SARTORIUS

Product Datasheet

Steamer Line Hollow Fiber Membrane Products

Hollow Fiber Modules Designed for Perfusion and Aseptic Applications.

Executive Summary

Steamer Line hollow fiber membrane products incorporate our latest glycerin free low extractables, heat resistant modified polyethersulfone (m-PES) membrane technology. All Steamer Line modules are gamma irradiated and ready to use without any tedious pre-rinse. The extractables level for the Steamer Line modules is approximately 80x less than a glycerin conditioned membrane, see Extractables Flush Analysis. After a quick buffer conditioning the module is ready to be used or autoclaved. For autoclaving directions, please see the Steamer Line Validation Guide. Steamer Line modules are fully scalable from batch volumes from 10 mL up to 1500 L with corresponding membrane surface areas from 0.056 ft² (0.0052 m²) up to 166.0 ft² (15.42 m²).

Unique Selling Points

The Steamer Line modules offer true ready to use crossflow filtration

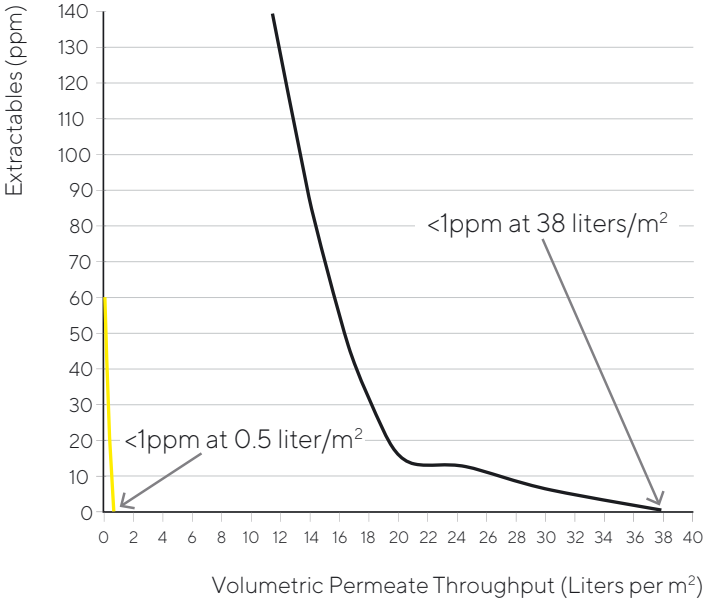
- Self-contained units
- No humectants - 80x less extractables
- No pre-rinse required (glycerin free)
- Ready to use
- Easy and reliable scale up and scale down
- Membrane offering from 3kD to 750kD MWCO and from 0.1 µm to 0.65 µm pore size
- Gamma irradiated
- Cost efficiency
- Free of time-consuming cleaning validation
- Integrity tested and individual lot number for easy traceability

Relevant Applications

- Rapid clarification of volumes from 25 L to 100 L of cell culture, fermentation solutions and virus | vaccine suspensions
- Production scale aseptic operations or any other sterile application requiring autoclaving
- Cell perfusion with a conventional pump operated cross-flow perfusion system. Bioreactor and Steamer hollow fiber assembly can be autoclaved simultaneously
- Concentration and diafiltration of gene therapy products as well as monoclonal antibodies, enzymes, blood components and other proteins

Relevant Process Steps

Extractables Flush Analysis - Glycerin Free vs Glycerin Stored



Membrane
m-PES 30kD, 1mm Fiber ID

Extractant
Water (20 °C)

GF Gamma Irradiated (Glycerin Free) Autoclaveable Steamer Line

Glycerin Stored (No Gamma)

Technical Specifications

Attribute	Steamer Line Modules
Bio compatibility	The module as assembled is USP Class VI compliant
Membrane	Modified Polyethersulfone (m-PES)
Housing	White Polysulfone
Encapsulant	Medical Grade Epoxy

