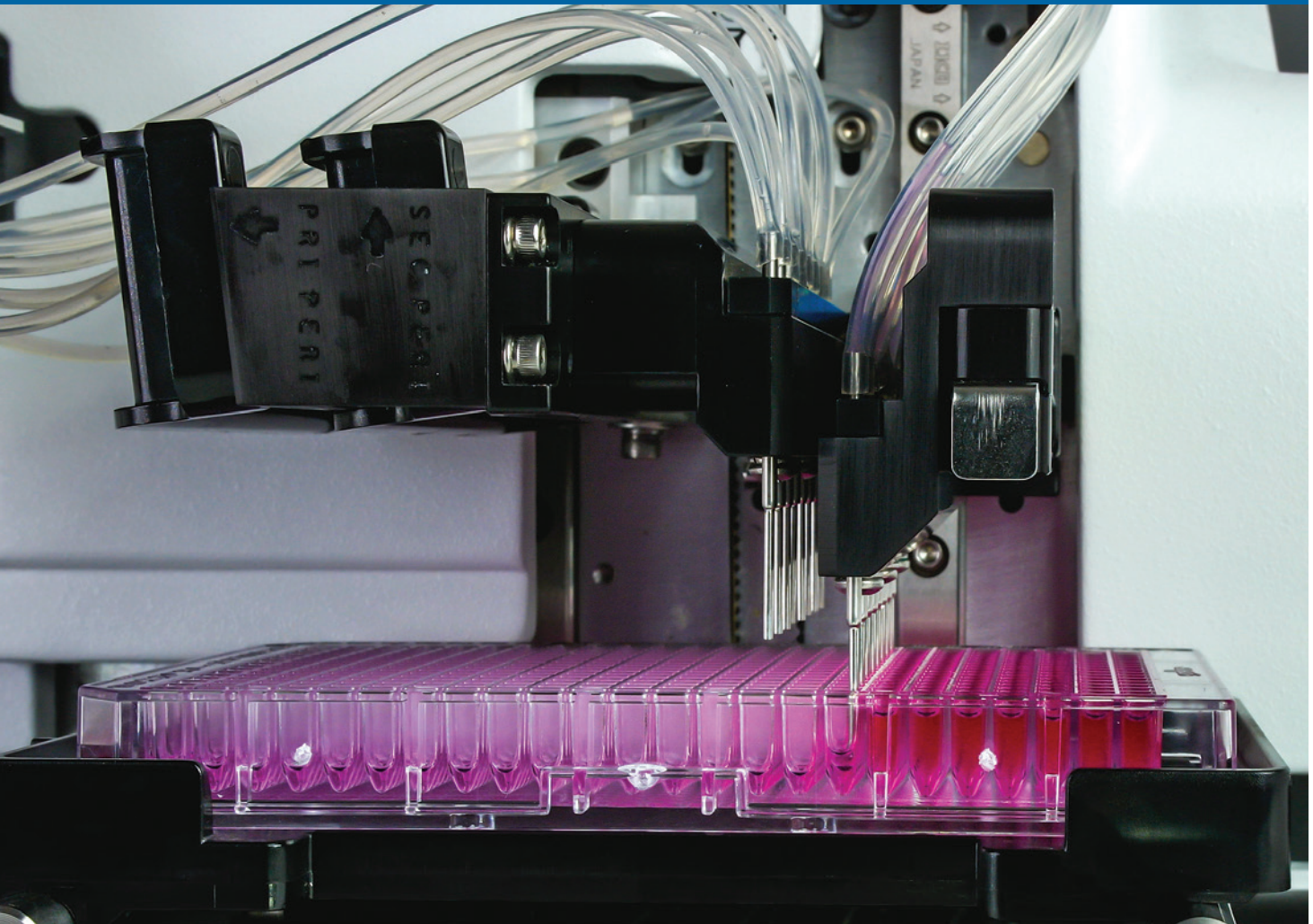


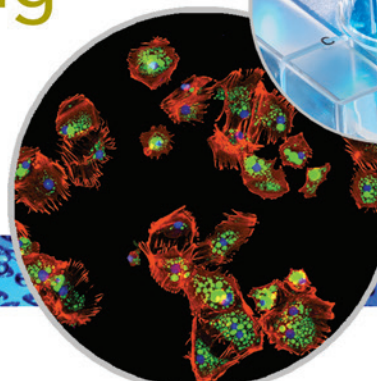
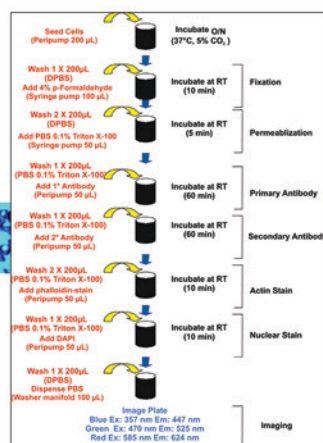
## BioTek Washers & Dispensers. Solutions for Better Workflows.



