

3M Purification Inc.

Zeta Plus™
Single-Use Depth Filtration
Product Portfolio

3M™ Zeta Plus™ Encapsulated System

The System of Choice for Single-Use Depth Filtration

Features & Benefits

Ergonomically Designed Holder System:

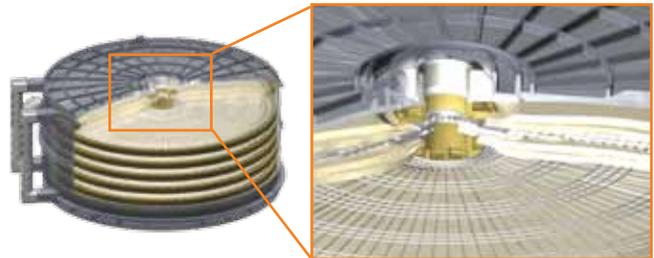
Larger holders (Model# 16EZB and #16EZC [not shown]) are pivoted between horizontal and vertical positions	<ul style="list-style-type: none"> • Enables loading and unloading at waist height. • Minimal fluid spills when handling spent capsules. • Single or two-stage depth filtration within one filter holder.
Vertical flow path	<ul style="list-style-type: none"> • Full utilization of the filter media. • Small footprint during filtration.



Model# 16EZB

Innovative Capsule/Manifold Design:

Translucent plastic shell (Standard Capsules)	<ul style="list-style-type: none"> • Easy detection of the liquid level inside, providing real time monitoring of the filtration process.
Solid core design with fully encapsulated shell	<ul style="list-style-type: none"> • Eliminates the need for a stainless steel housing and the cleaning step after filtration. • Low hold-up volume.
Self guiding locking mechanism	<ul style="list-style-type: none"> • Fast, reliable and robust capsule-to-capsule connectivity.
Lenticular style capsule design	<ul style="list-style-type: none"> • Linear scalability with filter surface area from small to large systems for many fluid challenges. • Consistency between single-use and conventional depth filtration.



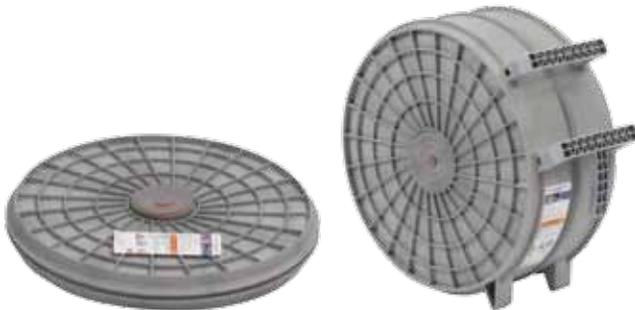
Zeta Plus™ filter media:

- Both single and double layer Zeta Plus filter media are available.
- Excellent performance in throughput and filtration efficiency.



Zeta Plus™ Encapsulated Standard Capsule Offering With Polycarbonate Shells

The 3M™ Zeta Plus™ Encapsulated System is a single-use depth filtration system designed for the bioprocessing industry where upstream cell culture clarification or downstream impurity removal is required. The 3M Zeta Plus Encapsulated System consists of three product lines: a pilot system that is ideal for larger scale-up studies, and two systems that are designed for production scale biomanufacturing. The pilot and production systems are comprised of a filter holder, top and bottom manifolds, and the required number of capsules.



Zeta Plus™ Encapsulated Capsule Offering With Alkaline Resistant* Polyphenylene Oxide / Polystyrene Shells

The 3M Zeta Plus Encapsulated Systems for production scale biomanufacturing feature an ergonomically designed large holder (Models# 16EZB and 16EZC) that is pivoted between horizontal and vertical positions, allowing for convenient loading and unloading, minimal footprint during filtration, minimal fluid spills during unloading, and full utilization of the filter media.

The capsule design features a translucent plastic shell (standard capsules) for easy liquid level detection; a self guiding locking mechanism for fast and robust capsule-to-capsule connection; and the Zeta Plus depth filter media that provides excellent filtration performance.



Zeta Plus™ Cartridges and Capsule Family



Self Guiding Locking Mechanism Enables Fast And Robust Capsule-To-Capsule Connection

* Based on testing with 1M NaOH and 5% NaClO (Bleach). See Chemical Compatibility Guide (70-0202-2023-5/LITPHG03) for more information.

High Performance filter media

The 3M™ Zeta Plus™ Encapsulated System utilizes the high performing Zeta Plus depth filter series media, including the single and dual (EXT) families covering a range of throughput, turbidity reduction, anion exchange capacities, as well as media purity attributes. The Zeta Plus EXT Series is a family of advanced dual zone depth filters designed to provide excellent clarification of biological fluids. The EXT Series filter media consist of two distinct layers, or “zones” of filter media with the upstream zone more open than the downstream one. This structure enhances the contaminant holding capacity of the filter media and helps extend service life. The purification family designed for lipid removal (Zeta Plus™ DELP series filters) is also available in the capsule configuration.

Applications

- Clarification of mammalian cell culture harvest.
- Clarification of bacteria, yeast and insect cell lysates.
- DNA reduction.
- Endotoxin removal.
- Anti-foaming agents removal.