Name	Scale	Fiber Length	Dimensions in inches (cm)	Membrane surface area ft^2 (m^2)*	Recommended batch volume per module	Connections	
						Feed | Retentate	Feed | Retentate
Discover	Lab	12 inch	0.38 × 12.88 (0.95 × 32.72)	0.056 (0.0052)	10 - 250 mL	Luer Lock	Luer Lock
		24 inch	0.38 × 24.38 (0.95 × 61.93)	0.115 (0.0107)	50 - 400 mL		
		41 inch	0.38 × 41.8 (0.95 × 106.2)	0.208 (0.0193)	80 - 850 mL		
Explorer	Lab	12 inch	0.5 × 12.3 (1.3 × 31.2)	0.17 (0.0155)	150 - 175 mL	½-inch TC	3/16-inch Hose Barb
		24 inch	0.5 × 23.8 (1.3 × 60.5)	0.35 (0.0321)	250 - 1,500 mL		
		41 inch	0.5 × 41.8 (1.3 × 106.2)	0.62 (0.0579)	300 - 3,000 mL		
Researcher	Lab | Pilot	12 inch	0.75 × 12.3 (1.91 × 31.2)	0.48 (0.0444)	400 - 2,000 mL	¾-inch TC	⅜-inch Hose Barb
		24 inch	0.75 × 23.66 (1.91 × 60.1)	1.01 (0.0940)	700 - 4,000 mL		
		41 inch	0.75 × 41.8 (1.91 × 106.1)	1.85 (0.1716)	1,000 - 8,000 mL		
Researcher XL	Lab | Pilot	12 inch	0.75 × 12.3 (1.91 × 31.2)	0.66 (0.0617)	0.56 - 2.8 L	¾-inch TC	⅜-inch Hose Barb
		24 inch	0.75 × 23.66 (1.91 × 60.1)	1.41 (0.1305)	0.98 - 5.6 L		
		41 inch	0.75 × 41.8 (1.91 × 106.1)	2.57 (0.2383)	1.4 - 11.2 L		
Investigator	Lab | Pilot	12 inch	1.32 × 12.01 (3.34 × 30.5)	1.4 (0.13)	1 - 6 L	1.5-inch TC	½-inch TC
		24 inch	1.32 × 23.5 (3.34 × 59.7)	3.0 (0.28)	2 - 12 L		
		41 inch	1.32 × 41.5 (3.34 × 105.4)	5.4 (0.51)	3 - 25 L		
mini-Bioproducer	Pilot | Production	12 inch	2.70 × 15.0 (6.86 × 38.1)	6.6 (0.61)	5 - 50 L	1.5-inch TC	0.75-inch TC
		24 inch	2.70 × 26.5 (6.86 × 67.3)	14.5 (1.35)	10 - 100 L		
		41 inch	2.70 × 44.5 (6.86 × 113)	26.9 (2.50)	25 - 250 L		
Bioproducer	Production	12 inch	3.50 × 15.0 (8.89 × 38.1)	13.1 (1.21)	25 - 100 L	1.5-inch TC	1-inch TC
		24 inch	3.50 × 28.5 (8.89 × 67.3)	29.0 (2.69)	50 - 250 L		
		41 inch	3.50 × 44.49 (8.89 × 113)	53.8 (5.00)	100 - 500 L		
Maximizer	Production	24 inch	4.62 × 28.8 (11.73 × 73.15)	58.4 (5.42)	100 - 500 L	2-inch TC	1-inch TC
		41 inch	4.62 × 46.5 (11.73 × 118.1)	104.9 (9.74)	250 - 1,000 L		
Grand XL (only with 1.0 and 2.0 mm Fiber IDs)	Production	24 inch	6.64 × 32.65 (16.88 × 82.93)	87.2 (8.10)	250 - 800 L	2.5-inch TC or 6-inch TC	1-inch TC
		43 inch	6.015 × 51.65 (16.88 × 131.19)	166.0 (15.42)	400 - 1,500 L		

*Membrane surface valid for all fiber IDs. For number of fibers per module please consider the Validation Guide.

Available MWCO and Pore Sizes for Different Fiber IDs

The tables stated below are valid for all sizes and lengths, if not stated otherwise.

