

Allegro™ Connect

DEPTH FILTRATION SYSTEM

Introduction

Executing any process without the right degree of monitoring, control or reporting runs the risk of process deviations. This could potentially lead to the adulteration of valuable drug substance and intermediates, whilst wasting valuable operator time. Allegro™ Connect systems provide robust, accurate and automated platforms that integrate with your manufacturing processes on every level, keeping unit operations within critical parameters to help ensure that you spend less time collating data and more time optimizing your process.

Our range of Allegro Connect systems share a compact form factor, designed with operators in mind, that are configurable to meet your process requirements without the time-consuming pain of modification.



Fig 1. The Allegro Connect depth filtration system.

The Allegro Connect depth filtration system

The Allegro Connect depth filtration system is a single-use automated filtration system designed to deliver robust process control during the clarification/harvest step.

This next generation compact and elegant system is designed to minimize risk through a fully automated process with recipe-controlled steps, including pre-use manifold leak test, system priming, product filtration and buffer chase, with all

data stored in a batch reporting system, minimizing non-conformities and substantially reducing manual labor.

New design features enable manifolds to be configured to meet various process needs, supporting different process trending sensors and a wide range of liquid filter capsules, and also accommodating non-Cytiva filters.

The problem

Manual and semi-automated filtration often lacks robustness, increasing the risk of critical deviations, non-conformities and sometimes even batch loss. The process data that is generated by the current systems is often insufficient and hard to access, making it very difficult to accurately evaluate any deviations or routine process analysis and causing a significant impact on both cost and labor.

Current trends show an increasing number of multi-product facilities being built and/or being retrofitted together with significant investments in automated bioprocessing equipment.

Most of the existing automated depth filtration systems are designed to fit a specified process scale and are therefore less flexible.



* Eliminating Human Error From Your List of Manufacturing Deviations. (podcast), Ginette Collazo, March 23, 2021

The solution is automated and configurable

The Allegro Connect depth filtration system is fully automated and highly configurable, designed with the following key features:

- Automatically performs pre-use water flushing, product filtration and buffer chase – utilizing standard manifolds.
- Filters up to 2000 L⁽¹⁾ of process stream from a bioreactor scale.
- Supports a total of 30 m² first stage, 20 m² second stage installed filter chassis and up to 2 × 762 mm (30 in.) in-line bioburden reduction filters installed on the system cabinet to reduce footprint.
- Combined manifold and installed filter leak test to ensure a correctly assembled flow path with no leaks prior to application of process fluid.
- Electronic batch records (summary and detailed), compiling data from the single-use sensors within the flow path and other critical process parameters.
- Common automation software (Wonderware based) used across the Cytiva Allegro Connect range, which aids ease of recipe creation and operator usability.
- A complete single-use flow path can be installed or uninstalled by a single operator in <90 minutes.

⁽¹⁾ Larger volumes may be possible for less challenging process streams.



Maximize flexibility

- Standard and advanced system to suit user requirements
- Manifold and filter diversity
- Good fit across 200 L pilot to 2000 L production scale



Minimize process risk

- Fully automated process
- Minimal operator intervention
- Seamless data mining with all data in one place



Maximize usability

- Compact 3D footprint and elegant design
- Improved usability and upgraded process sensor/probes
- Ease of manifold installation

Fig 2. Key system benefits.

Increased assurance

Pre-use manifold leak test provides flow path integrity assurance prior to flushing and product filtration. Pressure and flow measurements enable different processing modes to

improve process flexibility. In addition, the optional turbidity and conductivity sensors enhance process monitoring and control to reduce process deviations.



Fig 3. Allegro Connect depth filtration system showing depth filtration stages.

Automated pre-use manifold leak test and filter integrity test

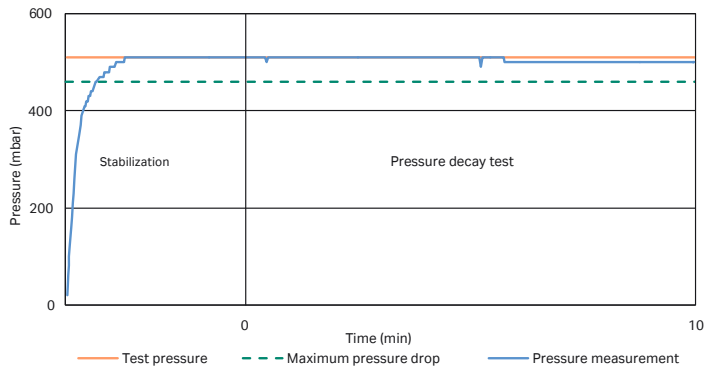


Fig 4. Automated pre-use manifold leak test.

Robust filtration

Three modes of pump operation to allow additional process flexibility: inlet pressure, flow control and sequential control (constant flow – constant inlet pressure).

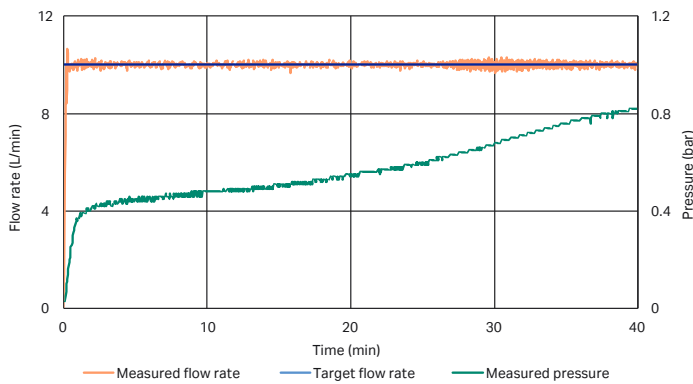


Fig 5. Fixed flow control.

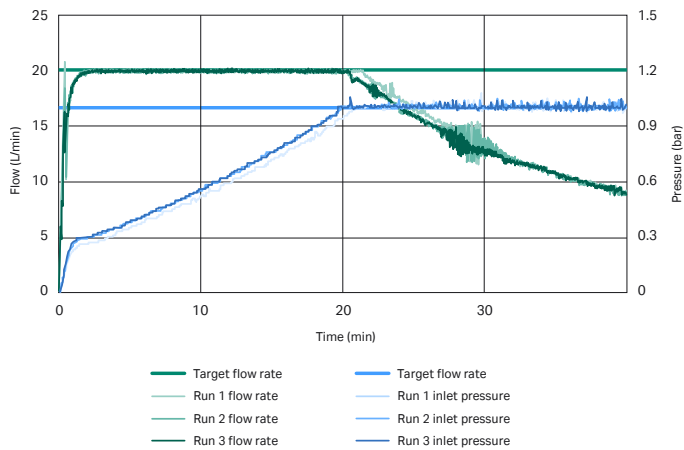


Fig 6. Sequential control: constant flow – constant inlet pressure.

