

Milli-Q® HR 7000

Connected, High-Capacity
Water Purification Systems



Now with
Milli-Q® Connect
Remote Service
Capability



The life science business
of Merck operates as
MilliporeSigma in the
U.S. and Canada.

Milli-Q®
Lab Water Solutions

YOUR total solution

from the people who know pure water best

Now more powerful and versatile than ever. We've redesigned our RiOs™ high-throughput central system to give you the **CAPACITY, CONFIGURATION** and **CONNECTIVITY** that today's lab facility needs to run smoothly.

The Milli-Q® HR 7000 system is at the heart of any total pure water solution

The Milli-Q® HR 7000 system provides a high-throughput standard water purification solution that can reliably meet the diverse needs for Type 3 pure water – for a single laboratory or an entire research facility.

Reliably feed all your pure water needs:

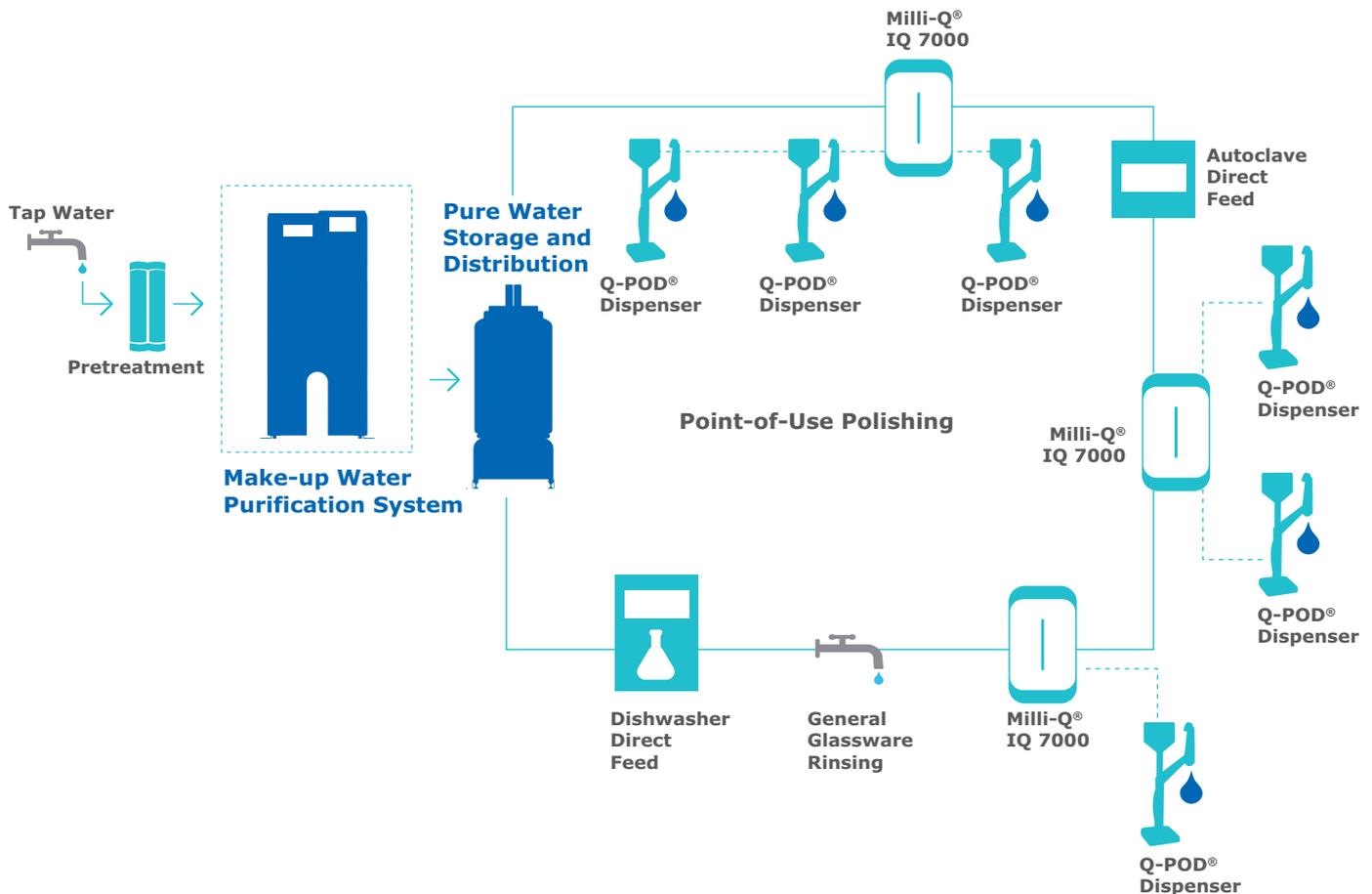
- **Taps** on benches
- **Systems and instruments**, including dishwashers, autoclaves, clinical analyzers, heating baths, humidity chambers, ice machines, and environmental chambers
- **Point-of-use polishers** and **purification systems** to obtain ultrapure water