concentration normalization assays

Spheroid and tumoroid workflows

## Cell fixing and staining



# ELISA

MULTIPLEX ASSAYS

## Cell-based assays

## Magnetic bead assays

Many life science laboratories benefit from automating their routine workflows, including microplate dispensing and washing processes. BioTek's microplate washers, dispensers and combination systems can help save time, space and money with affordable, compact and modular instruments designed to offer the best performance, low maintenance, ease of use and powerful functionality. For applications ranging from basic ELISA to pre-imaging cell fixing & staining processes to gentle automated media exchange, BioTek's extensive line of microplate liquid handling systems has just the right instrument solution.

### Typical Applications for BioTek Washers and Dispensers

- ELISA
- 2D and 3D cell-based assays
- ELISPOT assays
- Multiplex assays
- Magnetic and polystyrene bead assays
- Gentle automated media exchange
- Filtration-to-waste processes
- HCS immunocytochemistry
- Screening assays
- Cell fixing and staining
- Compound storage
- Concentration normalization assays
- Genomics and proteomics research
- Dispense/wash protocol automation
- Drug transport assays
- Calcium flux assays
- MSD assay automation
- Serum/plasma sample prep

# Unique Washing Technologies

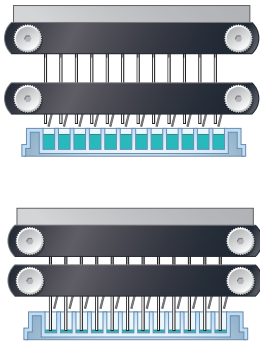


## Patented Ultrasonic Advantage™

Pin clogging is the primary cause of poor washer performance. The priming/cleaning reservoir in the 405 Microplate Washer and EL406 Washer Dispenser with Ultrasonic Advantage offers ultrasonic cleaning of both dispense and aspirate manifolds.

### Ultrasonic Advantage benefits:

- Automated ultrasonic cleaning helps prevent clogs
- Reduces assay failure, maintains assay integrity
- Cleans the toughest protein and salt crystal buildup

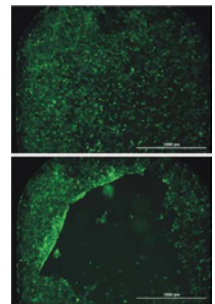


## Dual-Action™ Manifold

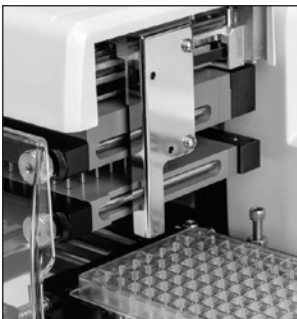
BioTek's Dual-Action manifold allows independent control of dispense and aspirate tubes for optimal x-, y- and z- positions. Dispense tubes are angled to 20° for gentle dispensing into well containing delicate cell layers.

### Dual-Action Manifold benefits:

- Wash 96- and 384-well microplates on one instrument without changing the manifold
- Optimal independent positioning of dispense and aspirate tubes for cell-based assays or for standard ELISA washing
- Angled dispense tubes won't disrupt cell layers
- Allows vigorous overflow washing



Top: cells washed with angled tips.  
Bottom: cells washed with straight tips.

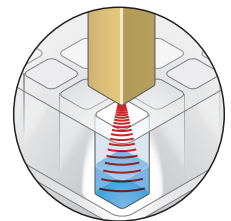


## Patented Verify™ Technology

Verify is a built-in module that tests the performance of washer dispense and aspiration cycles and alerts users to the specific location of any suspected manifold clog. This allows the blockage to be identified and resolved before the next assay is run.

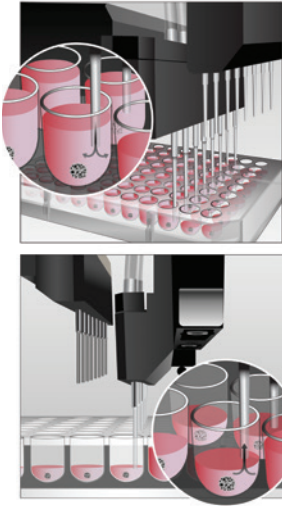
### Verify benefits:

- Automates aspirate or dispense clog detection
- Provides clear visual pass/fail results
- Reduces failed assay incidents caused by blockages
- Built-in design requires no additional bench top space





# Unique Dispensing Technologies



## AMX™ Automated Media Exchange

The patent-pending AMX module for the MultiFlo™ FX enables gentle automated media exchange to protect and encourage proliferation of spheroids, tumoroids and other 3D cell structures, in microplate-based assays. The AMX module uses both peristaltic pumps and software control to aspirate and dispense media from the plate wells.

