit downtime resulting from analyzer decontamination.

Depending on your needs, Merck Millipore offers either a 0.22 µm Opticap® filter to remove particles and bacteria, or a BioPak® C clinical ultrafiltration cartridge that will remove bacterial by-products for Alkaline Phosphatase-free water.

## AFS® Systems Water Purification Pathway



# A cost-effective solution to your clinical water purification needs

Budget-conscious users will appreciate AFS® systems for their optimized running costs. Advanced AFS® system design as well as software with automatic self-maintenance functions significantly reduce tap water use and increase cartridge lifetime:

- ▶ The single Progard® pretreatment pack incorporates several purification media that protect the RO membrane from particles, free chlorine, and scaling.
- ▶ An efficient RO-reject water recovery loop significantly reduces tap water use and helps extend the lifetime of the Progard® pack.
- ▶ Automatic self-maintenance functions (i.e., flush mode, sanitization cycles) keep the system's reverse osmosis membrane in top operating condition.
- ▶ The automatic rinsing valve function ensures that the reservoir will be filled with optimal quality reverse osmosis water. This helps extend the lifetime of the Q-Gard® pack.



## A water purification system fulfilling accreditation needs

Today, recent significant improvements in quality management systems are leading biomedical laboratories more and more frequently to seek accreditation to the ISO® 15189:2007 standard, which is supported by CAP 15189<sup>SM</sup> accreditation, or by "The Key to Quality" workbook from the CLSI®.\*

As the most commonly used fluidic reagent onboard an analyzer, water is a critical reagent, and its quality must be documented. AFS® systems have full monitoring and automatic water quality archiving capabilities. Up to six months of information is stored for easy and reliable traceability. Optional activation of Millitrack® software provides quick access to this data, as well as enhanced data management control, and remote access capabilities.

AFS® systems check and also archive relevant parameters, helping to control proper operation of the system. Risk management and reduced maintenance are achieved thanks to several adjustable set points that can trigger an alarm in case of deviation. Values such as feed pressure, feed water quality, RO pressure, RO water quality, and RO membrane efficiency (% ion rejection), etc., can be displayed on the system's LCD display.

\* International Organization for Standardization (ISO®); College of American Pathologists (CAP); Clinical and Laboratory Standards Institute, Inc. (CLSI®)





## A low-maintenance, robust system

With only the Progard® pretreatment pack and Q-Gard® polishing pack to change, AFS® systems provide a low-maintenance solution to your clinical laboratory water purification needs — saving you time and also reducing analyzer down-time.

To help make pack changes even easier, AFS® systems have a new ergonomic pack locking system. Just pull up on the locking handle to remove the exhausted pack, position the replacement pack in the cabinet, and push down on the handle to lock the new pack in place — it's as simple as that!

In addition, RFID technology prevents insertion of an incorrect purification cartridge in AFS® systems, and also ensures traceability of pack use and replacement.

### Essential information at a glance

AFS® systems have been designed for easy, effortless operation. Intuitive controls on the system cabinet simplify use — you see just the information you need, such as product water quality and reservoir water level. When necessary, icons and the system's backlit LCD screen change color to visually inform users of any actions that should be performed.

- ▶ Blue display: normal operation
- ▶ Yellow display: maintenance needed
- ▶ Red display: urgent action required

When there has been no user interaction with the screen for 15 minutes, and there is no alert or alarm, the system's screen saver ("ECO mode") will be activated automatically.

Additional information on system operation and maintenance is provided by the *Quick Reference Guide* and *User Manual* stored on the water production unit.



## Professional, rapid service

AFS® systems are backed by a responsive, professional service organization providing rapid intervention. When Millitrack® software is activated, this can further facilitate a quick diagnostic from the AFS® system dashboard. An optional emergency backup function can be installed to provide AFS® customers with temporary coverage until their system is serviced.

Watercare Pact service plans offer a range of support, from a single annual checkup to a full system coverage. Merck Millipore's certified Field Service Support Engineers provide expert, professional support for the installation and maintenance of your AFS® water purification systems, and our technical hotline support experts are available to investigate, diagnose and solve customer issues.

