

Xcellerex™

X-platform bioreactors

CELL GROWTH AND EXPANSION

Growing cells reliably and consistently is critical to manufacturing biologic medicines. Xcellerex™ X-platform bioreactors help you do that by combining scalable performance, process flexibility, and the reliability of Xcellerex single-use technologies. Available in 50 L, 200 L, 500 L, and 2000 L sizes.

Benefits of Xcellerex X-platform bioreactors:

- Scalable performance from 10 L to 2000 L working volume across the platform range
- Designed to support high-density cultures and shear-sensitive processes
- Standardized but configurable systems help reduce customization time and expense
- Application-ready bag designs simplify process setup and optimization
- Bag options to support fed-batch and perfusion workflows
- Flexible process control through Figure™ automation solutions, including PlantPAx® and DeltaV™ options
- Modular system layout to support different facility footprints and workflows
- Online Bioreactor Scaler tool to help define scale-up parameters
- Life-cycle support options, including installation, qualification, maintenance, upgrades, digital support, and scale-up expertise

Xcellerex X-platform bioreactors

Whether you are running a shear-sensitive cell therapy process or a high-cell-density production culture, the challenge is the same: achieving consistent performance without changing platforms. Xcellerex X-platform bioreactors are designed to support this wide range of process requirements, combining configurable hardware, application-ready bag designs, and single-use reliability in a flexible manufacturing platform.



Fig 1. Xcellerex X-2000 bioreactor, cabinet assembly and HMI.



Fig 2. Xcellerex X-platform bioreactor range.

The modular design helps the system fit different facility layouts and workflows. The platform combines a bioreactor vessel, control cabinet, and Human Machine Interface (HMI) that can be arranged to suit operational needs while maintaining a standardized user experience across the range.



Fig 3. The top of the Xcellerex X-2000 showing the bag hoist (A), FLIR foam camera (B), and tubing supports (C).



Fig 4. The Xcellerex X-200 bioreactor and full opening door.

Bioreactor vessel

Xcellerex X-platform bioreactors are available in four sizes, with maximum working volumes of 50 L, 200 L, 500 L, and 2000 L. Each system offers a 5:1 turndown ratio to support process development, scale-up and manufacturing on a common platform.

Performance

- **Supports both intensive and sensitive cell culture processes.** The combination of impeller, baffle and sparger design enables a single platform to support both high-cell-density processes that require intensive mixing and gas transfer, and lower-density, shear-sensitive cultures that demand gentler operating conditions.
- **Flexible gas delivery (sparging) options** support oxygen transfer requirements and can be configured to help manage metabolic CO₂ accumulation.
- **Application-ready hardware configurations** simplify system selection and help reduce the time required to configure a system for specific process needs.
- **An optional foam detection system**, available on the X-500 and X-2000 bioreactors, uses a thermal camera to automatically monitor foam formation and control antifoam additions, reducing the need for manual intervention.

Usability

- **Easy bag installation** with clear visual alignment between the bag coupling and drive unit, helping your operators position and install bag assemblies correctly and consistently.
- **Wide-opening vessel doors** provide easy access during bag installation, while a bag hoist on the X-500 and X-2000 systems helps reduce manual handling of larger assemblies.
- **Graduated viewing window** makes it easy to visually assess process volume during operation.
- **Flexible tubing routing** helps your operators route lines to suit your facility layout and workflow requirements.
- **Adjustable probe positioning** helps your operators place sensors correctly to support reliable process monitoring and control.

Sensors

X-platform bioreactors help you monitor and control critical process parameters, including electrochemical pH, polarographic and optical dissolved oxygen (DO), dissolved CO₂, viable cell density (VCD), pressure and temperature. You can choose conventional multi-use probes or single-use sensors for pH, DO and VCD measurements to match your process requirements.

Depending on bag configuration, you can install up to nine probes, giving you the flexibility to tailor process monitoring to your application.

Use the HMI to calibrate pH, DO, dissolved CO₂, and VCD sensors directly at the point of use through native probe calibration software. Wireless calibration and device management simplify setup, while wired Modbus-based data acquisition helps maintain data integrity.



Fig 5. Click-in probe sheath.

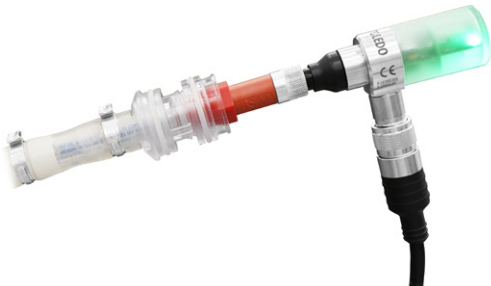


Fig 6. Wireless probe transmitter.

Filters

Primary exhaust filters come standard on all systems, with optional secondary and tertiary filters available for processes that are prone to filter fouling or require extended run times (Fig 7 and 8).

The system automatically switches between filters based on bag pressure, helping reduce the risk of interruptions and batch loss.

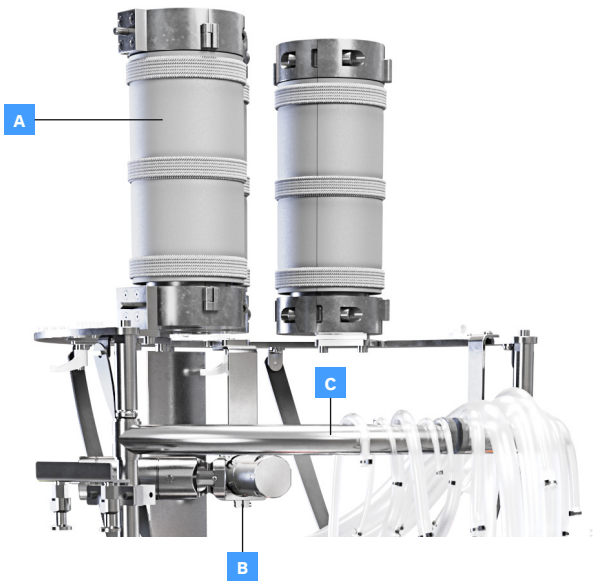


Fig 7. Exhaust filter heaters (A), pinch valves (B), and adjustable support arm (C).

