



# FLUID SYSTEMS® TFC® - S 8" ELEMENT

*Softening, Low Pressure, RO Element*

## PRODUCT DESCRIPTION

|                            |                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------|
| <b>Membrane Chemistry:</b> | Proprietary TFC polyamide                                                             |
| <b>Membrane Type:</b>      | TFC-S membrane                                                                        |
| <b>Construction:</b>       | Spiral wound with fiberglass outerwrap                                                |
| <b>Applications:</b>       | Municipal water treatment when softening and THMFP reduction                          |
| <b>Options:</b>            | 40" (1,106 mm) length, with high area construction, or 60" (1,524 mm) Magnum® length. |

## SPECIFICATIONS

| Part Numbers | Model              | Permeate Flow |        | Rejection % |                | Membrane Area |            |
|--------------|--------------------|---------------|--------|-------------|----------------|---------------|------------|
|              |                    | gpd           | (m³/d) | Chloride    | Total Hardness | MgSO₄         | ft² (m²)   |
| 8892300      | 8923 S-400         | 9,000         | (34.1) | 85*         | 98.5*          | 99**          | 400 (37.2) |
| 8893300      | 8933 S-575 Magnum® | 12,500        | (47.3) | 85*         | 98.5*          | 99**          | 575 (53.4) |

\* Test Conditions: mixed feed with 700 mg/l TDS of which at least 45% is monovalent, at 80 psi (550 kPa), applied pressure, 15% recovery (20% recovery for Magnum elements), 77°F (25°C) and pH 7.5.

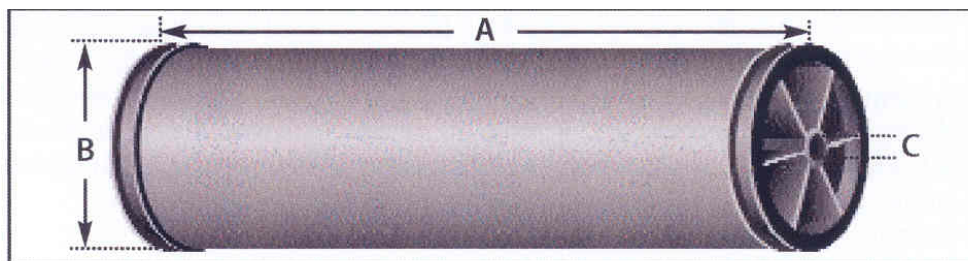
\*\* Test Conditions: 1,000 mg/l MgSO₄ in deionized water, at 80 psi (550 kPa) applied pressure, 15% recovery (20% recovery for Magnum elements), 77°F (25°C) and pH 7.5.

Quality assurance testing is done on a sample basis. Tested elements will be as described above. Untested elements will also meet this performance.

## OPERATING & DESIGN INFORMATION

|                                                   |                        |
|---------------------------------------------------|------------------------|
| <b>Typical operating pressure:</b>                | 80 psi (552 kPa)       |
| <b>Maximum operating pressure:</b>                | 350 psi (2,410 kPa)    |
| <b>Maximum operating temperature:</b>             | 113°F (45°C)           |
| <b>Maximum cleaning temperature:</b>              | 113°F (45°C)           |
| <b>Maximum continuous free chlorine:</b>          | <0.1 mg/l              |
| <b>Allowable pH – continuous operation:</b>       | 4 – 11                 |
| <b>Allowable pH – short term cleaning:</b>        | 2.5 – 11               |
| <b>Maximum differential pressure per element:</b> | 10/15 psi (69/104 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):</b>              | 5                      |
| <b>Feed spacer thickness:</b>                     | 31/28 mil (0.8/0.7 mm) |

## PRODUCT DIMENSIONS AND WEIGHT



| Model              | A           | B           | C           | Weight<br>lbs (kg) | Part Numbers   |         |            |
|--------------------|-------------|-------------|-------------|--------------------|----------------|---------|------------|
|                    | inches (mm) | inches (mm) | inches (mm) |                    | Interconnector | O-ring  | Brine Seal |
| 8923 S-400         | 40 (1,016)  | 8 (203.2)   | 1.5 (38.1)  | 44 (20)            | 0035270        | 0035478 | 0035705    |
| 8933 S-575 Magnum® | 60 (1,524)  | 8 (203.2)   | 1.5 (38.1)  | 64 (29)            | 0035270        | 0035478 | 0035705    |

**Performance:**

Performance specifications shown on the front side of this document are nominal values. Individual element permeate flows may vary +20/-15% from the values shown. Minimum chloride ion rejection is 85%, and minimum total hardness rejection is 94% at the mixed feed conditions shown. Minimum MgSO<sub>4</sub> rejection is 95% at the MgSO<sub>4</sub> 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 350 psi (2,410 kPa). Typical operating pressure for TFC-S systems is in the range of 80 psi (552 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) 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 113°F (45°C). Maximum cleaning temperature is 113°F (45°C).
- **pH:** Allowable range for continuous operation is pH 4-11. Allowable range for short term cleaning is pH 2.5-11.
- **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:** Intentional exposure of TFC-S membrane to free chlorine or other oxidizing agents such as permanganate, ozone, bromine and iodine is not recommended. TFC-S membrane has a free chlorine tolerance of approximately 1,000 ppm-hours based on testing at 77°F (25°C), pH 8. This tolerance may be significantly reduced if catalyzing metals such as iron are present or if the pH and/or temperature are different. Sodium metabisulfite (without catalysts such as cobalt) is the preferred reducing agent. TFC-S membrane has a chloramine tolerance of approximately 60,000 ppm-hours in the absence of free chlorine based on testing at 77°F (25°C), pH 8.
- **Cationic (Positively Charged) Polymers and Surfactants:** TFC-S membrane may be irreversibly fouled if exposed to cationic (positively charged) polymers or surfactants. Exposure to these chemicals during operation or cleaning is not recommended.

**Lubricants:**

For element loading, use only approved 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.

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.



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