Optimizing productivity

The Allegro Connect depth filtration system utilizes single-use technology (SUT) to ensure faster turnaround times between product batches, eliminating the need for clean-in-place (CIP) and sterilization-in-place (SIP) operations and associated cleaning validation, and reducing maintenance costs and system downtime to maximize plant productivity.

The entire flow path has been designed for easy installation and removal, with clearly marked connections and a shadow board to visibly guide the user, reducing the risk of human error and improving equipment turnaround between batches.



Fig 7. The Allegro Connect depth filtration system.

Designed for ease of use

The Allegro Connect depth filtration system has undergone extensive usability trials to ensure the system is simple and intuitive to use.

Visual instructions for installation (IFI) screens have been created and are accessible via the human machine interface (HMI) screen providing operators with a step-by-step guide to installing the single-use flow paths and making the relevant fluid connections. Sample IFI screens can be seen below.

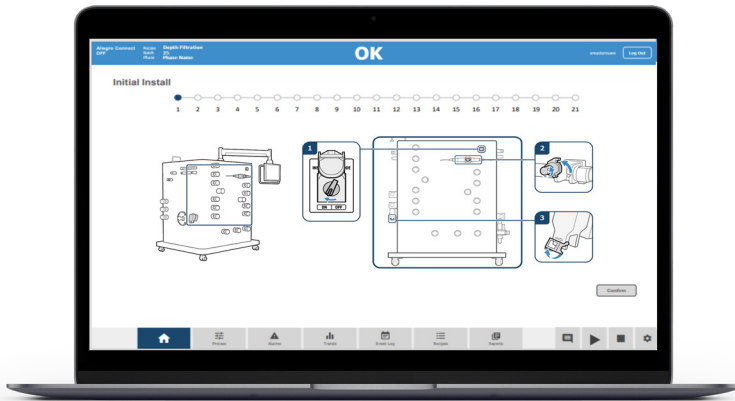


Fig 8. Guided IFI, where the operator is instructed by the recipe to prepare the system for installation.



Fig 9. Guided IFI, where the operator is instructed by the recipe to install the waste manifold.



Fig 10. Guided IFI, where the operator is instructed by the recipe to install bioburden filters.



Fig 11. Operator using the intuitive HMI screen for process monitoring.

A total depth filtration solution

The Allegro Connect depth filtration system can also be connected with some of our other single-use systems to provide a total depth filtration solution for your process, such as bioreactors, LevMixer™ systems and Allegro mixers for product and the Allegro totes for buffer and water for injection (WFI) storage.

Application

The Allegro Connect depth filtration system is well-suited for the initial process step of whole cell/cellular debris removal, post bioreactor, in drug substance manufacturing and for post-virus inactivation filtration where precipitation can occur after acidification/neutralization of the process stream.

The depth filtration system is available in two versions for flexibility to meet end user process requirements:

Allegro Connect depth filtration system – standard

The standard Allegro Connect depth filtration system includes:

- Feed pump
- Flow sensor
- Inlets (WFI, product, buffer)

- Outlets (product, process waste)
- Backpressure valve for leak test and blow down procedure
- Filter area ratio up to a maximum 3:2
- Bioburden filters: 1 × 254 mm (10 in.) up to 2 × 762 mm (30 in.) capsules
- Automated product recovery phase
- Pressure sensors (differential pressure (ΔP) across 1st stage, ΔP across 2nd stage and ΔP across bioburden filters)

Allegro Connect depth filtration system – advanced (additional components)

The advanced Allegro Connect depth filtration system includes all items within the standard system, with the following additional components:

- Depth filter chassis bypass of post stage 1
- Depth filter chassis bypass of post stage 2
- SU turbidity sensors (× 2)
- SU conductivity sensor
- Individual control valve for each installed depth filter chassis



Fig 12. Multiple Allegro Connect systems connected for a process solution.

System options

The Allegro Connect depth filtration system is available with three automation options:

- Programmable logic controller (PLC), Rockwell or Siemens, and human machine interface (HMI) for local stand-alone control
- Remote input/output (I/O) (no PLC) for integration into a DCS or supervisory control and data acquisition (SCADA) system
- Remote I/O (no PLC) controlled by centralized PLC system

The automation architecture is based on either Siemens S7 PLC or Rockwell CompactLogix PLC, an industrial PC, and a 22 in. thin client which is applied across our range of bioprocessing systems enabling a truly modular 'plug-and-play' concept, with the ability to control single or multiple unit operations from one centralized cabinet.

The Allegro Connect depth filtration system is compatible with all Cytiva single-use mixing technology and can also be integrated with most mixing equipment from other suppliers.