The primary application for the 3M Zeta Plus Encapsulated System is cell culture clarification after fermentation. The system can be employed alone, or in combination with centrifugation or Tangential Flow Filtration (TFF). Another application for the 3M Zeta Plus Encapsulated System is downstream impurity removal. Taking advantage of its positive charge capacity, Zeta Plus filter media has been shown to be effective in reducing contaminants such as DNA and endotoxins.

In monoclonal antibody production, Zeta Plus filter media is used after the sequential Protein A column capture and low pH hold viral inactivation steps to remove DNA-HCP aggregates prior to subsequent ion exchange columns.

Table 1a. Recommended Operating Parameters

	Zeta Plus™ Encapsulated System	Zeta Plus™ Scale-Up Capsules
Maximum Operating Pressure		
Inlet Pressure	3.4 bar (50 psi)	3.1 bar (45 psi)
Differential Pressure	2.4 bar (35 psi)	2.4 bar (35 psi)
Maximum Operating Temperature	40°C (104°F)	
Pre-Use Flush or Rinse	Preconditioning flush of the system with a minimum of 54 L/ m ² of buffer or water is required at temperature and pressure not to exceed the maximum values of corresponding product configuration.	

Ergonomically Designed Filter Holders

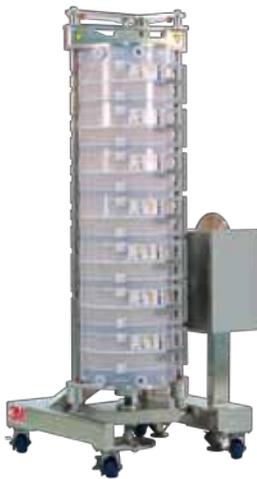
Traditional depth filtration systems utilize lenticular style cartridge filters and a vertical filtration flow path to allow easy access to process liquids and efficient utilization of filter media. However, stacking cartridges from bottom to top can be cumbersome, and dismantling the spent cartridges is often labor intensive. Furthermore, fluid spills during the unloading process could be problematic and, in some instances, might expose the operators to the process fluids.



Figure 1. 3M™ Zeta Plus™ Encapsulated System



16EZA



16EZH



16EZH

Recognizing the need for a depth filtration system that is fast, easy and clean, 3M designed filter holders (Model# 16EZH and #16EZH) that can be pivoted between the horizontal position for loading and unloading the capsules and manifolds, and the vertical position for filtration. Allowing loading and unloading at waist height eliminates the need for operators to lift capsules above their heads and reduces the risk of fluid spills when handling spent capsules. The use of the vertical flow path allows for full media utilization and a small system footprint during filtration.

Small Holder (Model# 16EZA)

The small holder is available for laboratory and pilot scale-up studies, in addition to low volume production filtration. The standard holder can accommodate from one to four 0.23 m² capsules, or one 1.6 m² (double layer) or 2.5 m² (single layer) capsule. Either single stage or two-stage depth filtration can be performed within the same holder. The standard small holder has a built-in torque limiter that will signal the operator when the holder assembly is properly sealed. All 16EZA holders have been designed to be fully autoclavable for applications where that may be required.

Large Holder (Model# 16EZH)

The large holder can accommodate up to 17.5 m² of single layer Zeta Plus filter media or 11.2 m² of double layer Zeta Plus filter media. This holder is ideal for small to large production scale purification processes.

Multi-Round Holder (Model #16EZH)

The Multi-Round Holder incorporates multiple carousels to allow for additional filtration area for larger scale applications. Movement of the carousel from the horizontal load position to the vertical filtration position is done via automation. The Multi-Round Holder can be adapted to meet the specific needs of large-scale biomanufacturers. For more information, please contact your 3M Purification representative.

Innovative Capsule/Manifold Design

Two capsule configurations are available for use with the 3M™ Zeta Plus™ Encapsulated System. The single cell capsule is designed for use with the small holder in laboratory and pilot scale-up studies. It has 0.23 m² filtration area and accommodates both single and dual layer Zeta Plus filter media. The multi-cell capsule is designed for use with both the small and large holders. Each large capsule accommodates 1.6 m² of EXT series dual layer media or 2.5 m² of single layer media. The multi-cell capsule has a self guiding locking mechanism for a fast, easy, and robust capsule-to-capsule connection, and a solid core design that eliminates the need for stainless steel bands and center post. In addition, this capsule also has two handles for convenient loading and unloading, and a low capsule fill volume and post-blown down hold-up volume. The capsule plastic shells are available in two different materials for a broad range of applications. The standard capsules use polycarbonate, which are translucent and allow for easy liquid level detection. The alkaline resistant* capsules use polyphenylene oxide/polystyrene, and can be used in applications where NaOH is required after filtration. Correspondingly, the single-use top and bottom manifolds are also available in these two materials. The manifold set allows for the entire filtration process to be fast, easy, and clean. An extra pair of manifolds is required to perform two-stage filtration within one holder assembly.

