Product Specifications

Thermo Scientific Barnstead Nanopure

Flow Diagrams

Thermo Scientific Barnstead Nanopure Analytical Unit

Description

The perfect system for most general laboratory applications. The Reagent Grade water (Type 1) system meets the strictest requirements for TOC and resistivity.

Purification cartridge pack

At the heart of all Thermo Scientific Barnstead Nanopure systems is the cartridge pack – which is easily installed with one connection. The pack uses two types of activated carbon to adsorb organic compounds and chlorine, and the highest purity semiconductor-grade ion-exchange resins for removing the last trace of ionic contaminants. Systems fed with deionized water (DI) have their own pack – designed to remove problematic organic and colloidal compounds associated with central DI feed.

Final filtration

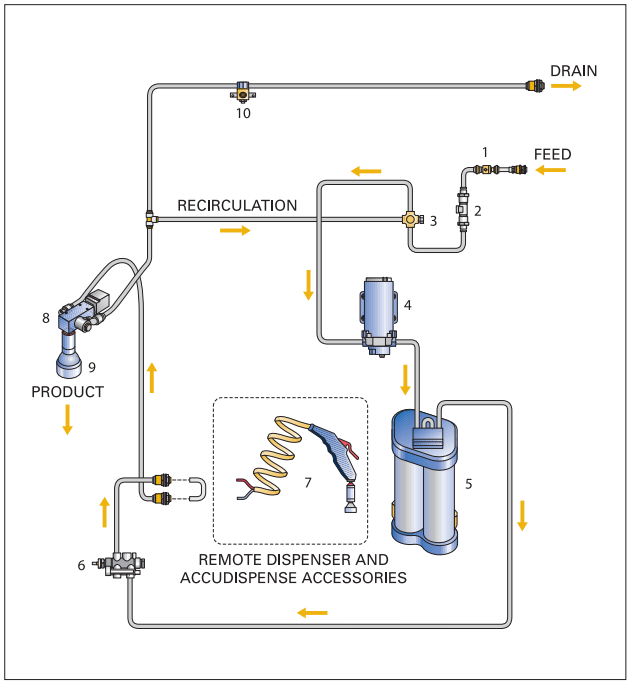
Final filtration is performed with an absolute 0.2 µm gamma irradiated filter. The naturally hydrophilic hollow fibers provide high surface area for longer filter life. The fibers are made of cellulose acetate and are encased in a clear polycarbonate housing.

Other materials of construction

All wetted parts beyond the purification cartridge pack are constructed of low-extractable, corrosion-resistant materials, including the tubing and fittings, which are made of fluoropolymer. The cell wall and cartridge pack are constructed of virgin polypropylene, and the cell is constructed of corrosion-resistant titanium.

The common elements of Nanopure ultrapure water systems:

1. Check valve (back-flow preventer)
2. Flow sensor
3. Pressure regulator
4. Whisper-quiet pump
5. Purification cartridge pack
6. Resistivity cell
7. Remote dispenser (optional)
8. Dispense manifold
9. Final filter
10. Flush solenoid



Nanopure

Thermo Scientific Barnstead Nanopure Analytical UV

Description

The Thermo Scientific Barnstead Nanopure Analytical UV is the ideal system for your most critical analytical applications, which require the absolute lowest levels of organic carbon, including HPLC, GC-MS, IC, and TOC analysis, and also trace metal analysis by ICP-MS where organically bound metals are of concern.

Ultraviolet (UV) photo oxidation

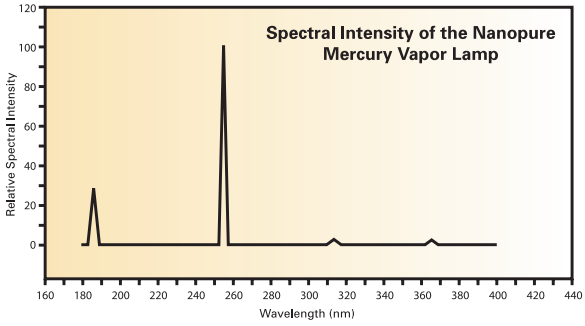
For ultralow TOC concentrations and germicidal action the addition of UV oxidation is unparalleled.