Achieve higher throughput than before:

With a constant flow rate of up to **220 L/h** (between 7°C and 30°C), the system has the capacity to purify up to several thousand liters per day of Type 3 pure water from tap water. Link up to 3 units to reach up to **13 000 L/day!**

Assure productivity with a remote connection

The **Milli-Q® Connect** online monitoring and service feature lets you securely and remotely manage your system, supporting your lab's optimal productivity.



Installation options that fit almost any configuration

The Milli-Q® HR 7000 system can be adapted to most laboratory or building configurations. It is capable of driving and controlling all ancillary equipment needed for a complete installation, including:

- Distribution pumps, single and duplex
- Reporting alarms from the pumps
- UV lamp in the distribution loop
- ASM (automatic sanitization module)
- Tank levels and alarms
- Consumable management (vent and final filters)
- 2 alarm outputs for connecting to a general BMS, LIMS or alarm, and 2 signals 4-20 mA are available for monitoring
- Embedded web server technology compatible with LIMS and BMS via TCP/IP protocol
- Water detector to stop the water supply in case of a leak (option)
- Distribution loop TOC monitoring (option)
- Distribution loop Resistivity monitoring (option)

Plug 'n' play compatibility with our SDS 500 storage, protection and distribution system

Easily connect Milli-Q® HR 7000 and SDS 500 systems for a **compact** and **clean** solution. This perfect pairing yields high storage and distribution flow possibilities.



Trust in Pure Experience

For over 50 years, we have been the partner of choice for water purification systems and services for lab scientists who need to assure the quality and reliability of results.

We provide a comprehensive range of water purification systems to fit your needs, space, building configuration, and budget.

- Customized solutions
- Valuable advice
- Comprehensive maintenance
- Qualification programs
- Budget planning
- Remote service capabilities

From conception, design and installation, through to engineering expertise and technical support services, we can work with you through any project for full peace of mind.

Peace of Mind

with state-of-the-art technology
& best-in-class support

Complementary purification technologies yield reliably pure water, enhance sustainability, and reduce running costs, making your facility more **PRODUCTIVE**, **ENVIRONMENTALLY FRIENDLY** and **COST-EFFECTIVE**.

Pretreatment is tailored to your feed water quality

For standard water feeds:

- Progard® pretreatment cartridges remove particles (0.5 µm filter), free chlorine and colloids (activated carbon filter)
- An anti-scaling agent protects the reverse osmosis (RO) membrane in hard water areas
- Bactericidal carbon prevents bacterial growth

If your source water has a high fouling index and/or high chlorine levels, supplementary backwashing carbon filters and an ultrafiltration system can be added via an external holder.

