HAMILTON

Microlab® NIMBUS®
Personal Pipetting Workstation

Meet
NIMBUS

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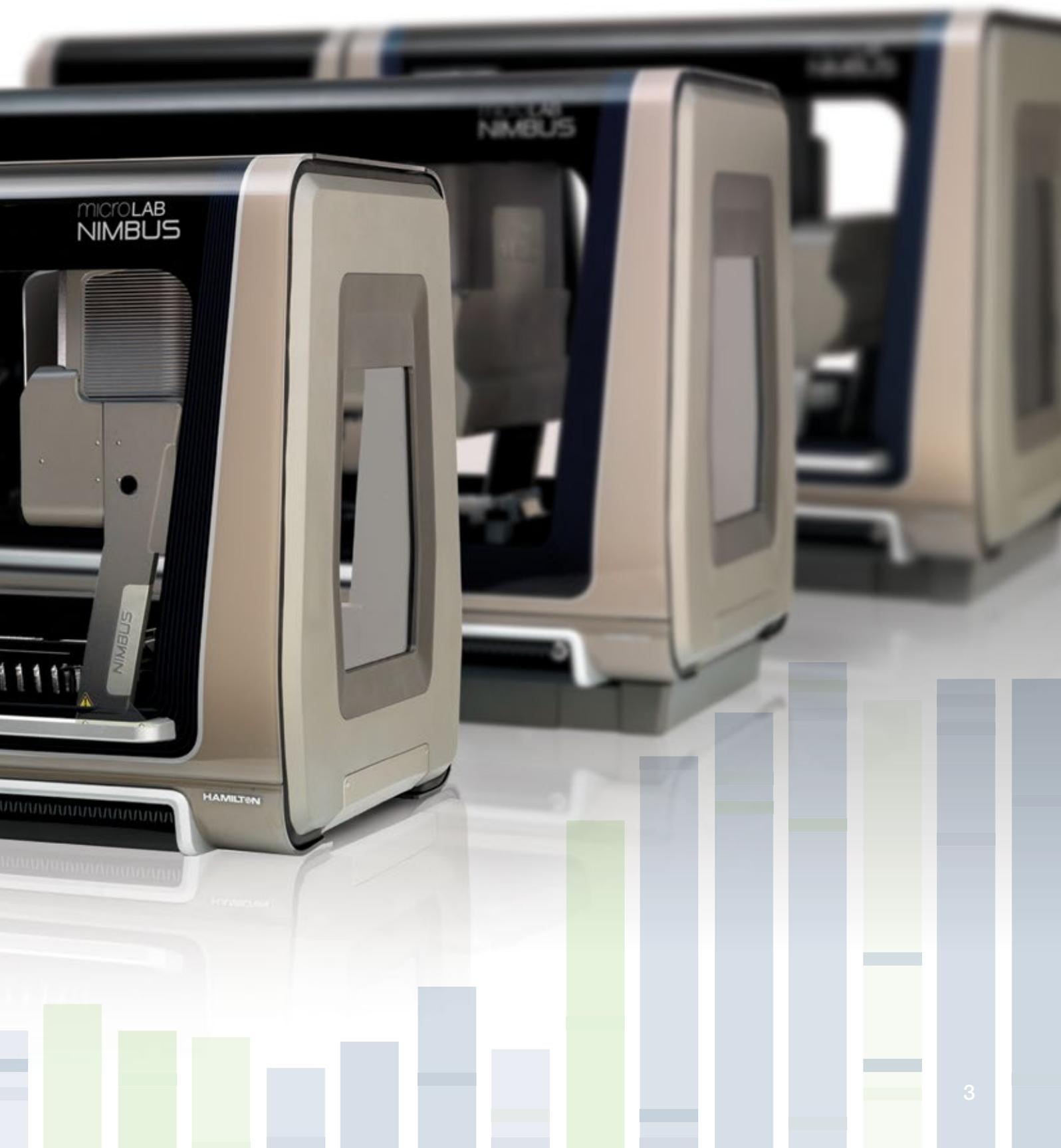
Microlab
NIMBUS

The Microlab NIMBUS is a compact, multi-channel automated liquid handling system, offering speed, flexibility, ease-of-use, and superior pipetting performance all for a surprisingly affordable price.

In contrast to large, multi-integrated, high-end systems designed for automating complex workflows, the NIMBUS is a small-footprint, lean-integrated, entry-level pipettor ideally suited for automating a single or select set of liquid handling routines. A flexible deck layout and a broad range of modular accessories and options makes reconfiguration for new applications quick and easy.

The NIMBUS is available in three pipetting options, each with a variety of highly configurable base platforms such as: Open, Enclosed, Extended Enclosed, and Large Extended Enclosed.

◀ NIMBUS4

1 – 4 Independent 1 mL Liquid Channels or
1 – 2 Independent 5 mL Liquid Channels

◀ NIMBUS96

96–Channel Multi-Probe Head (MPH)

◀ NIMBUS384

384–Channel Multi-Probe Head (MPH)
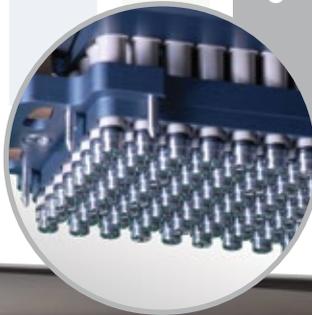
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microLAB NIMBUS

NIMBUS

Integrated options, intuitive software, and the backing of Hamilton's renowned service and applications support team makes the NIMBUS an indispensable tool for many labs. Using Hamilton's proprietary air displacement pipetting technology, the NIMBUS offers the same liquid handling performance as higher-end systems.

◄HIGH PIPETTING ACCURACY AND PRECISION

◄LOW/MEDIUM THROUGHPUT

◄SMALL FOOTPRINT

◄AFFORDABILITY

AUTOMATED APPLICATIONS ▶

ADMET assays ◄
CE analysis setup ◄
Cell assays and feeding ◄
Cloning assays ◄
DNA/RNA extraction and purification ◄
ELISA preparation and processing ◄
Liquid-liquid extraction ◄
MALDI target spotting ◄
Microarray sample preparation ◄
PCR setup and purification ◄
Post-PCR cleanup ◄
Protein purification and digestion ◄
Sample normalization ◄
Sample pooling ◄
Sequencing assays ◄
Solid phase extraction ◄
Solubility assays ◄

Open versions not available for purchase in Europe.

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ENCLOSED

EXTENDED
ENCLOSED

LARGE
EXTENDED
ENCLOSED

A Look Inside
NIMBUS

NIMBUS is a small footprint, high-speed liquid handling platform, featuring fast plate-based pipetting using the CO-RE 96 MPH or the CO-RE 384 MPH, or flexible pipetting to and from tubes and plates using up to 4 independent liquid channels. For enhanced process security, NIMBUS Enclosed features a locking cover set that minimizes environmental contamination.

1   LABWARE GRIPPER ARM

An optional labware gripper arm makes for easy handling of single or stacked microplates, deep-well plates, lids, and Hamilton's Nested Tip Racks (NTR). Extended reach and 270° of rotation allows for seamless handoffs to integrated devices located both on and off the NIMBUS deck.

2   EXTENSION PLATE

A plate located on the left-hand side of the Extended Enclosed NIMBUS (not shown) allows for 4 additional non-pipettable locations. The locations can accommodate Hamilton stackers, pedestals, Hamilton Heater Shaker, and additional small third-party devices. (Extended Enclosed NIMBUS only.)

3   DOOR LOCKS

Doors automatically lock (not shown) when the system is running.

4   MOVEMENT INDICATOR

Provides visual, at-a-glance, cues to the operational status of the NIMBUS.