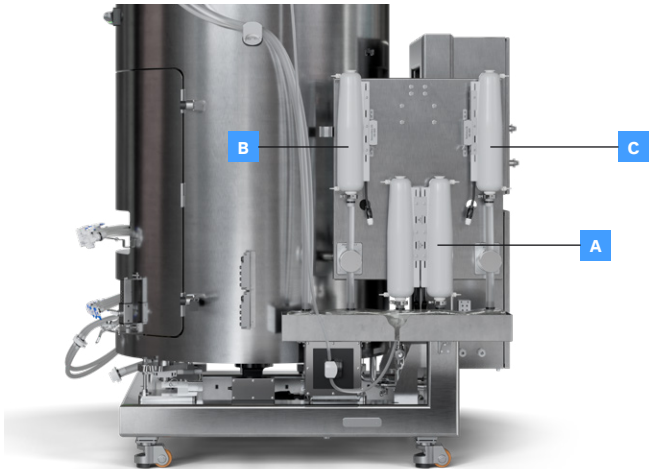


Fig 8. Working height mounted exhaust filters and heaters showing dual primary filter assembly (A) secondary filter (B) and tertiary filter (C).

Bioreactor single-use bag assembly

X-platform bioreactors support a range of standard bag and sparger configurations designed for different process needs (Table 1). You can choose the bag and sparger selections to match your application requirements, from routine batch cultures to demanding perfusion processes.

These standardized bag designs simplify implementation while supporting consistent supply and platform compatibility.

Each bag is manufactured from Allegro™ film and is supplied with dedicated packaging, labeling, and installation instructions.

Table 1. Eight standard bag configurations are available with Xcellerex X-platform bioreactor systems

Name	Description
Fed-batch I	The most basic bag type. Suitable for simple processes (e.g. cell expansion) that require few sensors, few liquid additions, and simple sparging.
Fed-batch II	Similar to Fed-batch I but allows more complex processes. The bag includes additional exhaust ports, sensors, liquid addition possibilities, and secondary sparging.
Fed-batch III	A variant of Fed-batch II that includes single-use pH and DO (dissolved oxygen) sensors in place of multi-use sensors.
Fed-batch IV	A variant of Fed-batch II that includes single-use pH, DO, and VCD (viable cell density) sensors in place of multi-use sensors.
Perfusion I	Suitable for simple perfusion processes. Similar to Fed-batch II and includes ports for attachment to a perfusion system.
Perfusion II	The most advanced bag type, suitable for demanding perfusion applications. Includes multi-use sensors, additional exhaust ports, liquid addition possibilities, and secondary sparging.
Perfusion III	A variant of Perfusion II that includes single-use pH and DO sensors (instead of multi-use)
Perfusion IV	A variant of Perfusion II that includes single-use pH, DO, and VCD sensors (instead of multi-use)

System cabinets

The system cabinets (Fig 9, Fig 10) consolidate built-in peristaltic pump options, connections for off-skid pumps and weigh scales, automation and networking hardware, I/O interfaces, and power distribution components within a single enclosure. All cabinets are IP55-rated and have locking 304 stainless steel casters.



Fig 9. Cabinet assembly for the Xcellerex X-50 and X-200 bioreactors showing four interchangeable pump heads.



Fig 10. Cabinet assembly for Xcellerex X-500 and X-2000 bioreactors shown with six interchangeable pumps.

Gas flow control

- Five digital mass-flow controllers (MFCs) provide precise gas flow control.
- Depending on MFC size, turndown ratios range from 250:1 to 100:1, supporting a wide operating range.
- Automatic shut-off valves are included in each MFC flow path.
- X-50 and X-200 systems include regulators, gauges, and manual shut-off valves for each incoming gas utility.
- An optional skid-mounted gas regulation panel is available for X-500 and X-2000 systems.

Alarms, connectivity, and communication

- **The alarm stack** has visual and audible status indication, helping your operators monitor multiple systems.
- **Rear-mounted connections** centralize cable management and support a more organized installation.
- **EtherNet/IP communication** connects the system and its subsystems.
- **5 m and 10 m communication cables** support flexible equipment placement.

The system consolidates Modbus sensor signals into a single EtherNet/IP connection, reducing cabling between field devices and the main control cabinet. Process temperature signals are handled separately.

Human-machine interface (HMI)

- **21.5 in. color touchscreen HMI** with industrial keyboard and mouse designed for operation in cleanroom environments.
- **IP55-rated, 304 stainless steel** construction helps protect internal components from dust ingress and routine cleaning activities.
- **Locking 304 stainless steel casters** allow the HMI to be repositioned and secured as needed.
- **Motorized height adjustment** enables your operators to position the HMI at a comfortable working height.



Fig 11. HMI featuring 21.5 in. color touchscreen, industrial keyboard and mouse.

Calibration and data communication

Integrated calibration software uses USB-enabled wireless communication between the HMI and probes and sensors during calibration. During operation, the system continuously transmits probe and sensor measurement data over the hard-wired EtherNet/IP network. Pressure and temperature sensors use separate connections and calibration methods.

