

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

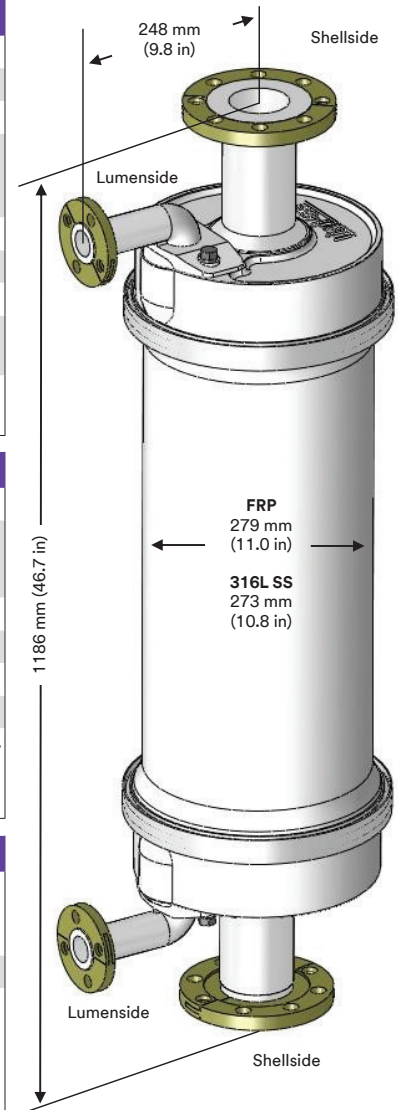
Typical Properties

Membrane Characteristics				
Cartridge Configuration	Extra-Flow with Center Baffle			
Liquid Flow Guidelines	10 – 57 m ³ /hr (44 – 250 gpm)			
Membrane Type	X50 Fiber		X40 Fiber	
	Recommended for CO ₂ removal from liquid and other gas transfer applications		Recommended for O ₂ removal from liquid and other gas transfer applications	
Membrane/Potting Material	Polypropylene / Epoxy			
Priming Volume (approximate)	FRP Housing		316 SS Sanitary/316 SS ANSI	
	X50 Fiber	X40 Fiber	X50 Fiber	X40 Fiber
Shellside	26.1 L (6.9 gal)	26.3 L (7.0 gal)	24.3/24.9 L (6.4/6.6 gal)	24.5/25.6 L (6.5/6.8 gal)
Lumenside	10.6 L (2.8 gal)	9.5 L (2.5 gal)	7.5/10.0 L (1.9/2.6 gal)	6.4/9.5 L (1.7/2.5 gal)

Pressure Guidelines*		
	X50 Fiber	X40 Fiber
Maximum Shellside LIQUID Working Temperature/ Pressure	5-50°C, 7.2 barg (41-122°F, 105 psig) 70°C, 2.1 barg (158°F, 30 psig)	5-25°C, 9.3 barg (41-77°F, 135 psig) 50°C, 7.2 barg (77-122°F, 105 psig) 70°C, 2.1 barg (158°F, 30 psig)
If no vacuum is used, 1.0 barg (15 psig) can be added to pressures above.		
	FRP	316 SS
Maximum Applied Gas Pressure	6.2 barg at 25°C (90 psig at 77°F)	9.0 barg at 25°C (130 psig at 77°F)
Maximum applied gas pressure is for integrity testing at ambient temperatures. Normal operating pressures are typically lower.		
* Pressures are based on fluid group 2 (other) liquids and gases per the European Union Pressure Equipment Directive 2014/68/EU. See Operating Guide for pressure limits in the European Union with fluid group 1 (hazardous) liquids and gases. See Operating Guide for complete listing of temp/pressure limits for housings and membrane.		
Note: Liquid pressure should always exceed gas pressure.		

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		
Shellside (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
Lumenside (Gas/Vacuum)	<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

Mounting Kit
A Mounting Kit with 2 cradles and 2 straps is available and sold separately. It 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.