	MWCO								
Fiber ID	**3 kD**	**5 kD**	**10 kD**	**30 kD**	**50 kD**	**100 kD**	**300 kD**	**500 kD**	**750 kD**
0.5 mm*	■	■	■	■	■	■	■	■	■
1.0 mm	■	■	■	■	■	■	■	■	■
2.0 mm			■		■		■	■	■

	Pore size			
Fiber ID	**0.1 µm**	**0.2 µm**	**0.45 µm**	**0.65 µm**
0.5 mm*	■	■	■	■
1.0 mm	■	■	■	■
2.0 mm	■	■	■	■

* Not available for Grand XL

Ordering Information

Product Designator
AU Steamer Line

Fiber Lumen Diameter (mm)
05 = 0.5 mm
10 = 1.0 mm
20 = 2.0 mm (special production)

Fiber Length
12 = 12 inches
24 = 24 inches
41 = 41 inches
43 = 43 inches

Package Size
6 = 6-pack
D = 12-pack
3 = 3-pack

AU	910	05	DIS	12	L	6

MWCO & Pore Size
003 = 3 kD
005 = 5 kD
010 = 10 kD
030 = 30 kD
050 = 50 kD
100 = 100 kD
300 = 300 kD
500 = 500 kD
750 = 750 kD
910 = 0.1 µm
920 = 0.2 µm
945 = 0.45 µm
965 = 0.65 µm

Cartridge Type
DIS Discover
EXP Explorer
RES Researcher
RXL Researcher XL
INV Investigator
MPR mini-Bioproducer

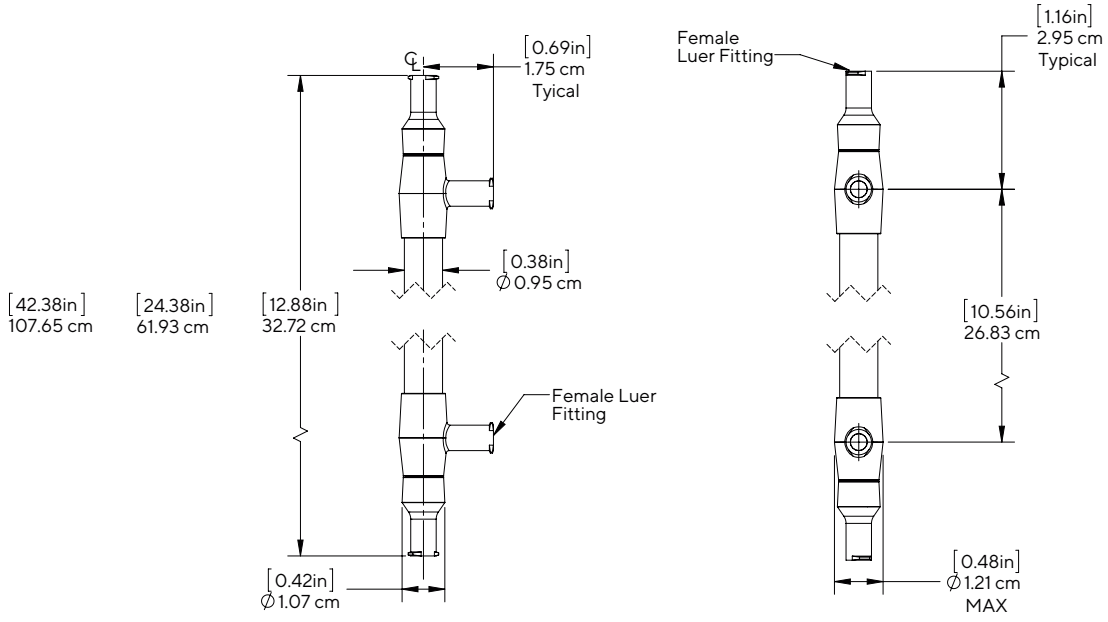
Type of Connector
L = Luer Lock (only Discover)
S = Sanitary

Please consult the specification table on page 3 to learn more about the possible combinations.

