

BD Falcon™ 24-Multiwell Insert System

Product Use Guidelines for Automated or Manual High Throughput Screening Assays

The **BD Falcon™ 24-Multiwell Insert System** is a cell culture insert assay platform composed of a Multiwell Insert Plate with a microporous (Polyethylene Terephthalate) PET membrane, a 24-well Assay Plate, or Feeder Tray and Lid. The System is automation friendly and is suitable for both manual and robotic cell based studies and compound screening. Each insert has a generous automation compatible sampling port so that you may sample above and below the membrane with standard pipet tips or automated fluid handling tips. The 24 wells are integrated into a one-piece plate, making it easy to move the insert if necessary. To grow a cell monolayer on the membrane prior to assay, the Multiwell Insert Plate can be transferred to a BD Falcon™ Feeder Tray, suitable for making media changes in one transfer. The Multiwell Insert Plate can then be transferred back to the BD Falcon Assay Plate for cell migration, invasion, chemotaxis, or monolayer permeability studies. For the most up-to-date technical information on BD Falcon Inserts (including meeting presentations, frequently asked questions, and applications notes), please refer to the BD Biosciences website at bdbiosciences.com

Product Specifications: BD Falcon 24-Multiwell Insert Systems

Catalog Number	Pore Size* (Micron)	Pore Density (Pores/sq. cm.)	Optical Quality	Included with each insert plate**	# Plates per pkg.
351180	1	1.6×10^6	Transparent	Feeder Tray	1
351181	1	1.6×10^6	Transparent	Feeder Tray	5
351186	BD Falcon™ Feeder Trays with lids (sterile)				5
351147	BD Falcon™ 24-well plates with lids, non-treated surface (sterile)				50/case
353047	BD Falcon 24-well plates with lids, TC-treated surface (sterile)				50/case

*All membranes are track-etched PET. All products are sterilized by gamma irradiation and are intended for single use only.

** Feeder tray and 24-well plates included with insert plates have non-treated surfaces.

BD Falcon 24-Multiwell Insert System: Plate Dimensions

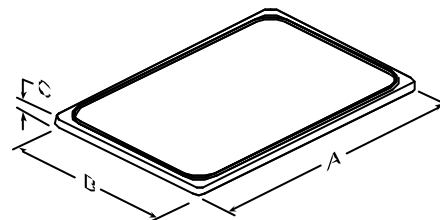
LID:

Material: PET

Length: **A** = 129.57 mm (5.101 inches)

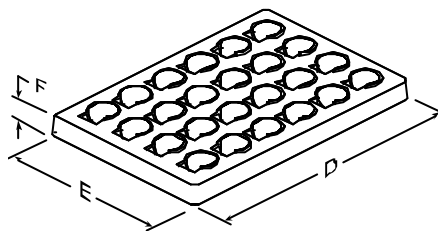
Width: **B** = 86.82 mm (3.418 inches)

Height: **C** = 8.20 mm (0.323 inches)



INSERT PLATE HOUSING:

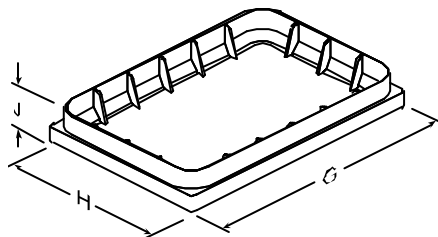
Material:	PET
Length: D =	127.61 mm (5.024 inches)
Width: E =	85.01 mm (3.347 inches)
Height: F =	17.96 mm (0.707 inches)
Ht. w/Lid only:	20.17 mm (0.794 inches)
Ht. w/Lid & Tray:	24.10 mm (0.949 inches)

**Insert Wells:**

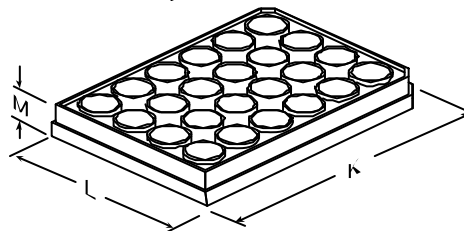
Top Interior Diameter:	12.50 mm (0.492 inches)
Bot. Interior (Membrane) Dia:	6.50 mm (0.256 inches)
Bot. Exterior Diameter:	10.00 mm (0.394 inches)
Total Well Depth:	17.96 mm (0.707 inches)
Well Depth below Cutout:	11.96 mm (0.471 inches)
Membrane Dist. from Tray:	1.40 mm (0.055 inches)
Well-to-Well Distance:	19.30 mm (0.760 inches)
Sampling Port Length:	9.45 mm (0.372 inches)
Sampling Port Width:	4.06 mm (0.160 inches)

