Minimate™ EVO TFF system and MidGee™ hollow fiber cartridges

Installation Guide

Read this before installing the system

Read the whole instruction carefully before starting to install the system.

Scope of the Instructions

This document describes the set-up and operation of the Minimate™ EVO tangential flow filtration (TFF) system when coupled with MidGee™ or MidGee hoop ultrafiltration hollow fiber cartridges.

Product description

Minimate EVO TFF system

The Minimate EVO TFF system is a system for concentration, diafiltration, and fractionation of samples up to 1 L. The system is typically used with Minimate TFF capsules. However, the system is versatile and can be coupled with MidGee and MidGee hoop hollow fiber cartridges. This capability enables filtration of difficult samples containing a large particulate load, such as the concentration of lipid-based nanoparticles.

Hollow fiber cartridges

The hollow fiber cartridges are shown below.

MidGee	MidGee hoop
	

For more information on the use of MidGee and MidGee hoop hollow fiber cartridges, refer to the *MidGee and MidGee hoop tangential flow filters Instructions for Use 28910662*.

Required equipment and fittings

The required equipment and fittings for installing MidGee and MidGee hoop cartridges onto Minimate EVO TFF system are described below.

Required equipment and fittings

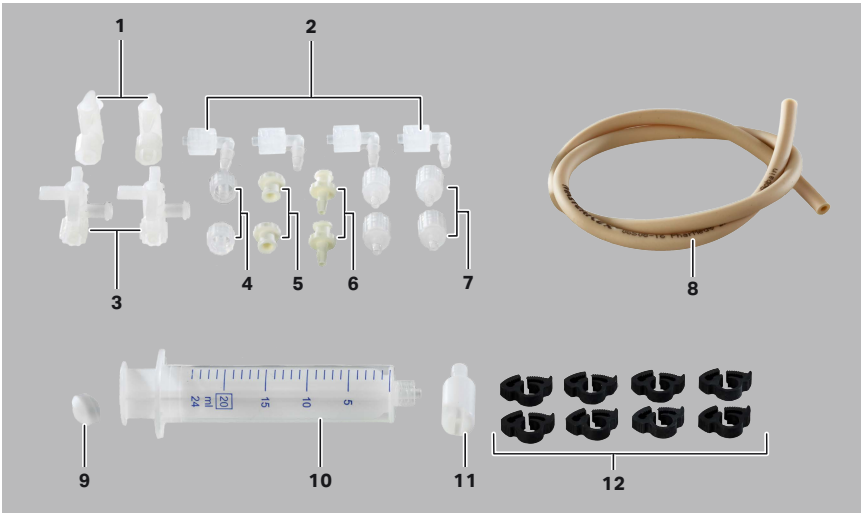
- Minimate EVO TFF system
- Minimate EVO fittings kit
- Female Luer plugs
- Female Luer lock-1/8 inch hose barb
- MidGee or MidGee hoop hollow fiber cartridge
- Masterflex Transfer Tubing, C-Flex, Clear, 1/8 inch ID
- Receiver container
- Diafiltration vessel (*optional*)

For more information on the products, see *Reference information, on page 16*.

For MidGee and MidGee hoop cartridges ordering information, refer to *cytiva.com* or contact Cytiva.

Illustration of required fittings

The required fittings are illustrated below.



Part	Description
1	1-way valve reservoir lid (2 pieces)
2	Male Luer lock-1/8" hose barb elbow (4 pieces)
3	3-way valve for reservoir (2 pieces)
4	Male Luer plug (2 pieces)
5	Female Luer plug (2 pieces)
6	Female Luer lock-1/8" hose barb (2 pieces)
7	Male Luer lock-1/8" hose barb (4 pieces)
8	PharMed BPT tubing (2 ft.)
9	Stir bar
10	Syringe with Luer lock (*optional*)
11	Sinker
12	Tubing clamps (8 pieces)

Installation

Introduction

This chapter describes the installation of MidGee and MidGee hoop hollow fiber cartridges to the Minimate EVO TFF system.

Prepare the required tubing

Step	Action
1	Depending on application, cut PharMed tubing (yellow) to lengths as specified in the table below.