Overview

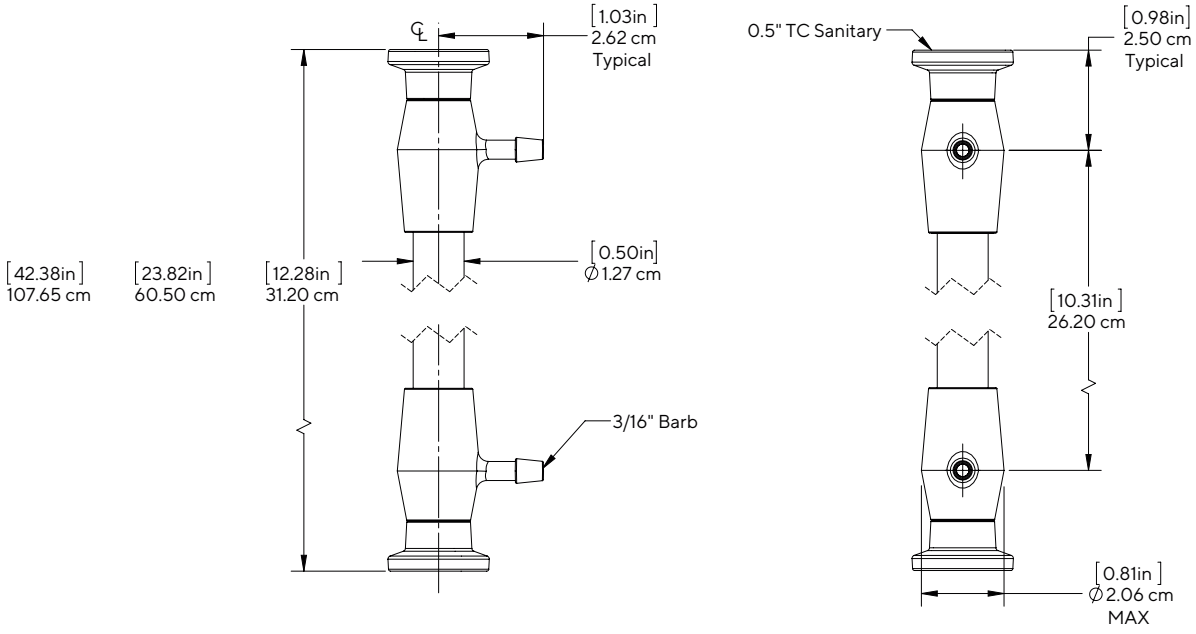
Discover

Exact length for different Fiber length: 12, 24 or 41 inch



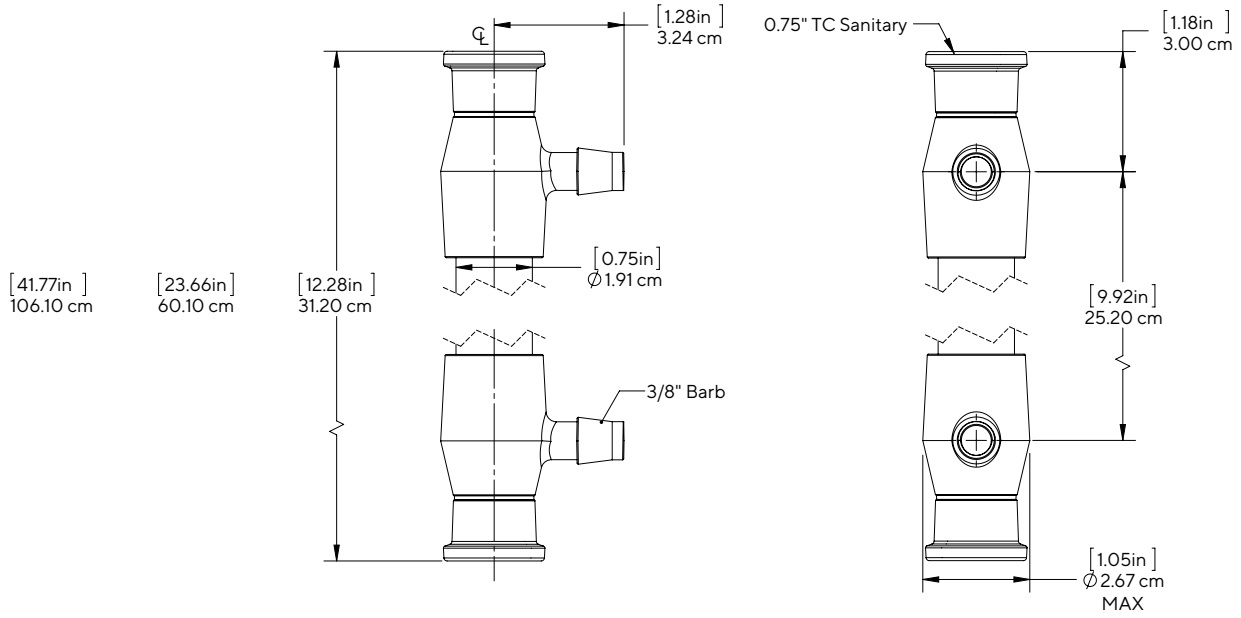
Explorer

Exact length for different Fiber length: 12, 24 or 41 inch



