

3M™ Liqui-Cel™ EXF-10×28 Series Membrane Contactor

Typical properties

| Membrane characteristics | | | | | | |
|------------------------------|---|------------------|-----------------|--|-----------------|-----------|
| Cartridge configuration | Extra-flow with center baffle | | | | | |
| Liquid flow guidelines | 10-57 m ³ /hr (44-250gpm) | | | | | |
| Membrane type | X50 Fiber | | | X40 Fiber | | |
| | Recommended for CO ₂ removal | | | Recommended for O ₂ removal | | |
| Membrane/potting material | Polypropylene/Epoxy | | | | | |
| Priming volume (approximate) | FRP Housing | | 316 SS Sanitary | | 316 SS ANSI/JIS | |
| | X50 Fiber | X40 Fiber | X50 Fiber | X40 Fiber | X50 Fiber | X40 Fiber |
| Shell side | 26.1 L (6.9 gal) | 26.3 L (7.0 gal) | 24.3 L | 24.5 L | 24.9 L | 25.6 L |
| Lumen side | 10.6 L (2.8 gal) | 9.5 L (2.5 gal) | 7.5 L | 6.4 L | 10.0 L | 9.5L |

| Pressure guidelines* | | | | | | |
|--|-------------|-----------|---------------------------|---------------------------|---------------------------|---------------------------|
| | FRP Housing | | 316 SS Housing | | | |
| | X50 Fiber | X40 Fiber | Sanitary Flange X50 Fiber | Sanitary Flange X40 Fiber | ANSI/JIS Flange X50 Fiber | ANSI/JIS Flange X40 Fiber |
| Maximum shell side LIQUID operating temperature/pressure | | | | | | |

| | | | | | | |
|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 5 - 25°C (41 - 77°F) | 7.2 barg (105 psig) | 9.3 barg (135 psig) | 7.2 barg (105 psig) | 9.3 barg (135 psig) | 7.2 barg (105 psig) | 9.3 barg (135 psig) |
| 50°C (122°F) | 5.4 barg (78 psig) | 5.4 barg (78 psig) | 7.2 barg (105 psig) | 7.2 barg (105 psig) | 7.2 barg (105 psig) | 7.2 barg (105 psig) |
| 70°C (158°F) | 2.1 barg (30 psig) | 2.1 barg (30 psig) | 2.1 barg (30 psig) | 2.1 barg (30 psig) | 2.1 bar (30 psig) | 2.1 bar (30 psig) |

| Maximum lumen side GAS operating temperature/pressure | | | |
|---|--------------------|--------------------|--------------------|
| 25C 25°C (77°F) | 5.4 barg (78 psig) | 6.2 barg (90 psig) | 5.6 barg (81 psig) |

*Pressures are based on fluid group 2 (other) liquids and gases per the European Union Pressure Equipment Directive 2014/68/EU. Note: Liquid pressure should always exceed gas pressure in operation.

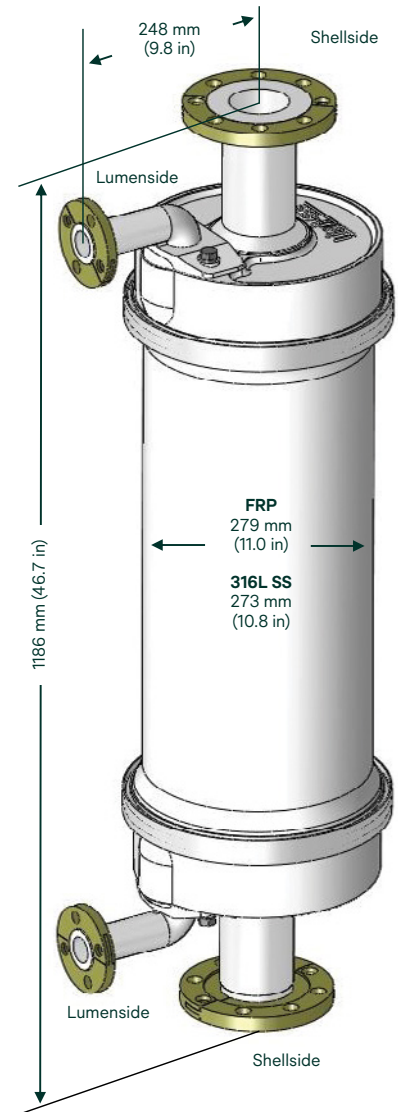
Seal material options for shell side wetted parts

EPDM

FKM only available with FRP housings.

Mounting kit

Contains 2 cradles and 2 straps sold separately and will hold the contactor horizontally or vertically.