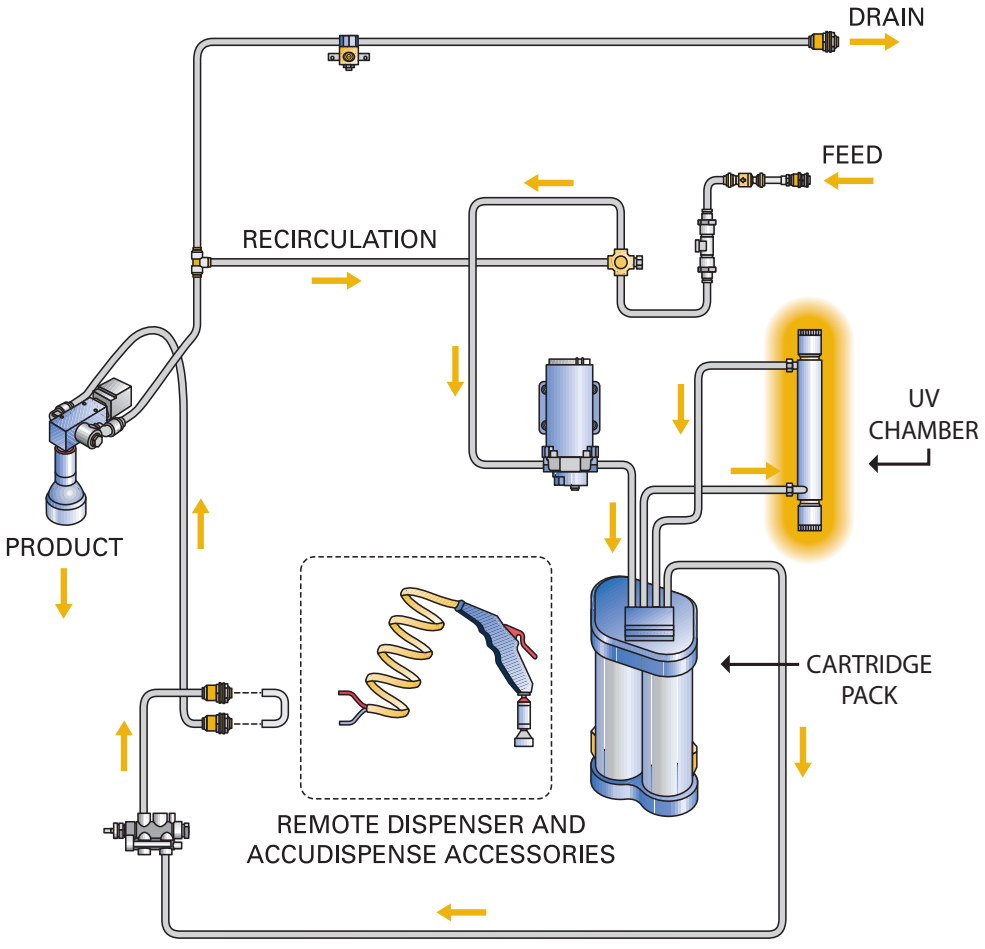
UV chamber – A UV oxidation chamber is placed between the third and fourth (final) purification beds in the cartridge pack. The chamber is constructed of highly polished 316 stainless steel and a UV-transparent quartz sleeve. Within the sleeve resides the mercury vapor lamp.

