KOCH MEMBRANE SYSTEMS

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FLUID SYSTEMS® ROGA® - HR 4” & 8” ELEMENTS

Cellulose Acetate, RO Elements

PRODUCT DESCRIPTION

Membrane Chemistry:	Proprietary ROGA cellulose acetate
Membrane Type:	ROGA membrane
Construction:	Spiral-wound with fiberglass outerwrap
Applications:	High rejection for municipal water treatment, municipal wastewater reclamation, industrial water supply and where chlorine is needed on a regular basis
Options:	40” (1,016 mm) or 60” (1,524 mm) Magnum® length

SPECIFICATIONS

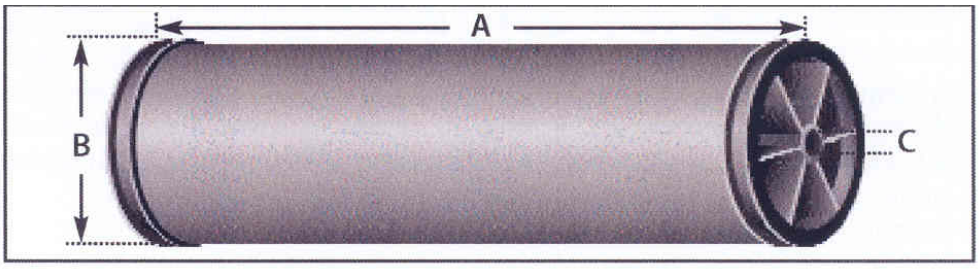
Part Numbers	Model	Permeate Flow gpd	Permeate Flow (m^3/d)	Chloride Rejection percent	Membrane Area ft^2	Membrane Area (m^2)
8422100	4221 HR	1,600	(6.1)	98.0	81	(7.5)
8822200	8222 HR	6,900	(26.1)	98.0	340	(31.6)
8823200	8232 HR Magnum®	11,500	(43.5)	98.0	520	(48.3)

Test Conditions: 2,000 mg/l NaCl solution at 420 psi (2,900 kPa) applied pressure, 15% recovery (20% recovery for Magnum elements), 77°F (25°C) and pH 5.7.

OPERATING & DESIGN INFORMATION

Typical operating pressure:	420 psi (2,900 kPa)
Maximum operating pressure:	600 psi (4,140 kPa)
Maximum operating temperature:	104°F (40°C)
Maximum cleaning temperature:	104°F (40°C)
Maximum continuous free chlorine:	1 mg/l
Allowable pH – continuous operation:	4 – 6
Allowable pH – short term cleaning:	2.5 – 7
Maximum differential pressure per element:	10/15 psi (69/104 kPa)
Maximum differential pressure per vessel:	60 psi (414 kPa)
Maximum feed turbidity:	1 NTU
Maximum feed SDI (15 minute):	5
Feed spacer thickness:	31 mil (0.8 mm)

PRODUCT DIMENSIONS AND WEIGHT



Model	A inches (mm)	B inches (mm)	C inches (mm)	Weight lbs (kg)	Part Numbers Interconnector	O-ring	Brine Seal
4221 HR	40 (1,016)	4 (101.6)	0.625 (15.9)	10 (4.5)	0035262	0035468	0035702
8222 HR	40 (1,016)	8 (203.2)	1.125 (28.6)	40 (18.0)	0035260	0035464	0035705
8232 HR Magnum®	60 (1,524)	8 (203.2)	1.125 (28.6)	58 (26.4)	0035260	0035464	0035705

ROGA® – HR 4” & 8” ELEMENTS

Performance:
Performance specifications shown on the front side of this document are nominal values. Individual element permeate flows may vary +/-15% from the values shown. Minimum chloride ion rejection is 97% at the conditions shown.

System performance should be predicted using KMS’ ROPRO® design software. Element performance is based on the nominal values shown.

System operating data should be normalized and key performance parameters tracked using KMS’ NORMPRO® software.

Operating Limits:

- Operating Pressure: Maximum operating pressure is 600 psi (4,140 kPa). Typical operating pressure for ROGA-HR systems is in the range of 420 psi (2,900 kPa). Actual operating pressure is dependent upon system flux rate (appropriate for feed source) as well as feed salinity, recovery and temperature conditions.
- Permeate Pressure: Permeate pressure should not exceed feed-concentrate pressure by more than 5 psi (34 kPa) at any time (on-line, off-line and during transition).
- Differential Pressure: Maximum differential pressure is 10 psi (69 kPa) for a 40” (1,016 mm) long element and 15 psi (104 kPa) for a 60” (1,524 mm) long element. Maximum differential pressure for any length pressure vessel is 60 psi (414 kPa).
- Temperature: Maximum operating temperature is 104°F (40°C). Maximum cleaning temperature is 104°F (40°C).
- pH: Allowable range for continuous operation is pH 4-6. Allowable range for short term cleaning is pH 2.5-7.
- Turbidity and SDI: Maximum feed turbidity is 1 NTU. Maximum feed Silt Density Index (SDI) is 5.0 (15 minute test). Experience has shown that feedwater with turbidity greater than 0.2 NTU generally results in frequent cleanings.
- Recovery: Maximum recovery is site and application specific. In general, single element recovery is approximately 15% for 40” (1,016 mm) long and 20% for 60” (1,524 mm) long elements. Recovery limits should be determined using KMS’ ROPRO program.

Chemical Tolerance:

- Chlorine: Maximum allowable continuous concentration of free chlorine or similarly active oxidizing agents such as iodine, bromine and ozone is 1 mg/l free chlorine equivalent.
- Feedwater: pH should be adjusted to a practical value of approximately 5.7 to minimize membrane hydrolysis. Above pH 6 these effects may become significant and may reduce the effective life of a membrane.
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Feed Spacers:

- KMS recommends the use of 31 mil thick feed spacers (standard construction) for applications where the feedwater has higher fouling potential.

Lubricants:
For element loading, use only the recommended silicone lubricant (or approved equivalent), water or glycerin to lubricate O-rings and brine seals. The use of petroleum based lubricants or vegetable based oils may damage the element and void the warranty.

Service and Ongoing Technical Support:
KMS has an experienced staff of professionals available to assist endusers and OEM’s for optimization of existing systems and support with the development of new applications. Along with the availability of supplemental technical bulletins, KMS also offers a complete line of KOCHTREAT® and KOCHKLEEN® RO pretreatment and maintenance chemicals.

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