Part	Description	Length	
		inches	mm
1	MidGee hoop short tube[1]	1.5"	38 mm
2	MidGee hoop long tube[1]	5"	127 mm
3	MidGee short tube[2]	2.5"	64 mm
4	MidGee long tube[2]	15"	381 mm
5	Pump tubing - short	3 7/8"	99 mm
6	Pump tubing - long	8.5"	216 mm

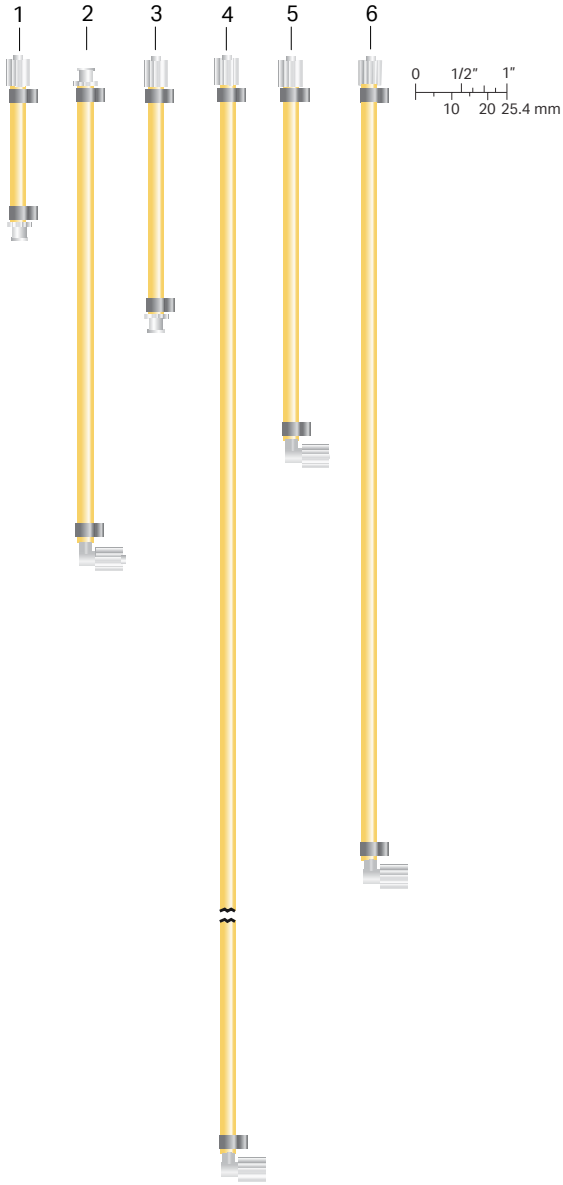
[1] MidGee hoop-specific.
[2] MidGee-specific.

The different tubing types and their fittings are illustrated in the following image.

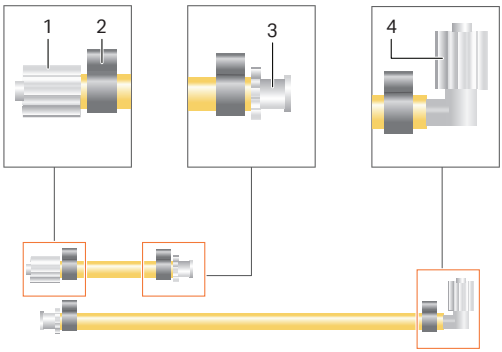
Step	Action

Note:

The tubing images below are for illustration purpose only. Use the specified tubing length in the table.



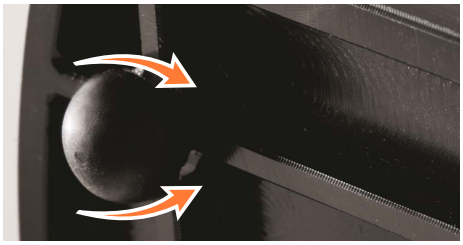
Step	Action
2	Slide tubing clamps on the tubing and then insert fittings into tubing as shown in the figure in step 1. The fittings are explained in the figure below.