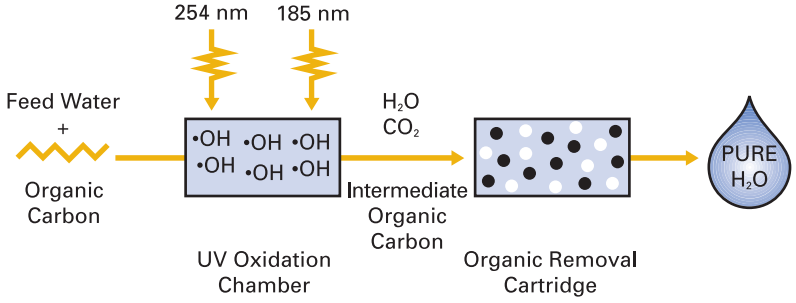
Germicidal action – The mercury vapor lamp creates a high fraction of light at 254 nm, which keeps bacterial levels in the system very low.

Organic carbon oxidation – The lamp also creates a high fraction of 185 nm light which, in conjunction with the 254 nm radiation, produces hydroxyl- free radicals (•OH) The radicals quickly oxidize residual organic carbon to carbon dioxide, water, and some organic intermediates.

Organic removal cartridge – A specially formulated media removes oxidation by-products (carbon dioxide and organic intermediates) to produce water virtually free of organic carbon. A final fraction of semiconductor-grade mixed-bed resin is the last step in producing the highest purity water.







Thermo Scientific Barnstead Nanopure Biological UF and Barnstead Nanopure Life Science UV/UF

Description

For applications requiring undetectable levels of pyrogens such as cell and tissue culture, ultrafiltration is essential. The most complete water system on the market today, the Thermo Scientific Barnstead Nanopure Life Science (UV/UF) is ideal for your most demanding molecular biology applications including PCR and electrophoresis, in addition to cell and tissue culture. This system has demonstrated the ability to remove nucleases such as RNase and DNase from challenged feed water.

Ultrafiltration removes the last traces of pyrogens (bacterial endotoxins) and nucleases for the many applications where their presence can be damaging.

The encapsulated ultrafilter uses unique, patented, polysulfone hollow fibers to remove particulates, nucleases and pyrogens. The filter is located downstream of the purification media and UV chamber for maximum benefit.

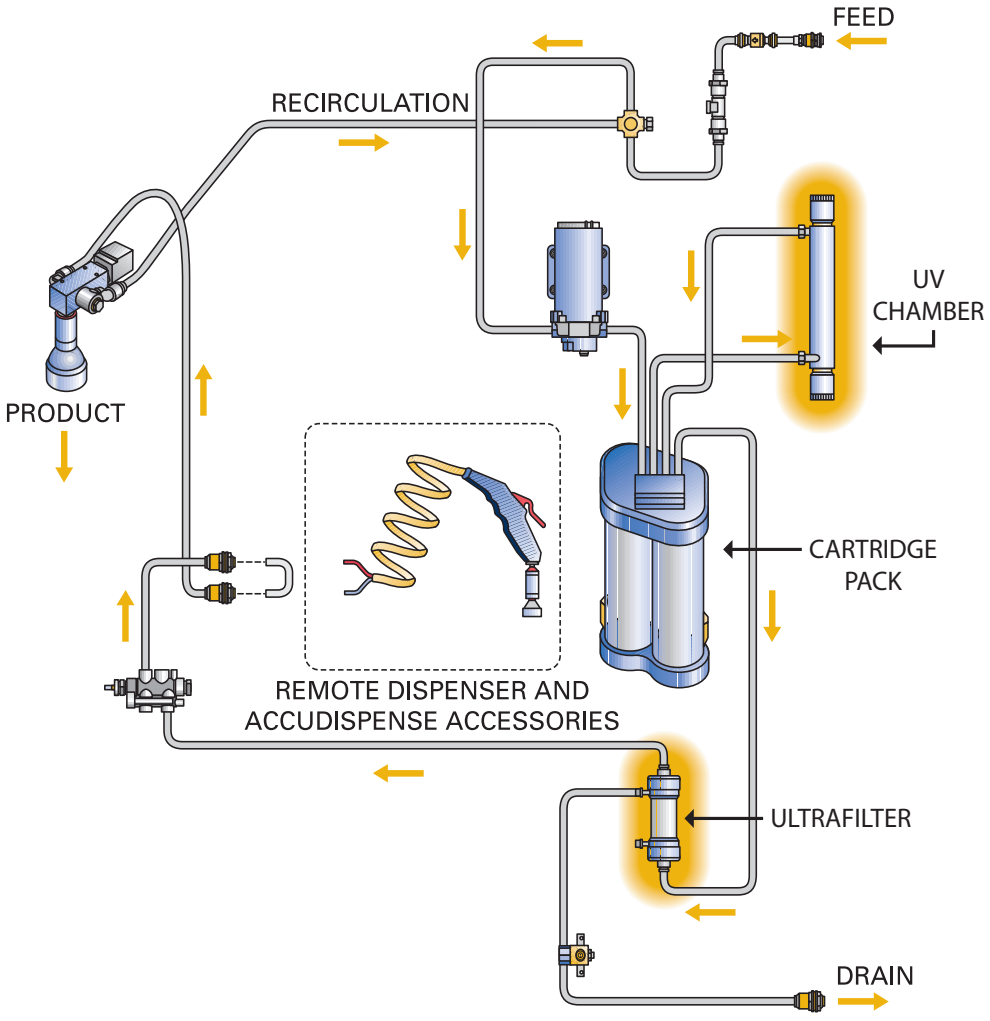
Fine hollow UF fibers are folded and secured on the product side of the capsule. Water entering the capsule flows form the outside of the fibers into their hollow cores. The channels merge to become the purified product stream. The system periodically sends water from the outside of the fibers to the drain – thereby removing filtered contaminants.