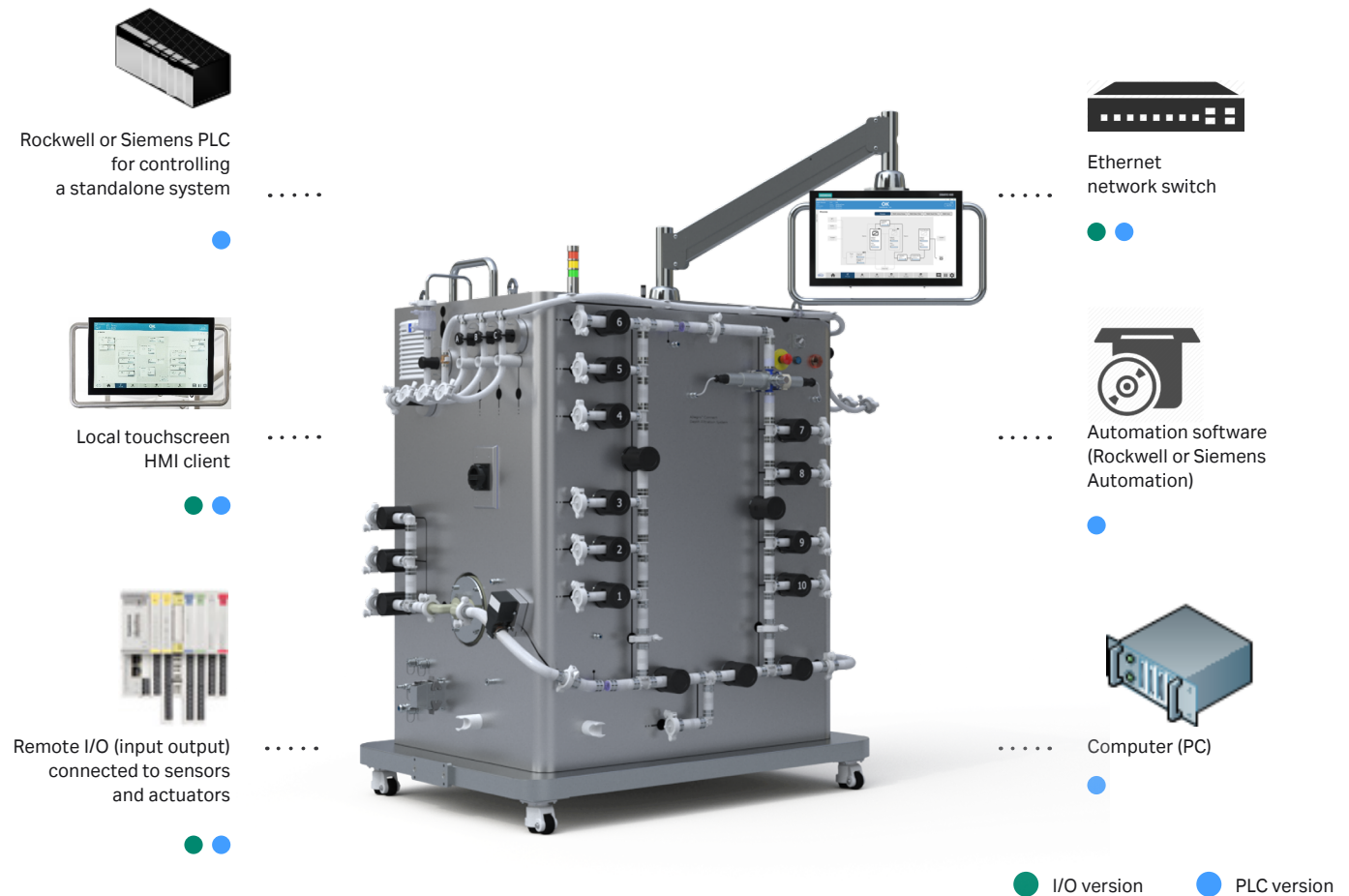


Fig 13. System options for Allegro Connect depth filtration system.

Quality standards

The Allegro Connect depth filtration system has a detailed validation package for all configurations according to ASTM 2500 Standards (a standard guide for specification, design and verification of pharmaceutical and biopharmaceutical manufacturing systems and equipment).

The regulatory dossier includes:

- Regulatory compliance ROHI to ROHS III directives.
- Raw material compliance data (USP Standards).

- Packaging and packaging waste directive 94/62/EC.
- System designed in accordance with the American Society of Civil Engineers (ASCE), ASCE 7, Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

The Cytiva automation platform enables compliance with 21 CFR Part 11 and follows the GAMP V life cycle for software development.

Technical specifications

Process specifications

Equipment	Specification
Functionality	Filtration
Filtration configurations	Depth filter stages in series with bioburden filters
Minimum bioburden filter size	254 mm (10 in.)
Maximum bioburden filter size	762 mm (30 in.)
Feed pump	1
Pump flow rate range	50 to 5000 L/h
Number of inlets	3 (2 × WFI/buffer and 1 × product)
Number of outlets	2 × process waste outlet (1 × vent line, 1 × pre bioburden reduction stage drain)
Tube dimension (ID)	1 in. (internal diameter (ID))
Flow path operating pressure	0 to 3 bar ⁽²⁾ (0 to 44 psi) and 0 to 2.4 bar ⁽³⁾ (0 to 35 psi)
Installation test pressure	2 bar max, <1 bar recommended
Flow path operating temperature range	4°C to 40°C
Pressure sensor	Up to 4 (1 after feed pump with integrated, hard-wired pressure switch; 1 before first filtration stage, 1 after second filtration stage and 1 after bioburden reduction filter stage)
Flow sensor	1 electromagnetic flow sensor after the feed pump
Conductivity sensor	1 (at the system outlet)
Turbidity sensor	2 (1 at Stage-1 outlet and 1 at Stage-2 outlet)
External connections	6 (2 × ethernet for mixer, 2 × HC-DD24 for mixers, 2 × HAN16E for scales)

⁽²⁾ All the system manifolds except the depth filter inlet manifold. ⁽³⁾ Depth filter inlet manifold.

Engineering specifications

Main system	Specification
Floor clearance	110 mm (4.3 in.)
Environmental conditions	5°C to 30°C, relative humidity (RH) 10% to 70% (non-condensing)
Noise	77 dB(A) at full pump load, 57 dB(A) at typical process conditions
Materials of construction	Stainless steel 1.4301 (304)
Surface finish	Cold rolled steel (typically Ra < 1 µm)
Ingress protection rating	IP54 (main, outer panel or chassis)

Component specifications

Component specifications, sensor range and accuracies are as per OEM datasheets and correct at the time of compiling this proposal. Cytiva does not accept any responsibility in the case of deviation to the specifications outlined below.

Process equipment	Type	Specification
Primary pump	QF5050 single-use diaphragm pump	Flow range: 50 to 5000 L/h
Flow sensor	Krohne FLEXMAG 4050	Range: 0.5 to 75 L/min Accuracy: ± 2% of MV
Process valves	Norgren Acro 935 and 936	Pneumatically operated pinch valve
Pressure	PendoTECH – single-use sensor with pressure sensitivity chip	Range: -0.48 to 5.2 bar Accuracy: ± 2% from 0 to 0.41 bar, ± 3% from 0.41 to 2.07 bar, ± 5% from 2.07 to 4.1 bar
Level detector	Rechner – capacitive sensor	Operating distance: 0.5 mm minimum – 15 mm maximum
Conductivity sensor	Optek ACF60 single-use sensor	Range: 0 µS/cm to 150 mS/cm Accuracy: ± 2% of MV ± 0.4 µS/cm
Turbidity sensor	Optek AF16 single-use sensor	Range: 0 to 0.05 CU to 4 CU Resolution: < ± 0.05% of MV

Dimensions and weight

Main system	Specification
Mass	650 kg (1433 lb)
Dimensions (w × d × h)	142 × 122 × 198 cm (59 × 48 × 78 in.)
Single Stax™ trolley	Specification
Mass	300 kg (661 lb)
Dimensions (w × d × h)	94 × 93 × 198 cm (38 × 37 × 78 in.)
Double Stax trolley	Specification
Mass	600 kg (1323 lb)
Dimensions (w × d × h)	159 × 93 × 198 cm (63 × 37 × 78 in.)
Triple Stax trolley	Specification
Mass	850 kg (1874 lb)
Dimensions (w × d × h)	237 × 93 × 198 cm (93 × 37 × 78 in.)