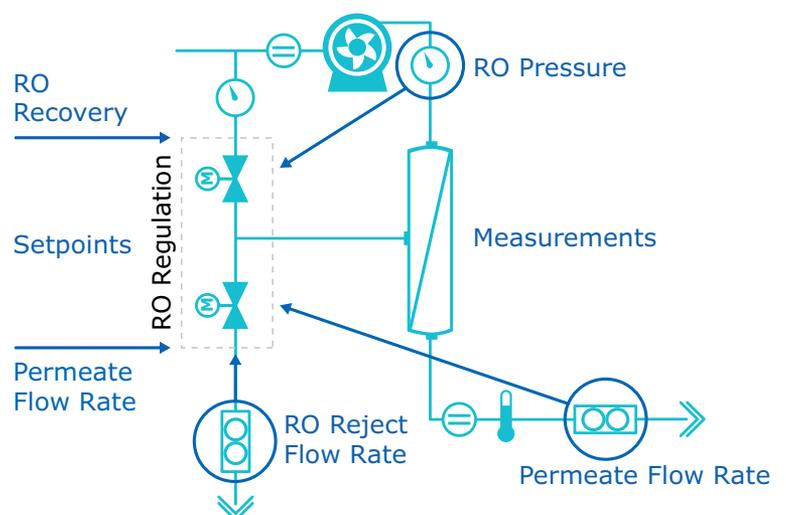
Advanced RO & patented E.R.A.® technologies yield constant flow rates while reducing water consumption

Advanced RO removes:

- 95-99% of ions
- 99% of all dissolved organics (MW >200 Da), microorganisms and particles

E.R.A.® (Evolutive Reject Adjustment) technology takes into account feed water quality (conductivity, temperature, hardness, alkalinity, CO₂) to automatically **optimize water recovery** (**between 45% and 75%**) and **reduce water consumption by up to 50%** compared to other RO systems of similar throughput.

- Achieve constant flow and water recovery rates, regardless of feed water temperature
- Eliminate manual valve adjustments due to temperature fluctuations
- Reduce maintenance time and the risk of human error
- Increase RO cartridge lifetime, reducing consumables waste
- Optimize your system's uptime and reliability



Our patented
E.R.A.® technology
saves you water,
time and money.

The Milli-Q® HR 7000 system is designed for quick and easy maintenance

With its **ergonomic patented pack holder** and **helpful wizards** accessible from the touchscreen display, the Milli-Q® HR 7000 system is quick and easy to maintain. Searching through user manuals for how to change a cartridge is no longer necessary; all instructions are at your fingertips, so you can get on with what's really important.

At <50 dB, the system is as quiet as a conversation with someone next to you.



Best-in-class Milli-Q® services, now supported by Milli-Q® connect

Receive unequalled quality of support for complete peace of mind throughout your system's lifetime.

At each stage of your project (conception, design and installation) to everyday use, we offer comprehensive, high quality support services that can be customized to meet your needs.

- **Before installation**, a certified field service engineer analyzes your feed water quality.
- **During installation**, feed water parameters are programmed into system memory to optimize water recovery and maximize system performance.
- **Throughout system lifetime**, apply the Milli-Q® Service Plan that meets your lab's needs, from a single annual Preventive Maintenance Visit with replacement of aging parts, to full system coverage.

- **Choose from a range of additional options**, including qualification, calibration and verification services, scheduled consumables shipments, and sanitization.

Our Milli-Q®-certified field service engineers can provide:

- Operator training
- Technical and maintenance support
- Preventive maintenance
- Customized services, such as conductivity and temperature meter verification
- Assistance to help you successfully perform the Installation Qualification (IQ), Operational Qualification (OQ) and maintenance program within a cGMP and/or GLP environment

Log into MyMilli-Q™ online solution to streamline the care of your Milli-Q® system fleet:

- Track service history & reports
- Plan maintenance visits
- Manage consumable deliveries
- Renew service contracts
- Remotely monitor, control & service your system (via the Milli-Q® Connect feature, see pages 7-8)

connect to the heart

of your Milli-Q® HR 7000 system

A superior communications interface plus Milli-Q® Connect service capabilities facilitate control, remote diagnostics and data traceability.

Milli-Q® HR 7000 systems are equipped with an integrated and powerful control panel. This user-friendly dashboard lets you easily navigate to access all main system data. In a few intuitive taps, you can view and control:

- System settings
- Production status
- Storage levels
- Distribution
- Consumables status
- Preventive alarms and alerts

The large, colored touchscreen display facilitates maintenance and control

System status zone	
Large display shows water qualities and distribution process	
Clear, visible status of all consumables	
Notification zone for alerts and alarms	

No need to open a user manual to maintain the system – wizards guide you through basic maintenance

If a consumable change is required, the system will display a yellow, blinking alert 15 days in advance. Just touch the yellow alert to open a new screen. A wizard will explain the maintenance procedure in easy, step-by-step instructions.

