KOCH MEMBRANE SYSTEMS

SelRO® MPS-36 - pH Stable Membrane

Nanofiltration Spiral Module Series - 8040

PRODUCT DESCRIPTION

Membrane Chemistry:	Proprietary composite nanofiltration membrane
Membrane Type:	pH stable nanofiltration membrane
Molecular Weight Cutoff (MWCO):	1000 Dalton
Construction:	Spiral wound element
Permeate Tube:	Stainless steel
Major Applications:	Acid and caustic recovery, product concentration
Options:	Feed channel spacers: 30 mil (X) and 57 mil (Z)

SPECIFICATIONS*

Model	Part Number	Rejection [%] Glucose / Sucrose	Rejection [%] NaCl	Permeate Flow gpd (m^3/day)	Membrane Area ft^2 (m^2)	Feed Spacer mil (mm)
MPS-36 8040 B2X	0770116	30 / 50	10	34,500 (130)	290 (27)	30 (0.8)
MPS-36 8040 B2Z	0770207	30 / 50	10	24,000 (91)	205 (19)	57 (1.4)

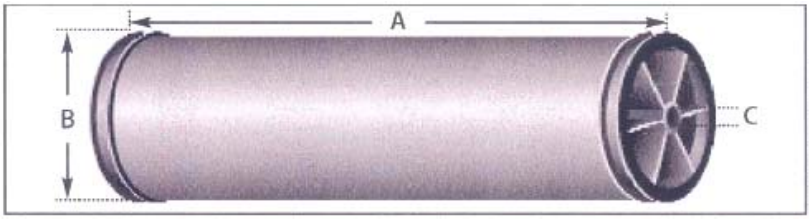
*Test Conditions: RO water at 440 psi (30 bar), 86°F (30°C). Feed solution for rejection tests is 3% glucose / 3% sucrose or 5% NaCl.

OPERATING AND DESIGN INFORMATION

Typical Operating Pressure:	220-510 psi (15-35 bar)
Maximum Temperature:	158°F (70°C)**
Allowable pH - Continuous Operation:	1-13***
Allowable pH - Clean-In-Place (CIP):	1-13***
Maximum Pressure Drop Per Element:	10 psi (0.7 bar)
Maximum Pressure Drop Per Vessel (5 in Series):	50 psi (3.5 bar)

* Consult Process Technology group for specific applications.
** Please refer to the Operating Envelope of Code 30 Membranes when temperature is higher than 122°F (50°C).
*** Corrosive acids should be avoided when a stainless steel permeate tube is being used.

NOMINAL DIMENSIONS



Model	Part Number	A inches	A (mm)	B inches	B (mm)	C inches	C (mm)
MPS-36 8040 B2X	0770116	40.0	(1016)	7.9	(200)	1.187	(30.15)
MPS-36 8040 B2Z	0770207	40.0	(1016)	7.9	(200)	1.187	(30.15)

SelRO® MPS-36 - pH Stable Membrane

Membrane Characteristics:

SelRO® Composite nanofiltration membrane in a spiral wound configuration, with superior pH and temperature stability.

Operating Limits:

- Operating Pressure: Maximum operating pressure for SelRO® MPS-36 is 510 psi (35 bar). Actual operating pressure is dependent upon system flux rate, as well as feed, recovery and temperature conditions.
- Permeate Pressure: Maximum allowed permeate pressure is 3 psi (0.2 bar).
- Differential Pressure: Maximum differential pressure limit is 10 psi (0.7 bar) per element. Maximum differential pressure for any length vessel is 50 psi (3.5 bar).
- Temperature: Maximum operating temperature is 158°F (70°C). For guidelines of recommended temperature and pressure please refer to the "Recommended Envelope for Code 30 Membranes" in this document.
- pH: Allowable range for continuous operation is 0-14. When a stainless steel permeate tube is used, corrosive acids should be avoided.
- Water Quality for Cleaning and Diafiltration:

  Turbidity: Maximum feed turbidity is 1 NTU.

  Guidelines: For more details please consult with KMS Process Technology Group.
- Chlorine and Chemical Exposure:

- It is not recommended to expose the MPS-36 membrane to chlorine or other oxidants, as it may affect the membrane performance.
- Sodium metabisulfite (without catalysts such as cobalt) is the preferred chemical to eliminate free chlorine or other oxidizers in the feed.
- It is not recommended to expose the MPS-36 membrane to organic solvents, such as alcohol, acetone, etc.

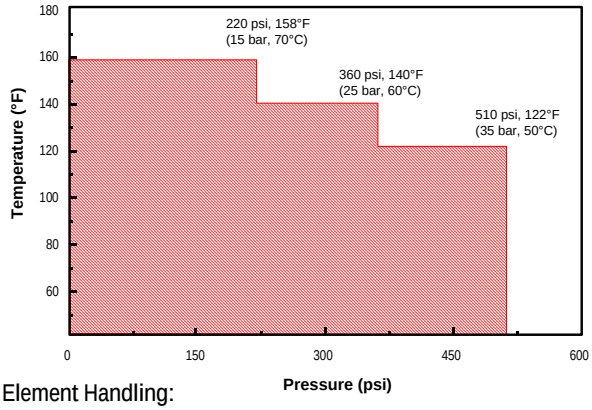
- Feed Flow Rate: Maximum and minimum flow rate for the MPS-36 spiral module are as follows:

  Min. 25 gpm (95 liter/min) Max. 75 gpm (285 liter/min)

  Actual feed flow rate is dependent upon system flux rate, feed characteristics, fouling tendency and system design.

- Operating Envelope For Code 30 Membranes:

  It is important to follow the pressure - temperature relationship guidelines, in order to prevent irreversible compaction and performance deterioration. The following diagram should be used as a guideline to operating the MPS-36 spiral module:



Element Handling:

- Recommended Cleaning Materials: Depending on the nature of the feed, the following cleaning agents can be chosen:

  0.1-5% w/w sodium hydroxide at 122°F (50°C)
  0.2-1% w/w nitric or phosphoric acid at 122°F (50°C)
  0.1-0.5% w/w detergent mix KOCHKLEEN® KLD-III
  0.5% anionic surfactant (such as SDS) at 122°F (50°C)

  Consult KMS regarding the use of other cleaning materials.

- Lubricants: For element installation, use only water or glycerin to lubricate seals. The use of petroleum or vegetable-based oils or solvents may damage the element and will void any warranty.
- Storage Solution: Should be made with:
  Short Term (up to two weeks): 0.25 w/w sodium metabisulfite.
  Long Term: 0.7% w/w benzalkonium chloride.
  Glycerin should not be used for storage of the MPS-36 membrane.
  The membrane module should not get dry. It should be stored in a sealed bag, in a temperature ranging from 36°F - 86°F (2°C - 30°C).

Service and Ongoing Technical Support:

Koch Membrane Systems (KMS) has an experienced staff of professionals available to assist end-users and OEM's for optimization of existing systems and support with the development of new applications. KMS also offers a complete line of KOCHKLEEN® membrane pretreatment, cleaning, and maintenance chemicals.

Koch Membrane Systems, Inc., www.kochmembrane.com

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