Cleaning

The system is stable to cleaning with the following typical cleaning solutions:

- 70% ethanol
- 70% IPA
- 0.5% sodium hypochlorite
- 0.02% w/w benzalkonium chloride
- 2% sodium hydroxide
- Spor-Klenz Ready-to-Use (RTU)

Process sequence

The generalized configurable depth filtration phases are shown below.

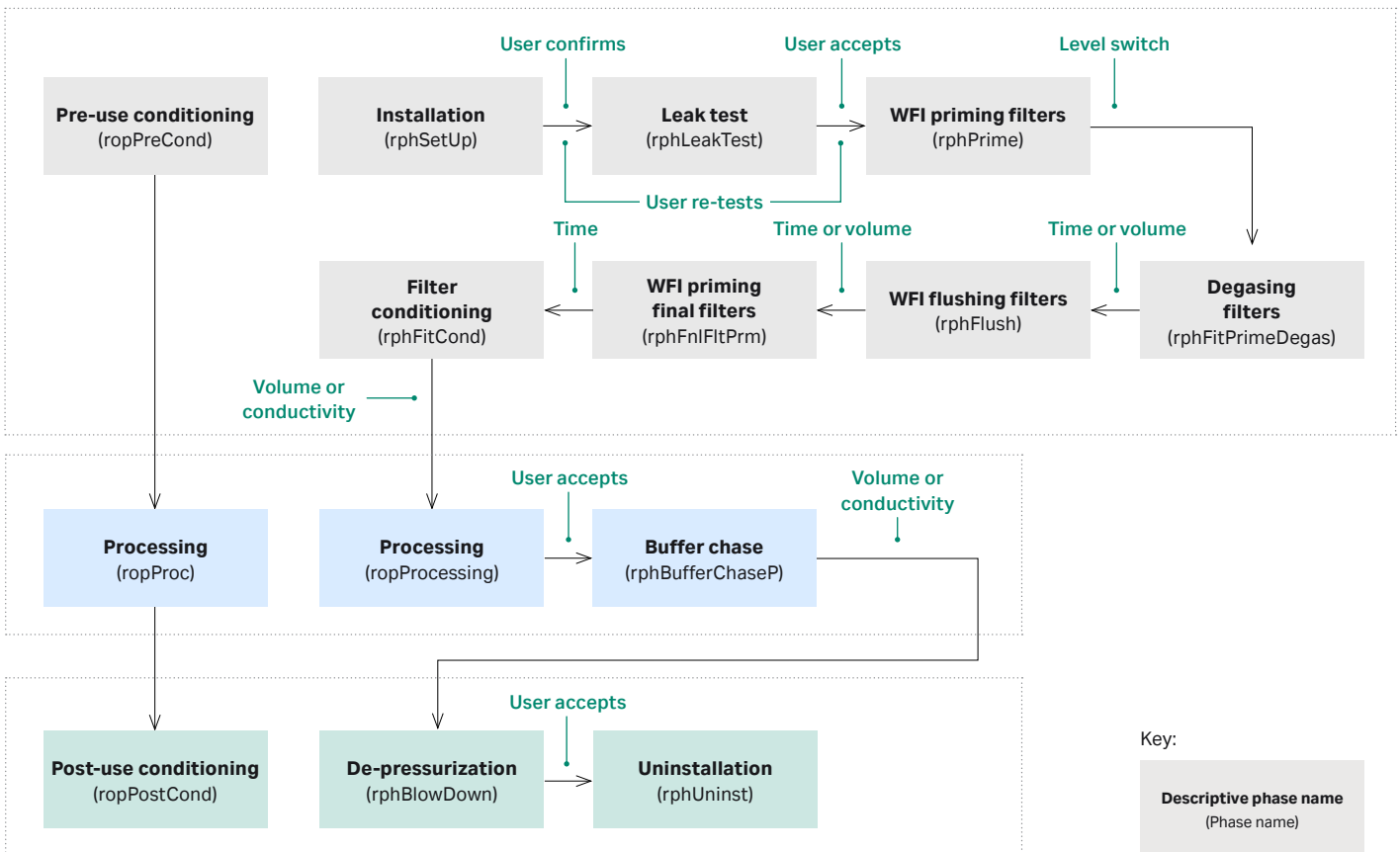


Fig 14. Depth filtration phases.

Process screens

Process screens have been created to summarize and expand on critical process information throughout the operation. Example screens are shown below.

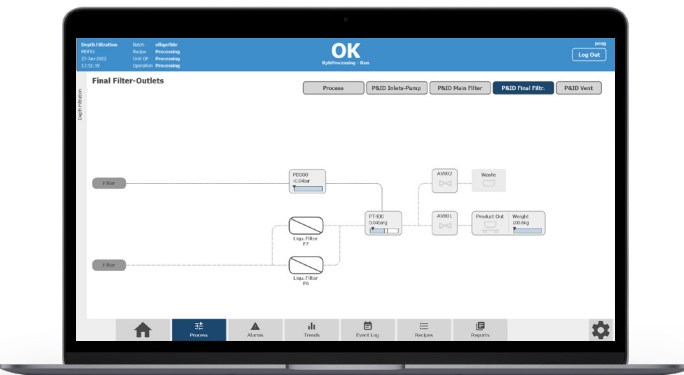


Fig 15. Process screens highlighting critical processes.

Batch report

Upon operator selection, batch reports will be generated automatically at the end of a batch for each single step. Both a summary and detailed batch report is generated, and the content of these batch reports is predefined. Batch reports can be configured to specific needs by the end user via AVEVA Reports (Dream Reports). Sample batch reports can be provided upon request.

