

Expand Outside the Hood: MYCAP[®] CCX Cell Expansion System



MYCAP® CCX Cell Expansion System – Reliable, Proven and Low-Risk

MYCAP® CCX brings reliable aseptic technique to cell culture expansion. This closed system featuring a revolutionary design ensures that media feed, inoculation, sampling and transfers are done aseptically, outside a biosafety cabinet.

MYCAP® Technology Platform

MYCAP® CCX is the next advance enabled by Sartorius' patented MYCAP® bottle closure system.

The MYCAP® CCX is assembled as follows: The tubing and the special gas exchange cartridge are inserted into pre-formed holes. Silicone elastomer is then dispensed into the cap to hermetically seal the installed components in place, creating the high-performance, plasticizer-free bottle closure.

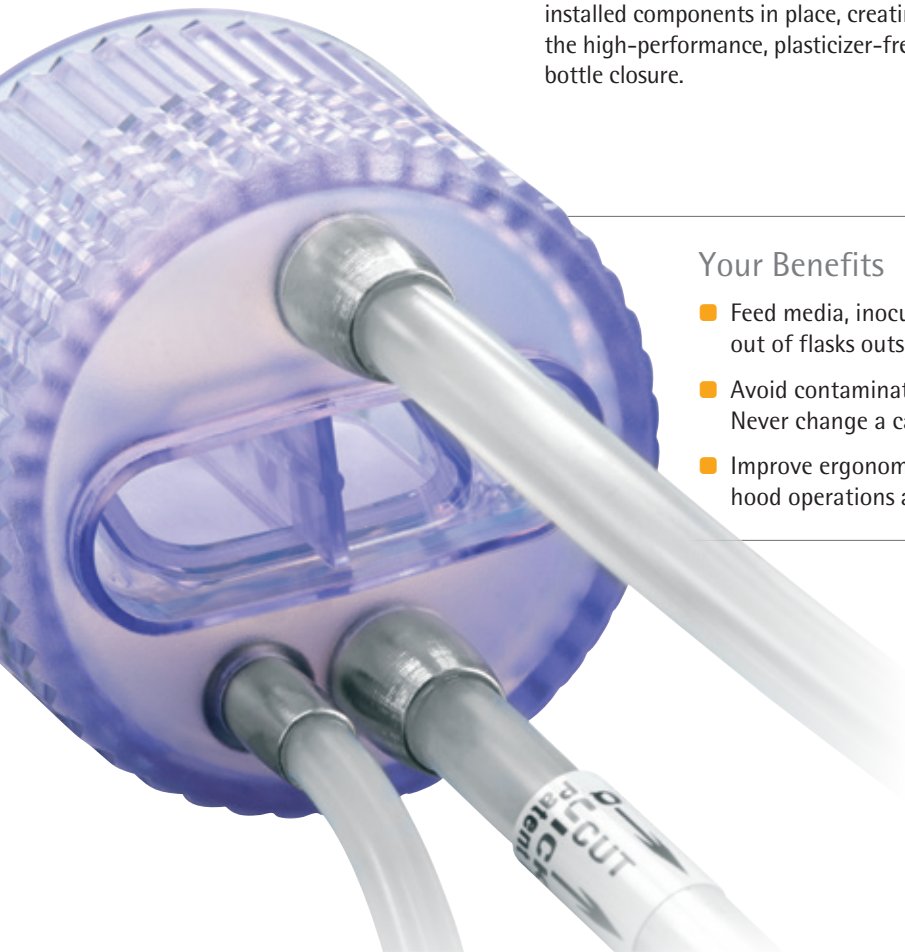
Aseptic Fluid Transfer

Good aseptic technique is especially important upstream where preserving axenic, or monoculture, conditions is compulsory.

Tubing is integral in MYCAP® CCX, facilitating aseptic technique and eliminating the risk of contamination.

Your Benefits

- Feed media, inoculate flasks, collect samples and transfer out of flasks outside the laminar flow hood.
- Avoid contamination: Never open a flask. Never change a cap.
- Improve ergonomics and process efficiency by eliminating hood operations and liquid transfers by manual pipetting.