Now you can view and control your system's interface remotely via Milli-Q® Connect. See pages 7-8 for more information.



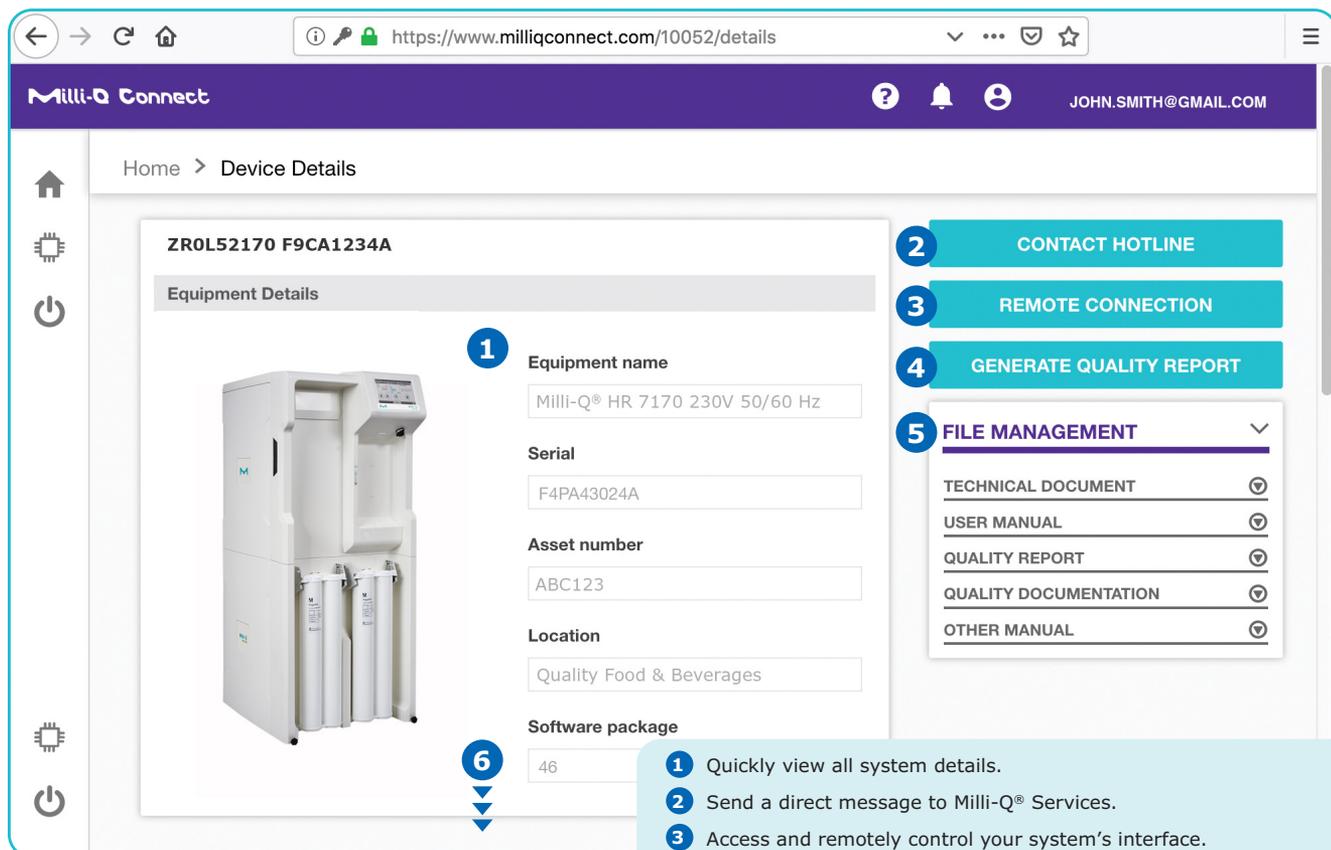
connectivity Assures productivity

Discover Milli-Q® Connect – a remote monitoring and service capability that supports your lab's maximum productivity.



What can Milli-Q® Connect help you to achieve?