Predefined batch records contain the following major information:

- General batch information, phase information and transition conditions
- Global and recipe parameters including controller parameterization
- Audit trails excerpt
- Alarms summary
- List of SU components that were registered during recipe execution
- Trends for differential pressure across filters

Ordering information

System hardware and accessories

Product	Product code
Standard system	
Allegro Connect depth filtration standard system: PLC 400 VAC, software automation	ACDFSBEUPLC
Allegro Connect depth filtration standard system: PLC 480 VAC, software automation	ACDFSBBWHPLC
Allegro Connect depth filtration standard system: I/O 400 VAC, DCS ready no automation	ACDFSBEUIO
Allegro Connect depth filtration standard system: I/O 480 VAC, DCS ready no automation	ACDFSBBWHIO
Advanced system	
Allegro Connect depth filtration advanced system: PLC 400 VAC, software automation	ACDFSABEUPLC
Allegro Connect depth filtration advanced system: PLC 480 VAC, software automation	ACDFSABWHPLC
Allegro Connect depth filtration advanced system: I/O 400 VAC, DCS ready no automation	ACDFSABEUIO
Allegro Connect depth filtration advanced system: I/O 480 VAC, DCS ready no automation	ACDFSABWHIO
Trolley	
Allegro Connect depth filtration trolley with max of 1 Stax chassis (1 to 10 m ² installed filter membrane area)	ACDFSSTAX1
Allegro Connect depth filtration trolley with max of 2 Stax chassis (1 to 20 m ² installed filter membrane area)	ACDFSSTAX2
Allegro Connect depth filtration trolley with max of 3 Stax chassis (1 to 30 m ² installed filter membrane area)	ACDFSSTAX3
FAT	
Allegro Connect depth filtration system FAT 2.5 days with flow kit	ACDFSFAT
Allegro Connect depth filtration system FAT 5 days with flow kit	ACDFSFATEXT
Seismic feet	
Allegro Connect system seismic leveling feet	ACSEISMIC
Other accessories	
Allegro Connect system GEN3 mixer communication cable	ACGEN3COMSCBL
Allegro Connect system GEN4 mixer communication cable	ACGEN4COMSCBL
Allegro Connect system LGR mixer communication cable	ACLGRCOMSCBL

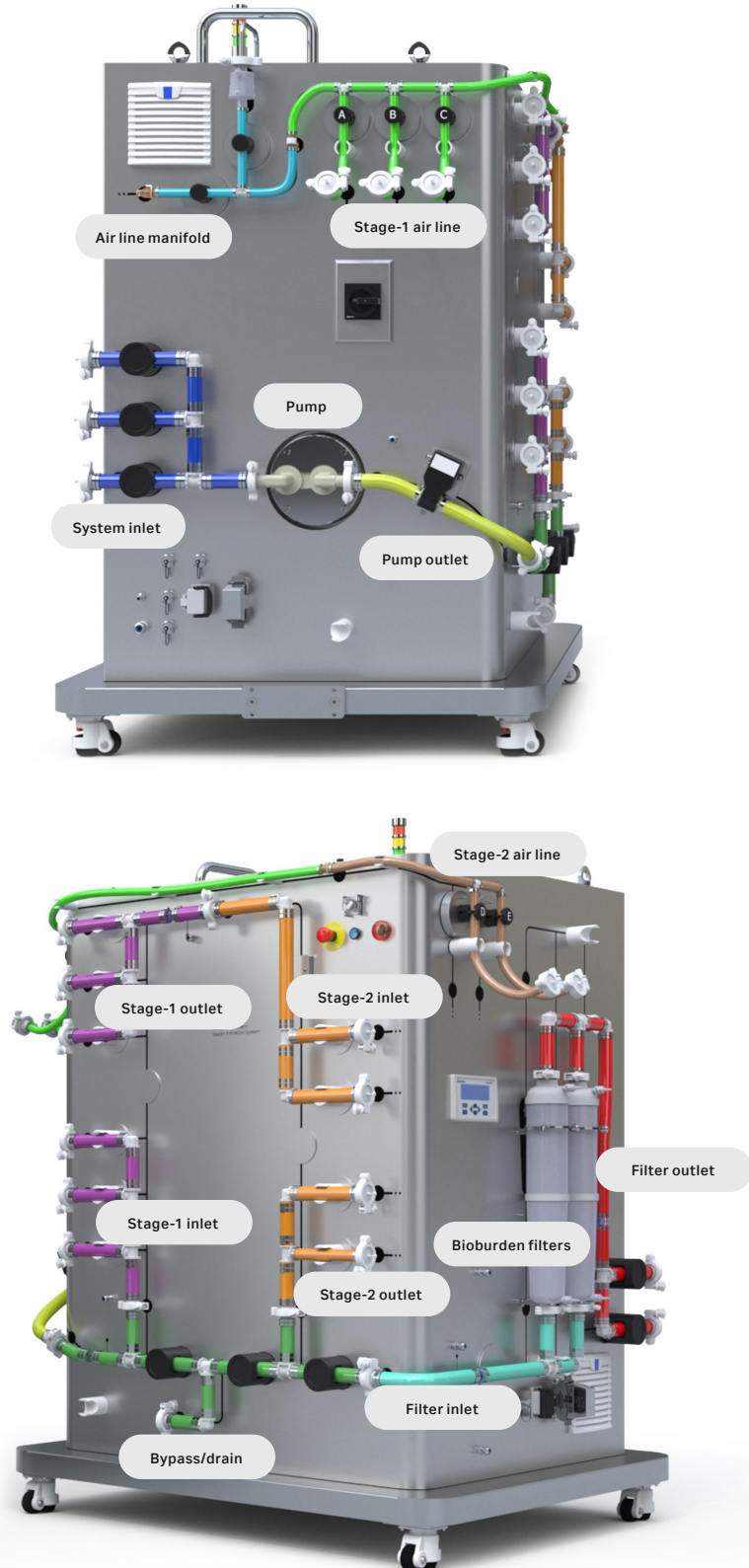
Contact our sales representative for UL61010 certification requirement.

