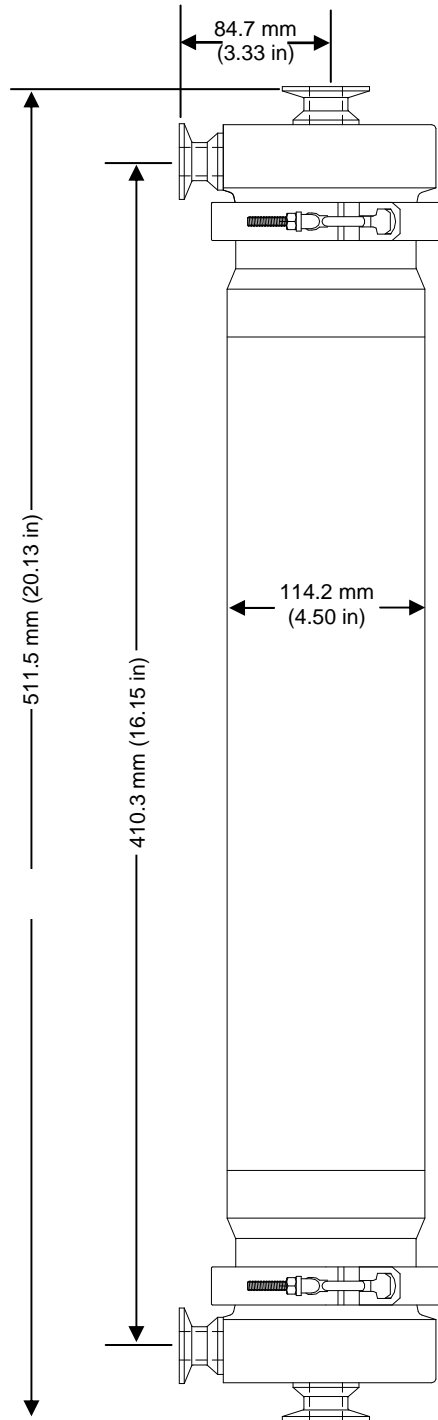


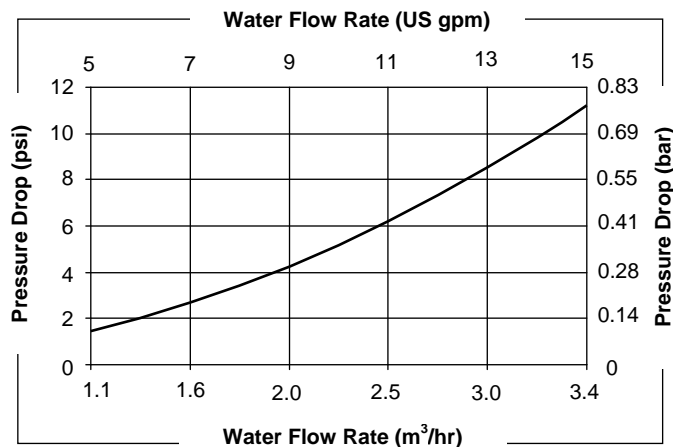
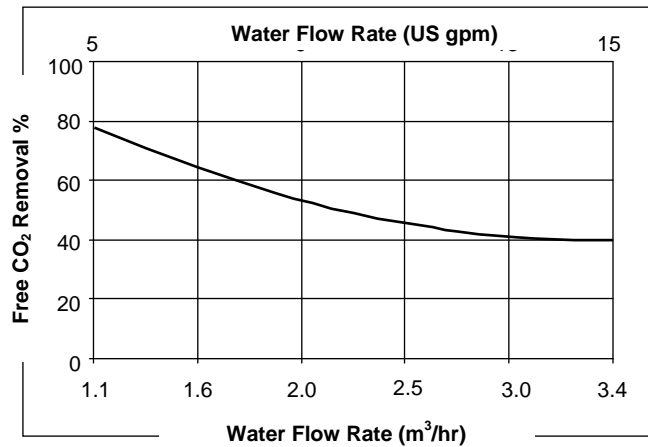
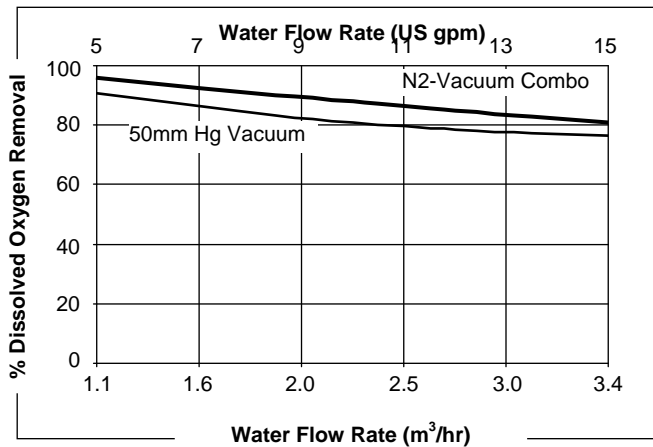
4 x 13 EXTRA-FLOW PRODUCT DATA SHEET