5   CO-RE PADDLES

Using two pipetting channels in parallel, the NIMBUS can transport plates or tips across the deck without the need for a dedicated labware gripper. CO-RE grippers are available for both 1 mL and 5 mL channels.

6   PAUSE/PARK BUTTONS

The park button moves the pipetting head out of the way for easier access to the deck during setup, while the pause button allows for temporary interruption of a method mid-stream.

7   SMALL FOOTPRINT

The compact size provides for positioning on virtually any benchtop as well as in select commercial hoods and bio-safety cabinets.

8   WASTE STATION

An attachable waste receptacle (not shown) accommodates used tips and empty NTRs.

9   STATUS INDICATOR

Provides visual, at-a-glance, cues to the operational status of the NIMBUS.

10   COMMUNICATIONS AND CONTROL PANEL

Simply connect the Ethernet cable from your PC to the communications port, plug in the power cable and push the power button to bring the NIMBUS to life. An Auxiliary Communications Panel is also featured to support integrated peripheral devices.

9 NIMBUS
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MICROLAB

5

NIMBUS

6

10

1

LABWARE GRIPPER ARM

4

MOVEMENT INDICATOR

5

CO-RE PADDLES

Versatile
Deck Options

Understanding that different assays have different requirements, NIMBUS offers multiple deck options to meet your needs. From a high-density deck that accommodates up to 20 SLAS ANSI positions to the ability to integrate small devices and read barcodes, NIMBUS offers flexibility to easily automate your assays.

◀ NIMBUS DECK (4 x 5)

▸ High-density deck up to 20 SLAS ANSI positions
▸ Allows for tip and plate stacking
▸ Integrates with:
  ▸ Heaters
  ▸ Shakers
  ▸ Chillers
▸ Tube and plate barcode reading
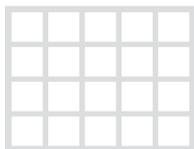
◀ NIMBUS DECK (3 x 4)

▸ 12 SLAS ANSI positions
▸ Positions used for all standard SLAS ANSI labware
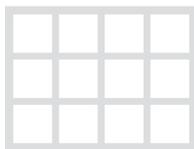
## ◀ NIMBUS DECK (9 + 2)

▸ 11 SLAS ANSI positions
▸ 9 positions for standard SLAS ANSI labware
▸ 2 positions used for:
  ▸ Tip stacking, plate stacking
  ▸ Small third-party integrations
  ▸ Labware taller than 118 mm
▸ Plate barcode reading
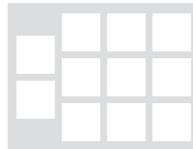
◀ NIMBUS DECK (SHIFT-N-SCAN)

▸ 8 SLAS ANSI plate and trough positions
▸ 3 barcoded tube locations
  ▸ Up to 96 tubes
▸ Plate barcode reading
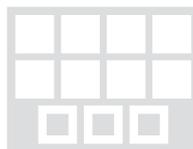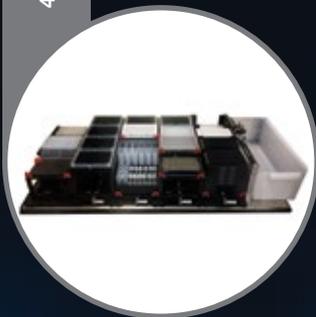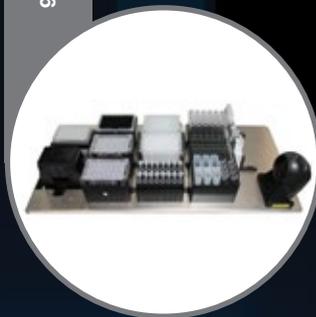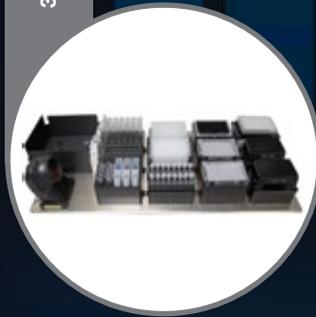
NIMBUS4

The NIMBUS**4** offers superior performance and
features up to 4 independent pipetting channels
for flexible pipetting to and from tubes and plates.

◀ 4 X INDEPENDENT CO-RE PIPETTING CHANNELS

- ▶ Independent movement in both Y and Z axis
- ▶ Available in 1000 µL (up to 4 channels) or 5000 µL (up to 2 channels) sizes
- ▶ Dynamic pipetting range of 0.5 µL to 5000 µL
- ▶ Features cLLD and pLLD for polar and non-polar (organic) liquids
- ▶ Full range of CO-RE tips are available
    - ▶ 10, 50, 300, 1000, and 5000 µL
    - ▶ Black or clear (conductive and non-conductive)
    - ▶ Slim, wide bore tips, etc.

◀ MAIN DECK

An open platform allows for easy loading of carrier pedestals, adapters, plates, tubes,
and tip racks onto the high-density main deck. Up to 8 standard microplates can be
stacked onto a single position. Choose from 3 different deck configurations:

- ▶ 4 x 5 — high-density deck up to 20 deck positions
- ▶ 9 + 2 — 9 main deck positions and 2 sub-deck positions
- ▶ 3 x 4 — 12 main deck positions (no sub-deck)
- ▶ Shift-n-Scan — 8 main deck positions and the integrated tube barcode scanner
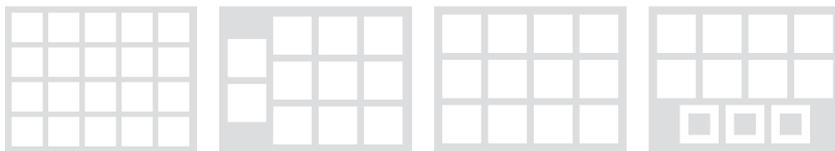
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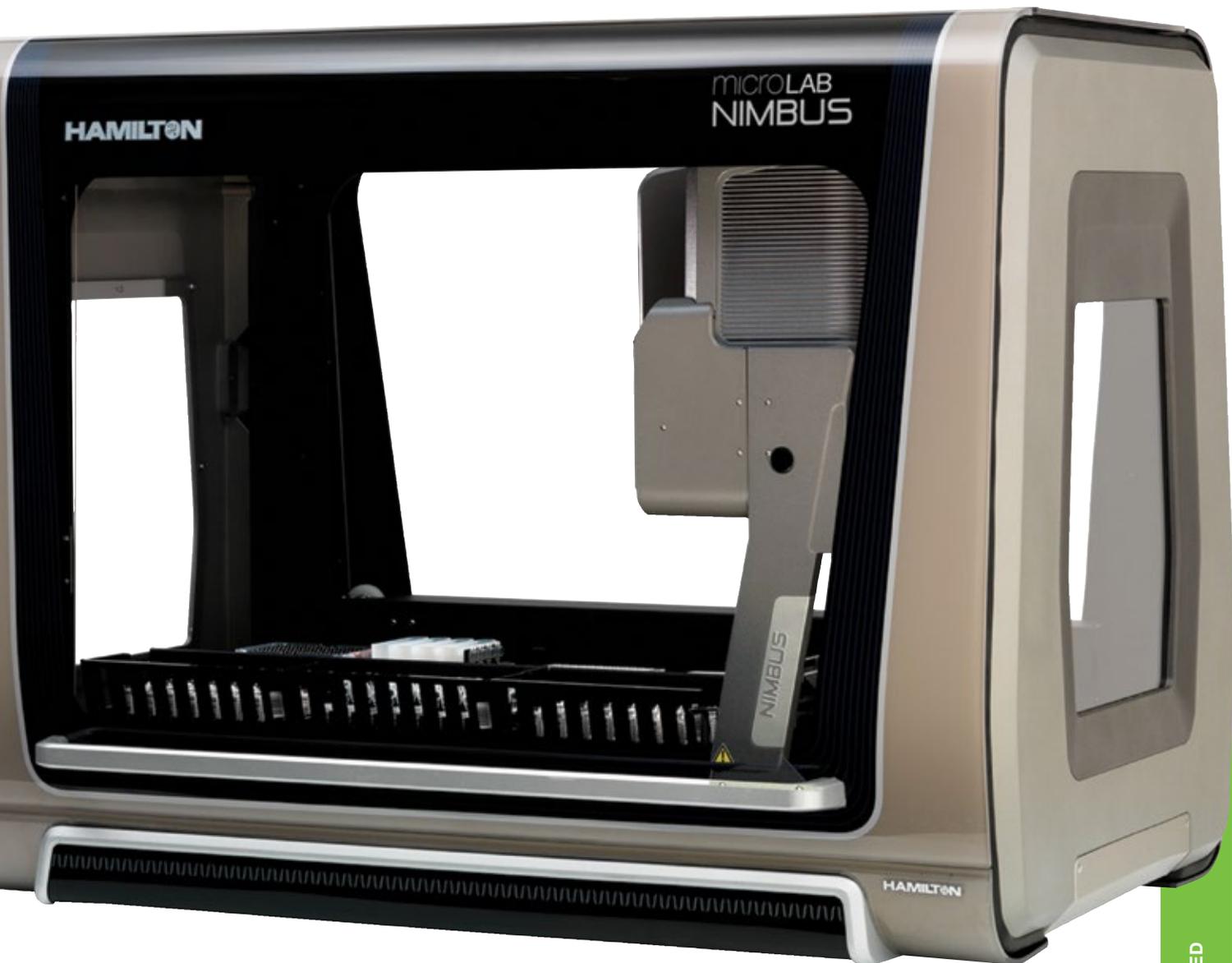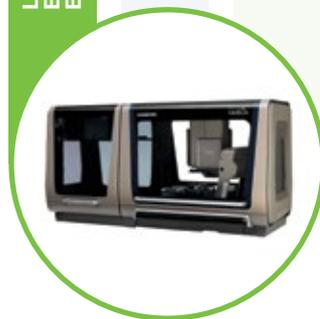
NIMBUS4 ENCLOSED