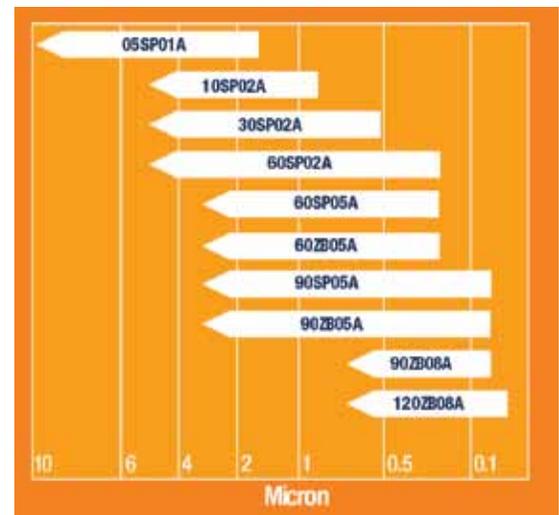


Figure 2. Nominal Retention Ratings for Zeta Plus™ EXT Grades (For reference only. Retention ratings may vary depending on application.)



Top Manifold



Bottom Manifold



Single Cell Capsule
0.23 m² Capsule
(with double layer or single layer media)



Multi-Cell Capsule
1.6 m² Capsule (with double layer media)
2.5 m² Capsule (with single layer media)

* Based on testing with 1M NaOH and 5% NaClO (Bleach).
See Chemical Compatibility Guide (70-0202-2023-5/LITPHG03) for more information.



Figure 3. The 3M™ Zeta Plus™ Encapsulated System Single-Use Depth Filtration Product Portfolio

Scalability

The 3M™ Zeta Plus™ Encapsulated System retains the lenticular filter design and vertical flow path that are characteristics of traditional depth filtration systems, helping provide consistent performance from bench scale to production scale, and from traditional lenticular to single-use systems.

Four single-use scale-up capsules are available for media grade selection and filter sizing. The BC25 capsule with 25 cm² filter media is ideal for media grade screening. The scale-up capsule filters with 170 cm², 340 cm² and 1020 cm² media are designed for intermediate scale-up studies and low volume production filtration. Combined with these small scale capsules, the 3M Zeta Plus Encapsulated System offers a completely single-use solution to process from 0.5 L to 2500+ L of liquid.

Figure 4. Zeta Plus™ Scale-Up Capsules



Figure 5. Large Holder with Mechanical Polish Finish

Figure 6. Multi-Round System



Table 2a. 3M™ Zeta Plus™ Encapsulated System Capsule Filter and Manifold Specifications

	Configuration			
	Single Cell Capsule		Multi-Cell Capsule	
	Standard	Alkaline Resistant ¹	Standard	Alkaline Resistant ¹
Dimensions (Height x Diameter)	5.7 cm x 45.2 cm (2.2" x 17.8")		20.3 cm x 45.2 cm (8.0" x 17.8")	
Weight				
Dry	3.3 kg (7 lbs)	3.4 kg (8 lbs)	10.0 kg (22 lbs)	10.7 kg (24 lbs)
Wet (post Blow-Down)	4.4 kg (10 lbs)	4.8 kg (11 lbs)	19.3 kg (43 lbs)	19.7 kg (43 lbs)
Materials of Construction				
Filter Media	Filter aids, cellulose, binding resin		Filter aids, cellulose, binding resin	
Outer Shell	Polycarbonate	Polyphenylene oxide / Polystyrene	Polycarbonate	Polyphenylene oxide / Polystyrene
O-rings	Silicone		Silicone	
Separators, Spacers and Connectors	Polypropylene		Polypropylene	
Edge Seals	Thermoplastic Elastomer		Thermoplastic Elastomer	
Handles	N/A		Nylon	
Hold-up Volume				
Capsule Fill Volume ²	Double Layer:	~ 1.1 L (~ 0.3 gal)	~ 5.2 L (~ 1.4 gal)	
	Single Layer:	~ 2.6 L (~ 0.7 gal)	~ 4.2 L (~ 1.1 gal)	
Post Blow-Down Hold-up Volume ³	< 100 mL (<0.026 gal)		< 100 mL (<0.026 gal)	
Maximum Operating Line Pressure	3.4 bar (50 psig)		3.4 bar (50 psig)	
Maximum Differential Pressure				
Forward	2.4 bar (35 psid)		2.4 bar (35 psid)	
Sterilization	1 cycle autoclave: 30 min at 126°C (259°F)		1 cycle autoclave: 30 min at 126°C (259°F)	
Effective Filtration Area	0.23 m ² (2.4 ft ²)		Double layer: 1.6 m ² (17.2 ft ²) Single layer: 2.5 m ² (27.0 ft ²)	
Top/Bottom Manifold				
Dimensions (Height x Diameter)	5.2 cm x 45.2 cm (2.0" x 17.8")		5.2 cm x 45.2 cm (2.0" x 17.8")	
Connector	1.5" Sanitary Style		1.5" Sanitary Style	
Material	Polycarbonate	Polyphenylene oxide / Polystyrene	Polycarbonate	Polyphenylene oxide / Polystyrene
Weight	4.5 kg (10 lbs)	4.5 kg (10 lbs)	4.5 kg (10 lbs)	4.5 kg (10 lbs)
Hold up volume	< 250 mL (<0.07 gal)		< 250 mL (<0.07 gal)	

¹ Based on testing with 1M NaOH and 5% NaClO (Bleach).

² Capsule Fill Volume is defined as the volume of liquid that is required to fill the portion of the capsule outside the filter media.