Not for consumer sale or use.

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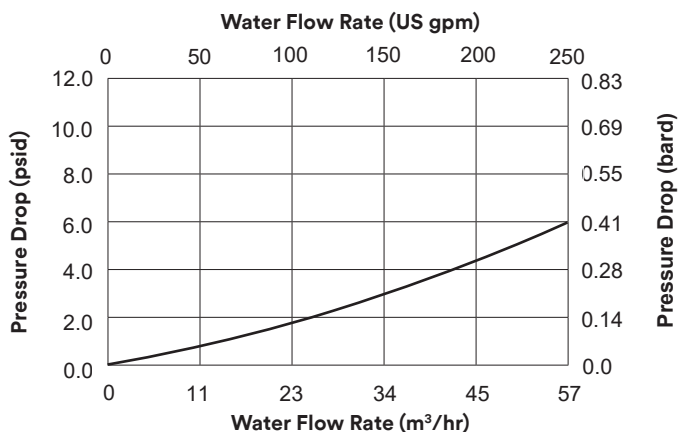
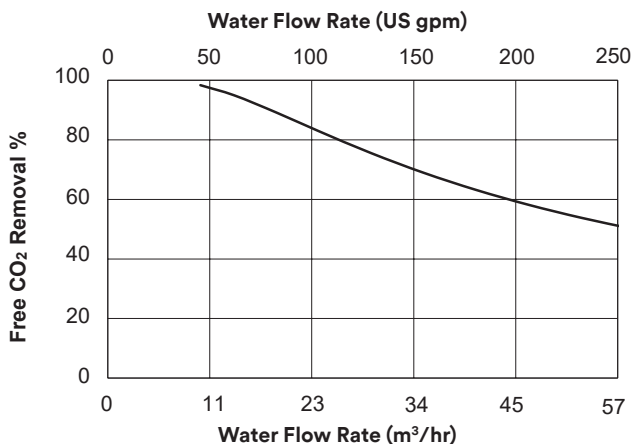
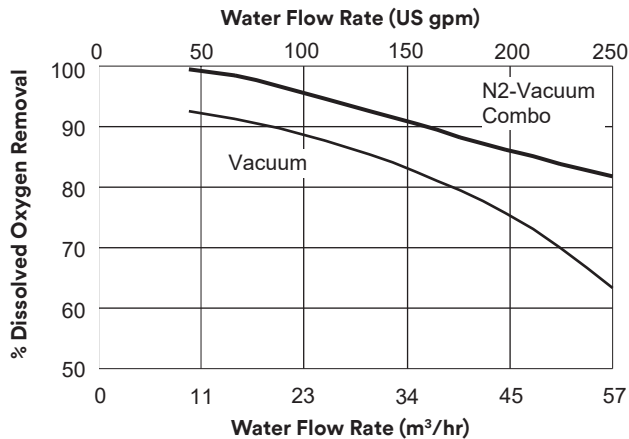
Typical Properties

Seal Options	
Material	Applications
EPDM	All Purpose
FKM (Available on FRP housing only)	High Purity/Electronics

Weight (approximate)			
	FRP Housing	Stainless Steel Housing	
	ANSI/JIS	ANSI /JIS	Sanitary
Dry	33 kg (73 lbs)	76 kg (168 lbs)	81 kg (177 lbs)
Water-filled (shellside)	57 kg (126 lbs)	99 kg (218 lbs)	107 kg (235 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).

Curves represent nominal values using water. Characteristics may change under different operating conditions.
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 Company
3M Separation and Purification Sciences Division
13840 South Lakes Drive
Charlotte, North Carolina
28273 USA
Phone: +1 980 859 5400

3M Deutschland GmbH
3M Separation and Purification Sciences Division
Öhder Straße 28
42289 Wuppertal Germany
Phone: +49 202 6099 - 0



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

LC-1031
870-2016-0207-8

Rev. 03/2023

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