

NANOFILM Fouling Resistant Series Elements: 4040

1. Brief Introduction

The FR series are aromatic polyamide RO membrane elements, which are newly developed by NANOFILM and can be used in desalination of brackish water. It is characterized by ultra low-pressure operation, higher water productivity and excellent desalting property. Moreover, we make special treatment to the surface of membrane with unique technology to change its electrical charge and smoothness, increasing the hydrophilicity of membrane surface, thus decreasing the adhesion of contamination and microbe so as to lessen the pollution and extend the service life of elements.

The FR series are applicable to the desalinating treatment of those water resources with salt concentration less than 5000ppm, such as surface water, underground water, tap water and municipal water. They are mainly used for treatment of various industrial water, such as various scales of industrial intermediate-stage water reclamation, boiler water replenishment in power plant, and are especially applicable to the treatment of that water with slight organic pollutants, such as industrial wastewater, municipal sewage and other slightly contaminated water.

2. Specifications and Main Properties of Membrane Elements

Part No.	Average Salt Rejection Rate %	Average Permeate flow GPD (m ³ /d)	Active Membrane Area ft ² (m ²)
NFR11-4040	99.0	2600(9.8)	85(7.9)
NFR21-4040	99.5	2200(8.3)	85(7.9)

Testing Conditions:

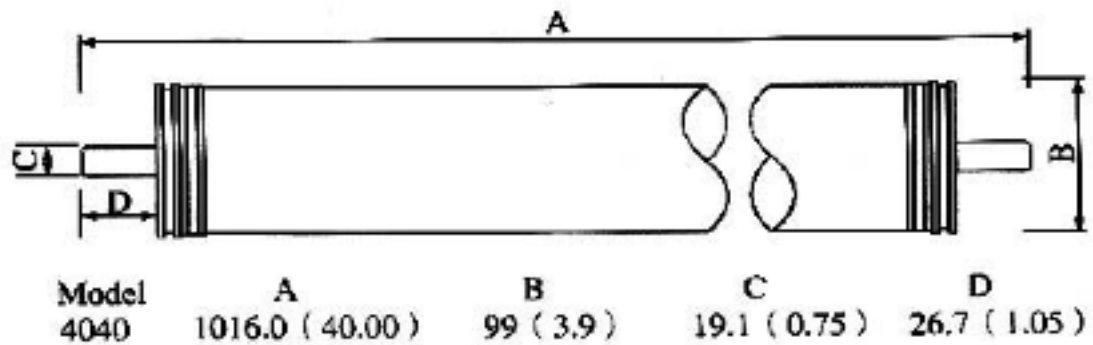
Testing Pressure	225psi (1.55Mpa)
Temperature of Testing Solution	25 °C
Concentration of Testing Solution (NaCl)	2000 ppm
PH Value of Testing Solution	7.5
Recovery Rate of Single Membrane Element	15%

3. Extreme operation Conditions

Max. Operating Pressure	600psi (4.14Mpa)
Max. Feedwater Flow	16gpm (3.6 m ³ /h)
Max, Temperature of Feedwater	45 °C
Max. SDI of Feedwater	5
Free Chlorine Concentration of Feedwater	< 0.1ppm
PH Value Range of Feedwater as Continuous Operation	3 — 10
PH Value Range of Feedwater as Chemical Cleaning	2-11
Max. Pressure Difference of Single Membrane Element	15psi(0.1Mpa)

4. Dimensions of Membrane Element

All dimensions are in millimeter (inch).



5, Important Information

- 1) For any recommended design scope, please refer to the latest edition of technology manual and design guide prepared by NANOFILM or consult experts proficient in membrane technology. In case the customer fails to follow the operating conditions as specified in this manual, NANOFILM will assume no liability for all results.
- 2) The permeate flow listed in the table is the average value. The permeate flow of single membrane element is with a tolerance of $\pm 15\%$.
- 3) Before leaving the factory, all membrane elements will have been strictly tested, and have been treated for storage with the solution of 1.0% sodium hydrogensulfite (an antifreeze solution of 10% propanediol will further added in winter), then packed in vacuum, and outer packing is carton. In order to prevent the breeding of microbes during short-time storage, transportation and system standby, we recommend you to soak the membrane elements with the protective solution (prepared with RO permeate water) containing 1.0% sodium hydrogensulfite (foodstuff-purpose).
- 4) Discard RO product water produced during the first one hour after system start-up.
- 5) During storage time and run time, it is strictly prohibited to add any chemical medicament, which may be harmful to membrane elements. In case of any violation in using this kind of chemical medicament, NANOFILM assumes no liability for all results.

Notice:

1. All data and information provided in this manual have been obtained from long-time experiment by NANOFILM. We believe the data and information contained herein to be accurate and effective. However, since the conditions and methods for use of our products are beyond our control, NANOFILM assumes no liability for all results obtained or damages incurred through the application of the presented data and information. Regardless of separate use or working with other products, it is strongly recommended that the users shall carry out

experiment to determine the safety of NANOFILM 's products and their applicability to customers' specific end uses.'

2. Due to technology development and products renovation, products information will be subject to modification without prior notification. Please pay attention to NANOFILM 's latest products information.