³ Post Blow-Down Hold-up Volume is defined as the volume of the residual liquid after nitrogen gas blow-down.

Figure 7. Single-Use Manifolds and Capsule Filter Schematic

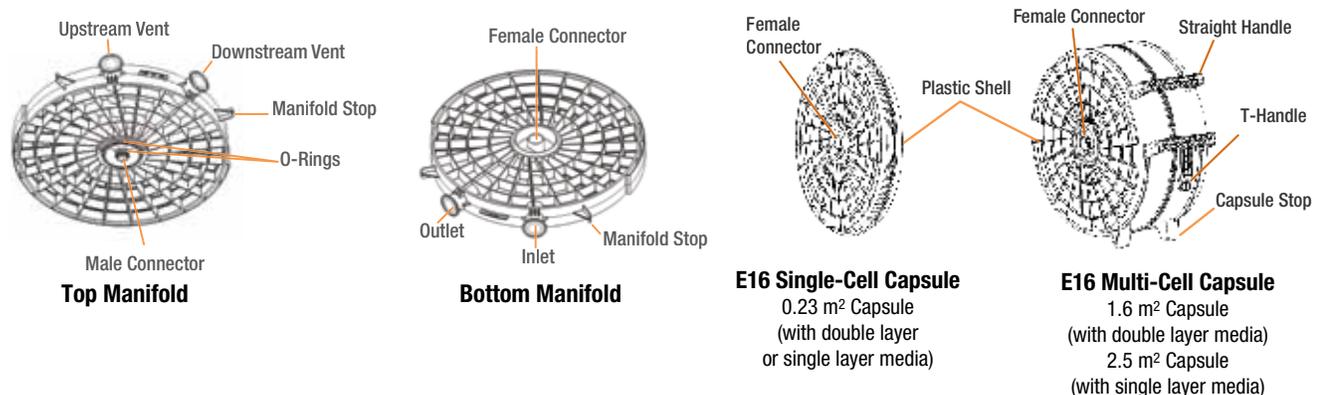


Table 2b. Zeta Plus™ Scale-Up Capsule Filter Specifications

	170 cm ² Capsule	340 cm ² Capsule	1020 cm ² Capsule
Dimensions			
Height x Diameter	4.1" x 8.5" (10.3 cm x 21.6 cm)		6.0" x 8.5" (15.2 cm x 21.6 cm)
Weight			
Dry - Single Layer	1.0 kg (2.2 lb)	1.0 kg (2.2 lb)	1.4 kg (3.0 lb)
Dry - Dual Layer	1.0 kg (2.2 lb)	1.0 kg (2.3 lb)	1.6 kg (3.5 lb)
Wet Post Blow-Down - Single Layer	1.1 kg (2.4 lb)	1.1 kg (2.5 lb)	1.8 kg (4.0 lb)
Wet Post Blow-Down - Double Layer	1.2 kg (2.6 lb)	1.3 kg (2.9 lb)	2.4 kg (5.2 lb)
Materials of Construction			
Capsule Shells	Polysulfone		
Separator, Spacer, Vent Cap	Polypropylene		
O-ring	Fluorocarbon		
Endcap & Edge Seals	Thermoplastic Elastomer		
Volume			
Capsule ¹ Fill Volume - Single Layer	0.48 L	0.40 L	0.91 L
Capsule ¹ Fill Volume - Double Layer	0.43 L	0.34 L	0.62 L
Post ² Blow-Down Hold-up Volume - Single Layer	< 40 mL	< 40 mL	< 40 mL
Post ² Blow-Down Hold-up Volume - Double Layer	< 40 mL	< 40 mL	< 40 mL
Miscellaneous			
Sterilization	1 cycle autoclave: 30 min @ 126°C (259°F)		
Effective Filtration Area	170 cm ² (0.18 ft ²)	340 cm ² (0.37 ft ²)	1020 cm ² (1.10 ft ²)
Connector	1/2" Sanitary Style		

¹ Capsule Fill Volume is defined as the volume of liquid that is required to fill the portion of the capsule outside the filter media.

² Post Blow-Down Hold-up Volume is defined as the volume of the residual liquid after nitrogen gas blow-down.

IMPORTANT NOTICE: Always operate the filter system within the maximum differential pressure of 2.4 bar (35 psig).