Single-use assemblies

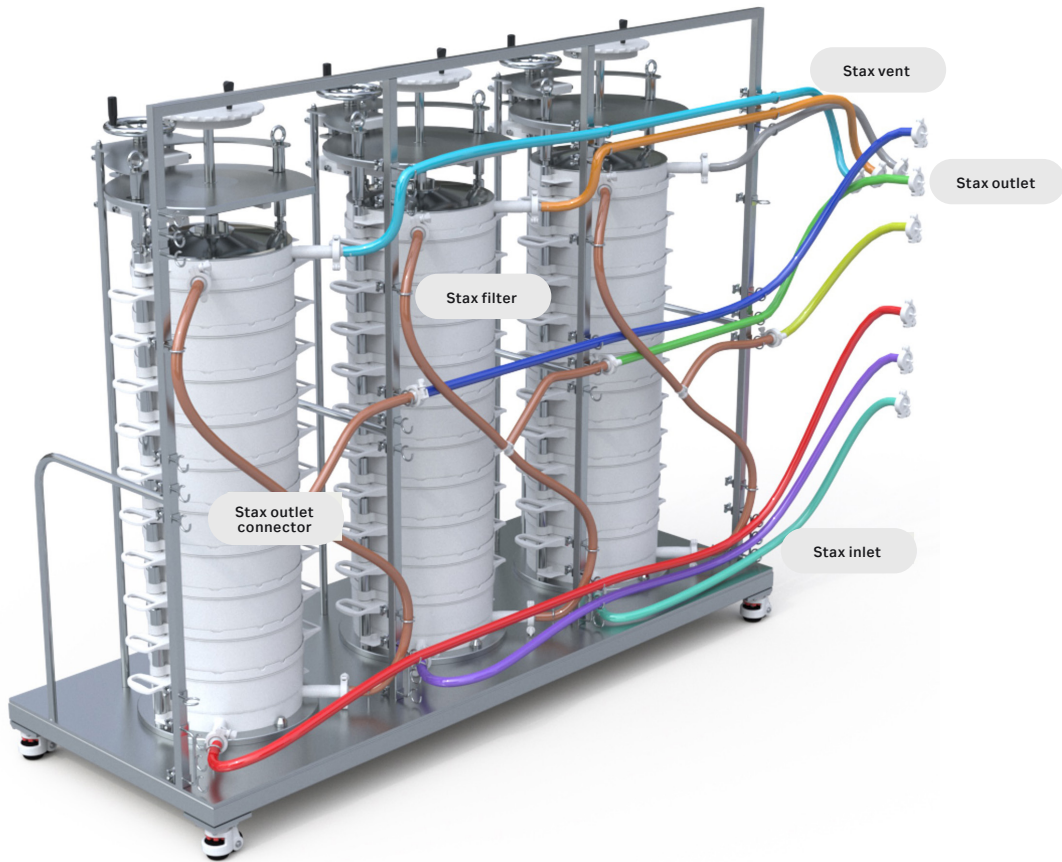
Below is the list of product codes that have been designed and approved to support the depth filtration system. Given the configurable nature of the system as well as the numerous combinations of filter capsules (membrane and size) possible, only a limited number of filtration assemblies are shown below.

If a specific filtration combination set does not appear but falls within the limits of the system, we can create it. An entire custom depth filtration manifold can be built for a specific process by following the steps below.