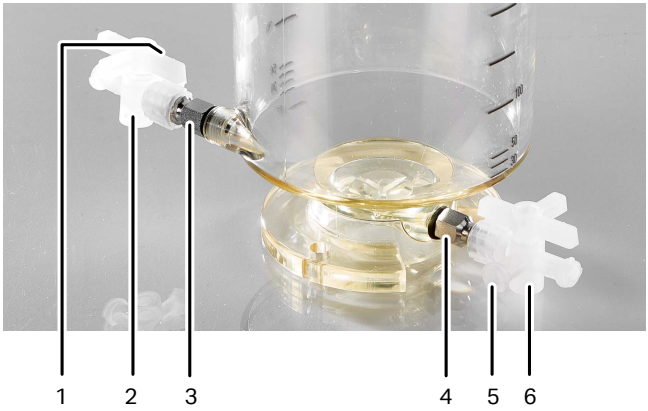
Part	Description
1	Male Luer lock- 1/8" hose barb
2	Tubing clamp
3	Female Luer lock-1/8" hose barb
4	Male Luer lock-1/8" hose barb elbow

3	Slide tube clamps over fitting ends. Pinch each clamp together. ***Tip:*** *Use pliers if necessary to assist.*

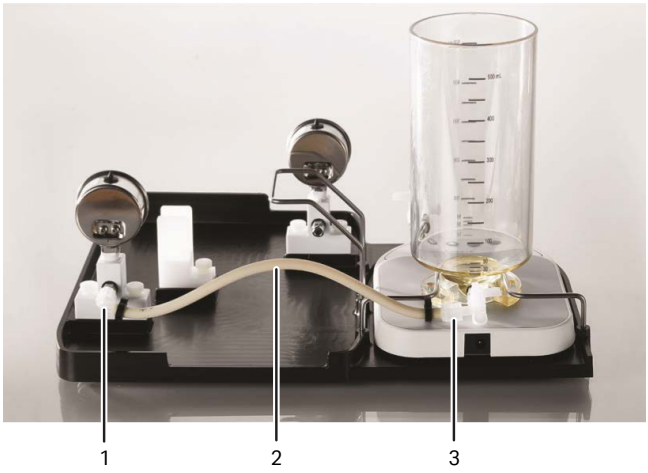
Install the pump

Step	Action
1	Place the drip tray on work surface in front of the pump. ***Note:*** *If there is any rocking of tray, the bottom feet can be adjusted by rotating as necessary as shown in the image below.* 
2	Slide the stir plate into the left compartment of the drip tray underneath the reservoir bracket. 

Step	Action
3	Connect the 3-way valves (2,6) to the fittings on the inlet (3) and outlet (4) of the reservoir. Close two of the ports (1 and 5) on the 3-way valves with male Luer plugs.



4	Place the reservoir onto a stir plate with outlet toward rear of the plate.
5	Connect the long tube (2) to the 3-way valve at the reservoir outlet (3) and to the rear fitting (1) on the Pressure Gauge 1 mount.

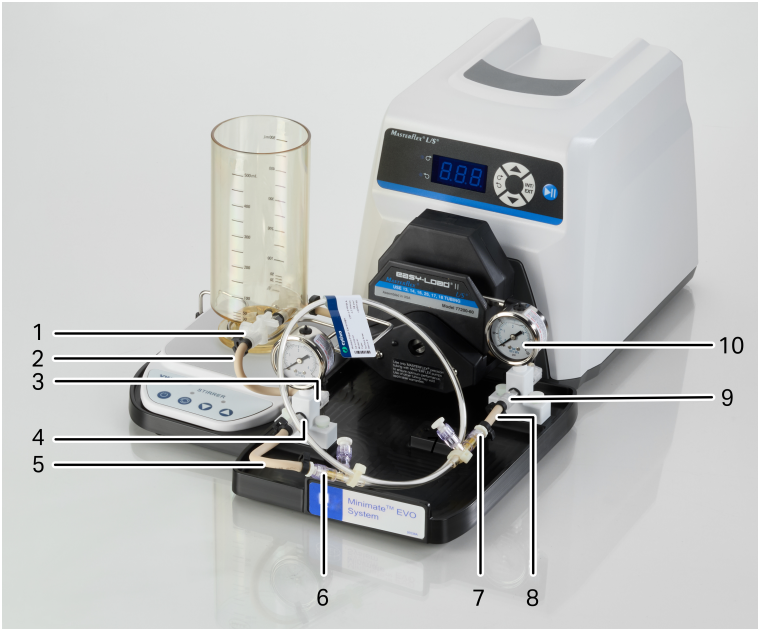


Step	Action
6	Attach the pump head (2) onto the pump (1) using the supplied mounting screws (3). 
7	Place the tray in front of the pump and insert the tubing into the open pump head.
8	Close the pump head onto the tubing. ***Note:*** *Make sure that the tubing is not pinched by the guiding teeth within the pump head.*