# An adaptable configuration

## Optimal use of lab space

With their small footprint, AFS® systems can be placed wherever it's convenient — on the wall, on or under the bench, or on a cart.

## A wide range of storage reservoirs

Select from a wide range of high quality polyethylene reservoirs (10–350 liters) to match your water usage. Merck Millipore reservoirs benefit from a number of features that maintain consistent purity of stored water and provide effective protection against airborne contaminants:

- ▶ A reservoir vent filter protects water from particulates, bacteria and dissolved CO<sub>2</sub>
- ▶ An aseptic overflow function maintains water quality by avoiding retro-contamination from the drain.
- ▶ The conical reservoir base allows complete draining, and facilitates rinsing during sanitization, while the smooth interior limits biofilm formation.

## Systems that can be adapted to your needs

AFS® systems are available with numerous options including: an Automatic Sanitization Module (ASM) for further bactericidal protection of stored water; sanitary sampling valve; sanitization kit for full decontamination of the entire system and reservoir; and water sensor.

To add production capacity to your AFS® system, a RiOs™ system can be installed in duplex to provide up to 48 L /hour of pure water.



# Confidence in your water purification system supplier

As one of the top three R&D investors in the Life Science Tools industry and with more than 50 years of experience in water purification systems manufacturing, Merck Millipore is a partner you can count on. Our long history of collaboration with biomedical laboratories has enabled us to develop our expertise concerning end-user applications such as biology, biochemistry, microbiology and immunology, as well as water contaminants.

AFS® systems are manufactured in an ISO® 9001- and ISO® 14001-registered site. Additionally, to ensure efficiency and safety of operation, systems are CE-, cUL-, and FCC-certified. Furthermore, to reduce environmental impact, all AFS® systems follow European Restriction of Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE) directives.

# AFS<sup>®</sup> system specifications

## Clinical Laboratory Reagent Water (CLRW) Product Water Quality

|                                        |
|----------------------------------------|
| Resistivity                            |
| Total Organic Carbon (TOC)             |
| Microorganisms                         |
| Dissolved silica                       |
| Dispensing water flow rate to analyzer |
| Dispensing pressure to analyzer        |
| Production flow rate to reservoir      |

## AFS<sup>®</sup> 8 / 16 / 24 Systems

|                                                 |
|-------------------------------------------------|
| > 15 MΩ.cm @ 25 °C                              |
| Typically < 30 ppb                              |
| < 1 cfu/mL                                      |
| < 5 µg/L                                        |
| Up to 2 L/min                                   |
| 0.9-3 bar (adjustable)                          |
| 8 L/h (AFS 8), 16 L/h (AFS 16), 24 L/h (AFS 24) |

## System Information

|                           |
|---------------------------|
| Dimensions (H x W x D)    |
| Net weight (shipping box) |
| Operating weight          |
| Voltage                   |
| Frequency                 |
| Power consumption         |

|                                          |
|------------------------------------------|
| 585 x 268 x 426 mm (23 x 10.6 x 16.8 in) |
| < 23.1 kg (50.9 lb)                      |
| < 28 kg (61.7 lb)                        |
| 100-240 VAC                              |
| 50-60 Hz                                 |
| 200 W or 250 VA                          |

## Feed Water Quality Requirements

|                                  |
|----------------------------------|
| Pressure                         |
| Flow rate                        |
| Tap Water Connection             |
| Type                             |
| Temperature                      |
| Conductivity                     |
| pH                               |
| Langelier Saturation Index (LSI) |
| Free total chlorine              |
| Silt Density Index (SDI)         |

|                           |
|---------------------------|
| 1 – 6 bar                 |
| > 5 L/min at 2 bar        |
| ½" Gaz M                  |
| Potable                   |
| 5 – 35 °C                 |
| 100 – 2000 µS/cm at 25 °C |
| 4 – 10                    |
| < 0.3                     |
| < 3 ppm                   |
| < 12                      |



For more information, please visit our website:

[www.millipore.com/labwater](http://www.millipore.com/labwater)

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