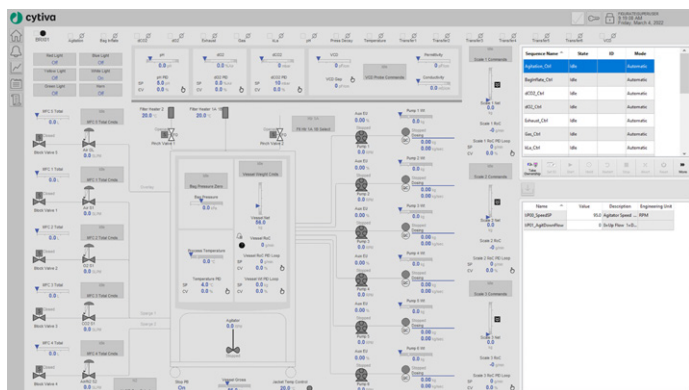
Temperature control unit (TCU)

TCUs are available for all sizes of Xcellerex X-platform bioreactors, matching the requirements of the systems.

Flexible automation and process control

- Supports either Rockwell Automation PlantPAx DCS or Emerson DeltaV DCS to align with your facility's automation strategy.
- Real-time process monitoring and control help operators maintain process performance.
- Alarm management, data history, and ISA-88-compliant reporting support operational oversight and documentation.
- Integrated recipe management and batch execution help standardize manufacturing workflows and improve process consistency.
- Modular automation architecture supports integration with your existing automation infrastructure.

(A)



(B)

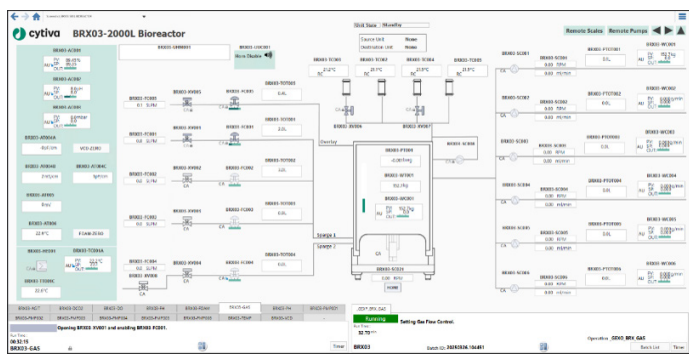


Fig 12. Interactive graphics display for (A) PlantPAx DCS and (B) Emerson DeltaV DCS.

Bioreactor Scaler tool

Bioreactor Scaler is an *in silico* modeling tool that helps you predict process performance across bioreactor scales, supporting the selection of key process parameters during scale-up and technology transfer. The software is available in free and Pro versions and provides data-driven insights that can help you reduce process development effort, process waste, and scale-up risk.

Whether you are scaling up from a benchtop bioreactor or transferring a process from an Xcellerex XDR bioreactor to an Xcellerex X-platform bioreactor, Bioreactor Scaler (Fig 13) helps you evaluate operating parameters and identify suitable scale-up conditions before implementation.

Reference scale		Target scale	
Day of culture*	Working volume (L)*	Appliation (gpm)*	Primary operation (gpm)
Range 0-100	Range 0-0	Range 0-0	Range 0-0
		Total	
		Range 0-0	
		Air	
		Range 0-0	
		Working volume (L)*	
		Range 0-0	

Fig 13. A screenshot of our online Bioreactor Scaler tool.

Equipment service solutions

From installation to end of life, our equipment services are designed to ensure your equipment delivers maximum performance and value throughout its life cycle, so you can stay on schedule. Whether you have in-house support teams or plan to rely fully or partially on Cytiva, we have flexible service offerings to meet your specific needs. Our engineers are certified, and regularly recertified, to provide hassle-free installation, repair, and maintenance that you can rely upon. We offer a comprehensive range of service plans, genuine parts engineered for reliability, standardized qualification services, and convenient remote troubleshooting support to protect your investment from day one. Preventive maintenance, tailored training, and cost-effective upgrade options are all designed to help minimize downtime throughout the equipment life cycle.

Find out more about our service solutions at cytiva.com/equipment-services, or, if you would prefer to contact a member of the equipment service solutions team, visit cytiva.com/repair to locate your country-specific phone number and email address.

System specifications

	X-50	X-200	X-500	X-2000
Max working volume (L)	50	200	500	2000
Min. working volume (L)	10	40	100*	400*
Volume turndown ratio	5:1			
Vessel	Jacketed 304 SS vessel with opening door			
Exhaust filter size	5 in.	10 in.	10 in.	20 in.
Filter heater assembly	1 as standard			2 as standard
Filter heater assemblies	Up to 3 total			Up to 4 total
Pinch Valves	Up to 2			
Impeller type	6B-R50			
Impeller to vessel ratio	0.4			
Agitation speed downflow (RPM)	0-285	0-185	15-140	15-105
Agitation speed upflow (RPM)	0-285	0-215	15-165	15-120
Enclosure protective class†	IP55			

*If operating in perfusion, minimum working volume is 40% of the maximum working volume (200 L and 800 L respectively for X-500 and X-2000)

† for the bioreactor, cabinet assembly, and HMI

Process instrumentation	X-50	X-200	X-500	X-2000
Conventional (multi-use) pH probes	2	2	2	2
Conventional (multi-use) DO probes	2	2	2	2
Conventional (multi-use) CO ₂ probes	1	1	1	1
Conventional (multi-use) VCD sensor	1	1	1	1
Temperature sensor	2	2	2	2
Pressure sensor	up to 2	up to 2	up to 2	up to 2
Single-use pH probes	2	2	2	2
Single-use DO probes	2	2	2	2
Single-use VCD sensor	1	1	1	1
Foam detection and control	-	-	Yes	Yes
Mass Flow Controllers (MFCs)	5	5	5	5
MFC range (SL/min)‡ and sparge destination				
MFC 1 Air - Sparge 1	0.1-10	0.1-40	0.3-75	1.4-200
MFC 2 O ₂ - Sparge 1	0.1-10	0.1-40	0.3-75	1.4-200
MFC 3 CO ₂ - Sparge 1	0.1-2.5	0.1-10	0.1-25	0.7-100
MFC 4 Air/N ₂ - Sparge 2	0.1-5.0	0.1-20	0.1-25	0.7-100
MFC 5 Air - Overlay	0.1-2.5	0.1-10	0.1-25	0.4-100
Internal pump count	4	4	6	6
Internal pump specification	Watson-Marlow 114DV, 313D, and 520R2			
External pumps (optional)	Up to 2; Watson-Marlow 530EnN, 630EnN, and 730EnN			
External scale connectivity (optional)	Up to 3	Up to 3	Up to 6	Up to 6
Load cells	4	4	4	4