### AMX benefits:

- Automates media exchange for spheroids, tumoroids and other 3D and 2D cell-based assays
- Helps protect cells and encourage cell structure growth
- AMX module can be added to MultiFlo FX and easily exchanged with other modules for workflow versatility

## RAD™ Technology

The innovative RAD (Random Access Dispensing) option for MultiFlo FX brings increased functionality to the dispenser – its single channel design allows rapid, custom-mapped dispensing to discrete wells on the microplate and rapid high volume dispensing to lower density microplates.

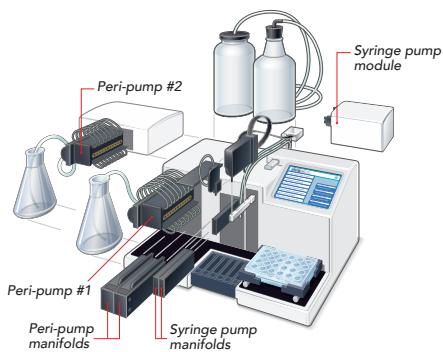
### RAD benefits:

- Rapid dispense to random or contiguous wells of a plate, ideal for optimizing experimental design
- Import custom plate maps in \*.CSV format to facilitate many applications, including nucleic acid and protein concentration normalization
- Bulk reagent dispensing of up to 30,000 µL/well to large well geometries for convenience and versatility

Plate ID	Well	Volume
Plate 1	A1	5
Plate 1	C2	11
Plate 1	D4	14
Plate 1	H4	5
Plate 1	H5	11
Plate 2	H6	14
Plate 2	H7	8
Plate 2	H8	20
Plate 2	H9	35
Plate 2	H10	11
Plate 2	H11	17
Plate 2	H12	5



The available "8 to 1" tip allows bulk reagent dispensing to one or more wells of 6- to 24-well plates.



## Parallel Dispense™ Technology

BioTek combines two pump technologies in its Parallel Dispense functionality available in MultiFlo FX. Peristaltic pumps offer a broad volume range and the ability to save reagent by backflushing and inherent low dead volume; syringe pumps are fast and don't require recalibration – and autoclavable versions are available.

### Parallel Dispense benefits:

- Up to 4 reagent dispensing without carryover
- Fast dispense speeds to 6- to 1536-well plates
- Angled tubes for gentle dispense to cell monolayers
- Volume range of 500 nL to 30 mL
- Space savings on benchtop and in automated systems



Four manifolds dispense four independent reagents

BioTek's unique "combination" instruments are designed to handle multiple processes on a single platform. These instruments reduce deck space and time when used in automated robotic systems.



## EL406

washer dispenser

The EL406™ automates plate washing and multiple reagent dispensing in one instrument. The EL406 is ideal for applications like cell fixing and staining prior to imaging, ELISA, multiplex assays, and many other common routines. The Dual-Action™ manifold and patented Ultrasonic Advantage™ ensure excellent washing performance and easy maintenance.

### EL406 features include:

- ▷ Fast plate washing with up to 3 reagent dispensers
- ▷ 96-, 384- and 1536- well plate compatible
- ▷ Full automation of intra-assay liquid handling steps
- ▷ Magnetic and polystyrene bead based assays
- ▷ Built-in cleaning with Ultrasonic Advantage
- ▷ Direct drain to waste option eliminates the need to empty waste bottles



## MULTIFLO|FX

multi-mode dispenser

MultiFlo™ FX is an automated multi-mode reagent dispenser that incorporates several unique technologies to facilitate applications from 2D and 3D cell culture to concentration normalization assays, ELISA, bead-based assays and more. MultiFlo FX integrates to the BioStack Microplate Stacker and BioSpa™ 8 Automated Incubator to automate many cell imaging and biochemical applications workflows.

### MultiFlo FX features include:

- ▷ Multi-mode dispensing replaces multiple instruments in a user upgradeable platform
- ▷ AMX™ module automates gentle media exchange
- ▷ RAD™ module for mapped dispensing to individual wells
- ▷ Wash module for 6- to 384-well plates
- ▷ Parallel Dispense™ technology: peristaltic and/or syringe pumps
- ▷ Direct drain to waste option eliminates the need to empty waste bottles

## 405|TS

microplate washer

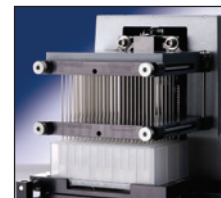


BioTek's 405™ TS enables applications ranging from gentle cell-based assay washing to rigorous ELISAs, biomagnetic separation and vacuum filtration processes. For computer control or use in an automated system, LHC pc software with SiLA compliant drivers is available and LHC Secure provides 21 CFR Part 11 compliant features.

