nx filtration

Technical datasheet

WRC200 dNF

Hollow fiber nanofiltration membrane module for water and wastewater applications

Release TDS001 – WRC200 dNF, Rev. 01 - 20240411

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General Information

The WRC200 dNF modules are designed for water treatment, including ground and surface water, as well as industrial and municipal wastewater reuse. These modules excel in removing color, turbidity, and dissolved organic molecules, including micropollutants such as pharmaceuticals, pesticides, and PFAS. The modules offer outstanding pH and chlorine resistance, require minimal pretreatment, no coagulation, and produce no sludge.

With dNF40 and dNF80, two different types of dNF membranes are available offering different flux and rejection characteristics. The choice between dNF40 and dNF80 depends on specific requirements and objectives of the application.

Membrane characteristics

Membrane material	Modified PES
Membrane charge	Negative @ pH=7
Membrane fiber inner diameter	0.7 mm
Filtration mode	Inside-Out; Vertical
Operation mode	Cross-flow

Product specifications	dNF40	dNF80
MWCO [1]	400 Dalton	800 Dalton
Min. $MgSO_4$ rejection [2]	91%	76%
Typical permeate flow range	0.6-1.25 m³/h (2.6-5.5 gpm)	0.75-1.5 m³/h (3.3-6.6 gpm)

Operating Conditions

Max. system pressure [3]	10 bar (145 psi)
Max. transmembrane pressure [3]	6 bar (87 psi)
Max. backwash pressure	4 bar (58 psi)
Max. active chlorine concentration	500 ppm @ pH>10
Max. cumulative active chlorine exposure	250,000 ppm-hours @ pH>10
Max. particle size	150 µm
Max. TSS	300 ppm
Max. turbidity	150 NTU
Max. Temperature during operation & cleaning	40°C (104°F)
pH range during operation	2-12
pH range during cleaning	1-13
Cross-flow velocity range [4]	0.1-1.0 m/s (0.33-3.3 ft/s)
Module feed flow range	2.4-24 m³/h (10.5-105 gpm)

[1] Molecular Weight Cut-Off (MWCO) is an estimation as it depends on size, shape, charge, and polarity of the compound being tested, as well as test conditions. Measured with PEG.
[2] Test conditions: 5.0 mMol/L $MgSO_4$, 3.0 bar, 20°C, v=0.5 m/s.
[3] Maximum pressures at 20°C.
[4] Recommended velocity depends on feed water quality and system configuration.

WRC200 dNF

Module Specification

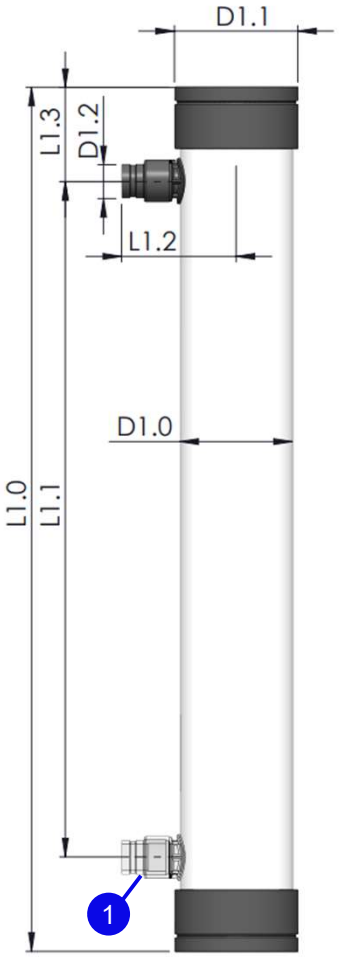
Materials of Construction

Housing	PVC-O
Internals	PVC-U
Potting	Epoxy resin

Dimensions

Membrane Surface Area	50 m²
L1.0	1538 mm (60.55”)
L1.1 [5]	1202 mm (47.32”)
L1.2	204 mm (8.01”)
L1.3	168 mm (6.59”)
D1.0	200 mm (7.87”)
D1.1	8” Victaulic PGS-300 groove
D1.2	2” Victaulic OGS groove

[5] Only applicable for WRC200 dNF 2P modules



1 : 2nd permeate port; optional

If enhanced disinfection of the system is required, NX Filtration can supply WRC200 dNF Modules with an additional permeate port (WRC200 dNF 2P). This module type with two side ports allows for easy disinfection of the module. For assistance in selecting the appropriate module type for a specific application, please contact your local sales representative.

Available Module types	WRC200 dNF80	WRC200 dNF40	WRC200 dNF80 2P	WRC200 dNF40 2P
Product-Code	ELENF0003	ELENF0004	ELENF0009	ELENF0010

Storage Information

New modules in original packaging can be stored for max. 1 year from shipping date in a dry place, protected from sunlight or any heat source, at temperatures between 1 and 40°C (33 and 104°F);

Ex-factory storage solution: 84wt% water, 15wt% glycerin and 1wt% sodium metabisulfite;