- **Assure productivity 24/7.** Access real-time system information, water quality data and more from anywhere at any time for 24/7 confidence in your lab's performance.
- **Save time.** In the event you need support, your interaction with Milli-Q® Services is streamlined as Milli-Q® Connect provides our service organization a secure and direct view of your system information. Our service teams can remotely diagnose and potentially repair your system, avoiding the need to wait for a service visit.
- **Maximize uptime.** Receive notification of alerts and alarms allowing you to promptly and remotely manage your system, either independently or with our remote assistance.
- **Easier data traceability & accreditation.** Audit preparation and lab accreditation have never been so effortless as data are automatically saved and can be easily accessed, searched and retrieved. Choose to download a standard Quality Report, or to create your own tailored reports.



The Milli-Q® Connect customer home page can be accessed online 24/7.

- 1 Quickly view all system details.
- 2 Send a direct message to Milli-Q® Services.
- 3 Access and remotely control your system's interface.
- 4 Instantly generate a Quality Report over the timeframe you specify.
- 5 Find all system documentation and generated reports.
- 6 Scroll down to view:
 - Real-time water quality parameters: resistivity, temperature and TOC
 - Service contract information
 - History of service visits and reports
 - Current alarms and alerts
 - Interactive Event Traceability tool for a visual timeline of all system events
 - Graphs of water resistivity, temperature and TOC over your chosen timeline
 - Remaining lifetime of each consumables and consumable contracts

Milli-Q® Connect facilitates data traceability & eases accreditation

Water is a reagent whose quality must be documented for laboratories seeking accreditation (or reaccreditation) to the ISO® 15189:2012 standard.

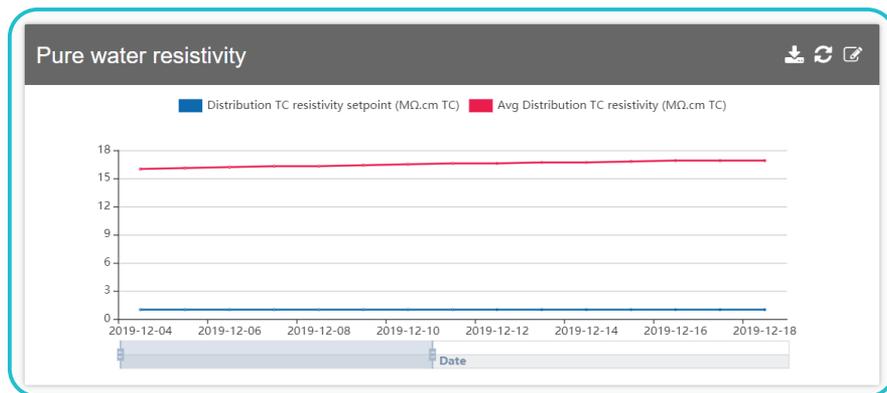
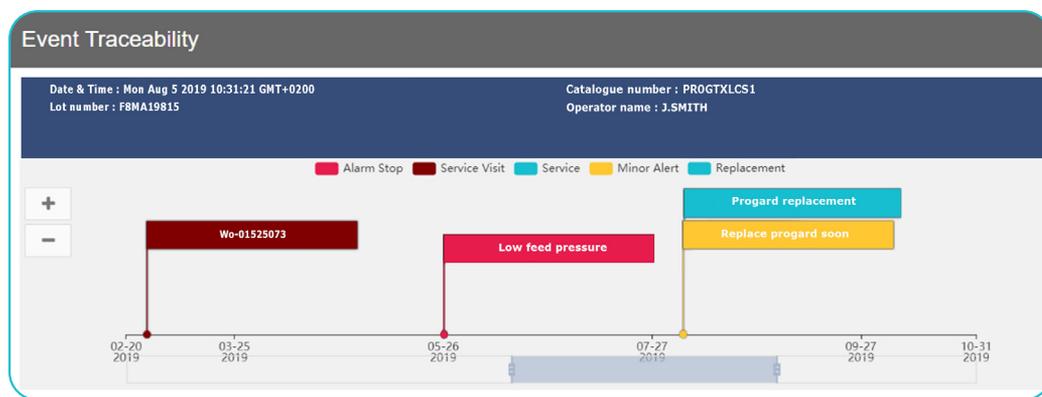
To facilitate compliance with worldwide regulatory organization guidelines, Milli-Q® HR 7000 systems allow for full monitoring capabilities as well as automatic e-record archiving both:

- **Directly in the system** — data are retrievable by USB key or via your lab's intranet connection.
- **In the cloud** when Milli-Q® Connect is activated.