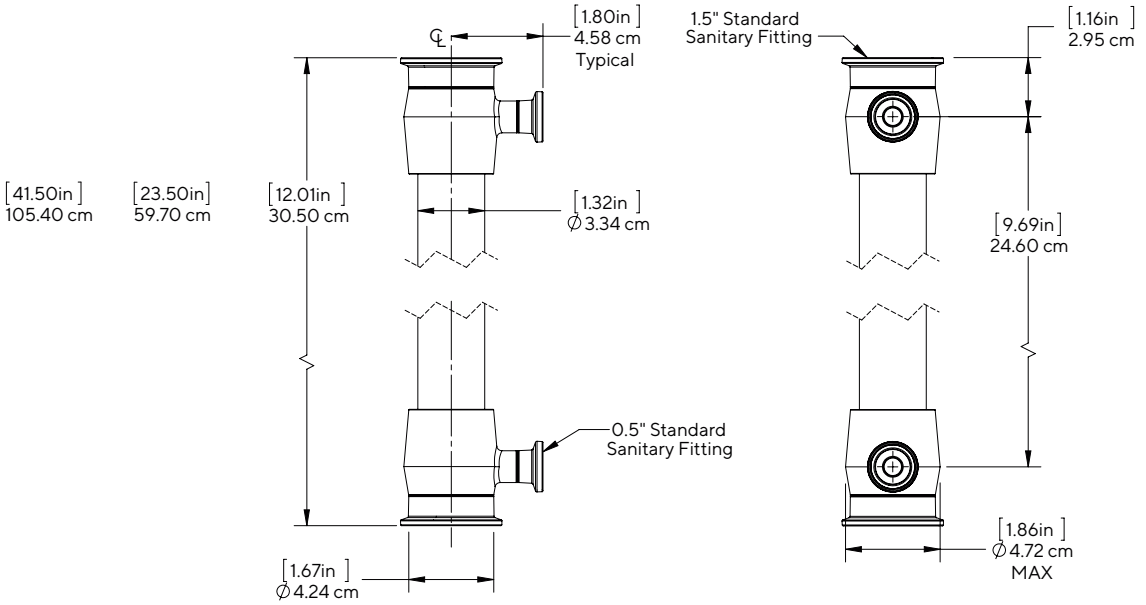
Researcher & Researcher XL

Exact length for different Fiber length: 12, 24 or 41 inch



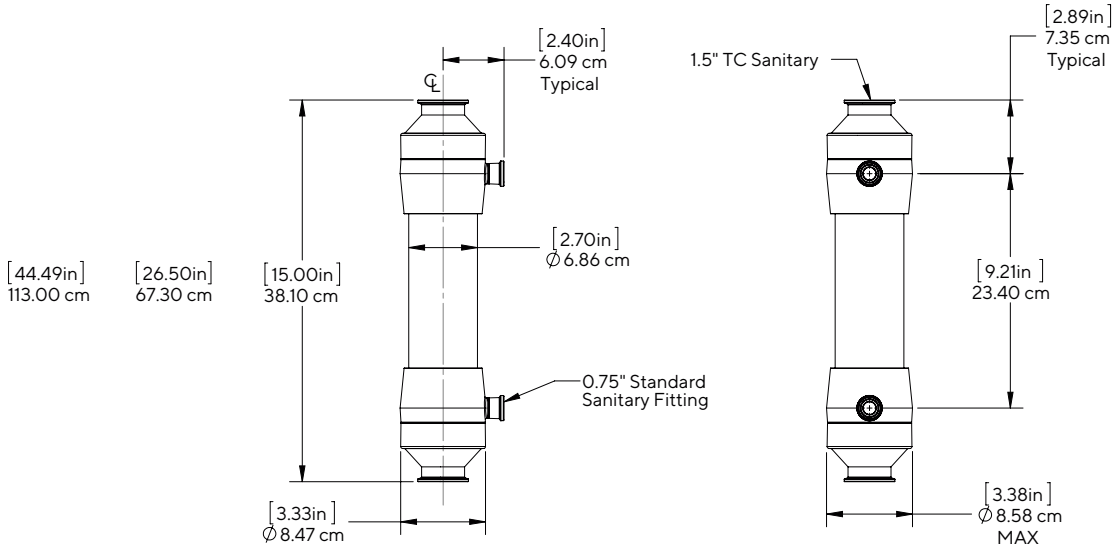
Investigator

Exact length for different Fiber length: 12, 24 or 41 inch