MYCAP® CCX Has It All in One Revolutionary System

- Innovative gas exchange cartridge supports vigorous cell growth in an incubator
- QUICKSEAL® for trouble-free aseptic disconnection
- Perform passages using up to 3 L Erlenmeyer flasks
- Gamma-irradiated and single-use
- Based on the reliable and robust MYCAP® closure system
- Ready to use

MYCAP® CCX Gas Exchange Cartridge

The MYCAP® CCX gas exchange cartridge is a three-dimensional component featuring two 0.2 µm hydrophobic filter membranes.

The alignment of the cartridge in the cap protects the membranes so they are ideally positioned for abundant gas exchange. Its stadium-like shape saves space, leaving room for integral tubing to allow all types of aseptic fluid transfer.



Cell Culture Expansion from Vial to Bioreactor

Fill your culture using MYCAP® CCX, without having to open a flask or resort to using a biosafety cabinet.

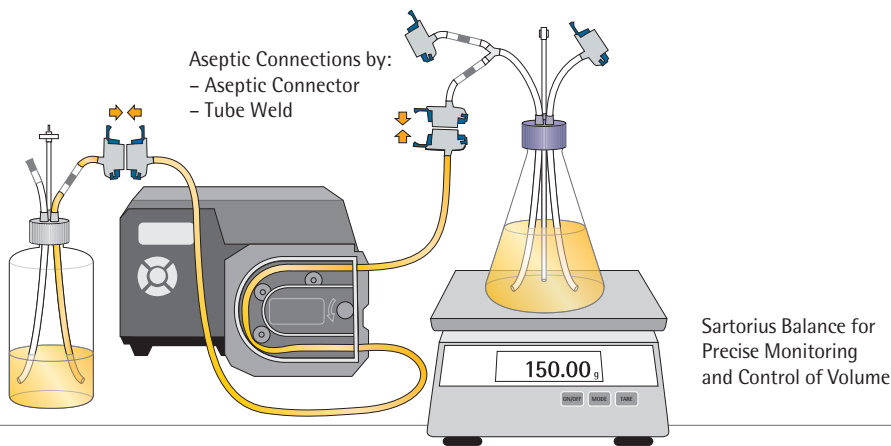
Enjoy the freedom of working outside the biosafety cabinet (BSC):

- No BSC maintenance
- No decontamination of BSCs or materials
- Eliminate wasteful back-up passages
- Modernize your cell expansion process

MYCAP® CCX Process Diagram

Running a passage with MYCAP® CCX is simple and uses standard equipment: No more fluid transfers by manual pipetting. The MYCAP® CCX product family features smart and easy-to-use assemblies for each step of your cell expansion.