E-record archiving supports traceability of all water-related daily operations, measurements and events. It saves time and is less expensive to manage versus paper documentation, as it removes the need for daily checks of the water purification system, hand-recording of parameters in a lab book, and physically archiving years of paper data.

With the user-friendly MyMilli-Q™ web interface and Milli-Q® Connect remote service feature, data management is greatly simplified. Your system and water data are readily accessible and rapidly searchable, graphable and reportable — from anywhere at any time.

An interactive Event Traceability tool lets you view events by type and over the timeline you specify. View past events (alarms, alerts, consumable replacements, service visits, custom events) and plan for future system maintenance. Click on any event and its details are displayed in the blue banner above the timeline. In this example, a Progard® cartridge was replaced by J.SMITH on Aug 19, 2019.



Water quality parameters (resistivity, temperature, TOC) are graphed over the timeline of your choice and can be easily downloaded.

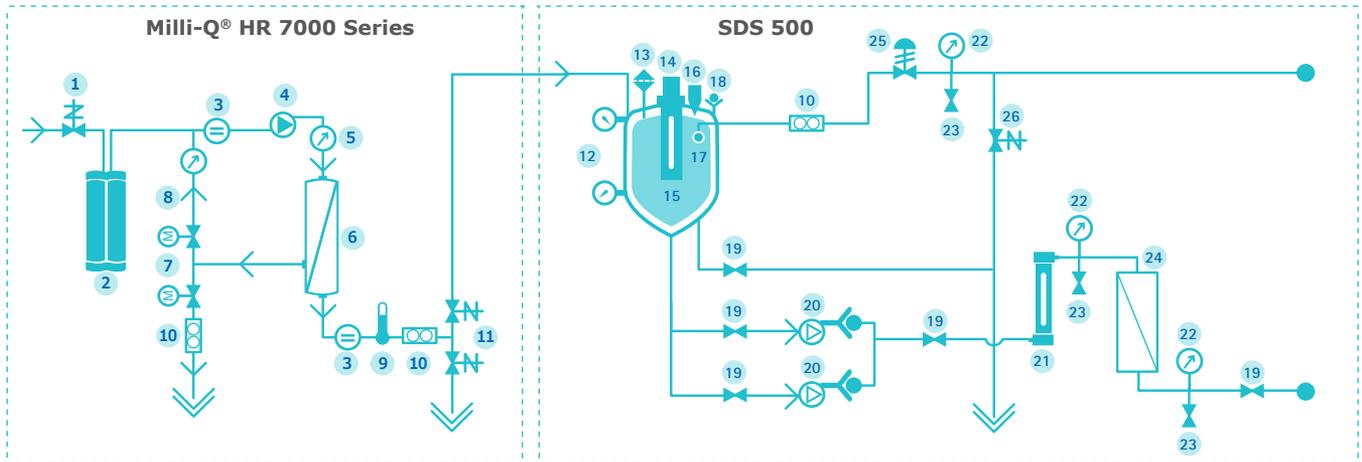
The system automatically stores a fully traceable—and easily retrievable—record of service history. In addition to archiving data, MyMilli-Q™ online tool lets you streamline contract management. You'll be able to schedule maintenance visits, manage consumable deliveries and renew your service contracts, all online.