### 405 TS features include:

- ▶ Fast 96- and 384-well microplate washing in a single instrument
- ▶ Angled dispense tips for gentle cell-based assay washing
- ▶ Patented Verify and Ultrasonic Advantage check for clogged manifold tubes and automatically cleans them
- ▶ Internal 4-buffer switching
- ▶ Password protection for onboard protocols
- ▶ Programmable to leaves wells empty or with specific residual volume
- ▶ Direct drain to waste option eliminates the need to empty waste bottles

For deep well plate washing, the ELx405 Select Deep Well Washer is compatible with 96- and 384-well plates and deep wells up to 50 mm.



## 50|TS

microplate washer



The 50™ TS Washer offers functionality that is unsurpassed in its class. The color touchscreen provides a visual interface that makes creating protocols fast and intuitive. It has excellent performance for conventional plate washing, cell-based assays, and for processing biomagnetic or polystyrene bead and vacuum filtration protocols. 50 TS is Luminex® xMap® approved.

### 50 TS features include:

- ▶ 24-, 96- and 384-well strip or full plate washing
- ▶ Affordable, high quality, high performance washing
- ▶ Applications from ELISA to cell- and bead-based assays
- ▶ Color touchscreen for quick, easy programming and operation
- ▶ Automated maintenance routines for continued reliable operation
- ▶ Direct drain to waste option eliminates the need to empty waste bottles





## MULTIFLO|FX

multi-mode dispenser

BioTek's MultiFlo™ FX Multi-Mode Dispenser accurately and precisely dispenses up to 4 reagents in parallel without carryover. The AMX module provides gentle automated media exchange for 3D cell structures, and the RAD single channel dispenser enables custom-mapped dispensing to individual wells to facilitate many applications including concentration normalization assays.

### MultiFlo FX features include:

- ▷ Multi-mode dispensing replaces multiple instruments in a user upgradeable platform
- ▷ Wide dispense volume range of 500 nL to 3 mL
- ▷ Compatible with 6- to 1536-well microplates
- ▷ Compact footprint, ideal for integration into automated systems
- ▷ Compatible with BioStack and BioSpa 8 Automated Incubator for walkaway automation
- ▷ Available wash module for 6- to 384-well plates
- ▷ Direct drain to waste option eliminates the need to empty waste bottles



## MICROFILL

microplate dispenser

MicroFill™ is an economical, compact, and reliable alternative for accurate and precise dispensing from 5  $\mu$ L to 6,000  $\mu$ L per well volume. Variable dispense flow rates allow low- to high-velocity dispensing for any application. The fluid path is autoclavable and MicroFill's compact footprint makes it ideally suited to fit inside common laboratory enclosures.

### MicroFill features include:

- ▷ Accommodates 24-, 96- and 384-well standard and deep well microplates
- ▷ Syringe pump guarantees optimal precision and accuracy
- ▷ No recalibration required; low maintenance design with built-in routines
- ▷ User-controlled dispense flow rates for low- to high-velocity dispensing
- ▷ Up to 75 programs stored in multiple languages at the touch of a button

# Instrument Comparison

	Combination Systems		Washers		Dispensers
	EL406	MultiFlo FX	405 TS/LS	50 TS	MicroFill
<b>Key Features: Washing</b>					
Plate types	96 to 1536	6 to 384	96, 384	24, 96, 384	
Low profile and standard height	•	•	•	•	
Solid and filter bottom	•		•	•	
Deep well		•	•*		
Automatic buffer switching	•		•	•	
Volume range (per well)	3 µL - 3 mL	20 µL – 30 mL	25 µL - 3 mL	25 µL – 3mL	
Full plate washing	•	•	•	•	
Strip washing		•		•	
Washing speed (96 wells, 3 cycles, 300 µL/ well)	≤30 sec	≤130 sec	≤30 sec	≤80 sec ** ≤130 sec	
Magnetic and polystyrene bead assays	•	•	•	•	
Dual-Action manifold available	•		•		
Overflow protection	•	•	•	•	
<b>Key Features: Dispensing</b>					
Plate types	96 to 1536	6 to 1536			24, 96, 384
Volume range	500 nL to 3 mL	500 nL to 3 mL 500 nL to 30 mL (RAD)			5 µL to 6 mL
Peristaltic pump dispensing	•	•			
Syringe pump dispensing	•	•			•
<b>General</b>					
AMX Automated Media Exchange		•			
RAD single channel dispensing		•			
Variable flow rates	•	•	•	•	•
Microplate shaking	•	•	•	•	
BioSpa™ 8 compatible	•	•	•		
BioStack™ compatible	•	•	•		•
LHC Software compatible	•	•	•	•	
Ultrasonic Advantage available	•		•		
Verify technology available			•		

\*ELx405 Select Deep Well

\*\*With 2x8 well manifold



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