NIMBUS96

The NIMBUS**96** features a high-speed CO-RE 96 MPH which ensures fast and accurate pipetting to 96- or 384-well plates across a wide range of volume, in individual, column, row, and whole plate formats.

◂ CO-RE 96 MPH

▸ Fast and accurate pipetting to 96- or 384-well plates
▸ Dynamic pipetting range of 1 µL to 1000 µL
▸ Features Capacitive Liquid Level Detection (cLLD)
▸ Full range of CO-RE tips are available
  ▸ 10, 50, 300, 1000, and 5000 µL
  ▸ Black or clear (conductive and non-conductive)
 ▸ Slim, wide bore tips, etc.

◂ MAIN DECK

An open platform allows for easy loading of carrier pedestals, adapters, plates, tubes, and tip racks onto the high-density main deck. Up to 5 standard microplates can be stacked onto a single SLAS ANSI position. Choose from 2 different deck configurations:

▸ 9 + 2 — 9 main deck positions and 2 sub-deck positions
▸ 3 x 4 — 12 main deck positions (no sub-deck)

CO-RE 96 MPH

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NIMBUS**384**

The NIMBUS**384** features a highly precise, time saving CO-RE 384 MPH which accurately and precisely pipettes to 96, 384, and 1536 plates, in individual, column, row, and whole plate formats.

◂CO-RE 384 MPH

▸ Fast and accurate pipetting to 96 or 384-well plates

▸ Dynamic pipetting range of 0.5 μL to 50 μL

▸ Features capacitive liquid level detection (cLLD)

▸ Full range of CO-RE tips are available

  ▸ 10 μL and 50 μL

  ▸ Black or clear (conductive and non-conductive)

◂MAIN DECK

An open platform allows for easy loading of carrier pedestals, adapters, plates, tubes, and tip racks onto the high-density main deck. Up to 5 standard microplates can be stacked onto a single SLAS ANSI position. Choose from 2 different deck configurations:

▸ 9 + 2 — 9 main deck positions and 2 sub-deck positions

▸ 3 x 4 — 12 main deck positions (no sub-deck)
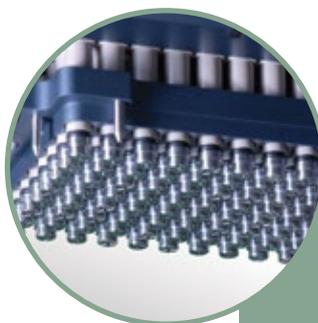
CO-RE 384 MPH

OPEN

EXTENDED
ENCLOSED

LARGE
EXTENDED
ENCLOSED

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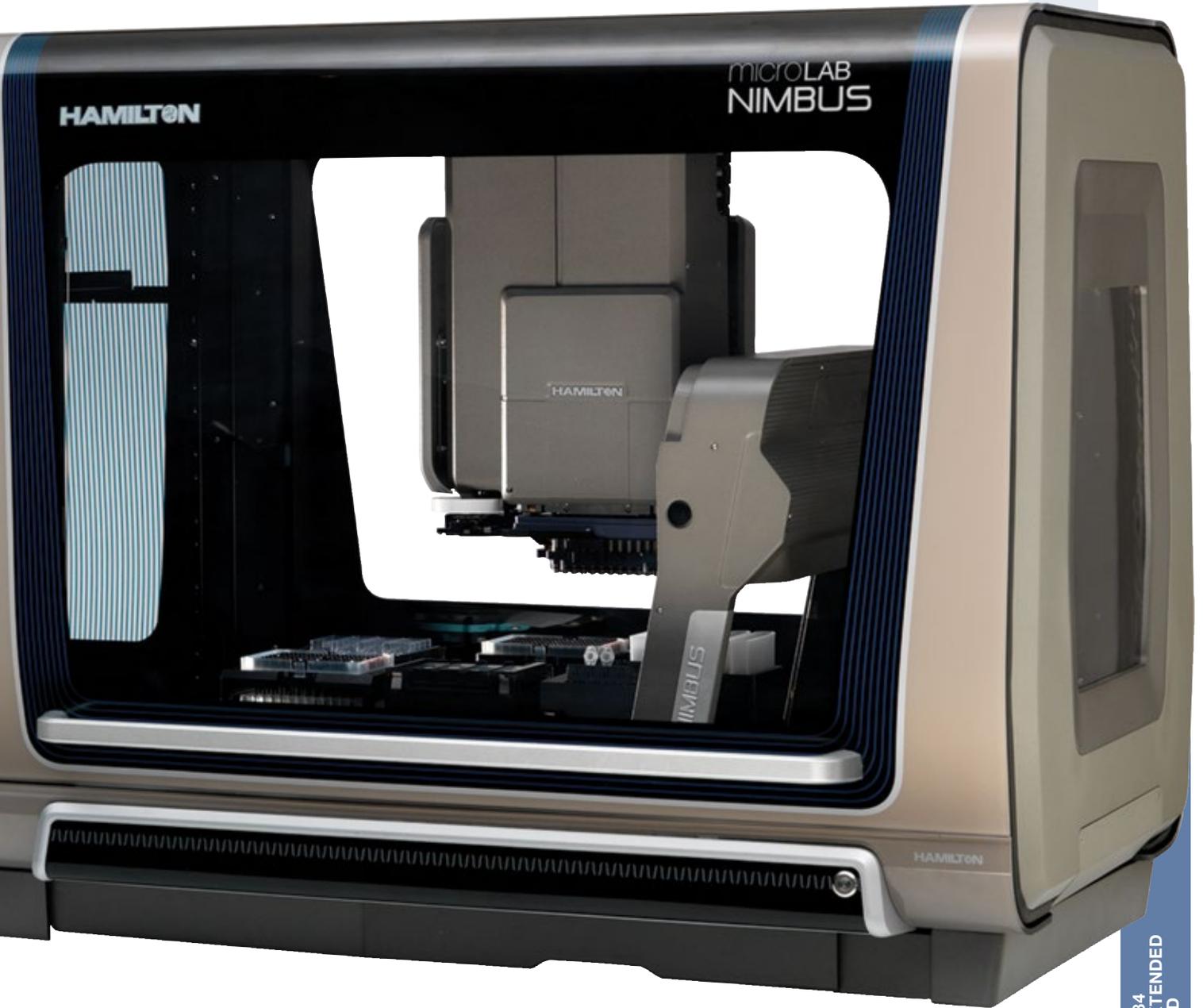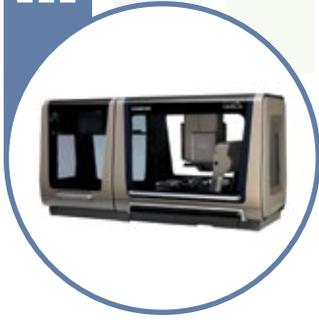
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Technology