FEEDER TRAY:

Material:	PS
Length: G =	127.51 mm (5.020 inches)
Width: H =	85.47 mm (3.365 inches)
Height: J =	19.94 mm (0.785 inches)
Height w/Lid only:	22.15 mm (0.872 inches)

**24-WELL PLATE:**

Material:	PS (Polystyrene)
Length: K =	127.76 mm (5.030 inches)
Width: L =	85.47 mm (3.365 inches)
Height: M =	20.19 mm (0.795 inches)
Height w/Lid only:	22.40 mm (0.882 inches)

**Important Dimensions for Use of BD Falcon™ 24-Multiwell Insert System**

Effective Diameter of Membrane	6.5 mm
Effective Growth Area of Individual Membrane	0.3 cm ²
Effective Growth Area in 24-well Plate (per individual well)	2.1 cm ²
Suggested Media Volume in Insert	250-500 µL
Suggested Media Volume in Well	750-1,400 µL
Suggested Media Volume in Feeder Tray	35 mL

General Hints for Using Membrane Insert Products

Handle all inserts under aseptic conditions. Use pre-warmed media to prevent cell shock.

Seeding of Inserts: Fill the inserts with cells and media before filling the bottom wells or feeder tray with media. This prevents bubbles from getting trapped underneath the insert, and prevents cell monolayers and other coatings on the membrane (if present) from being disturbed by hydrostatic pressure from media below the insert. To determine the optimal

seeding density for monolayer growth of your cell type on a porous growth surface, we recommend using a range of seeding densities (cells/cm²) that brackets the seeding density used on non-porous surfaces (flasks, dishes, and plates). For example, if you currently seed at 10⁵ cells/cm², seed at 0.5 x 10⁵, 10⁵ and 5 x 10⁵ cells/cm² to determine the optimal initial seeding density.

Initiating Assay in the BD Falcon™ 24-well Plate: Carefully add media or chemoattractant to lower wells, avoiding the introduction of bubbles below the membrane. The wells can be filled through the sample ports using a standard pipet, multichannel pipet or fluid handling instrument. Alternatively, the BD Falcon Multiwell Insert Plates can be moved to a separate Feeder Tray (Cat. No. 351186) or another 24-well plate (Cat. Nos. 351147 and 353047) while the plate is filled. The insert plate should then be carefully lowered back into the 24-well plate to avoid bubbles.

To neutralize the effects of hydrostatic pressure across the membrane, the level of media in the insert should match the level of media in the lower well, as per the attached chart:

Insert volume	Corresponding volume in lower well
300 µl	1000 µl
400 µl	1200 µl
500 µl	1400 µl

Filling the BD Falcon Feeder Tray: Add pre-warmed culture medium to the Feeder Tray. For best results, we recommend adding 35 ml media to the tray, as too little media will prevent contact with the insert. Excess media may slosh out of the Feeder Tray during handling. **Note:** the BD Falcon 24-well Plate may be used in place of the Feeder Tray if cells are to be grown with different media in each well. For best results with 24-well Plate, use the volumes outlined in the chart listed in the section above.

Feeding (using BD Falcon Feeder Tray): If desired, any of the 24 top sample ports may be used for aspirating off old media and adding fresh media. The 24 top sample ports will accept an aspirating pipet tip. If used manually, the insert plate may be lifted under aseptic conditions for direct access to the Feeder Tray, and transferred to another Feeder Tray or a sterile 24-well plate. Replacement Feeder Trays are available separately for added user convenience (Cat. No. 351186).

Retrieving, Staining, and Fixing Cells: To remove cells, follow standard trypsinization or scraping techniques. When using larger pore size membranes, some liquid may drip through the membrane. This should be considered during trypsinization. If desired, cells may be fixed and stained using standard techniques. For further information, see BD Biosciences Technical Bulletins #405 and #406 (Contact Technical Support at 877.232.8995 or email labware@bd.com).