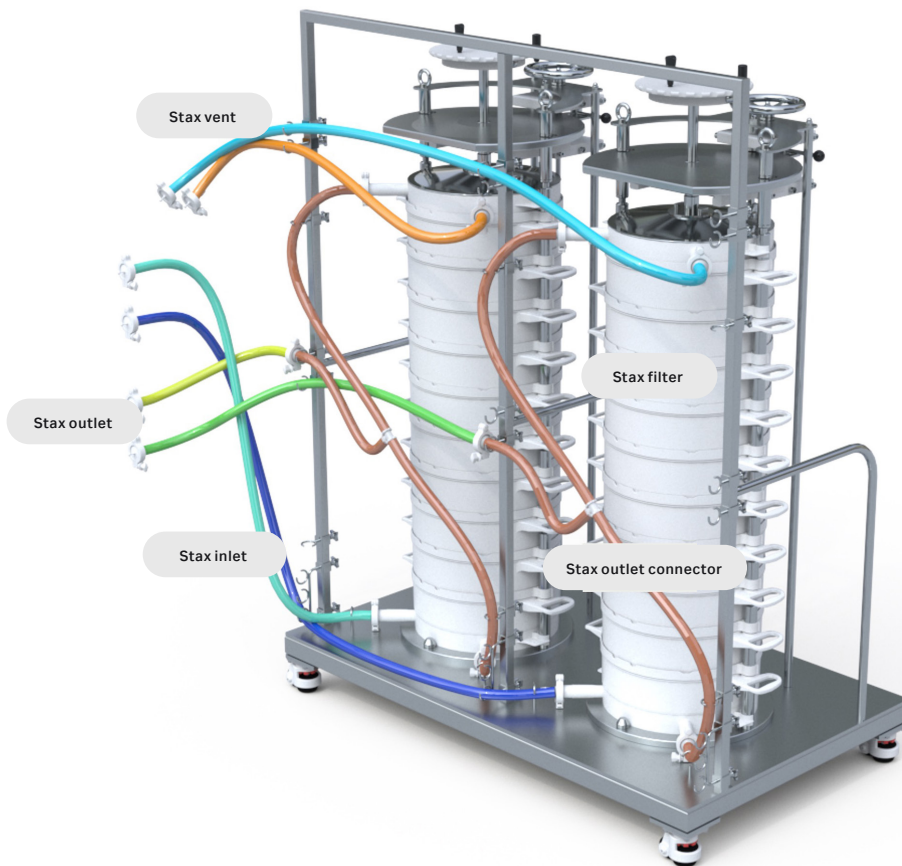
Standard system



Stage-1 Stax filters



Stage-2 Stax filters



Single-use ordering guide for depth filtration standard system

Flow path selection	Product	Product code
Step 1: Pick all mandatory manifolds (inlet, pump and bypass drain)		
Inlet	1 in. system inlet manifold	7424-1527K
Pump	1 in. single-use pump head assembly	7424-1527L
Pump outlet	1 in. pump outlet manifold	7424-1527M
Bypass/drain	1 in. bypass/drain manifold	7424-1527N
Step 2: Choose one air line manifold for the system		
Air line manifold CPC	½ in. filter air line 1 with CPC connector at the outlet manifold	7424-1529B
Air line manifold TC	½ in. filter air line 1 with 1½ in. tri clamp connector at the outlet manifold	7424-1528A
Step 3: Stage-1 Stax distribution manifold		
Stage-1 inlet manifold	1 in. left hand distribution option 1 manifold	7424-1527W
Stage-1 outlet manifold	1 in. distribution option 2 manifold	7424-1527X
Step 4: Choose stage-1 Stax inlet manifold depending on the number of chassis used		
Stax chassis, 1 inlet	Stax ¾ in. inlet short manifold	7424-1615N
Stax chassis, 2 inlet	Stax ¾ in. inlet medium manifold	7424-1615P
Stax chassis, 3 inlet	Stax ¾ in. inlet long manifold	7424-1615Q
Step 5: Choose stage-1 Stax outlet manifold depending on the number of chassis used		
Stax chassis, 1 outlet	Stax ¾ in. outlet short manifold	7424-1615S
Stax chassis, 2 outlet	Stax ¾ in. outlet medium manifold	7424-1615T
Stax chassis, 3 outlet	Stax ¾ in. outlet long manifold	7424-1615U
Step 6: Select stage-1 Stax inlet-outlet connector manifold depending on the number of chassis used		
Stage-1 Stax inlet-outlet connector manifold	Stax ¾ in. outlet connector manifold	7424-1615R
Step 7: Choose stage-1 Stax vent manifold depending on the number of chassis used		
Stax 1 vent	Stax ½ in. air line short manifold	7424-1615V
Stax 2 vent	Stax ½ in. air line medium manifold	7424-1615W
Stax 3 vent	Stax ½ in. air line long manifold	7424-1615X
Step 8: Select stage-1 air line manifold		
Air line manifold	Stax ½ in. air line 2 manifold	7424-1528B
Step 9: Choose one stage-2 Stax distribution manifold		
Stage-2 inlet manifold (for 1 × chassis)	1 in. distribution option 3 manifold	7424-1527Y
Stage-2 outlet manifold (for 1 × chassis)	1 in. distribution option 4 manifold	7424-1527Z
Stage-2 second inlet manifold (for 2 × chassis)	1 in. distribution option 5 manifold	7424-1790Y
Stage-2 second outlet manifold (for 2 × chassis)	1 in. distribution option 6 manifold	7424-1790Z
Step 10: Choose stage-2 Stax inlet manifold depending on the number of chassis used		
Stax 1 inlet	Stax ¾ in. outlet medium manifold	7424-1615T
Stax 2 inlet	Stax ¾ in. outlet long manifold	7424-1615U
Step 11: Choose stage-2 Stax outlet manifold depending on the number of chassis used		
Stax 1 inlet	Stax ¾ in. outlet short manifold	7424-1615S
Stax 2 inlet	Stax ¾ in. outlet medium manifold	7424-1615T
Step 12: Choose stage-2 Stax inlet-outlet connector manifold depending on the number of chassis used		
Stage-2 Stax inlet-outlet connector manifold	Stax ¾ in. outlet connector manifold	7424-1615R
Step 13: Choose stage-2 Stax vent manifold depending on the number of chassis used		
Stax 1 vent	Stax ½ in. air line medium manifold	7424-1615W
Stax 2 vent	Stax ½ in. air line long manifold	7424-1615X

Step 14: Choose stage-2 air line manifold depending on the number of chassis used

Air line for 2 × Stax	Stax ½ in. air line 3 manifold	7424-1528C
Air line for 1 × Stax	Stax ½ in. air line 4 manifold	7424-1529E

Step 15: Choose one bioburden filter inlet manifold

Filter inlet manifold	1 in. filter inlet	7424-1527R
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Step 16: Choose one bioburden filter outlet manifold

Filter outlet manifold	1 in. outlet manifold for 254 mm (10 in.) filter capsule	7424-1527T
Filter outlet manifold	1 in. outlet manifold for 508 mm (20 in.) filter capsule	7424-1527U
Filter outlet manifold	1 in. outlet manifold for 762 mm (30 in.) filter capsule	7424-1527V

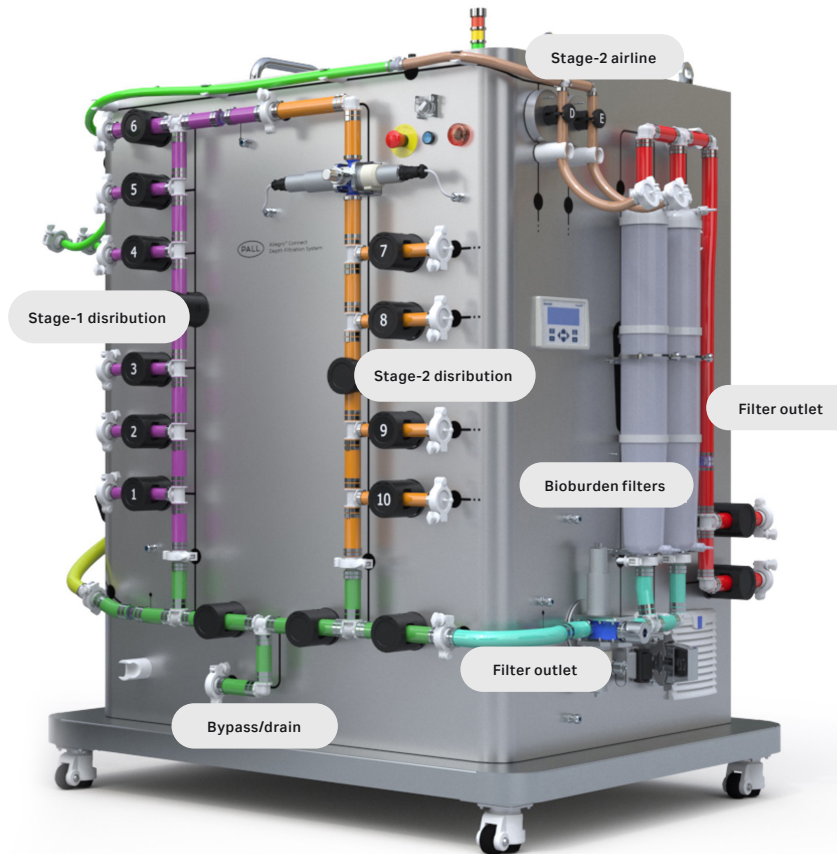
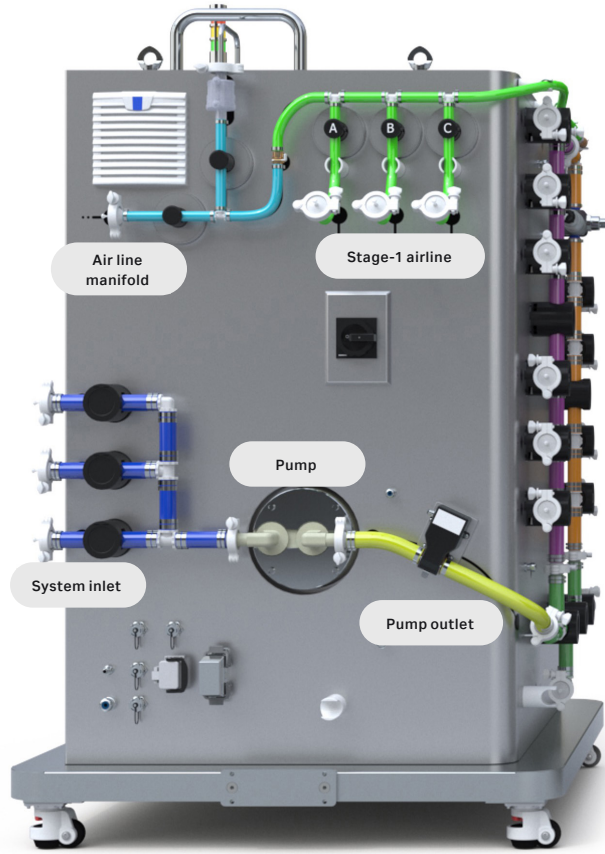
Step 17: Choose stage-1 and stage-2 filter capsules

