HydroSpeed™

SPEED AND CONTROL FOR OPTIMIZED WASHING OF CELLS, BEADS AND ELISAS

98/79/EC IVD-D

21 CFR Part 11

98/79/EC IVD-D
Are you washing away your cells?

Loosely adherent cell lines, such as P815 and HEK293, are commonly used for a wide range of research applications, but are challenging to wash for typical plate washers. Excessive dispense speeds can cause detachment of cells and holes in the cell layer. Coupled with loss of cells during poorly controlled aspiration, this can lead to reproducibility issues and high CVs, resulting in failed experiments, repeat testing and a loss of productivity.

Discover how the HydroSpeed plate washer with Cell Protection™ can help you resolve these issues!

Based on more than 30 years of experience in automated liquid handling, we understand that weakly adherent cells require very gentle washing to achieve reproducible results. The HydroSpeed plate washer puts the user in control with Cell Protection, allowing you to dial-in extra gentle wash settings, specific to your cells, microplates and application.

Features of Cell Protection include:
- **Dropwise dispense speed** to avoid cell detachment
- **Optimization of dispense position** to minimize turbulence in the wells
- **Tunable aspiration parameters**, including needle position and vacuum level, to avoid cell loss
- **Reduced costs** by eliminating the need for a dedicated cell washing head

Extra gentle wash settings for loosely adherent cells

Tunable aspiration rates to avoid cell loss

Optimized dispense position via Move function

Cell loss due to aggressive wash conditions

Schematic picture showing a damaged cell layer in a well

Failed results leading to loss of productivity
Are your magnetic beads being washed away?

Multiplexed assays using magnetic beads are becoming increasingly popular for a variety of applications, but achieving good wash results without losing beads remains a challenge. Automated washing protocols often suffer from low bead recovery rates due to insufficient bead settling by weak magnets. Poor control of aspiration parameters also makes it difficult to achieve low residual liquid volumes without significant loss of beads, leading to inconsistent results and high CV values.

Discover how the HydroSpeed plate washer can help you to overcome these problems by using two magnets per well!

Keeping magnetic beads away from the needles during aspiration helps to improve washing performance. Using a patented design with two magnets per well, the HydroSpeed washer protects magnetic beads by settling them at the side of the well during aspiration, achieving low residual volumes while maintaining high bead recovery rates.

Bead recovery features include:
- **Powerful rare-earth magnets** to provide fast and efficient bead settling
- **Two magnets per well** to keep the beads out of the way during washing
- **Adjustable vacuum level and aspiration position** for optimized bead recovery
- **Supports filter washing** of non-magnetic beads via vacuum filtration option
Are you suffering from needle clogging during ELISA washing?

Automated ELISA processing using a microplate washer is now a routine task for many laboratories, yet crystallization of wash buffer within the aspiration/dispense needles remains a common problem. This causes clogging of the needles while the washer is idle between plates, and can lead to loss of entire runs as a result of overflowing wells. Cleaning of wash heads is laborious and time consuming, and can significantly affect productivity if washers are integrated into automated liquid handling systems.

Discover how the HydroSpeed plate washer can take the hassle out of ELISA washing!

The innovative Anti-Clogging™ function actively prevents needle clogging by automatically rinsing and soaking the wash head when the HydroSpeed washer is idle for a pre-defined period. In addition, the wash head can be easily removed for ultrasonic cleaning, with a self-alignment feature to simplify reinstallation.

Highlights of active clog prevention include:
• Anti-Clogging function actively prevents needle blockage
• Pre-defined rinse procedure makes preventive maintenance easy to perform
• Easy X-change wash heads allow intense cleaning in an external ultrasonic bath
• Wash bottle filters prevent particles from entering the wash head
Fast, reliable washing in
96- and 384-well formats.

ON-BOARD CONTROL AT YOUR FINGERTIPS
Easy-to-use touchscreen interface allows full on-board operation, eliminating the need for an external PC to define wash programs and plate parameters.

READY TO START
• New plate assistant function for easy teaching of new plates
• Pre-defined plate library, with typical plate parameter settings for commonly used 96- and 384-well plates, allows rapid setup of new wash protocols

FORMAT AND APPLICATION FLEXIBILITY
• 96 indexing wash head allows HydroSpeed to be used for washing both 96- and 384-well plates, without swapping wash heads
• 96 indexing wash head supports three applications including ELISA washing, extra gentle cell washing and bead washing providing uncompromised wash performance
• 384HT wash head offers high speed parallel processing of all 384 wells

READY FOR RELIABLE OPERATION ON A ROBOTIC PLATFORM
The HydroSpeed washer incorporates an array of sensors – such as the plate positioning sensor – to ensure secure and reliable integration into automated platforms for true walkaway processing.

LIQUID LEVEL MONITORING IN WASTE BOTTLE
• Integrated pressure-based liquid level detection (pLLD) system informs operator when waste bottle is full
• pLLD avoids the risk of blockage common to swimmer-based LLD systems mounted in the waste bottle, increasing safety and eliminating additional cleaning steps

*REGULATORY COMPLIANCE
• The HydroSpeed washer is designed to meet IVD-directive 98/79/EC for Europe when configured for ELISA washing
• In combination with HydroControl™ software, it also provides FDA CFR 21 Part 11 functionality, including electronic records, signatures and audit trails
Specifications

**General**
- Number of disp. channels: 1–4
- Wash head types:
  - 96HT for high speed washing in 96-well format
  - 384HT for high speed washing in 384-well format
  - 96-indexing for flexible washing in 96- and 384-well formats
- Wash volume, 96-well format: 50–3,000 µl in increments of 50 µl
- Wash volume, 384-well format: 10–1,000 µl in increments of 10 µl

**Performance**
- Wash times, 96-well format: 15 secs for 1-cycle wash incl. crosswise asp. step (disp. vol: 300 µl/well, disp. rate: 5, asp. rate: 5, 96HT head)
- Wash times, 384-well format: 15 secs for 1-cycle wash incl. asp. step (disp. vol: 100 µl/well, disp. rate: 5, asp. rate: 5, 384HT head)
- Dispense accuracy @ 300 µl, 96-well format: ≤ 5 % across plate, gravimetric measurement**
- Dispense accuracy @ 100 µl, 384-well format: ≤ 5 % across plate, gravimetric measurement***
- Dispense uniformity @ 300 µl, 96-well format: ≤ 3 % across plate**
- Dispense uniformity @ 100 µl, 384-well format: ≤ 4 % across plate***
- Residual volume, 96-well format: ≤ 2 µl per well, crosswise asp.**
- Residual volume, 384-well format: ≤ 2 µl per well, single asp.***

**Vacuum range for vacuum filtration**
- -50 to -300 mBar

**Power**
- Power supply: 115 V / 60 Hz, 230 V / 50 Hz
- Consumption: < 300 VA

**Physical**
- External dimensions (height/width/depth): 28.8 cm (11.3in) / 38.8 cm (15.3in) / 43.0 cm (16.9in)
- Weight: 15 kg (33lbs)
- Color:

**Dispense accuracy @ 300 µl, 96-well format**: ≤ 5 % across plate, gravimetric measurement**
**Dispense accuracy @ 100 µl, 384-well format**: ≤ 5 % across plate, gravimetric measurement***
**Dispense uniformity @ 300 µl, 96-well format**: ≤ 3 % across plate**
**Dispense uniformity @ 100 µl, 384-well format**: ≤ 4 % across plate***
**Residual volume, 96-well format**: ≤ 2 µl per well, crosswise asp.**
**Residual volume, 384-well format**: ≤ 2 µl per well, single asp.***

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