

# Alfa Laval NF 3840 spiral membranes

## Special size spiral membranes for nanofiltration

### Spiral membrane data

The Alfa Laval NF 3840 spiral membrane is based on a unique construction of a thinfilm composite polyamide membrane with polyester (PET) support material in a sanitary and compact full-fit design that provides optimum cleaning conditions.

The NF 3840 spiral membrane is available with different feed spacer sizes.

All materials used for the production of the NF 3840 spiral membrane comply with EU Regulation (EC) 1935/2004, EU Regulation 10/2011, EU Regulation (EC) 2023/2006 and FDA regulations (CFR) Title 21.

The Alfa Laval NF 3840 spiral membrane is Halal certified and can be USDA approved upon request.



| Membrane type | Support material | Characteristics    | Rejection                |
|---------------|------------------|--------------------|--------------------------|
| NF            | Polyester        | Thinfilm composite | $\geq 99\%$ <sup>1</sup> |

<sup>1</sup> measured on 2000 ppm MgSO<sub>4</sub>, 5 bar, 25°C

### Spiral membrane designation

Example: **Alfa Laval NF 3840/65**

|               |   |                                                             |
|---------------|---|-------------------------------------------------------------|
| Alfa Laval NF | = | Membrane type                                               |
| 38            | = | Outer diameter of spiral (3.8")                             |
| 40            | = | Length of spiral without ATD system. Exact length is 38.74" |
| 65            | = | Thickness of feed spacer (65 mil)                           |

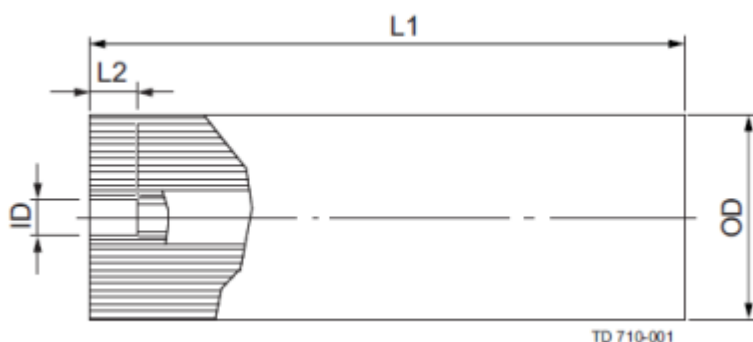
### Standard configurations

| Size <sup>1</sup> |        | Membrane type and code number <sup>2</sup> |
|-------------------|--------|--------------------------------------------|
| Spiral            | Spacer | NF                                         |
| 3840              | 30     | 533873                                     |
|                   | 48     | 528047                                     |
|                   | 65     | 536130                                     |
|                   | 80     | 552206                                     |

<sup>1</sup> For other sizes, please contact Alfa Laval

<sup>2</sup> Please specify code number when ordering

## Dimensions



OD = outer diameter of spiral membrane  
 HD = nominal inner diameter of housing<sup>1</sup>  
 L1 = total length of spiral membrane without ATD  
 ID = diameter of ATD socket  
 L2 = depth of ATD socket

<sup>1</sup> For specific measurements of Alfa Laval housings please see the product specification

## Standard size

| Size <sup>1</sup> | Outer diameter (OD) |           | Housing diameter (HD) |        | Spiral length (L1) <sup>2</sup> |        | ATD socket diameter (ID) |        | ATD socket depth (L2) |        |
|-------------------|---------------------|-----------|-----------------------|--------|---------------------------------|--------|--------------------------|--------|-----------------------|--------|
|                   | mm                  | inches    | mm                    | inches | mm                              | inches | mm                       | inches | mm                    | inches |
| 3840              | 95.0–96.5           | 3.74–3.80 | 97.55                 | 3.84   | 984                             | 38.74  | 21.1                     | 0.831  | 50                    | 1.97   |

<sup>1</sup> For other sizes, please contact Alfa Laval

<sup>2</sup> Without ATD system

## Cross-flow and pressure drop

Typical cross-flow (m<sup>3</sup>/h) and max. pressure drop (bar) at cP 1:

| Outer diameter:   |  | 3.8"              |     |
|-------------------|--|-------------------|-----|
| Spacer thickness: |  | m <sup>3</sup> /h | bar |
| 30 mil            |  | 6                 | 1.1 |
| 48 mil            |  | 8                 | 1.1 |
| 65 mil            |  | 10                | 1.1 |
| 80 mil            |  | 11                | 1.1 |

Note: Calculated at tight fit of spiral membrane and housing by use of standard ATD system

Maximum pressure drop across the entire housing not to exceed 4.1 bar

## Recommended operating limits

| Production                                           |         |
|------------------------------------------------------|---------|
| pH range (reference temperature 25°C)                | 3 – 9   |
| Typical operating pressure, bar                      | 15 – 35 |
| Maximum operating pressure, bar                      | 55      |
| Temperature, °C                                      | 5 – 50  |
| Free chlorine concentration, ppm                     | <0.1    |
| Hydrogen peroxide, continuous operation at 25°C, ppm | <20     |

### Cleaning<sup>1</sup> (3 hours per day)

|                                       |          |
|---------------------------------------|----------|
| pH range (reference temperature 25°C) | 1.5 – 11 |
| Typical operating pressure, bar       | 1 – 5    |
| Temperature, °C                       | 30 – 50  |

<sup>1</sup> Please consult the Alfa Laval cleaning instructions and water quality specifications

### Note:

- Washing procedure indicated on the cover of each spiral membrane package must be strictly followed. Please consult the Alfa Laval cleaning instructions and water quality specifications.
- The use of oxidation agents and similar chemicals might influence the membrane performance over time. Agents such as chlorine are not allowed. Any contamination with chlorine must be avoided!

### Important information

- New spiral membranes must be cleaned prior to first use. Please see detailed instructions on the packaging of the product.
- The customer is fully responsible for the effects that any incompatible chemicals may have on the spiral membranes.
- After initial wetting, the spiral membranes must be kept moist at all times.
- If the operating specifications provided in this product description are not strictly followed, the limited warranty will be null and void.
- To prevent biological growth during system shutdowns, Alfa Laval recommends that spiral membranes should be immersed in a protective solution.
- Avoid permeate-side back pressure at all times.
- Alfa Laval recommends using a rigid stainless steel ATD end device at the housing outlet end.
- Alfa Laval recommends that the inner diameter of the housing should be approx. 2 mm (0.08") bigger than the outer diameter of the spiral membrane.
- For storage conditions, please see Shelf Life and Storage document.
- For warranties, please see spiral membrane warranty document.

### Operating guidelines

Alfa Laval recommends the following start-up procedure from standstill to operating condition:

- The unpressurized plant should be refilled with water.
- Feed pressure should be gradually increased over a 30–60 second time scale.
- Before initiating cross-flow at high permeate flux condition (start-up with high-temperature water) the set feed pressure should be maintained for 5–10 minutes.
- Cross-flow velocity at the set operating point should be gradually achieved over a period of 15–20 seconds.
- Temperature variations should be implemented gradually over a period of 3–5 minutes.
- Avoid any abrupt pressure or cross-flow variations on the membranes during start-up, shutdown, cleaning or other sequences in order to prevent possible damage.



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