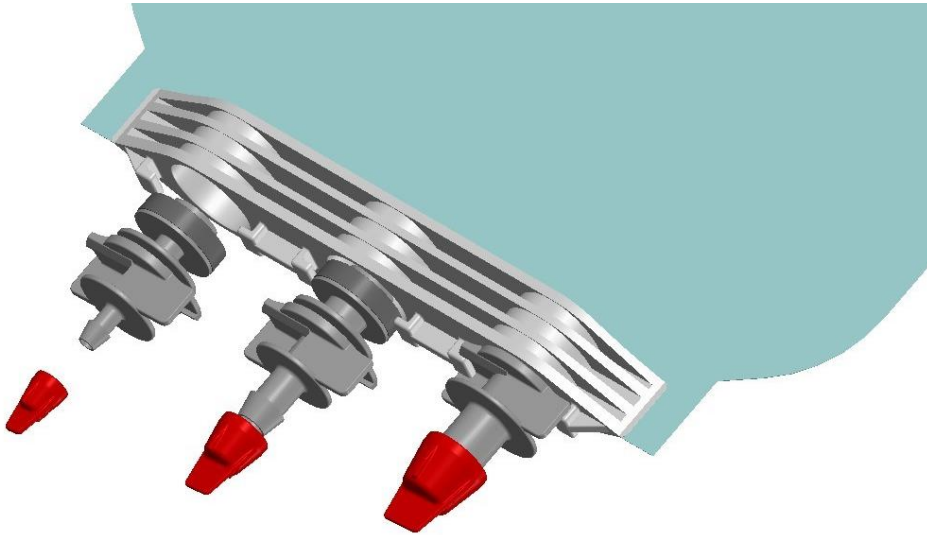


## The Evolution 2D Bag Fitting System helps you Standardize & Customize your Single-Use Systems



### EVOLUTION FITTING SYSTEM

At Evolution, we understand that each end user wants to customize their bioprocessing bag and system to fit their specific needs and unique processes. We also understand that customization significantly increases unit costs and inventory. The patent-pending Evolution Fitting System allows for customization of standard configurable bioprocess bags at the time of the system assembly, leading to lower unit and inventory costs and faster delivery.

- Standardize all 2D bioprocess bags with a simple 2 or 3-port canoe.
- Easily customize the bag by selecting and inserting the size and type of standard tube fitting your assembly needs.
- Stock standard bags and fittings rather than pre-built “configurations”.
- Eliminate the need to modify pre-built bags with more tubing and connectors “just to make it work”.

### SUPPLY CHAIN BENEFITS

- All raw materials and fittings are manufactured in the U.S. to reduce supply chain risk.
- Evolution has redundant molding capabilities for security of product supply.
- Evolution maintains 12-months of raw material inventory and stocks fittings for quick delivery.

### OTHER BENEFITS

- Evolution’s development team can assist original equipment manufacturers (OEMs) in incorporating this fitting system with their current single or multi-layer film.
- All fittings and gaskets are molded, assembled and packaged in a certified ISO 8 Clean Room “in operation”.

### Product Features & Benefits

- Leak-Free Connections
- Easy to Assemble
- Fits Common Tube Sizes
- Multiple Configurations
- USP VI Materials
- Molded in ISO 8 Clean Rooms
- Gamma & X-Ray Sterilizable
- Assembly tools not necessary
- Eliminates the need for pre-built bag configurations

### Product Configurations

- 2-Port for 50mL to 750mL
- 3-Port for 1L to 20L
- 1/8”, 1/4”, 3/8” Tube Connectors
- 1/4 “ Luer Connector
- Port plugs for unused ports
- Compatible with various tube retainer options