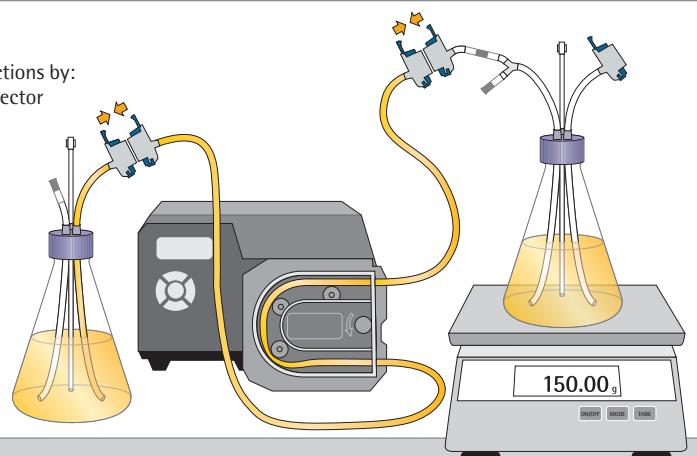
1 Pump Media into Flask



2 Inoculate Flask with Cell Culture

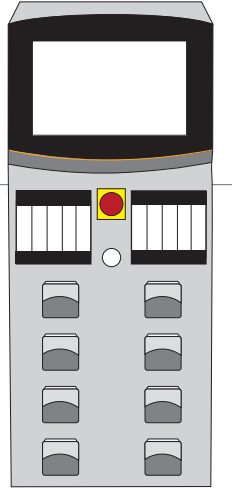
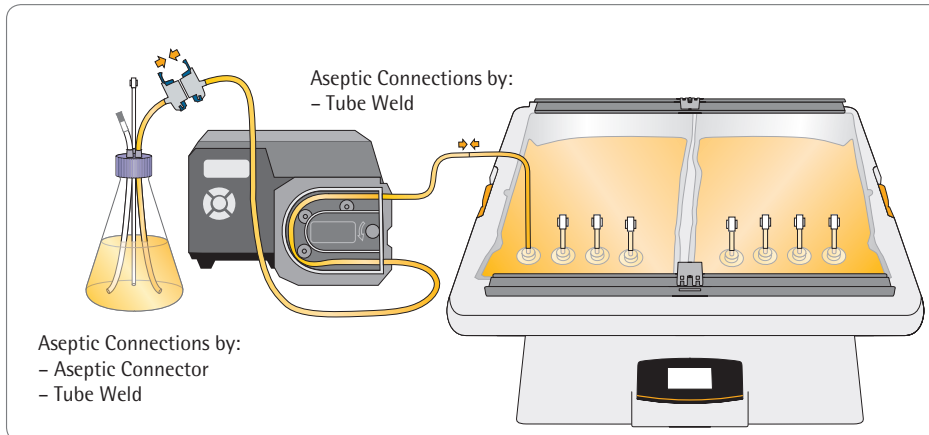