‡ the maximum MFC set point value for the bioreactor sizes is shown in the table. Specific MFCs have different SP values, based on their function

System dimensions	X-50 ^s	X-200	X-500	X-2000
Vessel, without step or rolling platform				
Including top frame and exhaust filter heaters (W × D × H) [¶]	84 × 79 × 201 cm (33.0 × 30.9 × 79.3 inch)	88 × 96 × 254 cm (34.5 × 37.9 × 99.9 inch)	165 × 168 × 241 cm (65 × 66 × 94.7 inch)	189 × 217 × 339 cm (74.4 × 85.3 × 133.5 inch)
Vessel weight	236 kg (520 lb)	336 kg (741 lb)	827 kg (1824 lb)	1754 kg (3867 lb)
Cabinet assembly (W × D × H)	80 × 113 × 115 cm** (31.6 × 44.4 × 45.3 inch)		76 × 121 × 139 cm (30 × 47.6 × 54.7 inch)	
Cabinet assembly weight	209 kg (461 lb)		274 kg (604 lb)	
X-platform HMI (W × D × H)	71 × 69 × 172 cm (28.0 × 27.0 × 68.0 inch)			
X-platform HMI weight	70 kg (154 lb)			
Temperature Control Unit (TCU) (W × D × H)	48 × 78 × 66 cm (18.9 × 30.7 × 26.0 inch)		45 × 55 × 65 cm (17.7 × 21.7 × 25.6 inch)	55 × 65 × 97 cm (21.7 × 25.6 × 38.2 inch)
TCU Weight	154 kg (339.5 lb)		56 kg (123 lb)	112 kg (247 lb)

[§] The X-50 can be configured with an integrated step platform, expanding the 3D envelope with exhaust filters to 84 × 106 × 201 cm (33.0 × 41.7 × 79.3 in.)

[¶] Width is the maximum. Depending on configuration the width could be less

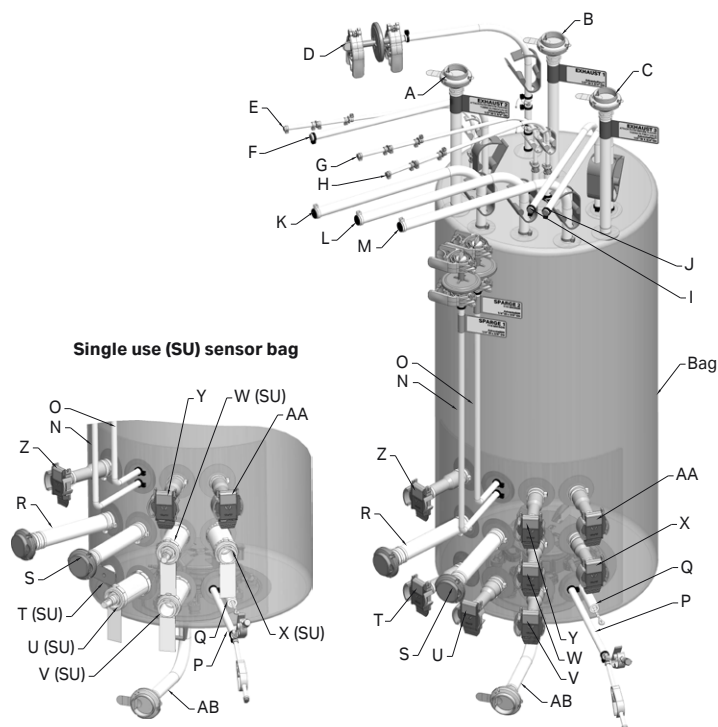
** Audible visual indicator increases height to 155 cm