Incorporating our proprietary technology, the NIMBUS offers the same consistent, quality pipetting you expect from Hamilton in a compact personal pipetting workstation. Our patented technology, the foundation of precision and reliability, includes individual positioning of pipetting channels, precise tip attachment, unrivaled Liquid Level Detection, and a comprehensive volume range.

◀ COMPRESSED O-RING EXPANSION (CO-RE®)

Automated liquid handling applications require precision in tip attachment and positioning. To ensure such precision, Hamilton liquid handling workstations offer proprietary CO-RE technology. CO-RE technology attaches disposable tips, steel needles, or transportation tools to the pipetting channels with a highly robust lock-and-key mechanism. The system requires no vertical force for tip attachment or tip ejection, thus eliminating mechanical stress and improving the overall system reliability, pipetting speed, positional accuracy, and dexterity.
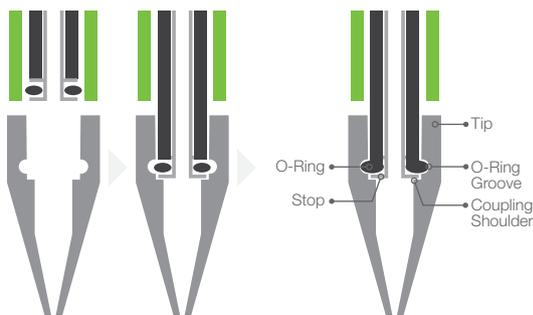
◀ AIR DISPLACEMENT PIPETTING

NIMBUS utilizes proven air displacement technology, which is analogous to using a hand pipette, and offers all the benefits that come with system liquid-free pipetting.

▶ High pipetting accuracy and precision from sub-microliter to large volumes (>1 mL)

▶ Dynamic pipetting range of 0.5 μL to 1000 μL using the 1000 μL pipetting channel

▶ Reduced risk of contamination or sample dilution because there isn't system fluid

▶ Increased robustness and less maintenance due to lack of system liquid, diluters, valves, or complicated tubing
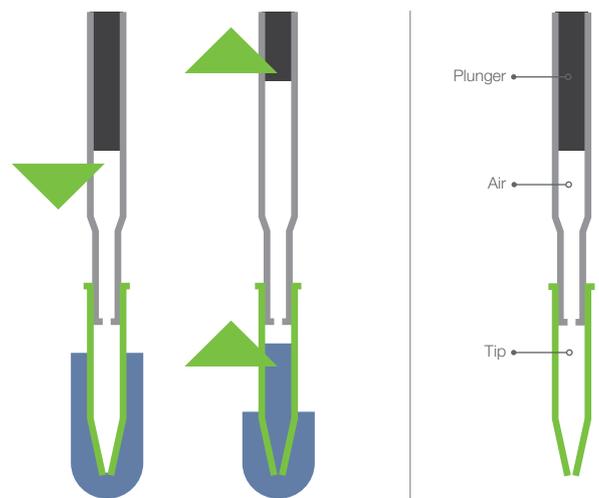
◀ LIQUID LEVEL DETECTION (LLD)

NIMBUS uses LLD technology to determine liquid levels in tubes and plates located on the pipetting deck. There are two modes of LLD: capacitative LLD (cLLD), used to detect conductive liquids; and pressure-based LLD (pLLD), which can detect virtually all liquid types, including foaming liquids and non-conductive organic solvents. cLLD is available on all NIMBUS**4** workstations, NIMBUS**384** (MPH channels A5 and P20), and NIMBUS**96** (MPH channels A1, B2, G11, and H12). pLLD is available on NIMBUS**4** only. For even greater confidence in LLD, a dual mode LLD approach may be used (NIMBUS**4** only).

◀ MONITORED AIR DISPLACEMENT (MAD)

Monitoring the air-based pipetting action, each individual pipetting channel on the NIMBUS**4** can detect clots or empty wells in real time during the aspiration step. It can also be used to pipette highly volatile solvents. Delivering a confirmation of the successful aspiration, real-time tracking of the aspiration performance with MAD offers certainty for your automated assays by providing reliable, consistent walk-away automation. (NIMBUS**4** only)


— Clogged
— Empty
— Normal
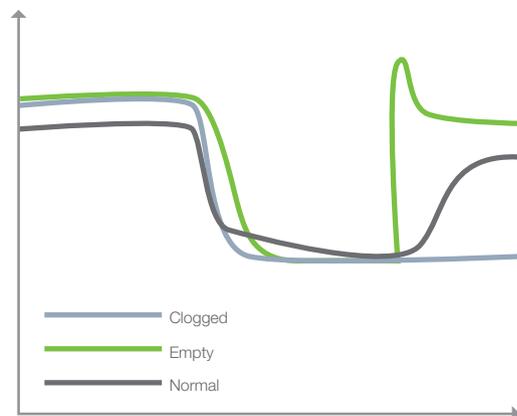
◀ TOTAL ASPIRATION AND DISPENSE MONITORING (TADM™)

During crucial sample transfers, parameters may be set up for real-time monitoring of each independent pipetting channel during the aspiration and dispensing steps. TADM verifies the sample transfer with a traceable digital audit trail. (NIMBUS**4** only)

1 Measurement Not Working
2 Blocked Tip, Blood Clot
3 Short Sample
4 Incorrect Volume
5 Short / No Sample

1 Dispense Speed Incorrect / Blocked Tip
2 Leaky System
3 Incorrect Volume
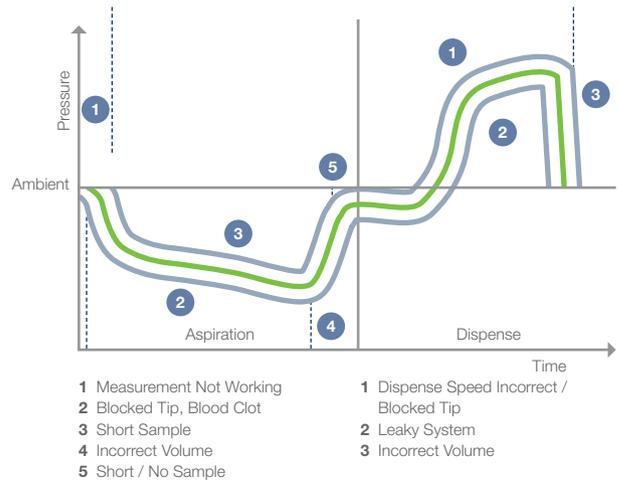
◀ ANTI-DROPLET CONTROL (ADC™)