Figure 8. Scale-Up Capsule Filter Schematics

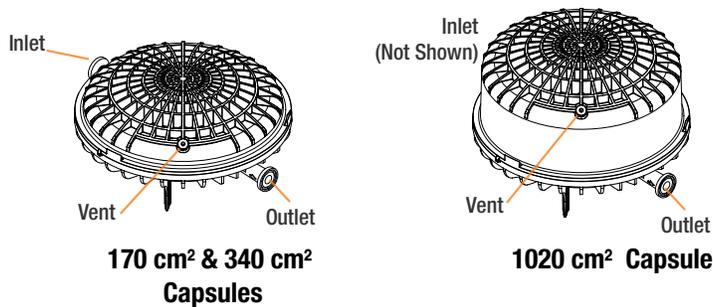


Table 3. 3M™ Zeta Plus™ Encapsulated System Holder Specifications

	Holder Model		
	Small Holder (Model# 16EZA)	Large Holder (Model# 16EZB)	Multi-Round Holder (Model# 16Ezc)
Maximum Operating Pressure	3.4 bar (50 psi)	3.4 bar (50 psi)	3.4 bar (50 psi)
Materials of Construction			
Frame	304 Stainless Steel	304 Stainless Steel	Please contact your 3M Purification representative for details.
End Plates	304 Stainless Steel	304 Stainless Steel	
Support Rods	440 Stainless Steel	316 Stainless Steel	
Stand	304 Stainless Steel	304 Stainless Steel	
Hand Wheels	300 Series Stainless Steel	300 Series Stainless Steel	
Gear Box	N/A	Epoxy Coated Cast Iron Cover Shrouded in 304 Stainless Steel	
Locking Bar	N/A	304 Stainless Steel	N/A
Casters	Stainless Steel	Stainless Steel	
Wheels	Phenolic	Polyurethane	
Surface Finish			
Standard	Mechanical Polish Finish (4552601)	Mechanical Polish Finish (6123502)	Please contact your 3M Purification representative for details.
Special	Electropolish Finish (4552602)	N/A	

Table 4. 3M™ Zeta Plus™ Encapsulated System Holder Capacity

Model	Single Stage		Two Stage	
	E16E01 Capsule	E16E07/E16E11 Capsule	E16E01 Capsule	E16E07/E16E11 Capsule
16EZA	4	1	2	N/A
16EZB	N/A	7	N/A	6

Figure 9. Small Standard Holder (Model# 16EZA) Dimensions

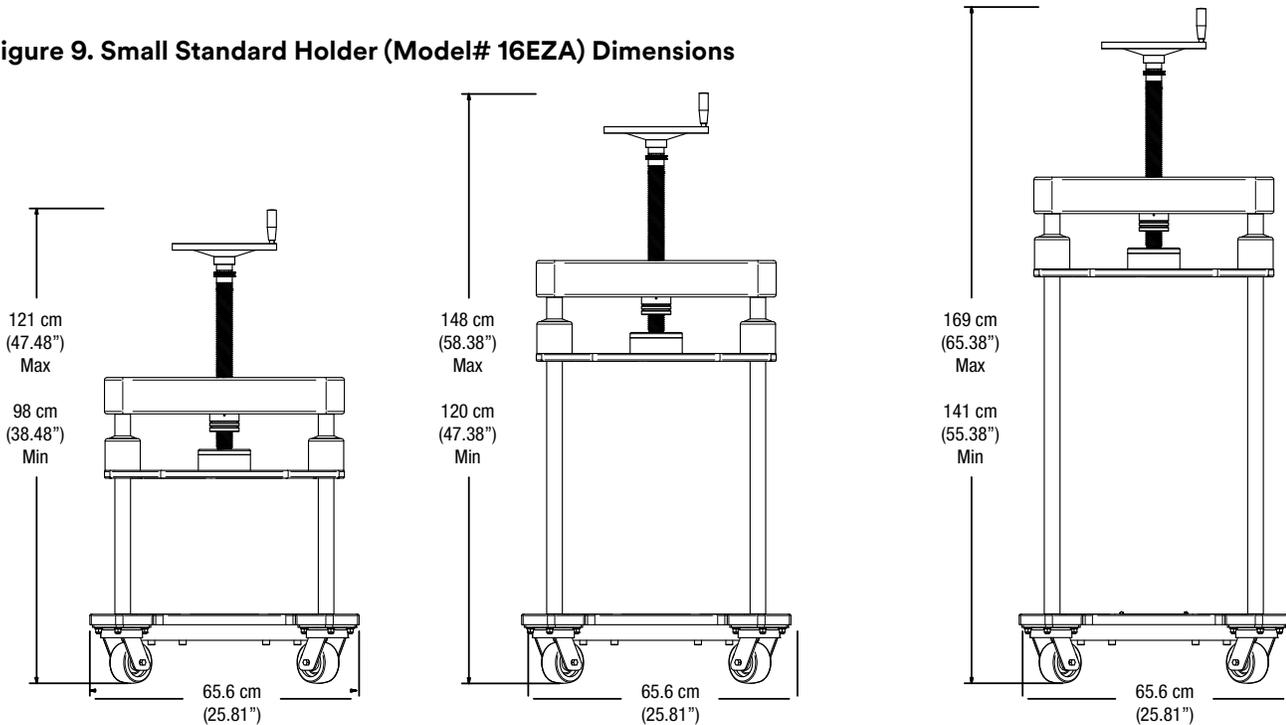
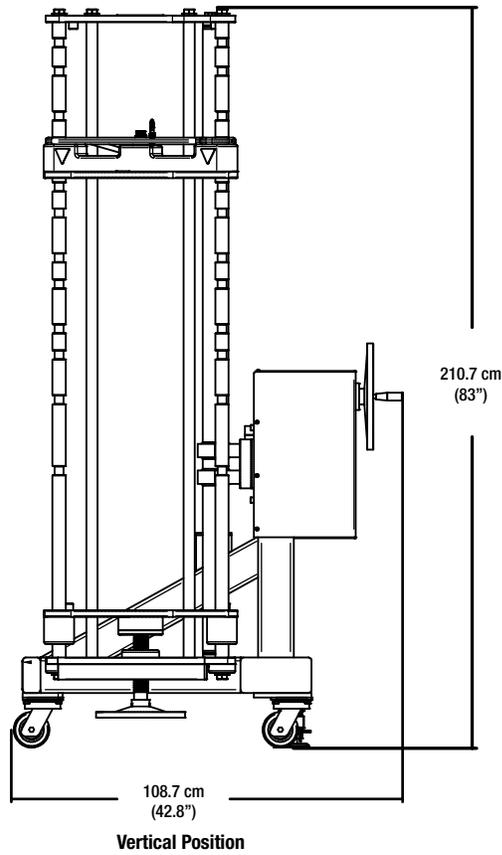
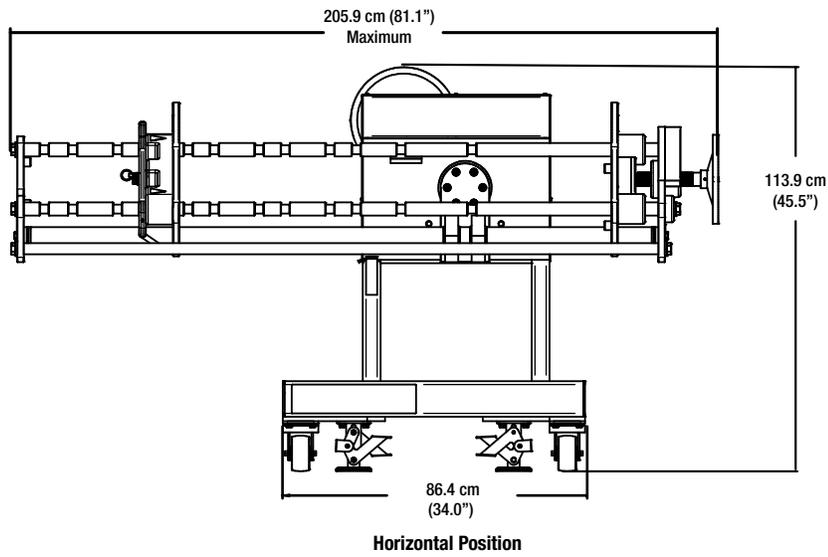