Bioreactor bag specifications

Bags for Xcellerex X-50 bioreactor

Bag port	Intended function	Bag port size	Tubing size i.d. x o.d. (in.)	Tubing length, [in. (mm)]	Terminal connector	Fed-batch				Perfusion			
						I	II	III	IV	I	II	III	IV
A	Exhaust 2	1/2"	1/2" x 3/4"	10.0 (255)	ReadyMate, 1/2"	•	•	•	•	•	•	•	•
B	Exhaust 1	1/2"	1/2" x 3/4"	7.0 (180)	ReadyMate, 1/2"	•	•	•	•	•	•	•	•
C	Exhaust 3	1/2"	1/2" x 3/4"	10.0 (255)	ReadyMate, 1/2"	•	•	•	•	•	•	•	•
D	Overlay	1/4"	1/4" x 7/16"	26.0 (660)	Mini-Triclamp	•				•			
	Overlay w/ redundant pressure sensor	1/4"	1/4" x 7/16"	26.0 (660)	Mini-Triclamp		•	•	•		•	•	•
E	Acid	1/4"	1/8" x 1/4"	103.0 (2615)	Plug		•	•	•	•	•	•	•
F	Feed 1	1/4"	1/4" x 7/16"	53.1 (1350)	Plug		•	•	•	•	•	•	•
G	Base	1/4"	1/8" x 1/4"	103.0 (2615)	Plug	•	•	•	•	•	•	•	•
H	Antifoam	1/4"	1/8" x 1/4"	103.0 (2615)	Plug	•	•	•	•	•	•	•	•
I	Feed 2	1/4"	1/4" x 7/16"	53.1 (1350)	Plug	•	•	•	•	•	•	•	•
J	Feed 4	1/4"	1/4" x 7/16"	53.1 (1350)	Plug	•	•	•	•	•	•	•	•
K	Media	3/8"	3/8" x 5/8"	53.1 (1350)	Plug	•	•	•	•	•	•	•	•
L	Inoculum	3/8"	3/8" x 5/8"	53.1 (1350)	Plug	•	•	•	•	•	•	•	•
M	Feed 3	3/8"	3/8" x 5/8"	53.1 (1350)	Plug					•	•	•	•
N	Sparge 1	1/4"	1/4" x 3/8"	32.0 (815)	Mini-Triclamp	•	•	•	•	•	•	•	•
O	Sparge 2	1/4"	1/4" x 3/8"	32.0 (815)	Mini-Triclamp		•	•	•	•	•	•	•
P	Sample	1/4"	1/8" x 1/4"	36.2 (920)	Plug	•	•	•	•	•	•	•	•
				18.1 (460)	Luer needleless valve								
Q	Temperature	1/4"	1/4" x 3/8"	2.6 (65)	Polymeric thermowell	•	•	•	•	•	•	•	•
R	Perfusion port 1	3/4"	3/4" x 1"	6.1 (155)	ReadyMate, 3/4"					•	•	•	•
S	Perfusion port 2	3/4"	3/4" x 1"	6.1 (155)	ReadyMate, 3/4"					•	•	•	•
T	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	•	•	•	•	•	•	•	•
T (SU)	Single-use VCD	VCD patch	N/A	N/A	N/A				•				•
U	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	•	•			•	•		
U (SU)	Single-use PH	1"	1" x 1 13/32"	3.2 (80)	N/A			•	•			•	•
V	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	•	•			•	•		
V (SU)	Single-use DO	1"	1" x 1 13/32"	3.2 (80)	N/A			•	•			•	•
W	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	•	•			•	•		
W (SU)	Single-use PH	1"	1" x 1 13/32"	3.2 (80)	N/A			•	•			•	•
X	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"		•			•	•		
X (SU)	Single-use DO	1"	1" x 1 13/32"	3.2 (80)	N/A			•	•			•	•
Y	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"		•	•	•	•	•	•	•
Z	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"					•	•	•	•
AA	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"					•	•	•	•
AB	Harvest	1/2"	1/2" x 3/4"	48.0 (1220)	ReadyMate, 1/2"	•	•	•	•	•	•	•	•
N/A	Exhaust filter 5"	N/A	N/A	N/A	ReadyMate, 1.5" TC	•	•	•	•	•	•	•	•

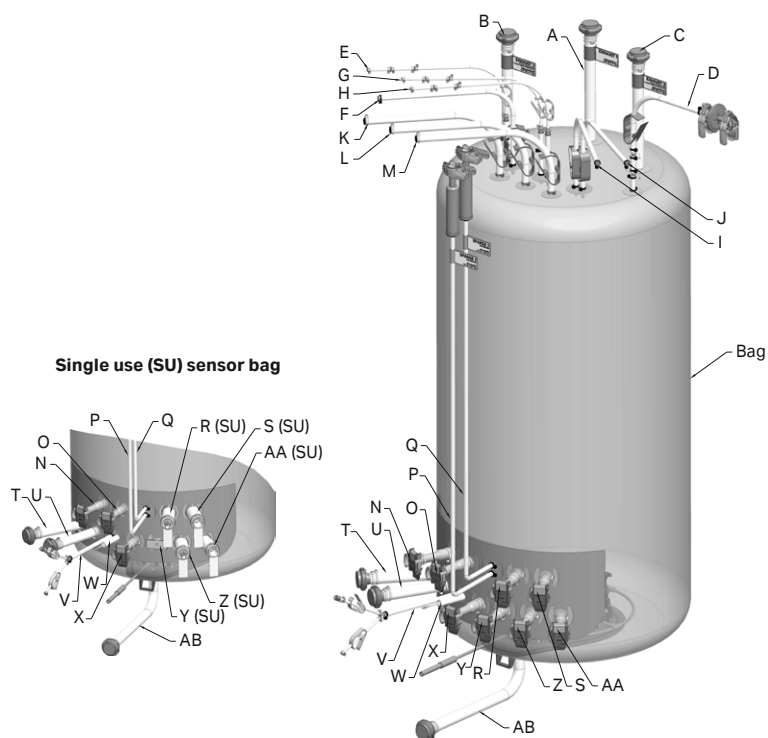
For more detailed information, including bag accessories, refer to X-50 drawing 30003437.