Aseptic Connections by:
- Aseptic Connector
- Tube Weld



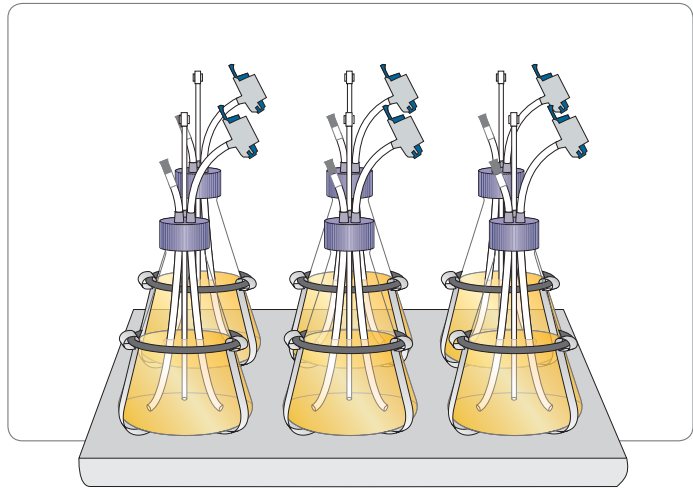
in the Open Space of Your Workbench

5 Transfer to Next Flask or Seed Reactor

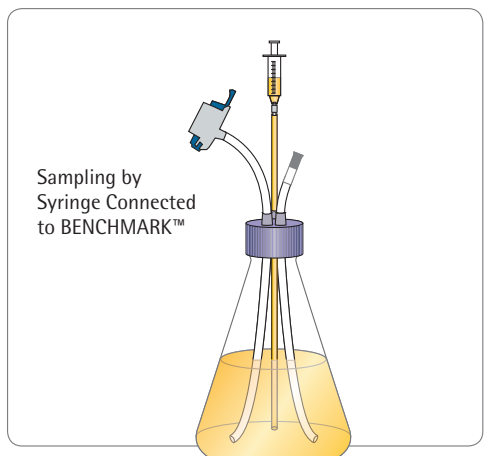


BIOSTAT® RM | BIOSTAT® A

3 Grow Culture in Incubator



4 Collect Samples for Cell Viability, Density, etc.

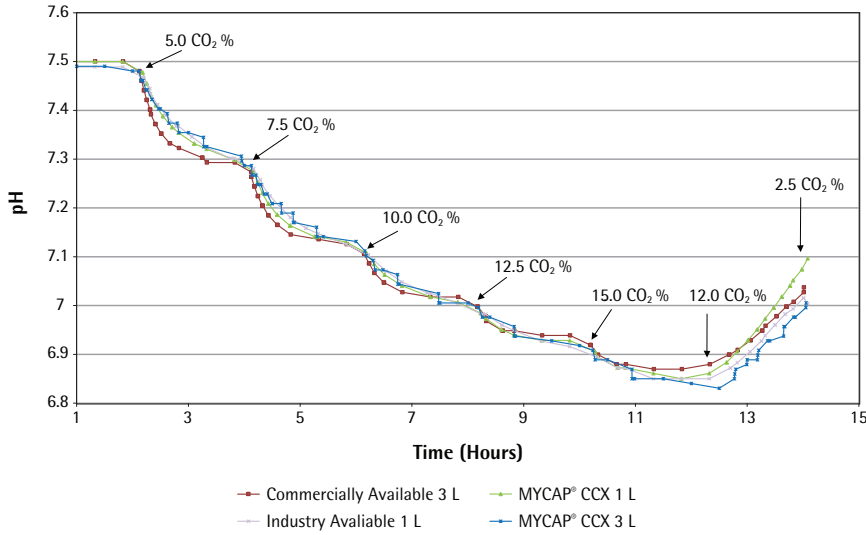


Watch MYCAP® CCX in Action here:



Proven Performance for Vibrant Cell Growth

Gas Exchange Comparison Between MYCAP® and Commercially Available Flask

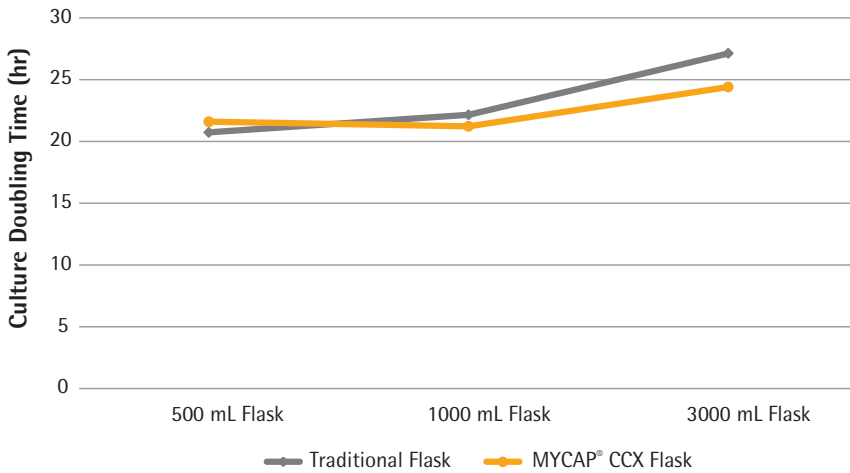


Exceptional Gas Exchange

Exchange of O₂ and CO₂ across a filter membrane is critical to cell growth. During cellular respiration, oxygen is consumed and carbon dioxide is produced. Cultures starved of O₂ will not expand; an overabundance of CO₂ increases acidity and harms cell viability.

Gas exchange in the incubator is passive. A large filtration area with unrestricted air flow is required for adequate gas exchange. A study of the change in pH of a solution in response to a change of CO₂ in an incubator showed equivalent response between MYCAP® CCX and traditional Erlenmeyer flasks.

Culture Doubling Times between Traditional Flasks and MYCAP® CCX



Proven Cell Growth

Cell expansion passage endpoints are typically measured by cell culture doublings. The MYCAP® CCX Cell Expansion System has been studied to confirm that it reaches critical endpoints, and the findings of these studies have been independently verified.