Figure 10. Large Holder (Model# 16EZB) Dimensions



Ordering Guide

Capsule Filter Ordering Information - Double layer (U.S. Customers)

Catalog Number	Configuration	Number of Cells	Gasket Material	Grade			
E16	E - Standard R - Alkaline Resistant*	01 - 1 Cell 07 - 7 Cell	A - Silicone	05SP01A 10SP02A 30SP02A 30SP03A 60SP01A	60SP02A 60SP03A 60SP05A 90SP05A 90SP08A 60LA05A 90LA05A 90LA08A	120ZB05A 120ZB08A 120ZB10A 60ZB05A 90ZB05A 90ZB08A	DELPO8A

NOTES:

- All Zeta Plus™ EXT media grades are available for order.
- For further information regarding Zeta Plus EXT Series filter media, please reference 3M Purification Literature 70-0201-8862-2 (LITZPMEXT) or 70-0201-8863-0 (LITZPMEXTSP1).
- DELPO8A are Zeta Plus EXT grades with two single layers of Delipid (DEL) media.
- Single layer 05SP media is offered in 0.23 m² and 1.6 m² Capsule format. One part number example is E16E07A05SP.

Capsule Filter Ordering Information - Single layer (U.S. Customers)

Catalog Number	Configuration	Number of Cells	Gasket Material	Grade		
E16	E - Standard R - Alkaline Resistant*	01 - 1 Cell 11 - 11 Cell	A - Silicone	30LA 50LA 60LA 90LA	10SP 30SP 50SP 60SP 90SP	30ZB 60ZB 90ZB 120ZB DELP

* Based on testing with 1M NaOH and 5% NaClO (Bleach). See Chemical Compatibility Guide (70-0202-2023-5/LITPHG03) for more information.

Manifold Ordering Information

Manifold Part	3M PI Part Number	3M ID
Manifold Set (Standard)	6128901	70020256221
Manifold Set (Alkaline Resistant*)	6129001	70020262369

Filter Holder Ordering Information

Model Name	3M Catalog ID (U.S. Customers)	Description	3M ID
16EZA	4552601	Standard Pilot Holder	70020310846
	4552602	Pilot Holder with Electropolish Finish	70020310853
	4552603	Pilot 2 High Holder	70020310861
	4552604	Pilot 3 High Holder	70020310879

Model Name	3M Catalog ID (U.S. Customers)	Description	3M ID
16EZB	6123502	Production Holder with Mechanical Polish Finish	70020252899

Scale-Up Capsules - Double Layer

3M Catalog ID (U.S. Customers)	EFA cm ²	Material Code	Grade	
E	0170 0340 1020	FSA	05SP01A 10SP02A 30SP02A 30SP03A 60SP01A 60SP02A 60SP03A 60SP05A 90SP05A 90SP08A	60LA05A 90LA05A 90LA08A 60ZB05A 90ZB05A 90ZB08A 120ZB05A 120ZB08A 120ZB10A
				DELPO8A

Scale-Up Capsules - Single Layer

3M Catalog ID (U.S. Customers)	EFA cm ²	Material Code	Grade		
E	0170 0340 1020	FSA	05SP 10SP 30SP 50SP 60SP 90SP	30LA 50LA 60LA 90LA	30ZB 60ZB 90ZB 120ZB DELP