Bags for Xcellerex X-200 bioreactor

Bag port	Intended function	Bag port size	Tubing size i.d. x o.d. (in.)	Tubing length, [in. (mm)]	Tenninal connector	Fed-batch				Perfusion			
						I	II	III	IV	I	II	III	IV
A	Exhaust 1	3/4"	3/4" x 1"	12.6 (320)	ReadyMate, 3/4"	●	●	●	●	●	●	●	●
B	Exhaust 2	3/4"	3/4" x 1"	12.6 (320)	ReadyMate, 3/4"	●	●	●	●	●	●	●	●
C	Exhaust 3	3/4"	3/4" x 1"	12.6 (320)	ReadyMate, 3/4"	●	●	●	●	●	●	●	●
D	Overlay	1/4"	1/4" x 7/16"	26.0 (660)	Mini-Triclamp	●				●			
	Overlay w/ redundant pressure sensor	1/4"	1/4" x 7/16"	26.0 (660)	Mini-Triclamp		●	●	●		●	●	●
E	Acid	1/4"	1/8" x 1/4"	127.0 (3225)	Plug		●	●	●		●	●	●
F	Feed 1	1/4"	1/4" x 7/16"	84.1 (2135)	Plug		●	●	●		●	●	●
G	Base	1/4"	1/8" x 1/4"	127.0 (3225)	Plug	●	●	●	●	●	●	●	●
H	Antifoam	1/4"	1/8" x 1/4"	127.0 (3225)	Plug	●	●	●	●	●	●	●	●
I	Feed 2	1/4"	1/4" x 7/16"	84.1 (2135)	Plug	●	●	●	●	●	●	●	●
J	Feed 4	1/4"	1/4" x 7/16"	84.1 (2135)	Plug	●	●	●	●	●	●	●	●
K	Media	3/8"	3/8" x 5/8"	84.1 (2135)	Plug	●	●	●	●	●	●	●	●
L	Inoculum	3/8"	3/8" x 5/8"	84.1 (2135)	Plug	●	●	●	●	●	●	●	●
M	Feed 3	3/8"	3/8" x 5/8"	84.1 (2135)	Plug					●	●	●	●
N	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"					●		●	●
O	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"					●	●	●	●
P	Sparge 1	1/4"	1/4" x 3/8"	53.1 (1350)	Mini-Triclamp	●	●	●	●	●	●	●	●
Q	Sparge 2	1/4"	1/4" x 3/8"	53.1 (1350)	Mini-Triclamp		●	●	●	●	●	●	●
R	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"		●			●	●		
R (SU)	Single-use PH	1"	1" x 1 13/32"	3.2 (80)	N/A			●	●		●	●	●
S	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"		●			●	●		
S (SU)	Single-use DO	1"	1" x 1 13/32"	3.2 (80)	N/A			●	●		●	●	●
T	Perfusion port 1	3/4"	3/4" x 1"	6.1 (155)	ReadyMate, 3/4"					●	●	●	●
U	Perfusion port 2	3/4"	3/4" x 1"	6.1 (155)	ReadyMate, 3/4"					●	●	●	●
V	Sample	1/4"	1/8" x 1/4"	36.2 (920)	Plug	●	●	●	●	●	●	●	●
				18.1 (460)	Luer needleless valve								
W	Temperature	1/4"	1/4" x 3/8"	2.6 (65)	Polymeric thermowell	●	●	●	●	●	●	●	●
X	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	●	●	●	●	●	●	●	●
Y	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	●	●			●	●		
Y (SU)	Single-use VCD	VCD patch	N/A	N/A	N/A			●	●			●	●
Z	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	●	●			●	●		
Z (SU)	Single-use PH	1"	1" x 1 13/32"	3.2 (80)	N/A			●	●		●	●	●
AA	Sensor port	3/4"	3/4" x 1/2" reducer	3.4 (86)	AseptiQuik, 1/2"	●	●			●	●		
AA (SU)	Single-use DO	1"	1" x 1 13/32"	3.2 (80)	N/A			●	●			●	●
AB	Harvest	3/4"	3/4" x 1"	48.0 (1220)	ReadyMate, 3/4"	●	●	●	●	●	●	●	●
N/A	Exhaust filter 10"	3/4"	3/4" x 1"	N/A	ReadyMate, 1.5" TC		●	●	●	●	●	●	●
N/A	Exhaust filter 5"	3/4"	3/4" x 1"	N/A	ReadyMate, 1.5" TC	●							

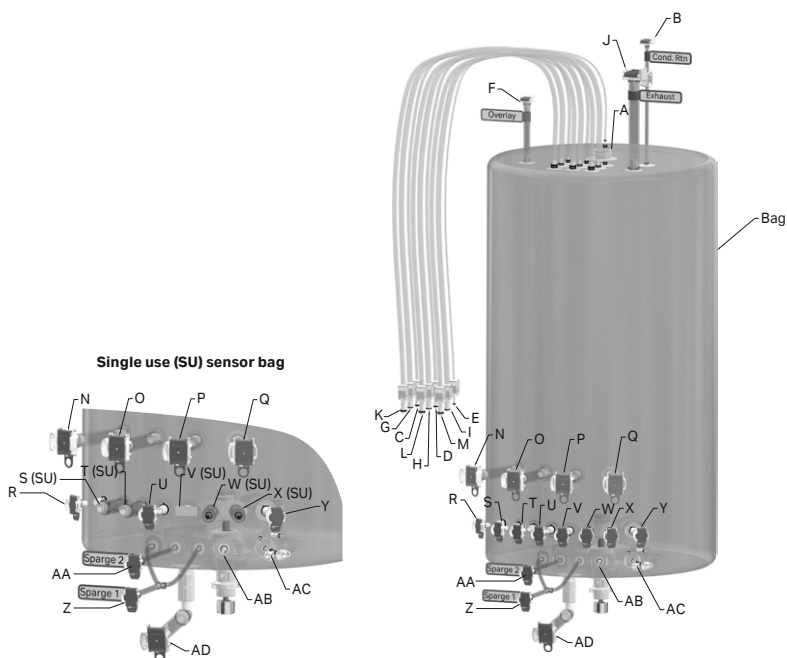
For more detailed information, including bag accessories, refer to X-200 drawing 30003438.



