

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

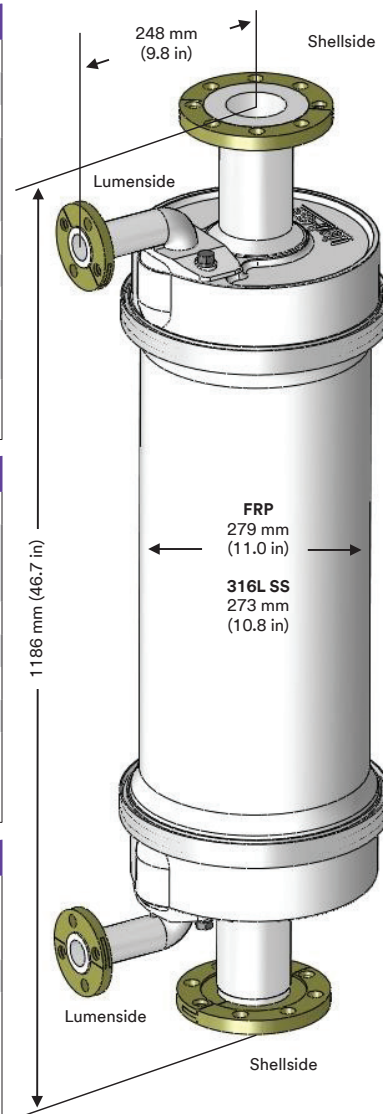
Typical Properties

Membrane Characteristics				
Cartridge Configuration	Extra-Flow with Center Baffle			
Liquid Flow Guidelines	10 – 57 m³/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)	3 inch class 150 raised face flange per ANSI B16.5 80A 10K flat face flange per JIS B2238	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)	1 inch class 150 raised face flange per ANSI B16.5 50A 10K flat face flange per JIS B2238	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.

Typical Properties

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

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)

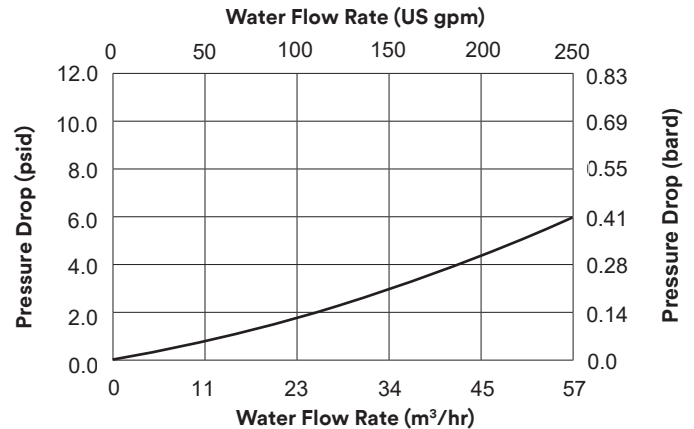
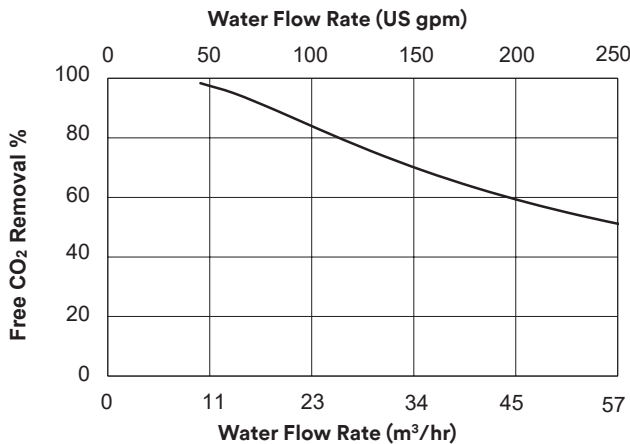
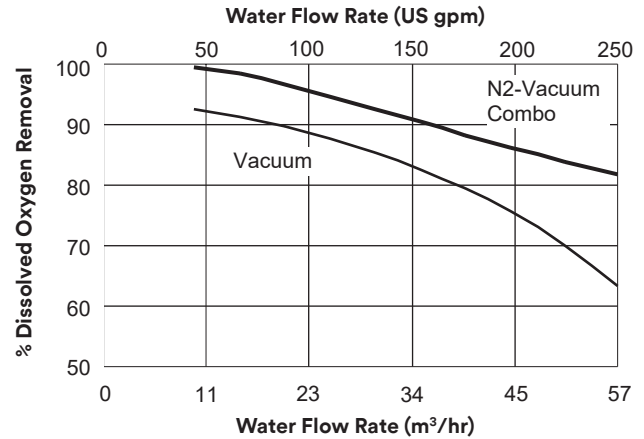
Regulatory

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).



Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Selection and Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: Unless a different warranty is expressly identified on the applicable 3M product literature or packaging (in which case such express warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

3M and Liqui-Cel are trademarks of 3M Company. All other trademarks are the property of their respective owners.
© 2023 3M Company. All rights reserved.



LENNTECH
WATER TREATMENT SOLUTIONS

info@lenntech.com Tel. +31-152-610-900
www.lenntech.com Fax. +31-152-616-289



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

LC-1031
70-2016-0207-8

Rev. 03/2023

3M.com/Liqui-Cel