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External Pressure Type **PVDF** Hollow Fiber Membrane Module

GS Module

GS-5101U-S4(M02-100) / GS-5101H-S4(M02-100)

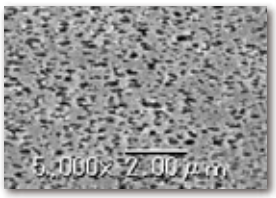
- **Compact design, high filtration performance**
- **Suitable for a wide variety of applications**
- **Higher strength and chemical stability**

GSE-5101U▶
(M02-100)

1 0.02μm with sufficient permeability

- With the pore size of 0.02μm achieved by Kuraray's own technology, GS has both a UF*1-like particle size cutoff and MF*2-like water permeability.

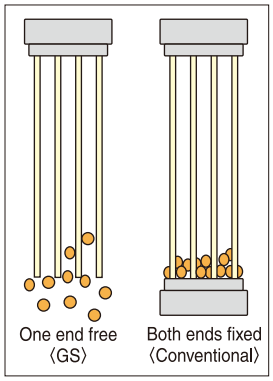
*1 **UF**: Ultra Filtration, *2 **MF**: Micro Filtration



Membrane surface (SEM)

2 Fouling significantly prevented

- Membrane surface is coated with hydrophilic polyvinyl alcohol (PVA), so that less fouling occurs.
- As the lower end of hollow fibers is left free, suspended solids (SS) can be easily removed without accumulating between the fibers.
- Due to the unique physical cleaning method (backwashing using pressurized air and air scrubbing), SS attached to the membrane surface is effectively removed, resulting in filtration performance recovery.



Physical cleaning procedure

Photos of Polysulfone hollow fibers

SS attaches to the membrane surface.

Attached SS is exfoliated with pressurized air.

SS is scrubbed off with air bubbles.

Membrane surface is cleaned, and the performance recovers.

3 Thermal resistance

- The thermal resistant type, GS-5101H-S4 (M02-100), can be used for the filtration of hot water up to 80 deg.C. It is resistant to hot water disinfection at 90 deg.C.

4 High water recovery

- The unique module structure and air backwashing system as well as external pressure type filtration method enable high water recovery.

※**Recovery rate (internal test result) : 97.6%**
Raw water: groundwater with the turbidity of 2.1-4.2, Flow rate: 2.5m³/hr, Physical cleaning: every 30 min.

5 Small footprint, low cost

- With a housing height of about 1m, a compact system design is allowed for a limited space.
- Outside installation is possible as the housing is made of stainless steel.
- Equipment cost can be reduced because no tanks or pumps for backwashing are needed.

The material of the sheath is different between GSE-5101U (M02-100) for normal temperature operation and GSE-5101H (M02-100) with thermal resistance.

GSE-5101H(M02-100)▶

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Applications

- Drinking water production from surface and ground water
- Purification of process water for food manufacturing, precise cleaning and etc.
- Pretreatment before RO*3 and NF*4, used for ultrapure water production
- Recovery and recycling of hot waste water, such as boiler drain

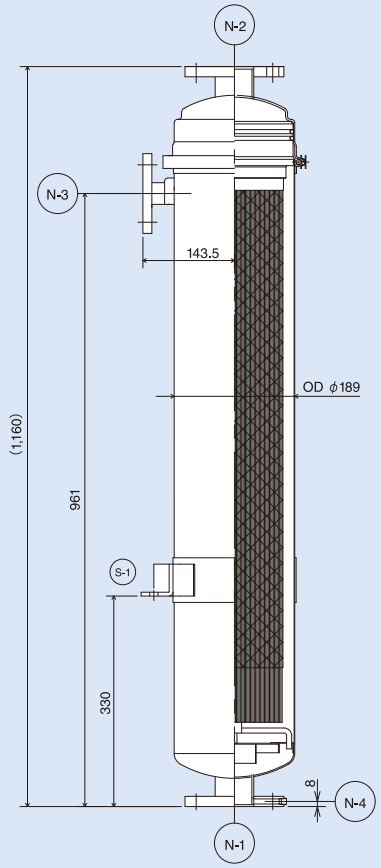
*3 **RO**: Reverse Osmosis, *4 **NF**: Nano Filtration

Groundwater purification system using GS modules

Types and specifications

Product name			GS Module	
Module type			GS-5101U-S4 (M02-100)	GS-5101H-S4 (M02-100)
Element	Element type		GSE-5101U (M02-100)	GSE-5101H (M02-100)
	Thermal resistance		For normal temperature operation	For higher temperature operation
	Nominal pore size (90% cutoff)		0.02μm	
	Effective membrane surface area (m^2)		42	
	Standard design flux (m^3/hr/module)		1-4	
	Material	Hollow fiber membrane	Hydrophilic PVDF*5	
		Potting material	Polyurethane	Epoxy resin
		Sheath	PVC	Thermal resistant PVC
		Center post	SUS304	
		Net	Polyethylene	
		O-ring	Silicon rubber	
	Filling liquid		NaClO*6	
Housing	Housing type		GSH-S4/GSH-S6	
	Dimensions (Max. diameter x Height: mm)		ϕ189×1,160	
	Material	Main unit	SUS304/SUS316	
		O-ring	Silicon rubber	
	Inner volume (L)		Approx. 30	
Operating conditions	Filtration type		External pressure type, dead-end filtration	
	Allowable maximum operating pressure (MPa)		0.5	
	Allowable maximum transmembrane pressure difference (MPa)		0.3	0.3 0.2 (@60-80 deg.C) 0.1 (@80-90 deg.C)
	Allowable maximum temperature (deg.C)		40	80*7
	pH range		1-10*8	

*5 Polyvinylidene fluoride (PVDF) coated with Polyvinyl alcohol
*6 The concentration of NaClO is as follows:
- Element---25mg/L
- Module---5mg/L
*7 Hot water disinfection at 90 deg.C (<10 min, Operating pressure @ 0.1MPa or less) is applicable.
*8 pH can excess the above range during chemical cleaning. Contact us for details.



■Nozzle list

NO.	Size(inch)	Name
N-1	2	Raw water inlet, Drain outlet
N-2	2	Effluent outlet
N-3	1	Air vent
N-4	1/8	Scrubbing air inlet
(S-1)	—	(Support band)

Notes:

1) Specifications and the type of the element and housing may be changed without prior notice.
2) Applications and basic data (in-house data) specified in this catalogue are standard examples. These depend on the influent to be treated, operating conditions and circumstances. Contact us before usage.
3) The nozzles shown in the above drawing are those conforming JIS.

Manufacturer

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カタログ(L)-GS-E-002(15.11)