### Applications

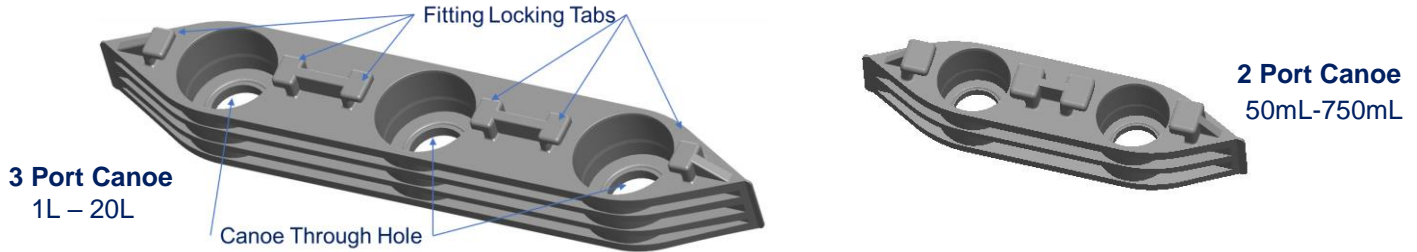
- Biopharmaceutical manufacturing and liquid storage systems
- All single-use assembly systems

### Coming Soon

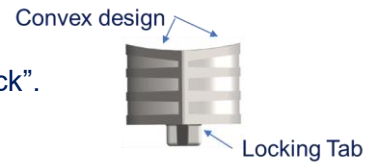
- 38mm Cap Fitting System
- Tube Retainer Fittings
- Dip Tubes for 2D bags
- 2D Bag Autoclavable Fittings
- 2D Bag Sampling System

## EVOLUTION 2D BIOPROCESS BAG “CANOE”

The Evolution Bag Canoe can be thermally welded to most thermoplastic single or multi-layer film configurations available today. Once welded, the bag is fully customizable using any one of the many Evolution Fitting designs.

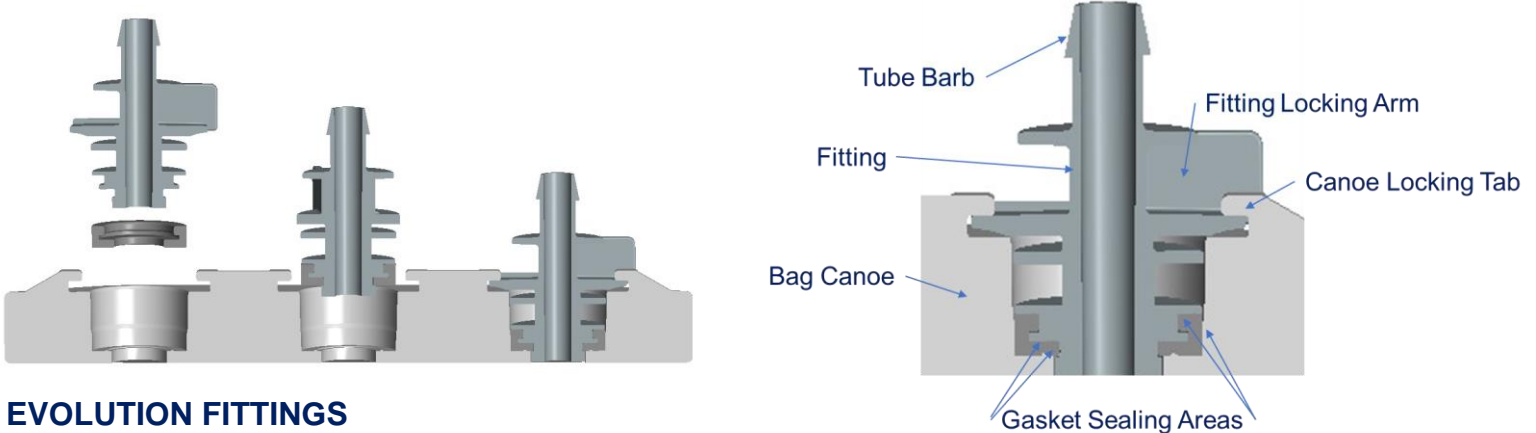


- A single canoe design has more welded surface area to improve film adhesion and eliminate leaks between ports. The tapered ends eliminates the hard angle weld points of traditional ports.
- The convex canoe efficiently channels fluids to the drain ports eliminating fluid retain.
- Locking tabs permanently secure fittings to the bag and is evidenced by an audible “click”.