Service Visits

Number	Type	Scheduled date	Status	Closed date	Attachments
WO-01552478	Preventive Maintenance	Oct-21-2020	Open	N/A	
WO-01484798	Preventive Maintenance	Oct-23-2019	Billed	Oct-23-2019 17:51:51	
WO-01414935	Repair	Apr-25-2019	Billed	Apr-25-2019 17:29:55	
WO-01319139	Preventive Maintenance	Oct-22-2018	Billed	Oct-22-2018 18:42:39	
WO-01224863	Installation	Oct-18-2017	Billed	Oct-18-2017 15:22:14	

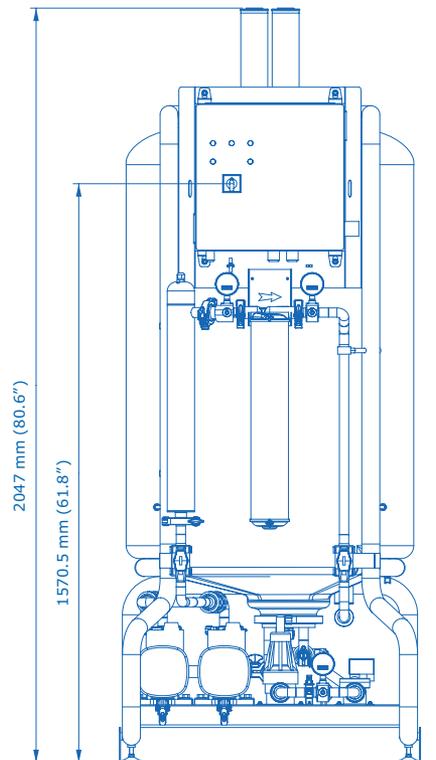
Technical Appendix

Milli-Q® HR 7000 series Type 3 Water Purification Systems

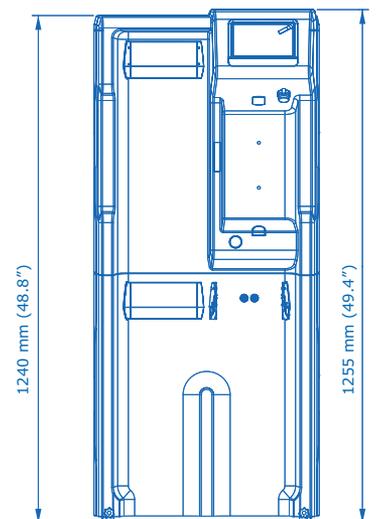


1. Inlet valve
2. Progard® pretreatment pack
3. Conductivity cell
4. RO pump
5. Pressure sensor
6. RO cartridge
7. Twin motorized valve - RO recirculation
8. RO circulation loop
9. Temperature sensor
10. Flow sensor
11. 3-way automatic rinsing valve
12. Tank level pressure sensors
13. Vent filter
14. Automatic Sanitization Module (ASM; UV 254 nm; option instead of spray ball)
15. Tank
16. Overflow
17. Spray ball
18. Check valve
19. Valve
20. Distribution pump(s)
21. UV lamp (254 nm; option)
22. Pressure gauge
23. Sampling valve
24. Opticap® filter (0.22 µm)
25. Back pressure regulator
26. Automatic loop rinsing valve

System Dimensions



SDS 500



Milli-Q®
HR 7000 Series

Milli-Q® HR 7000 series

Type 3 Water Purification Systems

Feed Water Requirements

Parameter	Value or Range
Pressure	2 - 6 bar
Flow rate	> 10 L/min at 2 bar
Feed water type	Potable water
Temperature	5 - 35 °C
Conductivity	10 - 2000 µS/cm at 25 °C
pH	4 - 10
Hardness (as CaCO ₃)	< 300 ppm
Silica concentration	< 30 ppm
Carbon dioxide concentration (CO ₂)	< 30 ppm
Langelier Saturation Index (LSI)	< 0.3
Fouling Index (FI ₂) or Silt Density Index (SDI)	≤ 7(*)
Total Organic Carbon (TOC)	< 1 ppm
Free chlorine for Milli-Q® HR 7060 LC, 7120 LC, 7170, 7220 systems	< 1.5 ppm
Free chlorine for Milli-Q® HR 7060 HC, 7120 HC systems	< 1.5 ppm - 3 ppm

* < 12 when the optional UF pretreatment is installed.

Milli-Q® HR 7000 Series Performances

Parameter	Value or Range
Conductivity	95% ionic rejection (99% particulates rejection)
Total Organic Carbon (TOC)	99% organic rejection for MW>200 Dalton

	Milli-Q® HR 7060	Milli-Q® HR 7120	Milli-Q® HR 7170	Milli-Q® HR 7220
Make-up flow rate to reservoir*	60 L/h 15.8 gal/h	120 L/h 31.7 gal/h	170 L/h 44.9 gal/h	220 L/h 58.1 gal/h

* Nominal flow rates ±10% between 10 and 35 °C. Additional deratings of -3% per °C from 10°C to 5°C.