See datafile for Stax mAx clarification platform or contact us for additional support.

Step 18: Choose bioburden filters

See datafiles for Supor™ EKV sterilizing grade filters or Kleenpak™ capsules with Supor EAV membrane or contact Cytiva for additional support. The manifold example is for connecting 3 Stax chassis, for 1 or 2 Stax chassis contact us.

Advanced system



Single-use ordering guide for depth filtration advanced system

Flow path selection	Product	Product code
Step 1: Add all mandatory manifolds (inlet, pump and bypass drain)		
Inlet	1 in. system inlet manifold	7424-1527K
Pump	1 in. single-use pump head assembly	7424-1527L
Pump outlet	1 in. pump outlet manifold	7424-1527M
Bypass/drain	1 in. bypass/drain manifold	7424-1527N
Step 2: Choose one air line manifold for the system		
Air line manifold CPC	½ in. filter air line 1 with CPC connector at the outlet manifold	7424-1529B
Air line manifold TC	½ in. filter air line 1 with 1½ in. tri clamp connector at the outlet manifold	7424-1528A
Step 3: Add stage-1 Stax distribution manifold		
Stage-1 distribution	1 in. left hand distribution manifold	7424-1527P
Step 4: Choose stage-1 Stax inlet manifold depending on the number of chassis used		
Stax 1 inlet	Stax ¾ in. inlet short manifold	7424-1615N
Stax 2 inlet	Stax ¾ in. inlet medium manifold	7424-1615P
Stax 3 inlet	Stax ¾ in. inlet long manifold	7424-1615Q
Step 5: Choose stage-1 Stax outlet manifold depending on the number of chassis used		
Stax 1 outlet	Stax ¾ in. outlet short manifold	7424-1615S
Stax 2 outlet	Stax ¾ in. outlet medium manifold	7424-1615T
Stax 3 outlet	Stax ¾ in. outlet long manifold	7424-1615U
Step 6: Select stage-1 Stax outlet connector manifold depending on the number of Stax chassis used		
	Stax ¾ in. outlet connector manifold	7424-1615R
Step 7: Choose stage-1 Stax vent manifold depending on the number of Stax chassis used		
Stax 1 vent	Stax ½ in. air line short manifold	7424-1615V
Stax 2 vent	Stax ½ in. air line medium manifold	7424-1615W
Stax 3 vent	Stax ½ in. air line long manifold	7424-1615X
Step 8: Select stage-1 air line manifold		
	Stax ½ in. air line 2 manifold	7424-1528B
Step 9: Choose one stage-2 Stax distribution manifold		
Stage-2 distribution	1 in. right hand distribution manifold without turbidity sensor	7424-1528D
	1 in. right hand distribution manifold with turbidity sensor	7424-1527Q
Step 10: Choose stage-2 Stax inlet manifold depending on the number of chassis used		
Stax 1 inlet	Stax ¾ in. outlet medium manifold	7424-1615T
Stax 2 inlet	Stax ¾ in. outlet long manifold	7424-1615U
Step 11: Choose stage-2 Stax outlet manifold depending on the number of chassis used		
Stax 1 outlet	Stax ¾ in. outlet short manifold	7424-1615S
Stax 2 outlet	Stax ¾ in. outlet medium manifold	7424-1615T
Step 12: Select stage-2 Stax inlet-outlet connector manifold depending on the number of chassis used		
	Stax ¾ in. outlet connector manifold	7424-1615R
Step 13: Choose stage-2 Stax vent manifold depending on the number of chassis used		
Stax 1 vent	Stax ½ in. air line medium manifold	7424-1615W
Stax 2 vent	Stax ½ in. air line long manifold	7424-1615X

Step 14: Choose stage-2 air line manifold depending on the number of chassis used

Air line for 2 × Stax	Stax ½ in. air line 3 manifold	7424-1528C
Air line for 1 × Stax	Stax ½ in. air line 4 manifold	7424-1529E

Step 15: Choose one bioburden filter inlet manifold

Filter inlet manifold	1 in. filter inlet with conductivity sensor manifold	7424-1557V
Filter inlet manifold	1 in. filter inlet with conductivity and turbidity sensor manifold	7424-1527S

Step 16: Choose one bioburden filter outlet manifold

Filter outlet manifold	1 in. outlet manifold for 254 mm (10 in.) filter capsule	7424-1527T
Filter outlet manifold	1 in. outlet manifold for 508 mm (20 in.) filter capsule	7424-1527U
Filter outlet manifold	1 in. outlet manifold for 762 mm (30 in.) filter capsule	7424-1527V

Step 17: Choose stage-1 and stage-2 filter capsules

See datafile for Stax mAx clarification platform or contact us for addition support.

Step 18: Choose Bioburden filters

See datafiles for Supor EKV sterilizing grade filters or Kleenpak capsules with Supor EAV membrane, or contact Cytiva for additional support. The manifold example is for connecting 3 Stax chassis, for 1 or 2 Stax chassis contact us.

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