



# 3M™ Liqui-Cel™ SP-4×28 Series Membrane Contactor

## Typical Properties

| Membrane Characteristics     |                                                               |                               |
|------------------------------|---------------------------------------------------------------|-------------------------------|
| Cartridge Configuration      | Extra-Flow with Center Baffle                                 |                               |
| Liquid Flow Guidelines       | 1.1-6.8 m³/hr (5-30 gpm)<br>Liquid must flow on the shellside |                               |
| Membrane/Potting Material    | Polyolefin / Polyethylene                                     |                               |
| Priming Volume (approximate) | <b>Polypropylene</b>                                          | <b>316L SS (32 Ra finish)</b> |
| Shellside                    | 2.9 L (0.8 gal)                                               | 2.9 L (0.8 gal)               |
| Lumenside                    | 0.9 L (0.2 gal)                                               | 0.7 L (0.2 gal)               |

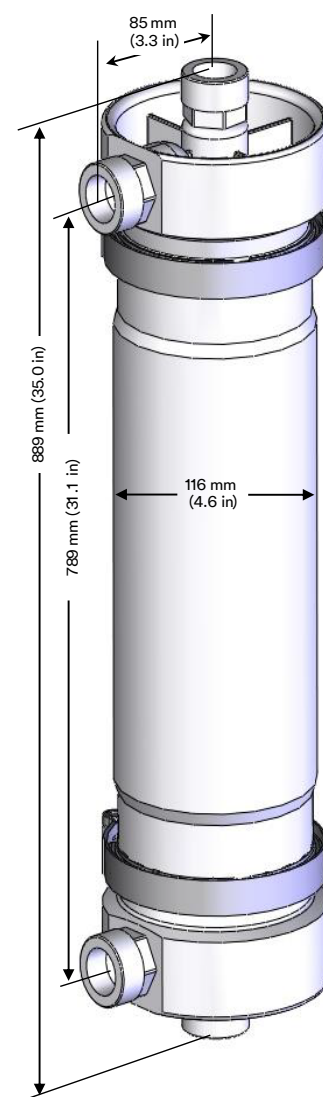
| Pressure Guidelines*                                                                                                                           |                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Maximum Shellside <b>LIQUID</b><br>Working Temperature/Pressure                                                                                | 5-25°C, 4.1 barg (41-77°F, 60 psig)<br>50°C, 1.0 barg (122°F, 15 psig) |
| If no vacuum is used, 1 barg (15 psig) can be added to pressures above.                                                                        |                                                                        |
| Maximum Applied Gas Pressure                                                                                                                   | 4.1 barg at 25°C (60 psig at 77°F)                                     |
| * See Operating Guide for complete temp/pressure limits for housings and membrane.<br>Note: Liquid pressure should always exceed gas pressure. |                                                                        |

| Housing Characteristics    |                                                                                                                                                           |                                                                   |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Material                   | <b>Polypropylene</b>                                                                                                                                      | <b>316L SS (32 Ra finish)</b>                                     |
| Flange Connections         |                                                                                                                                                           |                                                                   |
| Shellside (Wetted surface) | <ul style="list-style-type: none"><li>• 1 inch Sanitary</li><li>• ¾ inch NPT Female</li><li>• 1 inch George Fisher</li><li>• Rc ¾ per JIS B0203</li></ul> | <ul style="list-style-type: none"><li>• 1 inch Sanitary</li></ul> |
| Lumenside (Gas/Vacuum)     | <ul style="list-style-type: none"><li>• 1 inch 90° Sanitary</li><li>• ¾ inch 90° NPT Female</li><li>• Rc ¾ per JIS B0203</li></ul>                        | <ul style="list-style-type: none"><li>• 1 inch Sanitary</li></ul> |

| Seal Material Options | Applications     |
|-----------------------|------------------|
| Fluoroelastomer       | General Purpose  |
| Perfluoroelastomer    | Ultra Pure Water |

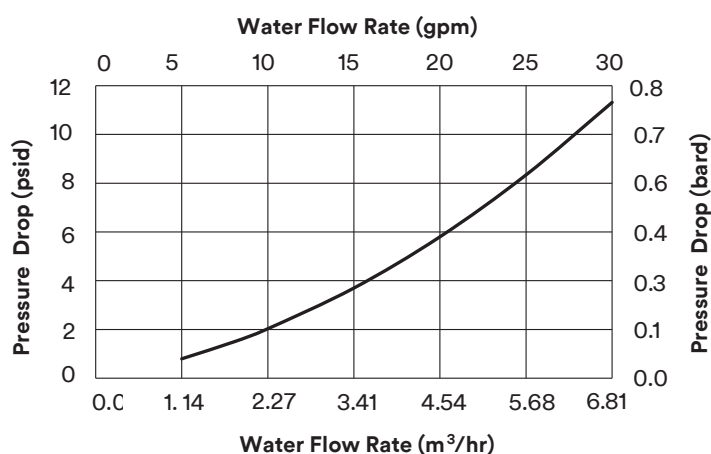
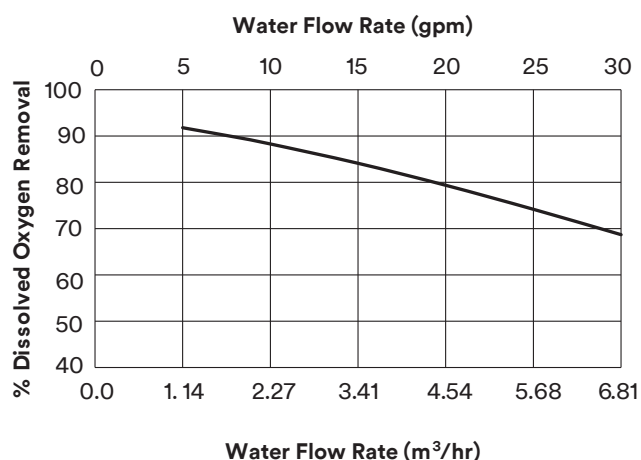
| Weight (approximate) | <b>Polypropylene</b> | <b>316L SS</b> |
|----------------------|----------------------|----------------|
| Dry                  | 4 kg (9 lbs)         | 7 kg (16 lbs)  |
| Water-filled         | 7 kg (16 lbs)        | 10 kg (22 lbs) |

| Regulatory                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Complies with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.<br>Constructed of FDA CFR title 21 compliant materials for wetted parts only at ambient temperatures. |



All dimensions are nominal values for the Polypropylene housing with NPT connections. See full housing drawing on [3M.com/Liqui-Cel](http://3M.com/Liqui-Cel) for additional details.

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Curves represent nominal values, generated using water at 25°C (77°F).

Test condition: O<sub>2</sub> Removal with 50 torr abs. vacuum.

Characteristics may change under different operating conditions.

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