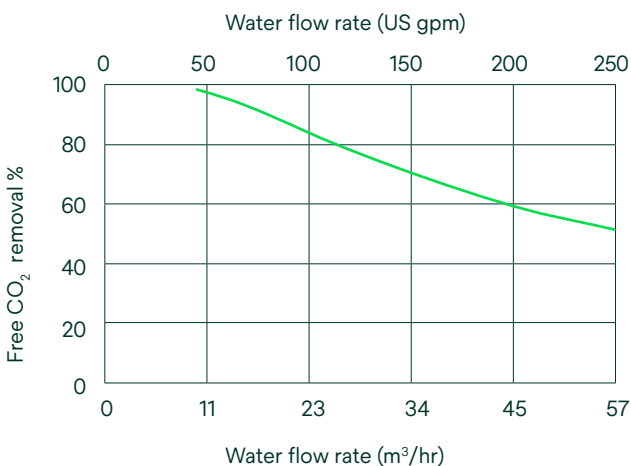
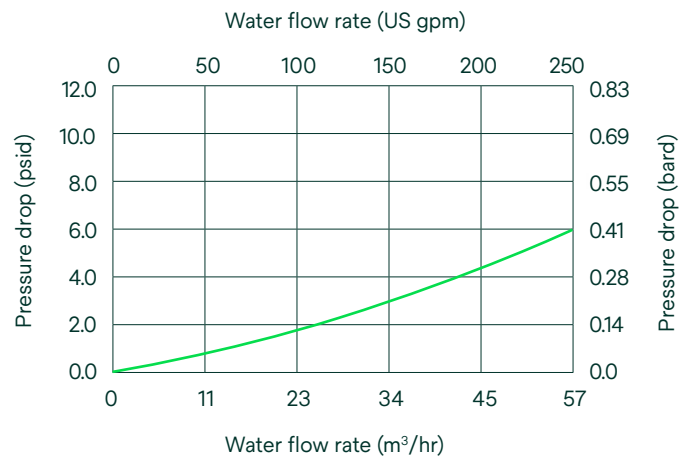
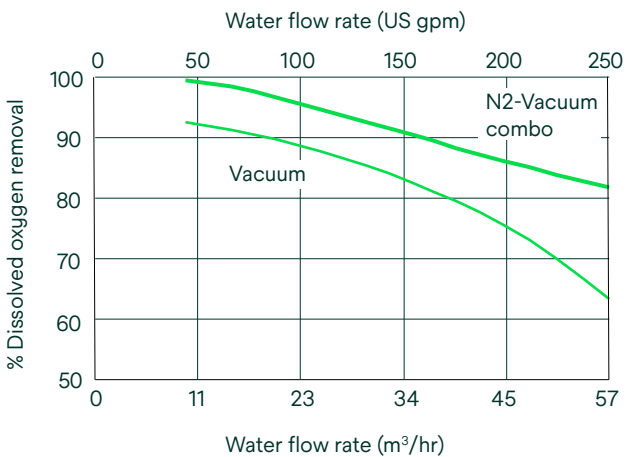
Note: All dimensions are nominal values for the PVDF-lined FRP housing. SS contactor uses a different end cap design. Sanitary connections are only available with 316 SS housing. See full housing drawing on 3M.com/Liqui-Cel for additional details.

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| Housing characteristics | | | | |
|----------------------------------|--|---|-------------------------|-----------------|
| Material | Fiber Reinforced Plastic (FRP) with PVDF for all wetted surfaces and FRP flanges. | 316L SS Vessel/CF3M SS End Caps ≤ 32RA (0.8µm SI) on schedule 10S pipe per ASTM A312 | | |
| Flange connections | | | | |
| Shell side (Liquid inlet/outlet) | <ul style="list-style-type: none"> 3 inch class 150 raised face flange per ANSI B16.5 80A 10K flat face flange per JIS B2238 | <ul style="list-style-type: none"> 3 inch class 150 raised face flange per ANSI B16.5 80A 10K flat face flange per JIS B2238 3 inch sanitary | | |
| Lumen side (Inlet/outlet) | <ul style="list-style-type: none"> 1 inch class 150 raised face flange per ANSI B16.5 50A 10K flat face flange per JIS B2238 | <ul style="list-style-type: none"> 1 inch class 150 raised face flange per ANSI B16.5 25A 10K flat face flange per JIS B2238 1.5 inch sanitary | | |
| Weight (approximate) | | | | |
| | FRP housing | | Stainless steel housing | |
| | ANSI/JIS | | ANSI/JIS | Sanitary |
| Dry | 33 kg (73 lbs) | | 69 kg (151 lbs) | 50 kg (111 lbs) |
| Water-filled (Shell side) | 57 kg (126 lbs) | | 96 kg (205 lbs) | 74 kg (163 lbs) |
| Cartridge only - Dry | 10 kg (23 lbs) | | 10 kg (23 lbs) | 10 kg (23 lbs) |

Regulatory

Complies with the limits as set by (EU) 2015/863 amending Annex II to the Restriction on Hazardous Substances (RoHS) Directive (2011/65/EU). 3M™ Liqui-Cel™ EXF-10×28 Series Membrane Contactors in stainless steel housings only are constructed of FDA Title 21 CFR §170-186 compliant materials for wetted parts only at ambient temperatures.



Curves represent nominal values using water. Characteristics may change under different operating conditions. These charts should not be used to design systems.

Test condition O₂ Removal with X40 membrane 20°C (68°F): N₂ vacuum combo mode, vacuum: 50 mm Hg N₂ sweep flow 0.40 Nm³/hr (0.25 scfm).

Test condition CO₂ Removal with X50 membrane 25°C: Air-vacuum combo mode, vacuum 75 mm Hg, air sweep flow 1.6 Nm³/hr (1 scfm)

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3M™ Liqui-Cel™ Membrane Contactors with EPDM Seals are tested and certified by WQA against NSF/ANSI/CAN 61.



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