Bags for Xcellerex X-500 bioreactor

Bag port	Intended function	Bag port size	Tubing size i.d. × o.d. (in.)	Tubing length (mm)	Tenninal connector	Fed-batch				Perfusion			
						I	II	III	IV	I	II	III	IV
A	Foam camera	2" TC	N/A	N/A	2" sanitary	●	●	●	●	●	●	●	●
B	Condensate return	1/4"	1/4" × 7/16"	400	AseptiQuik G (U), 1/4"	●	●	●	●	●	●	●	●
C	Acid	1/4"	1/4" × 7/16"	2300	Plug	●	●	●	●	●	●	●	●
D	Base	1/4"	1/4" × 7/16"	2300	Plug	●	●	●	●	●	●	●	●
E	Antifoam	1/4"	1/8" × 1/4"	2300	Plug	●	●	●	●	●	●	●	●
F	Overlay	1/2"	1/2" × 7/8"	200	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
G	Feed 1	3/8"	3/8" × 5/8"	2300	Plug	●	●	●	●	●	●	●	●
H	Feed 2	3/8"	3/8" × 5/8"	2300	Plug	●	●	●	●	●	●	●	●
I	Feed 4	3/8"	3/8" × 5/8"	2300	Plug	●	●	●	●	●	●	●	●
J	Exhaust	1"	1" × 1 13/32"	300	AseptiQuik L (U), 1"	●	●	●	●	●	●	●	●
K	Feed 3	1/2"	1/2" × 3/4"	2300	Plug	●	●	●	●	●	●	●	●
L	Inoculum	1/2"	1/2" × 3/4"	2300	Plug	●	●	●	●	●	●	●	●
M	Media	1/2"	1/2" × 3/4"	2300	Plug	●	●	●	●	●	●	●	●
N	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●	●
O	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●	●
P	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●	●
Q	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●	●
R	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
S	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
T	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
U	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
V	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
W	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
X	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
Y	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
S (SU)	Single-use PH	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●	●
T (SU)	Single-use PH	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●	●
W (SU)	Single-use DO	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●	●
X (SU)	Single-use DO	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●	●
V (SU)	Single-use VCD	VCD patch	N/A	N/A	N/A	●	●	●	●	●	●	●	●
Z	Sparge 1	1/4" double	3/8" × 5/8"	300	AseptiQuik G (U), 3/8"	●	●	●	●	●	●	●	●
AA	Sparge 2	1/4" double	1/4" × 1/2"	400	AseptiQuik G (U), 1/4"	●	●	●	●	●	●	●	●
AB	Thermowell	1/4" double	1/4" × 3/8"	65	Polymeric thermowell	●	●	●	●	●	●	●	●
AC	Sampling	1/4"	1/8" × 1/4"	1000	Plug	●	●	●	●	●	●	●	●
AD	Harvest	Drain valve	1" × 1 13/32"	200	AseptiQuik L (U), 1"	●	●	●	●	●	●	●	●
N/A	Exhaust manifold	1"	1" × 1 13/32"	2500	AseptiQuik L (U), 1"	●	●	●	●	●	●	●	●
N/A	Sparge 1 jumper	1/2"	1/2" × 7/8"	2000	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
N/A	Sparge 2 jumper	1/2"	1/2" × 7/8"	2000	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
N/A	Overlay jumper	1/2"	1/2" × 7/8"	2000	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●
N/A	Overlay jumper with redundant pressure sensor	1/2"	1/2" × 7/8"	2000	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●	●

For more detailed information, including bag accessories, refer to X-500 drawing 31166452.

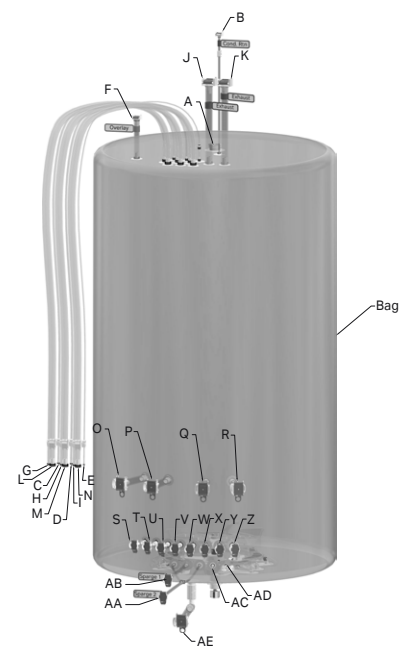
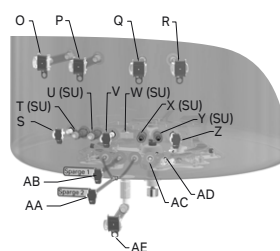


Bags for Xcellerex X-2000 bioreactor

Bag port	Intended function	Bag port size	Tubing size i.d. × o.d. (in.)	Tubing length (mm)	Tenninal connector	Fed-batch			Perfusion			
						II	III	IV	I	II	III	IV
A	Foam camera	2" TC	N/A	N/A	2" sanitary	●	●	●	●	●	●	●
B	Condensate return	1/4"	1/4" × 7/16"	500	AseptiQuik G (U), 1/4"	●	●	●	●	●	●	●
C	Acid	1/4"	1/4" × 7/16"	3000	Plug	●	●	●	●	●	●	●
D	Base	1/4"	1/4" × 7/16"	3000	Plug	●	●	●	●	●	●	●
E	Antifoam	1/4"	1/8" × 1/4"	3000	Plug	●	●	●	●	●	●	●
F	Overlay	3/4"	3/4" × 1-1/8"	500	AseptiQuik G (U), 3/4"	●	●	●	●	●	●	●
G	Feed 1	1/2"	1/2" × 3/4"	3000	Plug	●	●	●	●	●	●	●
H	Feed 2	1/2"	1/2" × 3/4"	3000	Plug	●	●	●	●	●	●	●
I	Feed 4	1/2"	1/2" × 3/4"	3000	Plug	●	●	●	●	●	●	●
J	Exhaust	1"	1" × 1 13/32"	400	AseptiQuik L (U), 1"	●	●	●	●	●	●	●
K	Exhaust	1"	1" × 1 13/32"	400	AseptiQuik L (U), 1"	●	●	●	●	●	●	●
L	Feed 3	3/4"	3/4" × 1"	3000	Plug	●	●	●	●	●	●	●
M	Inoculum	3/4"	3/4" × 1"	3000	Plug	●	●	●	●	●	●	●
N	Media	3/4"	3/4" × 1"	3000	Plug	●	●	●	●	●	●	●
O	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●
P	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●
Q	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●
R	Perfusion	1"	1" × 1 13/32"	200	AseptiQuik X (F), 1"	●	●	●	●	●	●	●
S	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
T	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
U	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
V	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
W	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
X	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
Y	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
Z	Sensor port	3/4"	3/4" × 1/2" reducer	86	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
T (SU)	Single-use PH	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●
U (SU)	Single-use PH	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●
X (SU)	Single-use DO	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●
Y (SU)	Single-use DO	1"	1" × 1 13/32"	80	N/A	●	●	●	●	●	●	●
W (SU)	Single-use VCD	VCD patch	N/A	80	N/A	●	●	●	●	●	●	●
AA	Sparge 2	1/4" double	1/2" × 7/8"	400	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
AB	Sparge 1	1/2" double	1/2" × 7/8"	500	AseptiQuik G (U), 1/4"	●	●	●	●	●	●	●
AC	Thermowell	1/4" double	1/4" × 3/8"	65	Polymeric thermowell	●	●	●	●	●	●	●
AD	Sampling	1/4"	1/8" × 1/4"	1000	Plug	●	●	●	●	●	●	●
			1/8" × 1/4"	500	Luer needleless valve	●	●	●	●	●	●	●
AE	Harvest	Drain valve	1" × 1 13/32"	200	AseptiQuik L (U), 1"	●	●	●	●	●	●	●
N/A	Exhaust manifold	2× 1"	1" × 1 13/32"	N/A	AseptiQuik L (U), 1"	●	●	●	●	●	●	●
N/A	Sparge 1 jumper	1/2"	1/2" × 7/8"	3500	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
N/A	Sparge 2 jumper	1/2"	1/2" × 7/8"	3500	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
N/A	Overlay jumper	3/4"	3/4" × 1-1/8"	2300	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●
N/A	Overlay jumper with redundant pressure sensor	3/4"	3/4" × 1-1/8"	2300	AseptiQuik G (U), 1/2"	●	●	●	●	●	●	●