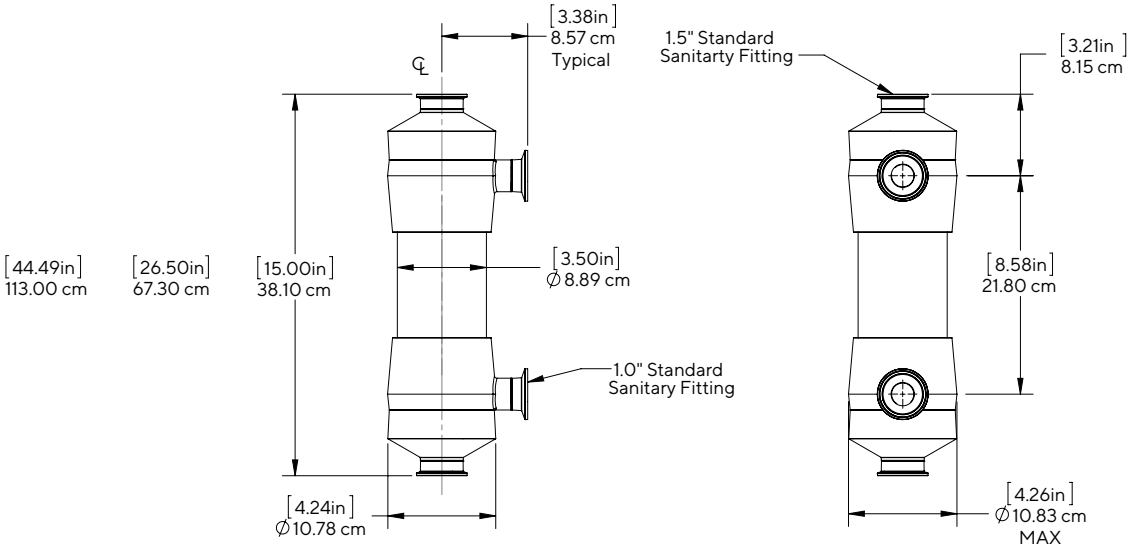
mini-Bioproducer

Exact length for different Fiber length: 12, 24 or 41 inch



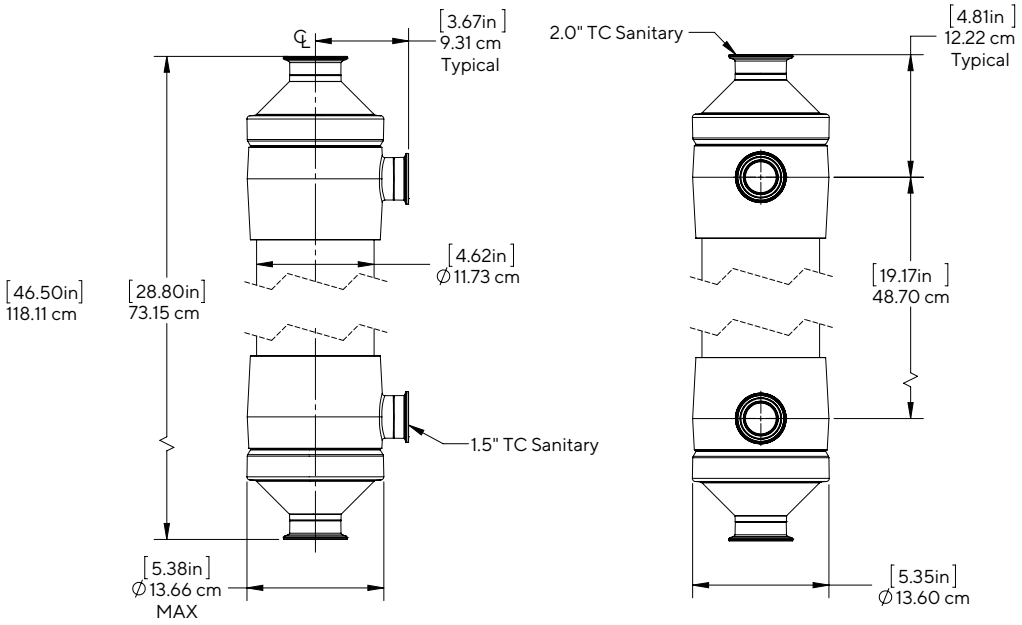
Bioproducer

Exact length for different Fiber length: 12, 24 or 41 inch