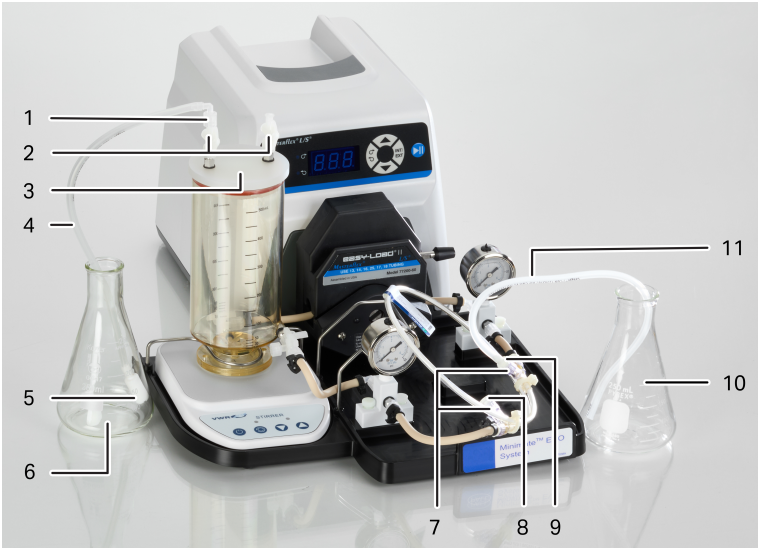
Connect the appropriate hollow fiber cartridge for your application, see *Install MidGee hollow fiber cartridge, on page 13* or *Install MidGee hoop hollow fiber cartridges, on page 11* for more information.

Install MidGee hoop hollow fiber cartridges

Step	Action
1	Connect the male Luer lock of the MidGee hoop-specific short tube (8) to the front fitting (9) of the Pressure Gauge 1 (10) mount. Connect the female Luer lock to the feed port (7) of the MidGee hoop cartridge.
2	Connect the female Luer lock of the MidGee hoop-specific long tube (5) to the retentate port (6) of the MidGee hoop cartridge. Connect the male Luer lock to the front fitting (4) of the Pressure Gauge 2 mount.
3	Connect the elbow male Luer lock of the short tube (2) to the rear fitting (3) of the Pressure Gauge 2 mount. Connect the other end of the tube to the 3-way valve (1) on the reservoir inlet.



Step	Action
4	Cut a length of clear thermoplastic elastomer tubing (11) long enough to reach the filtrate collection vessel (10) from one of the filtrate ports (7) of the MidGee hoop cartridge.