For more detailed information, including bag accessories, refer to X-2000 drawing 31166453.

Single use (SU) sensor bag



Bag configuration

Size	Type	Sparge 1	Sparge 2	Sensor Type	Product code
50	Fed-Batch I	1 mm	N/A	Multi-use	29870114
	Fed-Batch II	1 mm	1 mm	Multi-use	29870116
	Fed-Batch III	1 mm	1 mm	Single-use without VCD	31192090
	Fed-Batch IV	1 mm	1 mm	Single-use with VCD	31192094
	Fed-Batch II	115 µm	1 mm	Multi-use	29947606
	Fed-Batch III	115 µm	1 mm	Single-use without VCD	31196436
	Fed-Batch IV	115 µm	1 mm	Single-use with VCD	31196437
	Perfusion I	115 µm	1 mm	Multi-use	29947605
	Perfusion II	115 µm	1 mm	Multi-use	29947604
	Perfusion III	115 µm	1 mm	Single-use without VCD	31196438
	Perfusion IV	115 µm	1 mm	Single-use with VCD	31196439
200	Fed-Batch I	1 mm	N/A	Multi-use	29868230
	Fed-Batch II	1 mm	1 mm	Multi-use	29870097
	Fed-Batch III	1 mm	1 mm	Single-use without VCD	31192096
	Fed-Batch IV	1 mm	1 mm	Single-use with VCD	31192097
	Fed-Batch II	200 µm	1 mm	Multi-use	29947609
	Fed-Batch III	200 µm	1 mm	Single-use without VCD	31196440
	Fed-Batch IV	200 µm	1 mm	Single-use with VCD	31196441
	Perfusion I	200 µm	1 mm	Multi-use	29947608
	Perfusion II	200 µm	1 mm	Multi-use	29947607
	Perfusion III	200 µm	1 mm	Single-use without VCD	31196442
	Perfusion IV	200 µm	1 mm	Single-use with VCD	31196443
500	Fed-Batch I	400 µm	2 mm	Multi-use	6416-2123V
	Fed-Batch II	400 µm	2 mm	Multi-use	6416-2123X
	Fed-Batch III	400 µm	2 mm	Single-use without VCD	6416-2123Y
	Fed-Batch IV	400 µm	2 mm	Single-use with VCD	6416-2123Z
	Perfusion I	400 µm	2 mm	Multi-use	6416-2123U
	Perfusion II	400 µm	2 mm	Multi-use	6416-2112R
	Perfusion III	400 µm	2 mm	Single-use without VCD	6416-2123S
	Perfusion IV	400 µm	2 mm	Single-use with VCD	6416-2123T
2000	Fed-Batch II	400 µm	2 mm	Multi-use	6416-2124F
	Fed-Batch III	400 µm	2 mm	Single-use without VCD	6416-2124G
	Fed-Batch IV	400 µm	2 mm	Single-use with VCD	6416-2124H
	Perfusion I	400 µm	2 mm	Multi-use	6416-2124D
	Perfusion II	400 µm	2 mm	Multi-use	6416-2112Q
	Perfusion III	400 µm	2 mm	Single-use without VCD	6416-2124B
	Perfusion IV	400 µm	2 mm	Single-use with VCD	6416-2124C

Bag accessories

	Product code
Clamp kit for Xcellerex X-50 and X-200	29658239
Clamp kit for Xcellerex X-500 and X-2000	6291-2120Z
Tubing labels for all bioreactor sizes	29697121
5" exhaust filter for Xcellerex X-50 and X-200	29693831
10" exhaust filter for Xcellerex X-50 and X-200	29693829
10" exhaust filter for Xcellerex X-500	6090-2120X
20" exhaust filter for Xcellerex X-2000	6090-2120Y
Exhaust jumper for Xcellerex X-500 (sterile disconnect)	6090-2120V
Exhaust jumper for Xcellerex X-500 (weldable disconnect)	6090-2491W
Exhaust manifold for Xcellerex X-2000	6190-2101X
Exhaust jumper set for Xcellerex X-2000 (sterile disconnect)	6292-2451G
Exhaust jumper set for Xcellerex X-2000 (weldable disconnect)	6292-2451H

Ordering information

To order or learn more about Xcellerex X-platform bioreactors, please contact your local sales representative.



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