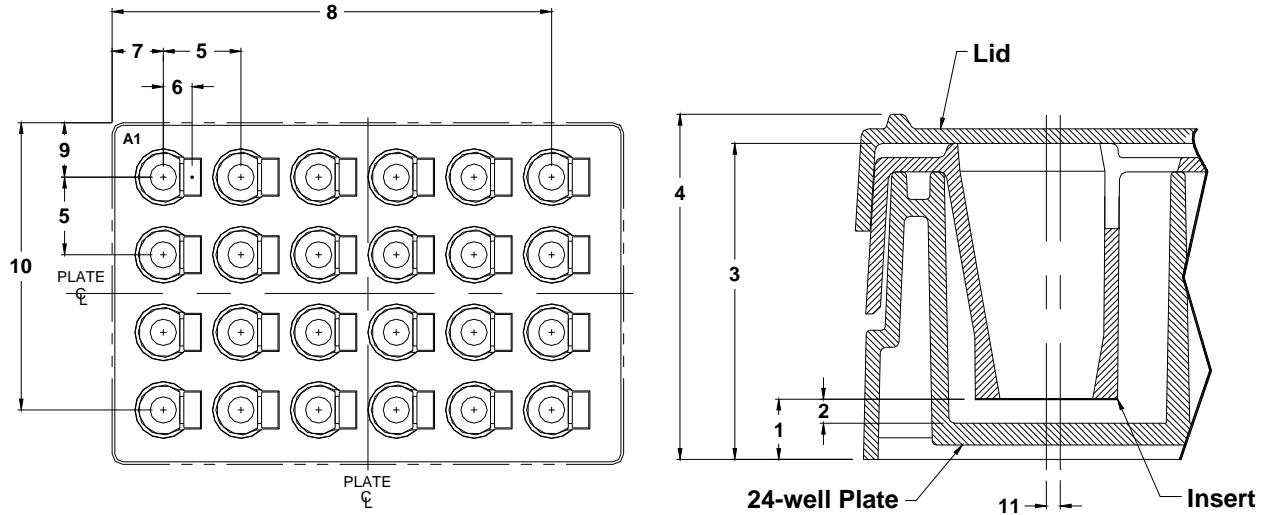
Guidelines for Automated Use of BD Falcon™ 24-Multiwell Insert Systems

Handle all inserts under aseptic conditions.

If you plan to use this product with a robotic fluid handler, please note the following:

1. The sides of the BD Falcon 24-Multiwell Insert System are designed so that most robotic grippers can manipulate the entire assembly (insert, receiver tray and lid) as well as each component. The lid can also be removed separately from the insert plate by suction from the top. To avoid splashing media, we recommend programming the automation for smooth movements to minimize media sloshing.
2. The insert plate is designed to be placed on BD Falcon 24-well plates (Cat. Nos. 351147 and 353047) in one unique orientation to prevent cross contamination of wells. To properly align the insert plate in the 24-well plate, make sure the BD Falcon logo, on the top of both pieces, faces the same direction. The sampling ports on the insert plates face the same direction as the notched corner side of a BD Falcon 24-well Plate.
3. When used with a BD Falcon 24-well Plate, sampling of wells beneath each membrane may be done with most 200 µl or 1,000 µl disposable pipet tips or standard “fixed” probes.

Automating BD Falcon™ 24-Multiwell Insert Systems: Plate Indexing



1.	Distance from Membrane to Bottom of 24-well Plate	4.19 mm
2.	Distance from Membrane to Bottom of Well (inner)	2.16 mm
	Distance from Membrane to Bottom of Feeder Tray (inner)	1.40 mm
3.	Plate Height (Insert Plate, 24-well Plate without Lid)	22.15 mm
	Plate Height (Insert Plate, Feeder Tray without Lid)	21.89 mm
4.	Plate Height (Insert Plate, 24-well Plate and Lid)	24.36 mm
	Plate Height (Insert Plate, Feeder Tray and Lid)	24.10 mm
5.	Well-to-Well Centers (center of one well to the center of another)	19.30 mm
6.	Well Center of Insert Membrane to Center of Insert Sample Port	7.44 mm
7.	Edge of Plate to Well Center A1	12.97 mm
8.	Edge of Plate to Well Center D6	108.46 mm
9.	Top Edge of Plate to Well Center A1	11.95 mm
10.	Top Edge of Plate to Well Center D6	69.85 mm
11.	Well Center of Insert Membrane to Well Center of 24-well Plate (offset)	1.07 mm

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