Quality – The UF capsule filters are 100% tested during manufacturing to guarantee integrity.

Fast rinse-up – The filters are shipped dry without chemical preservatives. This allows fast rinse-up to high-purity water.

Low extractables – There is almost no organic or inorganic addition to the water as demonstrated by low-TOC and high-resistivity measurements.

Simple cleaning – As with all Nanopure systems, those incorporating UF are easily cleaned. A liquid cleaning solution is injected by syringe and the Nanopure software does the rest.



Thermo Scientific Barnstead Nanopure with Total Organic Carbon (TOC) Analyzer

Description

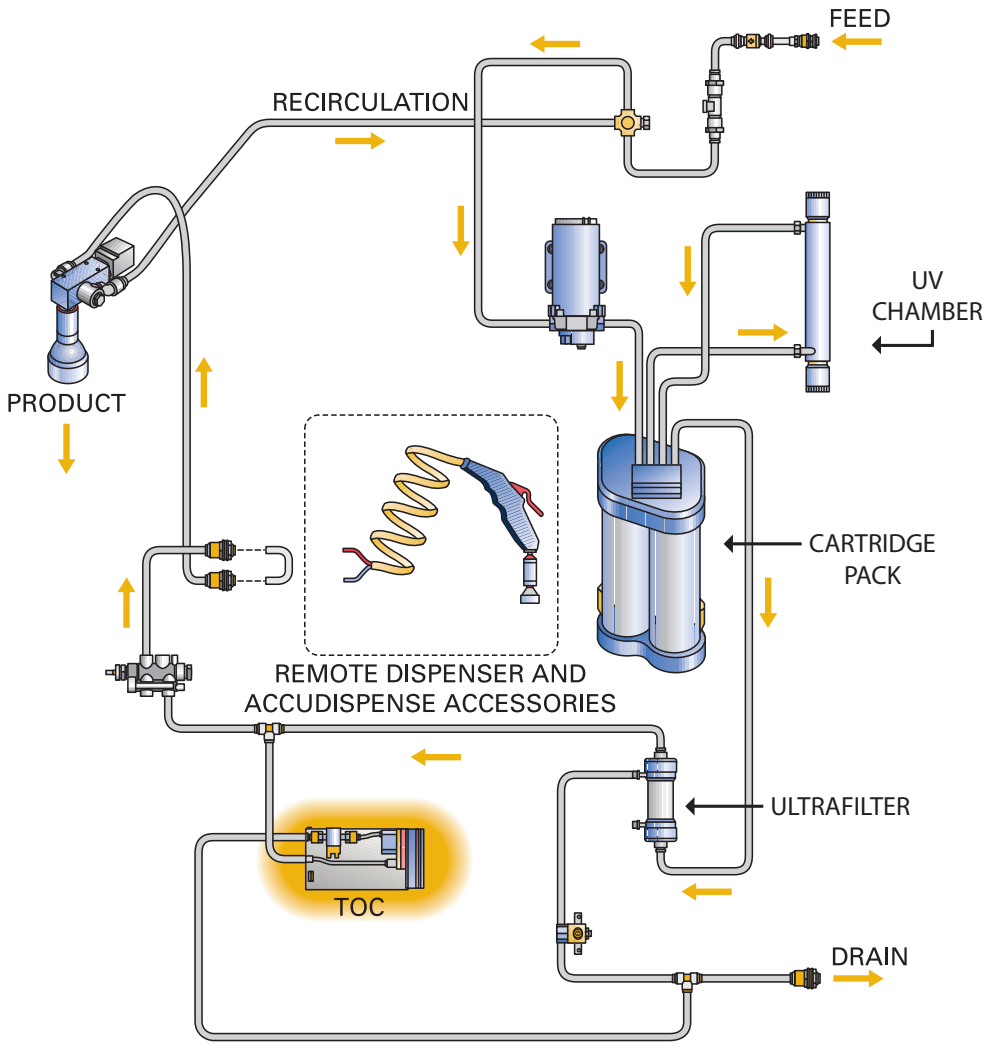
A resistivity meter reading 18.2 MΩ-cm ensures that charged species are absent from water. But what about neutral or weakly charged organics? Introducing the Thermo Scientific TOC analyzer.

By monitoring TOC and resistivity, you can be sure that the product water exceeds the requirements of any analytical or biological application.

In the Thermo Scientific Barnstead Nanopure system the TOC analyzer is positioned after the purification technologies, next to the resistivity cell. This provides accurate measurement of product-water quality before it is dispensed from the system.

Principles of operation

1. Water from our Nanopure passes though a filter and enters the UV reactor and conductivity cell. The conductivity cell measures the resistivity of the water.