## EVOLUTION LEAK-FREE FITTING DESIGN

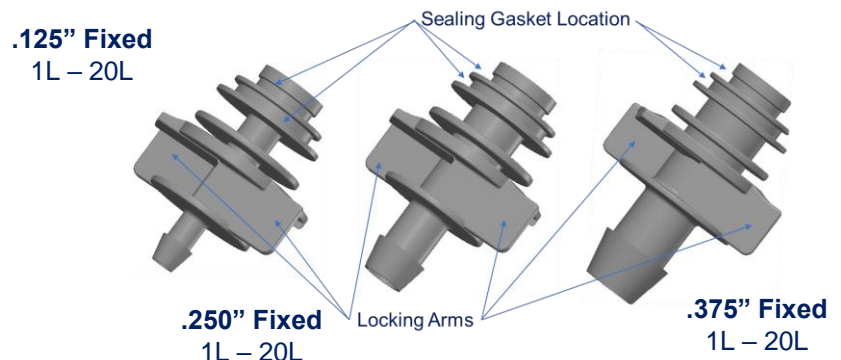
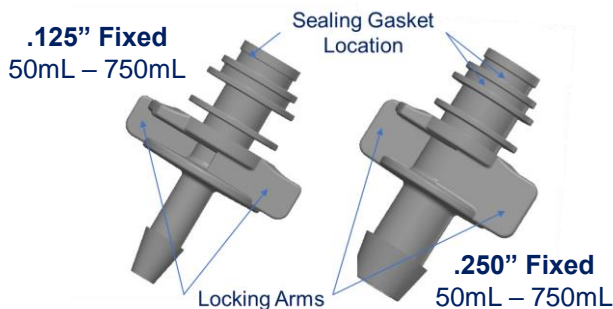
Each Evolution Fitting utilizes a silicone gasket that maintains fluid integrity in the bag chamber post-sterilization. The ergonomic design makes for easy hand installation. When engaged and locked into place, the sealing surfaces are significant on both the face and perimeter of the fitting.



## EVOLUTION FITTINGS

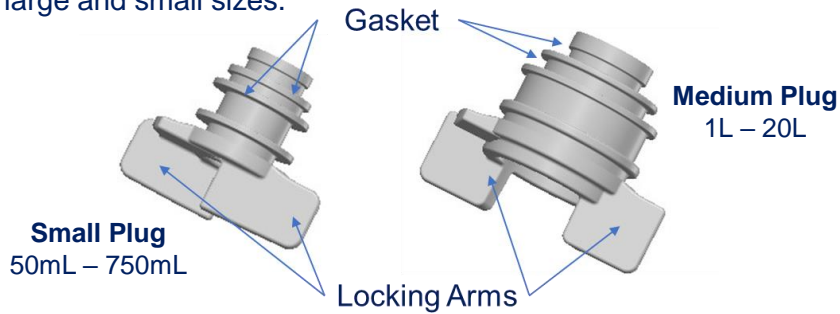
### Standard Fixed Tubing Fittings

Standard fittings are available in 1/8” and 1/4” ID for bag sizes 50mL to 750mL and 1/8”, 1/4” and 3/8” ID for bag sizes 1L to 20L. Each fitting comes with a silicone Gasket installed.



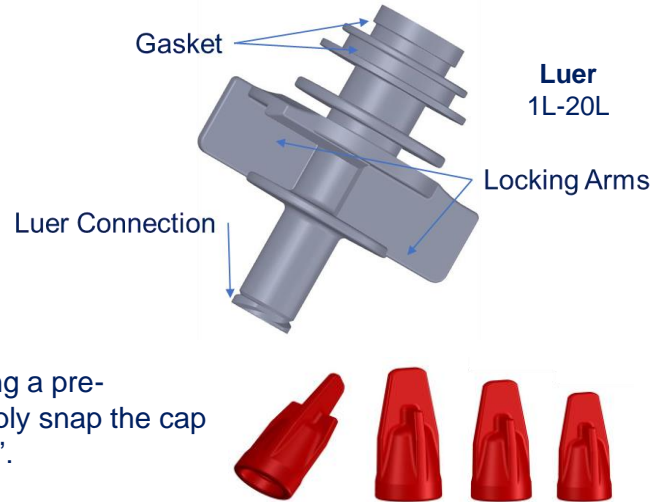
## Port Plugs

If the custom assembly does not require the utilization of a second or third port, the Evolution Port Plug can permanently seal the unused port. Port plugs come in large and small sizes.