Capsule 3M ID Numbers for International Customers

3M™ Zeta Plus™ Encapsulated System Capsule Filters — Single Layer

3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)
E16E01A05SP	70020288414	E16E07A05SP	70020288562	E16R01A05SP	70020288992	E16R07A05SP	70020289008
E16E01A10SP	70020288422	E16E11A10SP	70020288596	E16R01A10SP	70020288794	E16R11A10SP	70020289024
E16E01A30SP	70020288455	E16E11A30SP	70020288620	E16R01A30SP	70020288828	E16R11A30SP	70020289057
E16E01A50SP	70020274430	E16E11A50SP	70020288661	E16R01A50SP	70020288851	E16R11A50SP	70020289099
E16E01A60SP	70020288513	E16E11A60SP	70020288695	E16R01A60SP	70020288885	E16R11A60SP	70020289123
E16E01A90SP	70020288547	E16E11A90SP	70020288737	E16R01A90SP	70020288919	E16R11A90SP	70020289164
E16E01A30ZB	70020306992	E16E11A30ZB	70020307149	E16R01A30ZB	70020307198	E16R11A30ZB	70020307305
E16E01A60ZB	70020307008	E16E11A60ZB	70020307156	E16R01A60ZB	N/A	E16R11A60ZB	N/A
E16E01A90ZB	70020307024	E16E11A90ZB	70020307164	E16R01A90ZB	70020307222	E16R11A90ZB	N/A
E16E01A120ZB	70020306968	E16E11A120ZB	70020307131	E16R01A120ZB	N/A	E16R11A120ZB	N/A
E16E01A30LP	70020288448	E16E11A30LP	70020288612	E16R01A30LP	70020288810	E16R11A30LP	70020289040
E16E01A50LP	70020288489	E16E11A50LP	70020288653	E16R01A50LP	70020288844	E16R11A50LP	70020289081
E16E01A60LP	70020288505	E16E11A60LP	70020288687	E16R01A60LP	70020288877	E16R11A60LP	70020289115
E16E01A90LP	70020288539	E16E11A90LP	70020288729	E16R01A90LP	70020288901	E16R11A90LP	70020289156
E16E01A30LA	70020288430	E16E11A30LA	70020288604	E16R01A30LA	70020288802	E16R11A30LA	70020289032
E16E01A50LA	70020288471	E16E11A50LA	70020288646	E16R01A50LA	70020288836	E16R11A50LA	70020289073
E16E01A60LA	70020288497	E16E11A60LA	70020288679	E16R01A60LA	70020288869	E16R11A60LA	70020289107
E16E01A90LA	70020288521	E16E11A90LA	70020288711	E16R01A90LA	70020288893	E16R11A90LA	70020289149
E16E01ADELI	70020256130	E16E11ADELI	70020288588	E16R01ADELI	70020288786	E16R11ADELI	70020289016
E16E01ADELP	N/A	E16E11ADELP	N/A	E16R01ADELP	N/A	E16R11ADELP	N/A

3M™ Zeta Plus™ Encapsulated System Capsule Filters — Dual Layer

3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)
E16E01A05SP01A	70020239011	E16E07A05SP01A	70020236918	E16R01A05SP01A	70020262609	E16R07A05SP01A	70020262740
E16E01A10SP02A	70020239029	E16E07A10SP02A	70020236561	E16R01A10SP02A	70020262625	E16R07A10SP02A	70020262757
E16E01A30SP02A	70020238534	E16E07A30SP02A	70020236942	E16R01A30SP02A	70020262948	E16R07A30SP02A	70020262799
E16E01A30SP03A	70020239052	E16E07A30SP03A	70020236587	E16R01A30SP03A	70020262666	E16R07A30SP03A	70020262807
E16E01A60SP01A	70020239060	E16E07A60SP01A	70020236595	E16R01A60SP01A	70020262674	E16R07A60SP01A	70020262815
E16E01A60SP02A	70020239078	E16E07A60SP02A	70020236603	E16R01A60SP02A	70020262682	E16R07A60SP02A	70020262823
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E16E01A90SP05A	70020239102	E16E07A90SP05A	70020236629	E16R01A90SP05A	70020262716	E16R07A90SP05A	70020262864
E16E01A90SP08A	70020239110	E16E07A90SP08A	70020236637	E16R01A90SP08A	70020262724	E16R07A90SP08A	70020262872
E16E01A60ZB05A	70020307016	E16E07A60ZB05A	70020309376	E16R01A60ZB05A	70020307214	E16R07A60ZB05A	70020309384
E16E01A90ZB05A	70020307032	E16E07A90ZB05A	70020307107	E16R01A90ZB05A	N/A	E16R07A90ZB05A	70020307289
E16E01A90ZB08A	70020307040	E16E07A90ZB08A	70020307115	E16R01A90ZB08A	70020307248	E16R07A90ZB08A	70020307297
E16E01A120ZB05A	70020309434	E16E07A120ZB05A	70020307065	E16R01A120ZB05A	N/A	E16R07A120ZB05A	N/A
E16E01A120ZB08A	70020306976	E16E07A120ZB08A	70020307073	E16R01A120ZB08A	70020307172	E16R07A120ZB08A	N/A
E16E01A120ZB10A	70020306984	E16E07A120ZB10A	70020307081	E16R01A120ZB10A	N/A	E16R07A120ZB10A	N/A
E16E01ADELI08A	70020256015	E16E07ADELI08A	70020256023	E16R01ADELI08A	N/A	E16R07ADELI08A	N/A
E16E01ADELP08A	70020285147	E16E07ADELP08A	70020285154	E16R01ADELP08A	70020285162	E16R07ADELP08A	70020285170