ADC detects and reacts to pressure changes in real time for each pipetting channel that are caused by the high vapor pressure of volatile organic solvents. Upon activation, ADC prevents inadvertent dripping from the channels, reducing the risk of contaminating the deck. (NIMBUS**4** only)
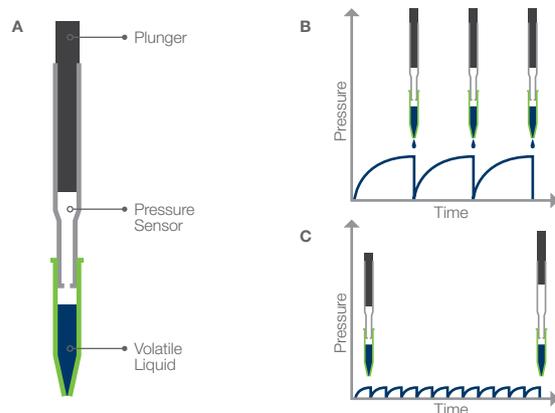
A Schematic sketch showing a pipetting channel with its pressure sensor. The volatile liquid contained in the tip evaporates into the air space.
B Pipetting without ADC, as the pressure in the tip increases, a droplet forms at the end of the tip, reducing the pressure in the tip when it falls off.
C Pipetting with ADC, pressure differences are detected by the pressure sensor and will be compensated in real time by plunger movements: droplet formation is prevented.

INSTINCT Software

Hamilton's INSTINCT software provides an intuitive graphical user interface for simplified instrument control and streamlined method programming, allowing you to achieve results faster and with less training than ever before. Hamilton recognizes the critical role that instrument control software plays in overall system usability and end-user satisfaction.

◄ INSTINCT FEATURES SEVERAL TOOLS TO ENHANCE THE END-USER EXPERIENCE:

- ▸ Intuitive graphical user interface
- ▸ Designed for users in busy labs from beginner to advanced
- ▸ Labware Library
  - ▸ A comprehensive menu of commercially available microplates, deep-well plates, reagent troughs/tubs as well as the complete line of Hamilton's CO-RE disposable tips
- ▸ Favorites Tool
  - ▸ Enables quick selection of your most commonly used labware
- ▸ Liquid Class Tuner
  - ▸ An easy-to-use utility for selecting optimal pipetting parameters and improved liquid handling performance
- ▸ 3D Viewing
  - ▸ An intuitive tool for visualizing deck layouts

◄ SMART PIPETTING

Combining these preferences together with other user-defined input (e.g. pipetting volume), INSTINCT's built-in intelligence provides:

- ▸ Automated deck layouts
  - ▸ Auto-populates the pipetting deck with carriers, microplates/tubes and tips, making setup of deck layouts a snap
- ▸ Automated tip tracking
  - ▸ Tracks tip usage, location, and status of tip racks
- ▸ Smart plate movements
  - ▸ Auto-transporting of labware to destination or waste locations

◄ BASIC TASKS

For basic tasks, INSTINCT software features a series of dedicated Wizards available for commonly performed pipetting routines, each guiding you step-by-step towards final method creation. Examples of some of the wizards include:

- ▸ Serial dilutions
- ▸ Reagent additions
- ▸ Plate replications
- ▸ Tube to plate
- ▸ PCR setup
- ▸ SPE

◄ ADVANCED PROGRAMMING

For the most sophisticated methods, powerful VENUS software is also featured as standard. VENUS provides the flexibility to create or modify a complex method from scratch, ensuring that your requirements are never compromised. VENUS also features a range of utilities for:

▸ Worklist importing/exporting
▸ Error handling and recovery
▸ LIMS adaptation
▸ Database/server controls
▸ Scheduling
▸ Integrated third-party device control

◄ 21 CFR PART 11 REGULATORY TOOLS

VENUS software contains the software tools required to use NIMBUS in compliance with 21 CFR Part 11. The tools provide audit trails, user group defined security functionality and file fidelity with the checksum system.

PROGRESS BAR **1**

GRAPHICAL STATUS OF PIPETTING VOLUMES **2**

STEP-BY-STEP VIEW OF PROTOCOL **3**

PLATE PROCESSING ORDER **4**

CONNECTION STATUS INDICATOR **5**

GRAPHICAL DISPLAY OF DISPENSE PATTERNS **6**

FAVORITE LABWARE MENU **7**

TOP-DOWN VIEW OF DECK LAYOUT **8**

UNDO/REDO FUNCTION **9**

Hamilton
Integrated Options and Accessories

With a flexible deck layout, the NIMBUS accommodates a broad range of modular accessories and options to automate your assays. Reconfiguration of the deck is quick and easy, allowing you to incorporate new processes as your workflows change.

◀LABWARE GRIPPER ARM

The NIMBUS Labware Gripper Arm option makes for quick and easy handling of single or stacked microplates, deep-well plates, lids, and Hamilton's Nested Tip Racks (NTR). Extended reach and 270° of rotation allows for seamless handoffs to integrated devices located both on and off-deck.

◀BARCODE SCANNER

Reads 1D barcodes microplates presented by Labware Gripper or CO-RE Paddles.

◀SHIFT-N-SCAN TUBE BARCODE SCANNER

The Shift-n-Scan is an on-deck module for rapid reading of 1D barcoded tubes. Accommodating a wide variety of tube sizes, it's compatible with all major symbologies. (NIMBUS**4** only)

◀CO-RE PADDLES

CO-RE paddles offer a cost-effective option for on-deck transport of labware. Using two pipetting channels in parallel, NIMBUS**4** can transport plates or tips (NTR only) across the deck without the need for a dedicated labware gripper. CO-RE Paddles are available for both 1000 µL and 5 mL channels. (NIMBUS**4** only)

◀[MPE]²

The [MPE]² is an all-in-one compact device for automating positive pressure solid phase extraction (SPE) and evaporation. The patented dual elevator design accommodates most filter and collection plate combinations. The dual circuit even-flow manifold is capable of applying up to 100 psi of pressure to the top of an SLAS ANSI-footprint filter plate/columns while maintaining equal pressure across the plate.
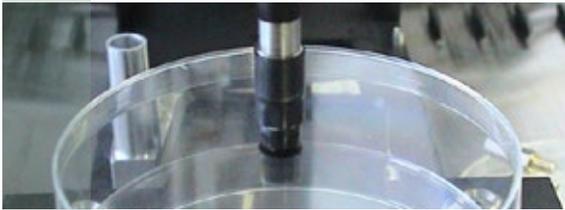
◀CO-RE LID TOOL

The CO-RE Lid Tool allows for the pickup of microplate and petri dish lids. Using two pipetting channels to access the tool, upon aspiration of the channel, a vacuum is created allowing for lid pickup and movement across the deck.

◀NIMBUS VACUUM STATION (NVS)

Fully software-integrated vacuum system with adjustable pressure control, the NVS allows automation of SPE and other vacuum-based applications.

◀CLEAN AIR PROTECTION SYSTEM (CAP)

The CAP is a cost-effective solution for positive sterile airflow. With a slim design that fits easily in labs, control within NIMBUS software for better management of airflow, and verification of 0 PPM by Hamilton's service team. CAP is ideal to protect samples from the environment.

◀HAMILTON HEATER SHAKER (HHS)

Hamilton's heater/shaker device offers efficient on-deck orbital shaking and heating up to 100°C. Accommodates a variety of SLAS ANSI plates, from microliter to deep-well plates, and tubes.
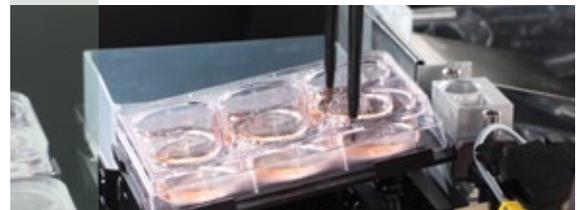
◀PLATE TILT MODULE

An integrated module that lifts plates at an angle to remove liquid out of flat bottomed plates.