Sartorius compared experimental cell expansion passages from 500 mL through 3 L Erlenmeyer flasks with MYCAP® CCX and traditional vented caps. There were no discernible differences in cell culture doubling times between MYCAP® CCX and traditional flasks.

Simple Implementation

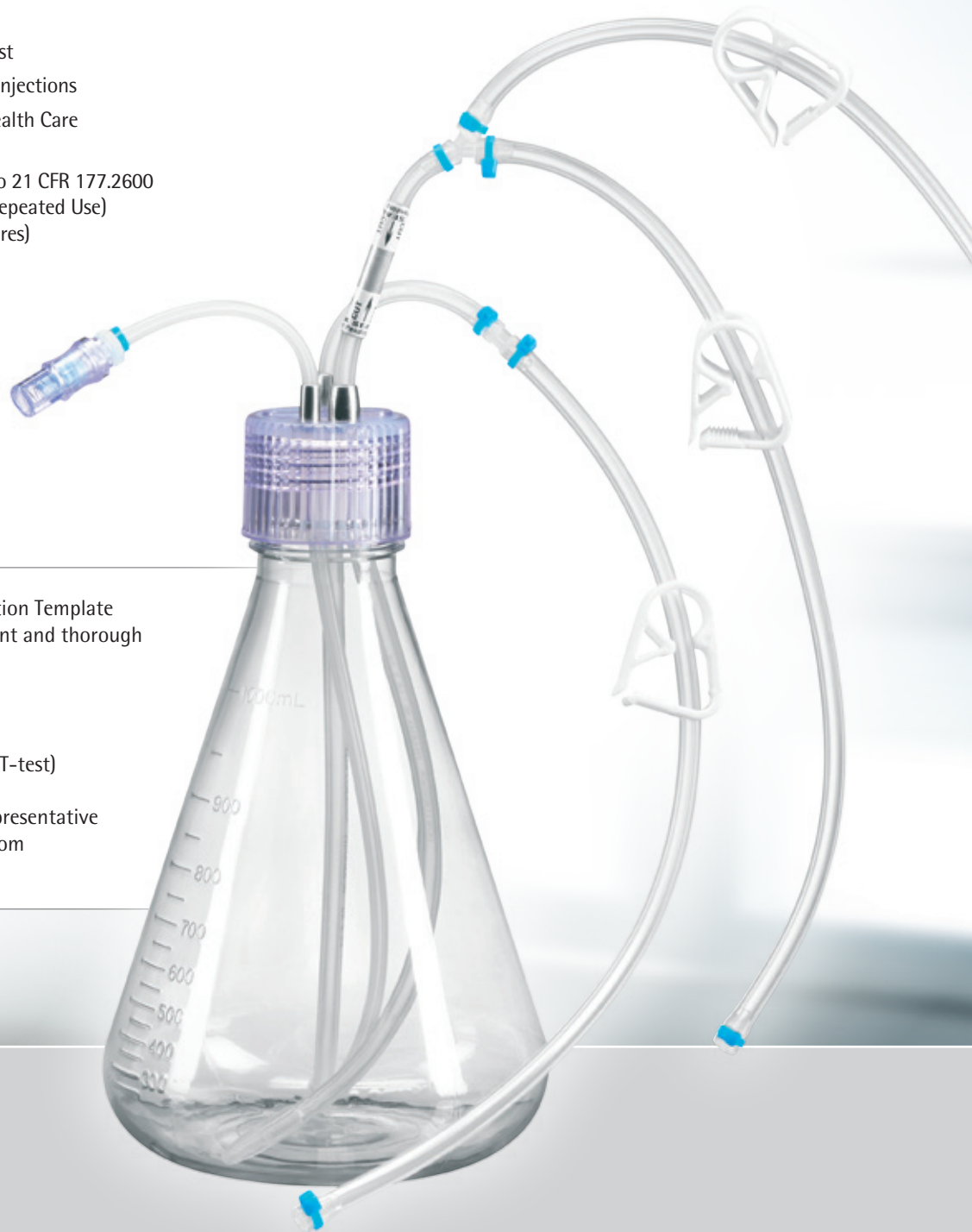
Thorough product validation and careful selection of materials make it simple to implement MYCAP® CCX in your expansion process. It has been validated for compliance with the following regulations and standards:

