

# FLUID SYSTEMS® ROGA® - HR 4" ELEMENTS

## Cellulose Acetate RO Elements

### PRODUCT DESCRIPTION

|                            |                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Membrane Chemistry:</b> | Proprietary ROGA® cellulose acetate                                                                                                                     |
| <b>Membrane Type:</b>      | ROGA®-HR membrane                                                                                                                                       |
| <b>Construction:</b>       | Spiral wound with fiberglass outerwrap                                                                                                                  |
| <b>Applications:</b>       | High rejection for municipal water treatment, municipal wastewater reclamation, industrial water supply and where chlorine is needed on a regular basis |

### SPECIFICATIONS

| Part Number | Model        | Permeate Flow |        | Chloride Rejection percent | Active Membrane Area |       | Feed Spacer mil (mm) |
|-------------|--------------|---------------|--------|----------------------------|----------------------|-------|----------------------|
|             |              | gpd           | (m³/d) |                            | ft²                  | (m²)  |                      |
| 8422100     | ROGA-4040-HR | 1,700         | (6.4)  | 98.0                       | 80                   | (7.4) | 31 (0.8)             |

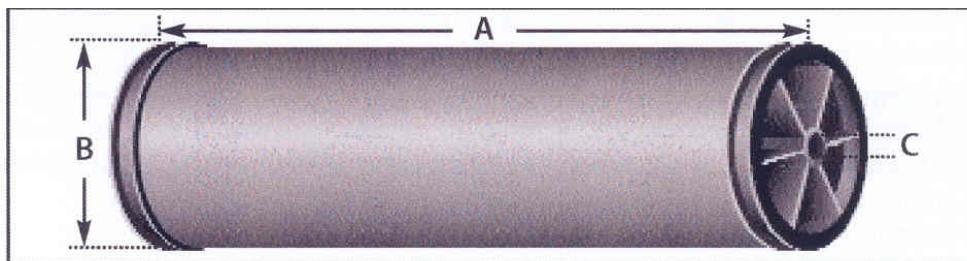
Test Conditions: 2,000 mg/l NaCl solution at 420 psi (2,900 kPa) applied pressure, 15% recovery, 77°F (25°C) and pH 5.7

### OPERATING AND DESIGN INFORMATION\*

|                                                   |                     |
|---------------------------------------------------|---------------------|
| <b>Typical Operating Pressure:</b>                | 420 psi (2,900 kPa) |
| <b>Maximum Operating Pressure:</b>                | 600 psi (4,140 kPa) |
| <b>Maximum Operating Temperature:</b>             | 104°F (40°C)        |
| <b>Maximum Cleaning Temperature:</b>              | 104°F (40°C)        |
| <b>Maximum Continuous Free Chlorine:</b>          | <1 mg/l             |
| <b>Allowable pH – Continuous Operation:</b>       | 4 - 6               |
| <b>Allowable pH – Short Term Cleaning:</b>        | 2.5 - 7             |
| <b>Maximum Differential Pressure per Element:</b> | 10 psi (69 kPa)     |
| <b>Maximum Differential Pressure Per Vessel:</b>  | 60 psi (414 kPa)    |
| <b>Maximum Feed Turbidity:</b>                    | 1 NTU               |
| <b>Maximum Feed SDI (15 minute test):</b>         | 5                   |

\* Consult Process Technology Group for specific information.

### NOMINAL DIMENSIONS AND WEIGHT\*



| Model        | A           | B           | C            | Weight   | Part Numbers   |         |            |
|--------------|-------------|-------------|--------------|----------|----------------|---------|------------|
|              | inches (mm) | inches (mm) | inches (mm)  | lbs (kg) | Interconnector | O-ring  | Brine Seal |
| ROGA 4040-HR | 40 (1,016)  | 4 (101.6)   | 0.625 (15.9) | 10 (4.5) | 0035262        | 0035468 | 0035702    |

\* Dimensions are provided for reference only and should not be interpreted as accurate specifications.

### Performance:

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

System performance should be predicted using KMS ROPRO® 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 limits are 10 psi (69 kPa). Maximum differential pressure for 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. It is recommended to limit the exposure of the ROGA-HR membrane to the extended pH range to 4 hours, once per month.
- **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%. 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.

### 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 end users 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.

The information contained in this publication is believed to be accurate and reliable, but is not to be construed as implying any warranty or guarantee of performance. We assume no responsibility, obligation or liability for results obtained or damages incurred through the application of the information contained herein. Refer to Standard Terms and Conditions of Sale and Performance Warranty documentation for additional information.

---

## LENNTECH

info@lennotech.com Tel. +31-152-610-900

www.lennotech.com Fax. +31-152-616-289