Membrane Characteristics			
Cartridge Configuration	Extra-Flow with Center Baffle		
Liquid Flow Guidelines	0.7 – 3.41 m ³ /hr (3 – 15 gpm)		
Membrane Type	X50	X40	
	Recommended for CO ₂ removal from water	Recommended for all other gas transfer applications	
Membrane/Potting Material	Polypropylene / Polyethylene		
Typical Membrane Surface Area	8.1 m ² (87 ft ²)		
Priming Volume (approximate)			
Shellside	1.26 liters (0.33 gal.)		
Lumenside	0.61 liters (0.16 gal.)		
Pressure Guidelines*			
	PP X50 or X40	316L SS X50	316L SS X40
Maximum Shellside LIQUID Working Temperature/ Pressure	5-30° C, 7.2 bar (41-86° F, 105 psig) 40° C, 5.2 bar (104° F, 75 psig)	5-50° C, 7.2 bar (41-122° F, 105 psig) 70° C, 2.1 bar (158° F, 30 psig)	5-50° C, 9.3 bar (41-122° F, 135 psig) 70° C, 2.1 bar (158° F, 30 psig)
If no vacuum is used, 1.05 bar (15 psig) can be added to pressures above.			
Maximum Applied Gas Pressure	6.2 bar (90 psig)		
Max applied gas pressure is for integrity testing at ambient temperatures. Normal operating pressures are typically lower.			
*Pressures are based on non-dangerous liquids and gasses per the European Union Pressure Equipment Directive /97/23/EC. See Operating Guide for pressure limits in the European Union with dangerous liquids and gasses. Also, see Operating Guide for complete temp/pressure limits for housings and membrane. Note: Liquid pressure should always exceed gas pressure.			
Housing Options & Characteristics			
Material	Polypropylene	316L SS	
Flange Connections			
Shellside (Liquid Inlet/Outlet)	<ul style="list-style-type: none"> • 1 inch Sanitary • ¾ inch NPT Female • 1 inch GF • Rc ¾ per JIS B0203 	<ul style="list-style-type: none"> • 1 inch Sanitary (316L SS) • ¾ inch NPT Female (304 SS) 	
Lumenside (Gas/Vacuum)	<ul style="list-style-type: none"> • 1 inch 90° Sanitary • ¾ inch 90° NPT Female • Rc ¾ per JIS B0203 	<ul style="list-style-type: none"> • 1 inch 90° Sanitary (316L SS) • ¾ inch 90° NPT Female (304 SS) 	
Seal Options			
Material	Applications		
Viton	General Purpose		
K-UPW	Ultra Pure Water		
K-EXT	Chemical Extraction		
Buna-N	Beverage		
Weight	PP	316L SS	
Dry weight	2.6 kg. (5.8 lbs.)	4.9 kg (10.7 lbs.)	
Liquid full (shellside)	3.7 kg. (8.2 lbs.)	7.4 kg (16.4 lbs.)	
Shipping Weight	3.3 kg. (7.3 lbs.)	6.4 kg (14.0 lbs.)	
Regulatory			
Meets RoHS threshold limits. Complies with the PED 97/23/EC. CFR Title 21 compliant.			

Note: All dimensions are nominal values.
This represents PP housing. All housing options are located on www.Liqui-Cel.com.

4 x 13 EXTRA-FLOW PRODUCT DATA SHEET



Cartridge Specifications		
Characteristics	Test Conditions	Specifications
Performance O ₂ Removal	Shellside water flow: 12 gpm 20°C (68°F) Lumenside N ₂ Flow: 1 ft ³ /min, 1.0 atm at 20°C	77% minimum
Pressure Drop	Shellside water flow: 12 gpm, 20°C (68°F)	8.5 psi maximum

Curves represent nominal values, generated using water at 20°C. Characteristics may change under different operating conditions.
 Test condition O₂ Removal with X40 membrane: N₂-vacuum combo mode, vacuum: 50 mm Hg N₂ sweep: 0.05 scfm at 20°C. Vacuum mode, vacuum: 50 mm Hg at 20°C.
 Test condition CO₂ Removal with X50 membrane: N₂-vacuum combo mode, vacuum: 150 mm Hg, N₂ sweep 0.1 scfm at 20°C.

All components of the Liqui-Cel[®] Extra-Flow Membrane Contactor, when used in accordance with recommendations given in our product literature for treatment or processing of water, alcoholic and non-alcoholic beverages, and aqueous, acid and non-acid food products at and below ambient temperatures, are in compliance with all relevant FDA regulations as specified in Title 21 of the Code of Federal Regulations.

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