Electrical Specifications

System Type	Voltage / Frequency	Power Consumption (VA)
Milli-Q® HR 7060/7120	220-240 VAC, 50/60 Hz	620
	120 VAC, 60 Hz	
	100 VAC, 50/60 Hz	
Milli-Q® HR 7170/7220	220-240 VAC, 50/60 Hz	750
	120 VAC, 60 Hz	
	100 VAC, 50/60 Hz	

General Specifications

Noise level	< 50 dB at 1 meter
Communication protocol	TCP/IP/CGI, embedded web server and HTML 5 embedded website*
Communication ports	Ethernet, USB 2.0
Languages	English, French, Spanish, Portuguese, Italian, German, Russian, Chinese, Japanese

* No additional software needed for remote control.

Dimensions and Weights

	Milli-Q® HR 7060	Milli-Q® HR 7120	Milli-Q® HR 7170	Milli-Q® HR 7220
Dimensions (H x W x D) footprint	1 240 x 543 x 542 mm (48.8 x 21.4 x 21.3 in)			
Shipping weight	91 kg (207 lb)	94 kg (220 lb)	97 kg (233 lb)	103 kg (252 lb)
Dry weight	72 kg (166 lb)	75 kg (179 lb)	78 kg (192 lb)	84 kg (221 lb)

SDS 500

Storage, Protection & Distribution System

SDS 500 Specifications

Tank volume	500 L (132 Gallons)
Usable water volume	400 L (105 Gallons), <i>an additional volume of 100 L is reserved for low and high level security</i>
Weight (filled with water)	660 kg (1455 lb)
Weight (empty)	Up to 140 kg (308 lb)
Dimensions H x W x D	2047 x 790 x 1082 mm (80.6 x 31.1 x 42.6 in)
Floor space required	0.85 m ² (9.15 ft ²)
Noise level	E.g. 45.5 dB @ 1m (BPR = 1.5b / flow rate 20 L/min) E.g. 54.7 dB @ 1m (BPR = 4b / flow rate 40 L/min)

Pump Performances (Variable speed pumps)

Voltage / Frequency	Pump Performances
220-240 V, 50/60 Hz	Nominal: 16-40 LPM @ 1-4 bar
110-127 V, 50/60 Hz	4-9 GPM @ 14-58 psi
200 V, 50/60 Hz	Nominal: 16-40 LPM @ 1-3.5 bar*
100 V, 50/60 Hz	4-9 GPM @ 14-50 psi*

* At 90V, performance is reduced to 16-40 LPM @ 1-3 bar (4-9 GPM @ 14-43 psi).

Electrical Specifications

Voltage / Frequency	Maximum Power Consumption	Maximum Intensity
220-240 V, 50/60 Hz	2100 VA	< 9A
100-127 V, 50/60 Hz	2000 VA (120 V)	< 16A
	2000 VA (100 V)	< 20A

Materials

Tank	Medium density polyethylene (MDPE)
Frame	Epoxy painted passivated steel
Valves and fittings	Polypropylene, polyamides, EPDM
Piping	Beta Polypropylene Homopolymer (Beta PP-H)
Pump wetted parts	316 SST and tungsten carbide / carbon and EPDM seals
BPR wetted parts	Polypropylene, EPDM, PTFE
Pressure gauge	Inox 316 L
Other mechanical parts	Polyethylene terephthalate (PETP)

Plumbing Connections

Pure water inlet to tank	3/4" Sanitary TC
Tank drain	1 1/2" Sanitary TC
Tank loop inlet/return	1 1/2" Sanitary TC

Milli-Q®

Lab Water Solutions

Merck KGaA
Frankfurter Strasse 250
64293 Darmstadt, Germany

MerckMillipore.com



For more information on the Milli-Q® HR 7000 series of systems,
including options and accessories, please visit our website:

[MerckMillipore.com/labwater](https://www.MerckMillipore.com/labwater)

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