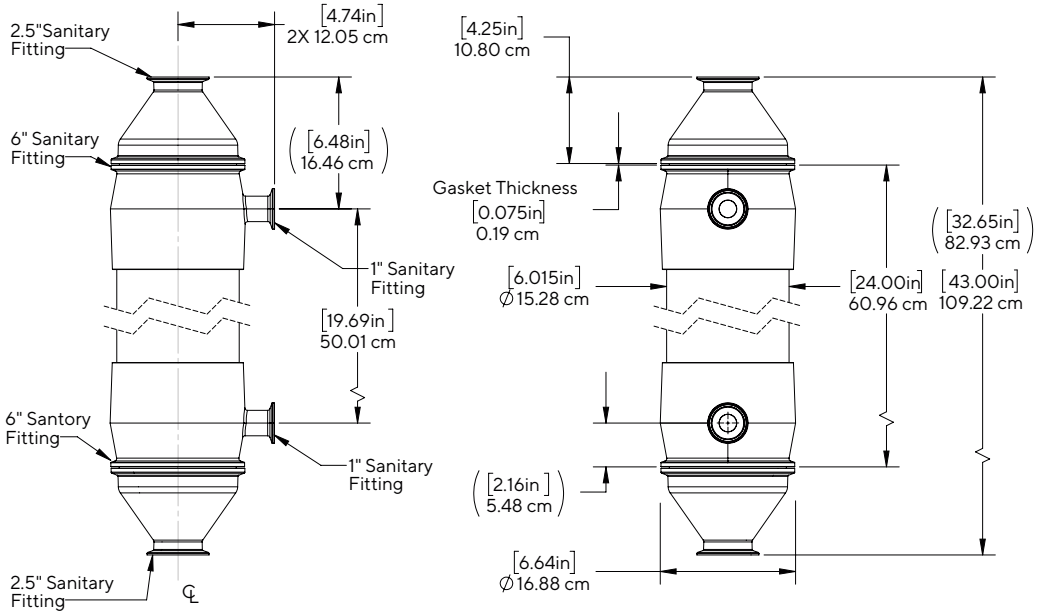
Maximizer

Exact length for different Fiber length: 24 or 41 inch



Grand XL

Exact length for different Fiber length: 24 or 43 inch



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