- USP Class VI biocompatibility
- USP 85 Bacterial Endotoxins Test
- USP 788 Particulate Matter in Injections
- ISO 11137-2 Sterilization of Health Care Products – sterility
- Extractables | Leachables Acc. to 21 CFR 177.2600 (Rubber Articles Intended for Repeated Use) and USP 381 (Elastomeric Closures)
- Container closure validation

Use our MYCAP® CCX Validation Template to guide you through efficient and thorough system implementation.

- Experimental design
- Data capture
- Analysis of results (charts, T-test)

Please contact your sales representative or email mycap@sartorius.com for further information



MYCAP® CCX Parts List

Growth and Transfer Systems

Transfer media and inoculum, collect samples and grow cells all in one system without opening a cap or ever using a biosafety cabinet.

Article Number	Description	Aseptic Connection Method
MCX050002040204A	MYCAP® CCX 500 mL Flask	Aseptiquik® S
MCX100002040204A	MYCAP® CCX 1000 mL Flask	Aseptiquik® S
MCX200002040204A	MYCAP® CCX 2000 mL Flask	Aseptiquik® S
MCX300002040204A	MYCAP® CCX 3000 mL Flask	Aseptiquik® S
MCX050002040204W	MYCAP® CCX 500 mL Flask	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®
MCX100002040204W	MYCAP® CCX 1000 mL Flask	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®
MCX200002040204W	MYCAP® CCX 2000 mL Flask	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®
MCX300002040204W	MYCAP® CCX 3000 mL Flask	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®



MYCAP® CCX Growth and Transfer Cap

Transfer Caps

Install on smaller flasks to close the system and enable aseptic fluid transfer from the flasks.

Article Number	Description	Aseptic Connection Method
MCX01250204A	Transfer Cap for 125 mL Flask	Aseptiquik® S
MCX02500204A	Transfer Cap for 250 mL Flask	Aseptiquik® S
MCX01250204W	Transfer Cap for 125 mL Flask	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®
MCX02500204W	Transfer Cap for 250 mL Flask	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®



Transfer Caps

Transfer Assemblies

Connect media bottles to flasks, flasks to flasks and flasks to seed reactors to transfer fluids accurately and aseptically. Sized to fit in peristaltic pumps accepting size 16 tubing (1.6 mm | 1/16 " wall)

Article Number	Description	Aseptic Connection Method
X020412W020418A	Transfer Assembly 1/8 " ID × 1/4 " OD (Size 16)	Aseptiquik® S Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®
X020436AA	Transfer Assembly 1/8 " ID × 1/4 " OD (Size 16)	Aseptiquik® S Aseptiquik® S
X040712W020418A	Transfer Assembly 1/8 " ID × 1/4 " OD (Size 16)	Tube Welding, 1/4 " ID × 7/16 " OD C- Flex® Aseptiquik® S
X020412W020412W	Transfer Assembly 1/8 " ID × 1/4 " OD (Size 16)	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex® Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®
X020412W040712W	Transfer Assembly 1/8 " ID × 1/4 " OD (Size 16)	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex® Tube Welding, 1/4 " ID × 1/16 " OD C- Flex®
XY020403A	2-Way Splitter	Aseptiquik® S
XY020418W	2-Way Splitter	Tube Welding, 1/8 " ID × 1/4 " OD C-Flex®
QSCUTTERSD	Small Diameter QUICKSEAL® Cutting Tool	
QSCAP04SILNT	QUICKSEAL® Protective Cap for 1/4 " OD QUICKSEAL® Collar	



Transfer Assembly

C-Flex® is a trademark of St. Gobain Performance Plastics.
Aseptiquik® is a trademark of Colder Products.

Email mycap@sartorius.com to get in touch with a specialist to create a list of MYCAP® CCX assemblies for your expansion process.

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