## Luer Fitting

Evolution Luer Fittings come in a standard 1/4" Luer configuration for 1L to 20L bags sizes. Other sizes are available upon request.

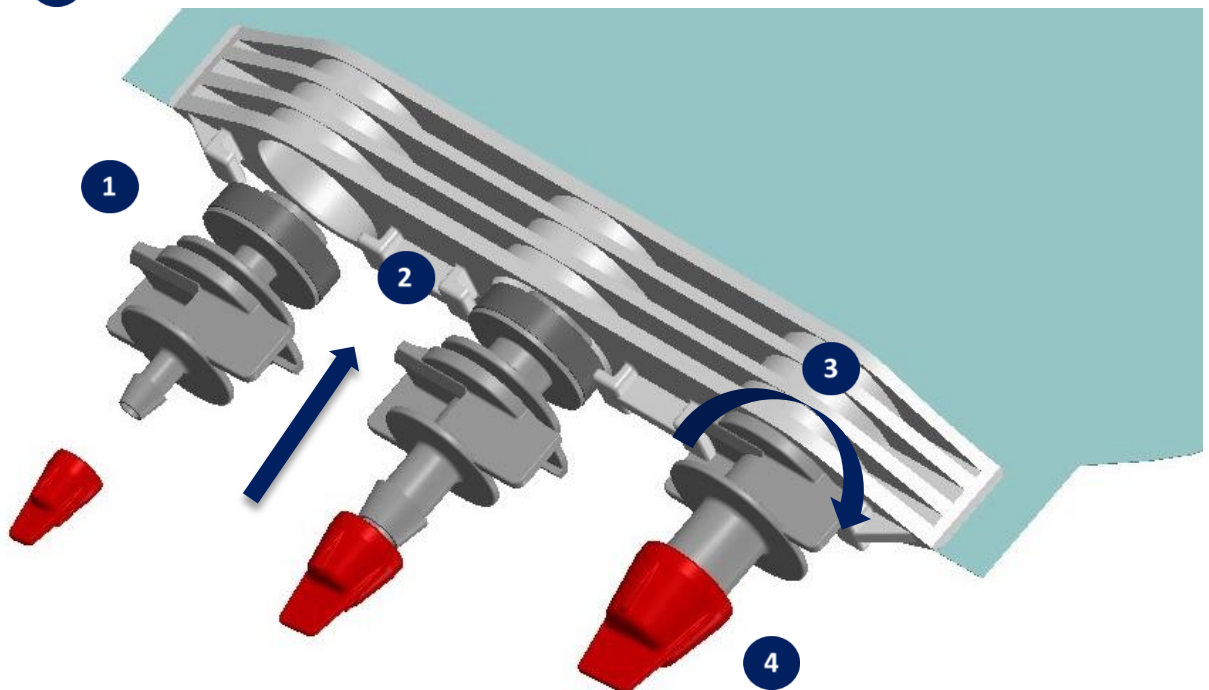


## Dust Caps

Evolution Dust Caps are used to prevent particulates from entering a pre-assembled bag prior to final system assembly. To assemble, simply snap the cap to the end of the tube connector. Sizes include 1/8", 1/4" and 3/8".

## EVOLUTION SYSTEM ASSEMBLY PROCESS

- 1 Starting with a canoe enabled bag, select fitting type (size, configuration)
- 2 Insert fitting into canoe port until it stops
- 3 Rotate fitting 1/4 turn to lock in place (audible click). Repeat
- 4 Add Dust Cap to tube connector if needed



Evolution Fitting System products are **Patent Pending**. Custom connector designs are available upon request.