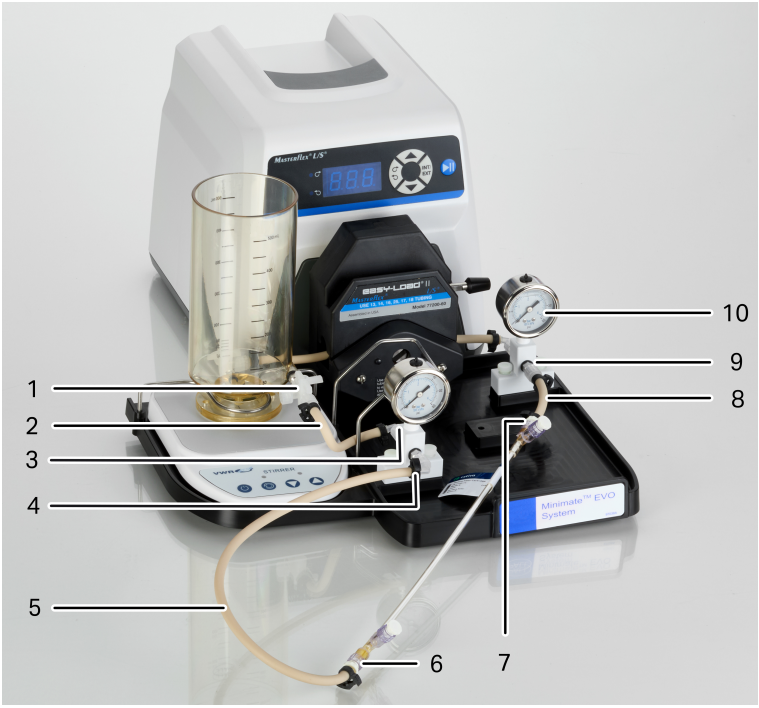


5	Attach a female Luer lock-1/8 inch hose barb (9) to the tube and secure with a tubing clamp. Connect the fitting to the filtrate port and place the open tube end into the filtrate collection vessel.
6	Close the second filtrate port on the cartridge with a female Luer cap (8).
7	If performing diafiltration, place the lid (3) onto the reservoir. Connect 1-way valves (2) to the fittings on the reservoir lid. Cut a clear thermoplastic elastomer tubing (4) to a length sufficient to reach from the 1-way valve on reservoir lid to the diafiltration vessel (6).
8	Attach a male Luer lock-1/8 inch hose barb elbow (1) and a tubing clamp to the elastomer tubing (3). Attach the elbow to the 1-way valve (2) on the reservoir lid (3).
9	Attach the other tube end into the diafiltration vessel. *Optional: Add sinker (5) at the end of the tube.*

Once the system is set up, proceed to rinse the cartridge. See *Cartridge rinsing, on page 15* for more information.

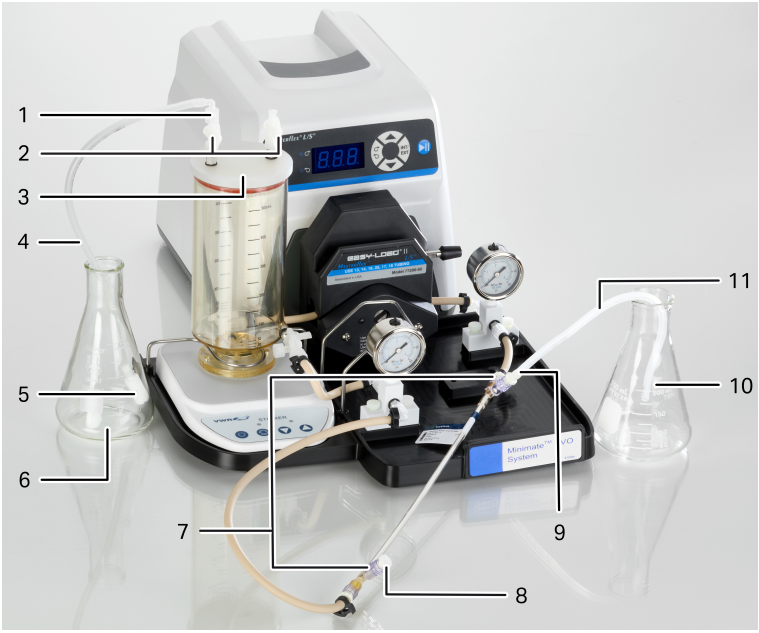
Install MidGee hollow fiber cartridge

Step	Action
1	Connect the male Luer lock of the MidGee-specific short tube (8) to the front fitting (9) of the Pressure Gauge 1 (10) mount. Connect the female Luer lock to the feed port (7) of the MidGee cartridge.
2	Connect the female Luer lock of the MidGee-specific long tube (5) to the retentate port (6) of the MidGee cartridge. Connect the male Luer lock to the front fitting (4) of the Pressure Gauge 2 mount.
3	Connect the elbow male Luer lock of the short tube (2) to the rear fitting (3) of the Pressure Gauge 2 mount. Connect the other end of the tube to the 3-way valve (1) on the reservoir inlet.



4	Cut a length of clear thermoplastic elastomer tubing (11) long enough to reach the filtrate collection vessel (10) from one of the filtrate ports (7) of the MidGee cartridge.

Step	Action
5	Attach a female Luer lock-1/8 inch hose barb (9) to the tube and secure with a tubing clamp. Connect the fitting to the filtrate port and place the open tube end into the filtrate collection vessel.
6	Close the second filtrate port on the cartridge with a female Luer cap (8).



7	If performing diafiltration, place the lid (3) onto the reservoir. Connect 1-way valves (2) to one of the fittings on the reservoir lid. Cut a clear thermoplastic elastomer tubing (4) to a length sufficient to reach from the 1-way valve on reservoir lid to the diafiltration vessel (6).
8	Attach a male Luer lock-1/8 inch hose barb elbow (1) and a tubing clamp to the elastomer tubing (4). Attach the elbow to the 1-way valve (2) on the reservoir lid (3).
9	Attach the other tube end into the diafiltration vessel. *Optional: Add sinker (5) at the end of the tube.*

Once the system is set up, proceed to rinse the cartridge. See *Cartridge rinsing, on page 15* for more information.