3M™ Zeta Plus™ Encapsulated System Capsule Filters — Single Layer

3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)
E0170FSA05SP	70020290162	E0340FSA05SP	70020290535	E1020FSA05SP	70020290907
E0170FSA10SP	70020290188	E0340FSA10SP	70020290550	E1020FSA10SP	70020290923
E0170FSA30SP	70020290261	E0340FSA30SP	70020290634	E1020FSA30SP	70020291004
E0170FSA50SP	70020290329	E0340FSA50SP	70020290691	E1020FSA50SP	70020291061
E0170FSA60SP	70020290352	E0340FSA60SP	70020290725	E1020FSA60SP	70020291095
E0170FSA90SP	70020290444	E0340FSA90SP	70020290816	E1020FSA90SP	70020291186
E0170FSA30ZB	70020306729	E0340FSA30ZB	70020306810	E1020FSA30ZB	70020306901
E0170FSA90ZB	70020306752	E0340FSA60ZB	70020306828	E1020FSA60ZB	70020306919
E0170FSA30LA	70020290246	E0340FSA90ZB	70020306844	E1020FSA90ZB	70020306935
E0170FSA50LA	70020290303	E0340FSA30LA	70020290618	E1020FSA30LA	70020290980
E0170FSA60LA	70020290337	E0340FSA50LA	70020290675	E1020FSA50LA	70020291046
E0170FSA90LA	70020290428	E0340FSA60LA	70020290709	E1020FSA60LA	70020291079
		E0340FSA90LA	70020290790	E1020FSA90LA	70020291160

3M™ Zeta Plus™ Encapsulated System Capsule Filters — Dual Layer

3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)	3M Catalog ID (U.S. Customers)	3M ID (International Customers)
E0170FSA05SP01A	70020290170	E0340FSA05SP01A	70020290543	E1020FSA05SP01A	70020290915
E0170FSA10SP02A	70020290204	E0340FSA10SP02A	70020290576	E1020FSA10SP02A	70020290949
E0170FSA30SP02A	70020290279	E0340FSA30SP02A	70020290642	E1020FSA30SP02A	70020291012
E0170FSA30SP03A	70020290287	E0340FSA30SP03A	70020290659	E1020FSA30SP03A	70020291020
E0170FSA60SP01A	70020290360	E0340FSA60SP01A	70020290733	E1020FSA60SP01A	70020291103
E0170FSA60SP02A	70020290378	E0340FSA60SP02A	70020290741	E1020FSA60SP02A	70020291111
E0170FSA60SP03A	70020290386	E0340FSA60SP03A	70020290758	E1020FSA60SP03A	70020291129
E0170FSA60SP05A	70020290394	E0340FSA60SP05A	70020290766	E1020FSA60SP05A	70020291137
E0170FSA90SP05A	70020290451	E0340FSA90SP05A	70020290824	E1020FSA90SP05A	70020291194
E0170FSA90SP08A	70020290469	E0340FSA90SP08A	70020290832	E1020FSA90SP08A	70020291202
E0170FSA60ZB05A	70020306745	E0340FSA60ZB05A	70020306836	E1020FSA60ZB05A	70020306927
E0170FSA90ZB05A	70020306760	E0340FSA90ZB05A	70020306851	E1020FSA90ZB05A	70020306943
E0170FSA90ZB08A	70020306778	E0340FSA90ZB08A	70020306869	E1020FSA90ZB08A	70020306950
E0170FSA120ZB05A	70020306695	E0340FSA120ZB08A	70020306794	E1020FSA120ZB05A	70020306877
E0170FSA120ZB08A	70020306703	E0340FSA120ZB10A	70020306802	E1020FSA120ZB08A	70020306885
E0170FSA120ZB10A	70020306711	E0340FSADELP08A	70020290527	E1020FSA120ZB10A	70020306893
E0170FSADELP08A	70020290154			E1020FSADELP08A	70020290899

Enabling Scalability for Cell Culture Clarification from R&D to Large-Scale Production

Laboratory / R&D

Up to 1 liter



Scale-Up

Up to 50 liters



Pilot Production

Up to 400 Liters



Large-Scale Production

Up to 5,000 Liters



Multi-Round Production

Up to 25,000 Liters



Product Use

Intended uses: Manufacturing of pharmaceutical (drug) products, including active pharmaceutical ingredients and vaccines.

Prohibited uses: As a component in a medical device that is regulated by any agency, and/or globally exemplary agencies, including but not limited to: a) FDA, b) European Medical Device Directive (MDD), c) Japan Pharmaceuticals and Medical Devices Agency (PMDA); Applications involving permanent implantation into the body; Life-sustaining medical applications; Applications requiring FDA Food Contact compliance without use restrictions.

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