## EVOLUTION FITTING SYSTEM CONFIGURATIONS

Bag Sizes	Part Number	Description	Material	Tubing Size (ID x OD)	Color	Qty / Bag
50mL-750mL	CF2P-000-PE	2-Port Canoe	Marlex 9006 PE	N/A	Translucent	25
50mL-750mL	PP50-075-AS	Port Plug, Small	Marlex 9006 PE	N/A	Translucent	25
50mL-750mL	FPSM-125-AS	1/8" Standard Fixed Port	Marlex 9006 PE	.125" x .250"	Translucent	25
50mL-750mL	FPSM-250-AS	1/4" Standard Fixed Port	Marlex 9006 PE	.250" x .375"	Translucent	25
1L- 20L	CF3P-000-PE	3-Port Canoe	Marlex 9006 PE	N/A	Translucent	25
1L- 20L	PP10-110-AS	Port Plug, Medium	Marlex 9006 PE	N/A	Translucent	25
1L- 20L	FPLG-125-AS	1/8" Standard Fixed Port	Marlex 9006 PE	.125" x .250"	Translucent	25
1L- 20L	FPLG-250-AS	1/4" Standard Fixed Port	Marlex 9006 PE	.250" x .375"	Translucent	25
1L- 20L	FPLG-375-AS	3/8" Standard Fixed Port	Marlex 9006 PE	.375" X .500"	Translucent	25
1L- 20L	FLPS-250-AS	1/4" Female Luer Port	Marlex 9006 PE	N/A	Translucent	25
N/A	DUCC-125-TP	1/8" Dust Cap	Marlex 9006 PE	N/A	Translucent	50
N/A	DUCC-250-TP	1/4" Dust Cap	Marlex 9006 PE	N/A	Translucent	50
N/A	DUCC-375-TP	3/8" Dust Cap	Marlex 9006 PE	N/A	Translucent	50

- Other fitting configurations available upon request. All fittings include gasket.
- For product samples, please see our web site [www.evolutionls.com](http://www.evolutionls.com)

## MATERIAL TESTING

Requirements	Test Protocol	Value	Marlex 9006 (HDPE)	Momentive 2670 (LSR)
USP CLASS VI	USP <88>	Pass/Fail	Pass	Pass
Biological Reactivity Tests (in vivo)	USP <88> ,ISO 10993-11, 10, 6	Pass/Fail	Pass	Pass
Cytotoxicity (Bioreactivity in vitro)	USP <87> ,ISO 10993-5	Pass/Fail	Pass	Pass
Bacterial Endotoxin	USP <85>, EP 2.6.14	Pass/Fail	Pass	Pass
European Pharmacopeia	EP 3.1.3 & EP 3.1.5	Compliant	Yes	Yes
Particulate	USP <788>, ASTM E3230-20	Compliant	Yes	Yes

## REGULATORY

Requirements	Test Protocol	Value	Marlex 9006 (HDPE)	Momentive 2670 (LSR)
Heavy Metals, RoHS	USP <661>, IEC 62321	Pass/Fail	Pass	Pass
PFAS & Bisphenol A (BPA) Free	LC/MS/MS	Compliant	Yes	Yes
SVHC	< 0.1% Product Weight	Compliant	Yes	Yes
REACH	EC No. 1907/2006	Compliant	Yes	Yes

The statements in this document regarding product specifications are general in nature; a prospective buyer should request testing reports and additional information as well as closely examine the products to make its own determination as to the suitability of any product for its purposes. EDD disclaims all warranties, express, implied or statutory that are not expressly included in EDD's written terms and conditions.

**PRODUCT WARRANTY:** Evolution Design & Development (EDD) warrants these products to be free from defects in materials and workmanship for a period of twelve (12) months from the date of purchase by the original purchaser, subject to the warranty limitations in EDD's written Terms and Conditions. EDD's sole obligation with respect to any valid warranty claim will be the replacement of any product that EDD has determined does not meet the written product specifications provided to the customer.