◀FILL MODULE

A liquid filling module used for large volumes of liquid needed on the deck. The module comes standard with a Liquid Sensing Sensor and easily replaced tubing.

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NIMBUS
Accessories

◂ LABWARE PEDESTALS

NTR Pedestal

Holds 1 – 4 x Nestable Tip Racks (NTR); also used for Small Tube Adapters

**12 x 75 – 13 x 100 mm
32-Tube Position Pedestal**

Holds 32 x small sample tubes in one SLAS ANSI position; accommodates the following tube sizes (diameter x height):

▸ 12 mm x 75 mm
▸ 12 mm x 100 mm
▸ 13 mm x 75 mm
▸ 13 mm x 100 mm

MTP Pedestal

Holds 1 x standard SLAS ANSI microtiter plate

Tip Isolator Pedestal

Available for 50, 300 and 1000 µL tips with an integrated deep-well plate. The pedestal prevents cross contamination between re-used tips

DWP Pedestal

Holds 1 x standard SLAS ANSI deep-well plate; also used for PCR Tray

1536-Plate Pedestal

Accommodates most commercially available 1536 MTP plates

FTR Pedestal

Holds 1 x Framed Tip Rack of CO-RE disposable tips; also used for Filtered CO-RE tips

**16 x 75 – 17 x 100 mm and
15 mL Conical 24-Tube Position**

Holds 24 x medium sample tubes; accommodates the following tube sizes (diameter x height):

▸ 16 mm x 75 mm
▸ 16 mm x 100 mm
▸ 17 mm x 75 mm
▸ 17 mm x 100 mm

**MTP Labware Gripper and
Paddle Stacking Pedestals**

Holds a stack of up to 5 x standard SLAS ANSI microtiter plates; used with Labware Gripper only

50 mL Conical 6-Tube Position

Holds 6 x 50 mL (e.g. Falcon brand) tubes; accommodates the following tube sizes (diameter x height)

Reagent Trough Pedestal

Holds up to 5 x 50 mL reagent troughs

◀LABWARE ADAPTERS

96 PCR Tray Adapter

Accommodates most commercially available skirted, semi-skirted, and unskirted 96-well PCR trays

384 PCR Tray Adapter

Accommodates most commercially available skirted, semi-skirted, and unskirted 384-well PCR trays

CO-RE Tip Adapter

Holds 96 x CO-RE tips; required to access single rows/columns of all Framed CO-RE tips and 10 µL NTR tips

Small Tube Adapter

Holds up to 32 x standard volume (approx 1.7 mL) conical reaction tubes or 1.8 mL cryovials; a slot feature keeps snap caps out of way to allow access for the pipetting channels

Multi-Tube Adapter

Holds up to 24 x standard volume 1.8 - 2.0 mL conical tubes or 1.8 cryovials and up to (8) 5 mL standard vials

4 Position Adapter

Holds up to 5 positions on the reagent trough pedestal adding up to 4 positions for 1.8 - 2.0 mL conical tubes or 1.8 cryovials

Consumables

CO-RE Tips (10 µL)

Available Options	Part Number	Case
10 µL Conductive Non-Sterile Filter Tips	235901	Case of 5,760 tips (Blister 5 x 96 tips per rack)
10 µL Conductive Non-Sterile Non-Filter Tips	235900	Case of 5,760 tips (Blister 5 x 96 tips per rack)
10 µL Conductive Sterile Filter Tips	235936	Case of 5,760 tips (Blister 5 x 96 tips per rack)
10 µL Conductive Sterile Non-Filter Tips	235935	Case of 5,760 tips (Blister 5 x 96 tips per rack)

CO-RE Tips (50 µL)

Available Options	Part Number	Case
50 µL Conductive Non-Sterile Filter Tips	235948	Case of 5,760 tips (Blister 5 x 96 tips per rack)
50 µL Conductive Non-Sterile Non-Filter Tips	235966	Case of 5,760 tips (Blister 5 x 96 tips per rack)
50 µL Conductive Sterile Filter Tips	235979	Case of 5,760 tips (Blister 5 x 96 tips per rack)
50 µL Conductive Sterile Non-Filter Tips	235978	Case of 5,760 tips (Blister 5 x 96 tips per rack)
50 µL Clear Non-Sterile Non-Filter Tips	235836	Case of 5,760 tips (Blister 5 x 96 tips per rack)
50 µL Clear Sterile Non-Filter Tips	235837	Case of 5,760 tips (Blister 5 x 96 tips per rack)
50 µL Clear Non-Sterile Filter Tips	235829	Case of 5,760 tips (Blister 5 x 96 tips per rack)
50 µL Clear Sterile Filter Tips	235831	Case of 5,760 tips (Blister 5 x 96 tips per rack)

Slim CO-RE Tips

Available Options	Part Number	Case
300 µL Slim Conductive Non-Sterile Filter Tips	235647	Case of 3,840 tips (Blister 5 x 96 tips per rack)
300 µL Slim Conductive Non-Sterile Non-Filter Tips	235806	Case of 3,840 tips (Blister 5 x 96 tips per rack)
300 µL Slim Conductive Sterile Filter Tips	235646	Case of 3,840 tips (Blister 5 x 96 tips per rack)
300 µL Slim Conductive Sterile Non-Filter Tips	235648	Case of 3,840 tips (Blister 5 x 96 tips per rack)

CO-RE Tips (300 µL)

Available Options	Part Number	Case
300 µL Conductive Non-Sterile Filter Tips	235903	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Conductive Non-Sterile Non-Filter Tips	235902	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Conductive Sterile Filter Tips	235938	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Conductive Sterile Non-Filter Tips	235937	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Clear Non-Sterile Non-Filter Tips	235834	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Clear Sterile Non-Filter Tips	235835	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Clear Non-Sterile Filter Tips	235830	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Clear Sterile Filter Tips	235832	Case of 5,760 tips (Blister 5 x 96 tips per rack)

Wide Bore CO-RE Tips

Orifice 1.2 mm   Orifice 3.2 mm   Orifice 0.71 mm   Orifice 1.55 mm

Available Options	Part Number	Case
300 µL Wide Bore (0.71 mm) Conductive Non-Sterile Filter Tips	235452	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Wide Bore (1.55 mm) Conductive Non-Sterile Filter Tips	235449	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Wide Bore (0.71 mm) Conductive Non-Sterile Non-Filter Tips	235688	Case of 5,760 tips (Blister 5 x 96 tips per rack)
300 µL Wide Bore (1.55 mm) Conductive Non-Sterile Non-Filter Tips	235451	Case of 5,760 tips (Blister 5 x 96 tips per rack)
1000 µL Wide Bore (1.2 mm) Conductive Sterile Filter Tips	235677	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1000 µL Wide Bore (1.2 mm) Conductive Non-Sterile Filter Tips	235678	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1000 µL Wide Bore (1.2 mm) Conductive Non-Sterile Non-Filter Tips	235679	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1000 µL Wide Bore (3.2 mm) Conductive Non-Sterile Non-Filter Tips	235444	Case of 3,840 tips (Blister 5 x 96 tips per rack)

Piercing CO-RE Tips

Available Options	Part Number	Case
250 µL Piercing Conductive Non-Sterile Filter Tips	235658	Case of 5,760 tips (Blister 5 x 96 tips per rack)
250 µL Piercing Conductive Non-Sterile Non-Filter Tips	235805	Case of 5,760 tips (Blister 5 x 96 tips per rack)
250 µL Piercing Conductive Sterile Filter Tips	235649	Case of 5,760 tips (Blister 5 x 96 tips per rack)
250 µL Piercing Conductive Sterile Non-Filter Tips	235659	Case of 5,760 tips (Blister 5 x 96 tips per rack)