Cartridge rinsing

Rinsing procedure

When used with the Minimate capsule, the Minimate EVO TFF system runs with a maximum feed pressure of 2.06 bar (30 psi) with the use of clamp. However, when using the MidGee or MidGee hoop hollow fiber cartridges, the clamp is not used because the cartridges build up their own pressure. The transmembrane pressure (TMP) must not exceed 0.3 bar (5 psi).

Step	Action
1	Fill the cartridge with 25% ethanol or isopropanol (100% for 1000 NMWC and 3000 NMWC membranes) and allow the cartridge to soak for one hour. ***Tip:*** *For more effective procedure, pump the alcohol through the cartridge at 0.3 bar (5 psi) TMP for at least 10 minutes prior to soaking.*
2	Drain and discard alcohol according to local regulatory guidance.
3	Fill the feed reservoir with clean water (water for injection (WFI) or 10000 NMWC permeate) at 25°C to 50°C. Direct retentate and permeate lines to an appropriate waste container.
4	Start the pump on slow and adjust transmembrane pressure (TMP) to: • 1 bar (15 psi) for 1000 NMWC and 3000 NMWC pore sizes. • 0.7 bar (10 psi) for 5000 NMWC through 50000 NMWC pore sizes. • 0.3 bar (5 psi) for larger pore sizes.
5	Adjust the pump speed and retentate back pressure such that the retentate flow rate is approximately 1/10th of the permeate flow.
6	Continue rinsing for 90 minutes, adding more fluid to the feed reservoir as needed.
7	Proceed to pre-conditioning steps or sample processing.

Reference information

Ordering information

The table below lists Minimate EVO TFF system and accessories kits.

Product number	Description
OAPMPUNV	Minimate EVO TFF system The system package includes: • pump with pump head • stir plate • 500 mL Reservoir with lid • Drip tray • Pressure gauge (2) • Adjustable drip tray feet • Adapter plug international 100V-250V AC for pump (note: the plug does not change current) • Power adapter plug, 100V-240V AC power supply, 12V DC input for stir plate
97008	Minimate EVO reservoir kit The kit includes: • Reservoir 500 mL with fittings • Lid with fittings and O-ring
97009	Minimate EVO drip tray kit The kit includes: • Drip tray with reservoir and filter capsule brackets • Pressure gauges (2) with mounts and fittings • Minimate TFF capsule stand
97010	Minimate EVO stir plate kit The kit includes: • Stir plate • Power adapter plug (100V-240V AC power supply, 12V DC input)

Product number	Description
97011	Minimate EVO pump drive. The part includes: • Masterflex L/S variable speed pump • International adapter plug (100 to 250 V)[1]
97012	Minimate EVO pump head
97014	Minimate EVO fittings kit The kit includes: • 3-way valve for reservoir (2) • 1-way valve reservoir Lid (2) • male Luer coupler (1) • male Luer lock-1/8" hose barb (3) • male Luer lock-1/8" hose barb elbow (4) • female Luer lock-1/8" hose barb (1) • tubing clamps (8) • PharMed tubing (2 ft.) • screw clamp for tubing (1) • male Luer plug (4)
MFLX06422-04[2]	Masterflex Transfer Tubing, C-Flex, Clear, 1/8" ID
56410578	Female Luer plugs
56410575	Female Luer lock-1/8" hose barb

[1] The plug does not change the current.
[2] Product to be obtained from third-party supplier.

Related literature

Literature	Reference number
MidGee and MidGee hoop tangential flow filters Instructions for Use	28910662
Hollow Fiber Cartridges for membrane separations Operating Handbook	CY28744

Give feedback on this document

Visit cytiva.com/techdocfeedback or scan the QR code.

cytiva.com

Cytiva and the Drop logo are trademarks of Life Sciences IP Holdings Corporation or an affiliate doing business as Cytiva.

MidGee and Minimate are trademarks of Global Life Sciences Solutions USA LLC or an affiliate doing business as Cytiva.

Any other third-party trademarks are the property of their respective owners.

© 2025 Cytiva

For local office contact information, visit cytiva.com/contact

29942702 AB V:2 09/2025