WRC200 dNF

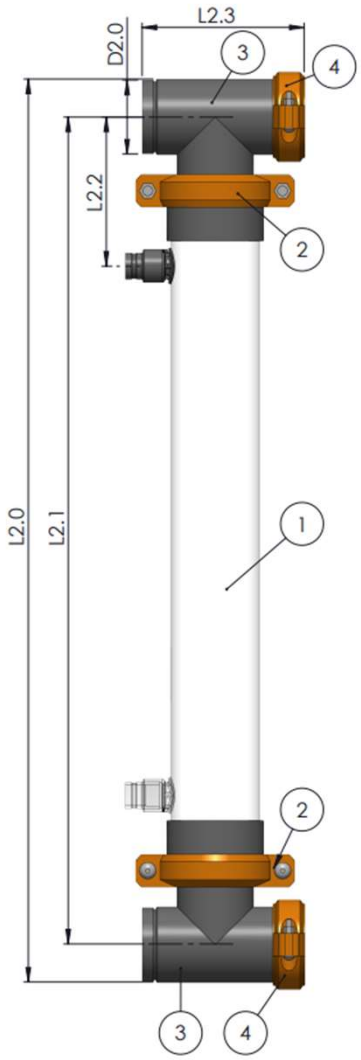
Connection Configurations – Tee

The WRC200 module can be utilized in NX Filtration's Integrated Rack Design (IRD) where Tee-headers are connected to the top and bottom of the module and to each other forming the feed and concentrate channels. This concept allows for simple and swift assembly on site. The modules are placed on a base frame.

To assemble a rack, additional parts are required. For detailed information on the IRD and parts, please refer to the corresponding IRD documentation.

Dimensions

L2.0	2053 mm (80.81")
L2.1	1880 mm (74.00")
L2.2	339 mm (13.34")
L2.3	368 mm (14.49")
D2.0	6" Victaulic PGS-300 groove



Assembly Components

(1) Module	WRC200 dNF
(2) Feed/concentrate connection	Victaulic Coupling Style 358 6"x8" Gasket E
(3) Tee	Victaulic Tee CPVC No. 352 6"
(4) Tee connectors	Victaulic Coupling Style 357 6" Gasket EHP

Available Sets (Components 1-4)	WRC200 dNF80 Tee Set	WRC200 dNF40 Tee Set	WRC200 dNF80 2P Tee Set	WRC200 dNF40 2P Tee Set
Set-Code	SETNF0003	SETNF0004	SETNF0015	SETNF0016

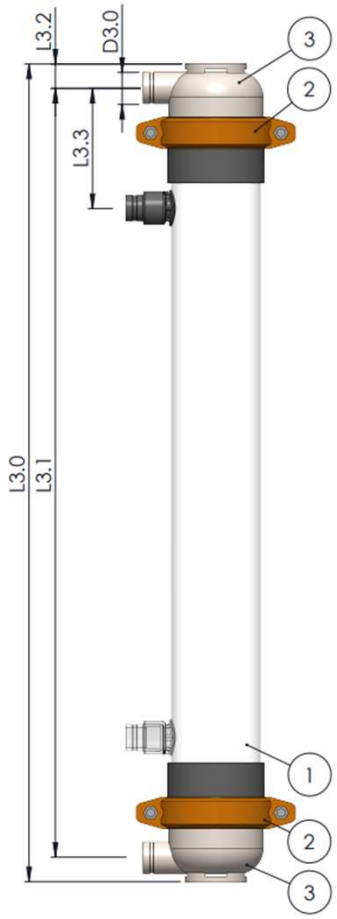
WRC200 dNF

Connection Configurations – Steelcap

Next to the Integrated Rack Design, the WRC200 module can also be used with a stainless steel end cap and be placed in a more traditional rack configuration.

Dimensions

L3.0	1859 mm (73.20”)
L3.1	1748 mm (68.83”)
L3.2	56 mm (2.19”)
L3.3	273 mm (10.75”)
D3.0	2.5" Victaulic OGS groove



Assembly Components

(1) Module	WRC200 dNF
(2) Feed/concentrate connection	Victaulic Coupling Style 356 8" Gasket EHP
(3) Endcap	Stainless Steel Cap (8”)

Available Sets (Components 1-3)	WRC200 dNF80 Steelcap Set	WRC200 dNF40 Steelcap Set	WRC200 dNF80 2P Steelcap Set	WRC200 dNF40 2P Steelcap Set
Set-Code	SETNF0013	SETNF0014	SETNF0017	SETNF0018

WRC200 dNF

Weight Information

Weight	WRC200 Tee Set	WRC200 Steelcap Set
Dry weight Module (without assembly components)	30.5 kg (67.5 lbs)	30.5 kg (67.5 lbs)
Dry weight Module including assembly components	67.5 kg (149 lbs)	47.5 kg (105 lbs)
Filled Module including assembly components	107 kg (236 lbs)	87,5 kg (193 lbs)

Shipping Information

Each module is individually packed in a vacuum sealed plastic bag. For small quantities, modules and endcaps are shipped in separate cardboard boxes:

- Shipping weight per module: 40.5 kg (90 lbs.);
- Shipping weight Tee assembly components (2 Tees + 4 grooved couplings): 40 kg (88.5 lbs.);
- Shipping weight Steelcap assembly components (2 Steelcaps + 2 grooved couplings): 19 kg (42 lbs.);

For large shipments, modules are loaded in a wooden crate with a max. of 16 modules per crate:

- Crate dimensions: 100 x 126 x 173 cm; 40 x 50 x 68 in (L x W x H);
- Shipping weight per crate (16 modules), excl. assembly components: 675 kg (1490 lbs.)

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