Rocket CO-RE Tips

Available Options	Part Number	Case
300 µL Rocket Conductive Non-Sterile Non-Filter Tips 384- to 96-Head	235974	Case of 4,800 tips (Blister 5 x 96 tips per rack)

CO-RE Tips (1,000 µL)

Available Options	Part Number	Case
1,000 µL Clear Non-Sterile Filter Tips	235820	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1,000 µL Clear Non-Sterile Non-Filter Tips	235822	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1,000 µL Clear Sterile Filter Tips	235821	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1,000 µL Clear Sterile Non-Filter Tips	235823	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1,000 µL Conductive Non-Sterile Filter Tips	235905	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1,000 µL Conductive Non-Sterile Non-Filter Tips	235904	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1,000 µL Conductive Sterile Filter Tips	235940	Case of 3,840 tips (Blister 5 x 96 tips per rack)
1,000 µL Conductive Sterile Non-Filter Tips	235939	Case of 3,840 tips (Blister 5 x 96 tips per rack)

CO-RE Tips (4,000 µL – 5,000 µL)

Available Options	Part Number	Case
4,000 µL Conductive Non-Sterile Filter Tips; 4 Tips/Sheath	194053	Case of 96 tips (4 tips/sheath, individual bagged)
4,000 µL Conductive Non-Sterile Filter Tips	184021	Case of 720 tips (Blister 5 x 24 tips per rack)
4,000 µL Conductive Sterile Filter Tips	184023	Case of 720 tips (Blister 5 x 24 tips per rack)
5,000 µL Conductive Non-Sterile Non-Filter Tips; 4 Tips/Sheath	194050	Case of 96 tips (4 tips/sheath, individual bagged)
5,000 µL Conductive Non-Sterile Non-Filter Tips	184020	Case of 720 tips (Blister 5 x 24 tips per rack)
5,000 µL Conductive Sterile Non-Filter Tips	184022	Case of 720 tips (Blister 5 x 24 tips per rack)

Nested 96-Tip Racks

NTR rack with 96 tips

Available Options	Part Number	Case
10 µL Nested Clear Non-Sterile Non-Filter Tips	235971	Case of 11,520 tips (NTR 5 x 4 stack)
10 µL Nested Conductive Non-Sterile Non-Filter Tips	235949	Case of 11,520 tips (NTR 5 x 4 stack)
10 µL Nested Conductive Sterile Non-Filter Tips	235983	Case of 11,520 tips (NTR 5 x 4 stack)
50 µL Nested Clear Non-Sterile Non-Filter Tips NTR	235964	Case of 11,520 tips (NTR 5 x 4 stack)
50 µL Nested Conductive Non-Sterile Non-Filter Tips NTR	235947	Case of 11,520 tips (NTR 5 x 4 stack)
50 µL Nested Conductive Sterile Non-Filter Tips NTR	235987	Case of 11,520 tips (NTR 5 x 4 stack)
300 µL Nested Clear Non-Sterile Non-Filter Tips NTR	235965	Case of 11,520 tips (NTR 5 x 4 stack)
300 µL Nested Conductive Non-Sterile Non-Filter Tips NTR	235950	Case of 11,520 tips (NTR 5 x 4 stack)
300 µL Nested Conductive Sterile Non-Filter Tips NTR	235985	Case of 11,520 tips (NTR 5 x 4 stack)

Nested 384 Tip Racks

NTR for 384-Probe Head stacked with 96 tips

NTR for 384-Probe Head stacked with 384 tips

Available Options	Part Number	Case
50 µL Nested Clear Non-Sterile Non-Filter Tips 384 NTR	235446	Case of 7,680 tips (NTR 5 x 4 stack; 384/rack)
50 µL Nested Clear Non-Sterile Non-Filter Tips 384/96 NTR	235447	Case of 1,920 tips (NTR 5 x 4 stack; 96/rack)
50 µL Nested Conductive Non-Sterile Non-Filter Tips 384 NTR	235989	Case of 7,680 tips (NTR 5 x 4 stack; 384/rack)
50 µL Nested Conductive Non-Sterile Non-Filter Tips 384/96 NTR	235993	Case of 1,920 tips (NTR 5 x 4 stack; 96/rack)
50 µL Nested Conductive Sterile Non-Filter Tips 384 NTR	235694	Case of 7,680 tips (NTR 5 x 4 stack; 384/rack)
50 µL Nested Conductive Sterile Non-Filter Tips 384/96 NTR	235695	Case of 1,920 tips (NTR 5 x 4 stack; 96/rack)

NIMBUS
Specifications

◀NIMBUS4 TECHNICAL AND PERFORMANCE DETAILS

Input Power (Primary)

Universal Supply	100 - 240 VAC, 50-60 Hz, 5A		

Output Power (Secondary)

Power	+42 VDC +5%		
Wattage	600 Watts maximum		
Power Supply	UL/CSA/CE approved universal power supply with IEC connection		

Physical Dimensions / Operating Dimensions

	Length	Width	Height	Weight
Open	37.4 in (95.0 cm)	20.1 in (51.0 cm)	30.3 in (77.0 cm)	145 lbs (102 kg) approx.
Standard Enclosed	41.2 in (104.6 cm)	27.9 in (70.9 cm)	32.7 in max (83.1 cm)	220 lbs (98.6 kg) approx.
Extended Enclosed	53.5 in (135.9 cm)	27.9 in (70.9 cm)	35.0 in max (88.9 cm)	250 lbs (98.6 kg) approx.
Large Extended Enclosed	65.5 in (166.4 cm)	27.9 in (70.9 cm)	35.0 in max (88.9 cm)	300 lbs (134.4 kg) approx.

Pipetting Specifications for Disposable Tips and 1000 µL Channels

Disposable tip size	Volume	Trueness |R| (%)	Precision CV (%)
10 µL	1 µL	5.0%	5.0%
10 µL	5 µL	2.5%	2.0%
10 µL	10 µL	1.5%	1.5%
50 µL	1 µL	5.0%	5.0%
50 µL	5 µL	2.5%	2.0%
50 µL	50 µL	2.0%	1.0%
300 µL	10 µL	5.0%	2.0%
300 µL	50 µL	2.0%	1.0%
300 µL	300 µL	1.0%	1.0%
1000 µL	10 µL	7.5%	3.5%
1000 µL	100 µL	2.0%	1.0%
1000 µL	1000 µL	1.0%	1.0%

For pipetting of less than 10 µL HAMILTON recommends 10 µL/50 µL volume disposable tips to achieve highest pipetting precision.

Pipetting Specifications for Disposable Tips and 5 mL Channels

5 mL	50 µL	5.0%	2.5%
5 mL	500 µL	2.0%	1.5%
5 mL	1000 µL	1.5%	1.0%
5 mL	5000 µL	1.0%	0.5%
Liquid Level Detection	Capacitive Liquid Level Detection (cLLD)		
Independent Channels	Pressure Liquid Level Detection (pLLD)		
Communication Type	Ethernet		

Operating

Temperature	15° to 35 °C (59° to 95 °F)
Relative Humidity	30% to 85% R.H. non-condensing
Altitude	0 – 2000 m above sea level

Storage

Temperature	-20 °C (-4.0 °F) @ 10% humidity to 70 °C (158 °F) @ 90% humidity non-condensing

CSA Certification

Installation category	II
Pollution degree	2

◀NIMBUS**96** AND NIMBUS**384** TECHNICAL AND PERFORMANCE DETAILS

Input Power (Primary)

Universal Supply	100 - 240 VAC, 50-60 Hz, 5A

Output Power (Secondary)

Power	+42 VDC +5%
Wattage	600 Watts maximum
Power Supply	UL/CSA/CE approved universal power supply with IEC connection

Physical Dimensions / Operating Dimensions

	Length	Width	Height	Weight
Open	Length	Width	Height	Weight
	37.4 in (95.0 cm)	20.1 in (51.0 cm)	30.3 in (77.0 cm)	145 lbs (102 kg) approx.
Standard Enclosed	Not Available in NIMBUS**96** or NIMBUS**384**			
Extended Enclosed	Length	Width	Height	Weight
	53.5 in (135.9 cm)	27.9 in (70.9 cm)	35.0 in max (88.9 cm)	250 lbs (98.6 kg) approx.
Large Extended Enclosed	Length	Width	Height	Weight
	65.5 in (166.4 cm)	27.9 in (70.9 cm)	35.0 in max (88.9 cm)	300 lbs (134.4 kg) approx.