2. The high-intensity (185 and 254 nm) UV lamp then turns on and oxidizes any organic compounds present in the water, producing carbon dioxide.
3. The solenoid valve then opens briefly to move the oxidized water from the reactor into the conductivity cell, where resistivity is measured again.
4. The difference in resistivity resulting from the increased carbon dioxide concentration is used to calculate the TOC value, which is then displayed.



Thermo Scientific Barnstead Nanopure with Total Organic Carbon (TOC) Analyzer Specifications

Volume per Measurement	Cycle Interval	Control	Range	Resolution	Accuracy	Water Temp. Range	Ambient Temp. Range
10-15 mL per reading dispensed to drain	Approx. 3 1/2 min. cycle between readings	TOC monitoring can be turned on or off via system keypad	1-250 ppb	1 ppb	±1 ppb or 15% of reading, whichever is greater	4-40ºC (40-104ºF)	10-40ºC

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North America: USA/Canada +1 800 553 0039
Europe: Austria +43 1 801 40 0, Belgium +32 2 482 30 30, France +33 2 2803 2180, Germany national toll free 08001-536 376,
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Russia/CIS +7 (812) 703 42 15, Spain/Portugal +34 93 223 09 18, Switzerland +41 44 454 12 12, UK/Ireland +44 870 609 9203
Asia: China +86 21 6865 4588 or +86 10 8419 3588, India toll free 1800 22 8374, India +91 22 6716 2200, Japan +81 45 453 9220,
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