

Product Description / Equipment Specifications

Nanofiltration Units

10,000 Gallons/Day – 264,000 Gallons/Day

General Description:

Lifestream NF Series units are designed and manufactured for industrial applications. They are horizontal configurations utilizing vertical pumps. They are pre-engineered, pre-assembled units that minimize installation and start-up costs. They are fully tested at the factory and require simple utility connections and, with minor set up and adjustment, are ready for immediate on-line service. Their designs maximize reliability of the Nanofiltration unit.

Each unit is a single pass system mounted on a urethane coated structural steel frame. The NF skid includes a cartridge filter, high pressure feed pump, FRP, side entry pressure vessels, spiral wound thin film composite NF membranes, PVC low pressure feed and reject piping, stainless steel high pressure piping, and PVC product piping. The systems are controlled by a programmable logic controller (PLC) with a touch screen Human-Machine Interface (HMI). The system also utilizes an integrated Clean in Place (CIP) function.



Mechanical Description:

The components of the NF Series units are supported by the urethane coated carbon steel frame and designed in such a way to provide easy access for servicing, maintenance, and monitoring system performance.

The feed, low-pressure reject, and product piping is schedule 80 PVC. The high-pressure piping is constructed of welded Sch10 316 stainless steel. The inlet and outlet piping connections to the unit are class 150 PVC flanges. A single 316 stainless steel locking valve is used for pump discharge pressure

control on the NF units. Two 316 stainless steel globe valves are used to control the reject and recycle flow rates. Sample valves are provided for the NF feed upstream and downstream of the cartridge filter, membrane feed, reject, and combined product water.

A sample valve is also located on the product port of each pressure vessel for analyzing individual vessel performance. Cleaning connections are provided at each stage of the NF to clean the membranes.

The unit features an “on-board” integrated cleaning system. The NF cartridge filter and pump are used for CIP along with the factory supplies valves, hoses, and a chemical tank (placed adjacent to the skid).

The CIP operation is initiated through the HMI. pH and ORP are available as an option for all models.

Electrical Description:

The units are controlled by a PLC. The model has a motor starter and PLC housed in a single NEMA 4 enclosure. All systems require only a single power drop for operation. These controls monitor and protect the system from damage to itself or nearby equipment systems and/or personnel.

Operational Description:

Nanofiltration units operate continuously and are monitored by the instruments and PLC. The PLC will alarm on non-critical conditions such as poor quality or shut down the NF system on critical conditions such as low suction pressure or high discharge pressure. All alarm and shut down conditions are indicated on the control interface. Dry contact inputs are provided for chemical feed failure, pretreatment interlock, tank high and low level, plus feed and pump discharge pressure switches. The pretreatment interlock or tank high input will put the NF into “Standby” mode. During the standby mode, the RO will periodically flush with feed water (the high pressure pump is not running) to maintain optimal system performance.

Maximum TDS	Varies by application
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Factory Procedures:

Assembly	Fully assembled at the factory
Wiring	Fully wired at the factory
Testing	Hydrostatic pressure test, Electrical integrity test, Factory functional test
Membrane Elements	Membrane elements are shipped in their original packaging For installation on site at time of start-up
Membrane Shipping Condition	Dry, shipped uninstalled
Shipping Preparation	Shrink protection (some components may be removed for protection prior to shipment)

Electrical and Controls	Underwriters' Laboratory (UL), National Electrical Code (NEC), Canadian Standards Association (CSA)
Panel NEMA Rating	NEMA 4

Flow Rate Specifications:

Model Number	NF 264K	NF 144K	NF 108K	NF 86K	NF 65K	NF 43K	NF 28K	NF 10K
Product (GPM)	185	100	75	60	45	30	19	7
Feed (GPM)	265	143	107	86	65	43	28	10
Reject (GPM)	80	43	32	26	20	13	9	3
Recycle (GPM)	8	4	3	3	2	2	2	1

Customer Connection Specifications*:

Model Number	NF 264K	NF 144K	NF 108K	NF 86K	NF 65K	NF 43K	NF 28K	NF 10K
Feed	6"	3"	3"	2 1/2"	2"	1 1/2"	2"	1 1/2"
Product	4"	3"	2"	2 1/2"	2"	1 1/2"	1 1/2"	1 1/2"
Reject	4"	1.5"	2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1

**All connections are 150# ANSI flanges

Physical Dimension Specifications:

Model Number	NF 264K	NF 144K	NF 108K	NF 86K	NF 65K	NF 43K	NF 28K	NF 10K
Length (in)	310	168	168	168	168	168	120	110
Width (in)	72	32	32	32	32	32	32	32
Height (in)	89	89	89	89	72	72	68	68
Est. Shipping Weight (lbs)	5900	3500	3200	3200	2400	2200	1800	1100