Pipetting Specifications for CO-RE 96 MPH

Disposable tip size	Volume	Accuracy |R| (%)	Precision CV (%)
10 µL	1 µL	5.0%	5.0%
10 µL	5 µL	2.5%	2.0%
10 µL	10 µL	1.5%	2.0%
50 µL	1 µL	5.0%	5.0%
50 µL	5 µL	2.5%	2.0%
50 µL	50 µL	1.5%	0.75%
300 µL	10 µL	3.0%	2.0%
300 µL	50 µL	1.5%	2.0%
300 µL	300 µL	1.0%	2.0%
1000 µL	10 µL	1.0%	0.75%
Liquid Level Detection	CO-RE 96 MPH Capacitive Liquid Level Detection (cLLD) Channels A1, B2, G11, and H12		

Pipetting Specifications for CO-RE 384 MPH

50 µL	0.5 µL	6.0%
50 µL	1.0 µL	4.0%
50 µL	50.0* µL	2.0%

* The CO-RE 384 MPH uses special 50 µL 384 tips (usable as 96-channel CO-RE head with the 4-to-1 tip adapters).

Liquid Level Detection	CO-RE 384 MPH Capacitive Liquid Level Detection (cLLD) Channels A5 and P24

Communication Type	Ethernet

Operating

Temperature	15° to 35 °C (59° to 95 °F)
Relative Humidity	30% to 85% R.H. non-condensing
Altitude	0 – 2000 m above sea level

Storage

Temperature	-20 °C (-4.0 °F) @ 10% humidity to 70 °C (158 °F) @ 90% humidity non-condensing

CSA Certification

Installation category	II
Pollution degree	2

Support and Service

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OUTSTANDING

Hamilton's service organization is committed to providing the best, quality service and support in the industry. Worldwide, we offer highly qualified support from local service engineers. Trained by certified Hamilton trainers, these engineers are supported by our local service headquarters and distribution partners.

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RELIABLE

Investment in a high-performance liquid handling system sets high expectations of quality, reliability, and precision. From in-house manufacturing to state-of-the-art quality control systems and final inspection, Hamilton guarantees high standards for all of our products. Reliability is an essential part of our products and our support team. From our technical support hotline to local service engineers and dedicated application specialists, know that Hamilton is available with qualified support teams.

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About
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The Measure of Excellence®

Hamilton Company specializes in the development, manufacturing, and customization of precision measurement devices, automated liquid handling workstations, and sample management systems.

Hamilton's processes are optimized for quality and flexibility. Whether it's a custom needle with a quick delivery timeframe, a special length pH sensor, or a comprehensive solution to fully automate your assay workflow, trust that Hamilton's products will always meet your needs.

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Hamilton Company has been a leading global manufacturer for more than 60 years, with headquarters in Reno, Nevada; Franklin, Massachusetts; Timișoara, Romania; and Bonaduz, Switzerland; and subsidiary offices throughout the world.
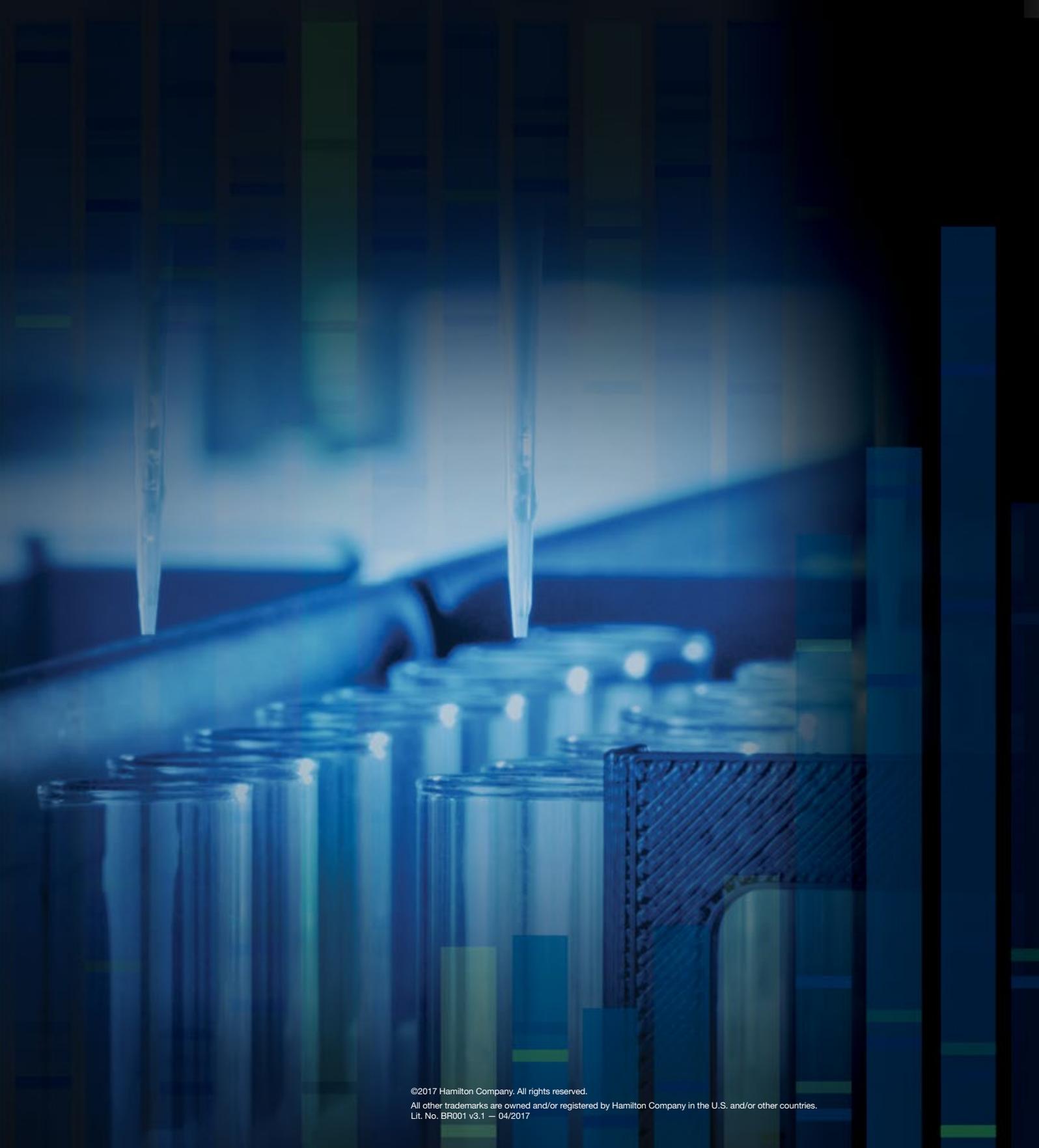
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