### HAMILT®N<sup>®</sup>

### Complete Solutions for Next-Generation Sequencing

Assay Ready Workstations



Time and Time Again, Hamilton Cuts Through Your NGS Workflow Complexity

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Next-Generation Sequencing (NGS) technologies reveal detailed insights to help solve life's mysteries – both great and small – across vast scientific realms. With such a powerful tool to propel your research, why risk errors, delays, or setbacks caused by tedious manual processing?

Instead, blaze new trails as a consistent leader in research innovation with high-throughput NGS assay ready workstations from Hamilton Company. Each precision-crafted automated solution includes personalization options as it takes on the burden of repetitive pipetting and other variable or time-consuming tasks. We collaborate with leading NGS chemistry providers so that you can continue to use your preferred chemistry while benefiting from enhanced performance and decreased variability compared to manual methods.

MORE CONSISTENCY

MORE CHOICE

MORE CONFIDENCE

When Forging New Frontiers using NGS, Hamilton Simply Delivers More

# Amplified Strength for Maximal Reliability

#### **Target Consistency**

Even small errors and fluctuations in manual pipetting performance can significantly impede downstream results when working in a complex, multi-step workflow. Instead, depend on Hamilton's precision-crafted NGS assay ready workstations for consistent liquid handling performance throughout the workflow and over time, regardless of operator technique. Additionally, pre-programmed methods standardize other routine actions, such as incubations and start/stop points, to further strengthen consistency.





#### **Dispense with Intent**

#### Compressed O-Ring Expansion (CO-RE II)

technology provides precise and consistent liquid transfer steps along with the utmost precision in tip attachment and positioning. Using a highly robust and air-tight lock-andkey mechanism, Hamilton CO-RE II tips securely attach to independent pipetting channels using virtually no force. After use, Hamilton CO-RE II tips are gently ejected without mechanical stress to reduce the risk of aerosol production.

#### Advanced air displacement technology

offers a wide dynamic pipetting range down to sub-microliter levels. Air displacement also has a reduced risk of contamination or sample dilution, as well as less frequent maintenance with no hassles compared to older liquid displacement technologies. The independent and spreadable pipetting channels in most assay ready workstations may be expanded on-site at any time for further enhanced throughput.

#### **Steadfast Sensing**

Liquid Level Detection (LLD) determines liquid levels in tubes and plates located on the pipetting deck in two modes: capacitive LLD (cLLD) to detect conductive liquids; and pressure-based LLD (pLLD), to detect virtually all liquid types, including foaming liquids and non-conductive organic solvents.

#### Anti-Droplet Control (ADC<sup>™</sup>) detects and reacts to pressure changes from volatile organic solvents in each pipetting channel instantaneously to prevent inadvertent dripping.

#### Monitored Air Displacement (MAD)

detects clots or empty wells with synchronous tracking of aspiration performance and can also be used to pipette highly volatile solvents.

#### **Total Aspiration and Dispense**

Monitoring (TADM<sup>™</sup>) offers real-time monitoring of each independent pipetting channel during aspiration and dispensing and verifies sample transfer with a traceable digital audit trail.

# Intensely Focused on Forward Progress

### Walk Away from Complexity

Throughout the day, and even off-hours, Hamilton's NGS assay ready workstations keep your lab running as efficiently as possible. Automated workflows minimize touch points, allowing users to refocus their attention on higher-order activities to get more done at once. Additionally, preprogrammed methods that are specially optimized in collaboration with leading NGS chemistry providers reduce time and effort spent on individualized method development.

#### Tap into Absolute Confidence

Hamilton's NGS assay ready workstations are enabled for any manufacturer's assay chemistry. Operators simply load or autoload samples and reagents, following the on-screen prompts and instructions. Run status and system controls are then monitored in real time. The software includes liquid class parameters to optimize performance. User permission levels and lockout controls prevent unintended changes, and the system may be integrated with any LIMS for streamlined operations and data handling.

#### **NO GUESSWORK**

#### **NO MANUAL CALCULATIONS**

#### NO ADVANCED EXPERIENCE REQUIRED

#### NO COMPLICATED, TIME-CONSUMING PROGRAMMING

### Extreme Control Over Every Detail

#### **Tomorrow-Ready Automation**

Every Hamilton NGS assay ready workstation is crafted with Tomorrow-Ready Automation to protect against the hassles of highly disruptive changes due to laboratory circumstances, robotic advancements, and even chemistry modifications. With this, operators can continue to focus, uninterrupted, on what really matters.



### Select Your Preferred Solution

Don't compromise! Select from our portfolio of verified NGS library prep methods and fine-tune a workstation that meets your unique research needs. Not sure where to start? Contact our on-staff NGS automation experts for advice and guidance.

Pre-programmed methods optimized in collaboration with your preferred NGS chemistry provider.

Dedicated platforms for low, medium and high throughput/walk away time.

Modular and upgradeable architecture with convenient on-/off-deck peripheral device integrations.

Wide variety of automation-friendly consumables.

Laboratory-tailored script programming and editing.

# Select Your Chemistry

### Manufacturer

Agilent

IDT

Illumina

Lexogen

New England Biolabs

Oxford Nanopore Technologies

Qiagen

Roche

Twist Bioscience

### Target

Amplicon

DNA

Methylome

RNA

Enriched DNA/RNA Targets



### Sample Type

Bacteria/Fungi

Blood

Cell-free DNA

Cerebrospinal Fluid (CSF)

Formalin Fixed Parafin Embedded (FFPE) Tissues

Limited Sample Quantity

Plasma/Serum

Saliva

Tumor Oncology

### Sequencing Type

De Novo

Exomes

Genotyping

PCR-Free

mRNA

Whole-Genome

Whole-Transcriptome

Targeted Enrichment

# Library Prep Workflow

Regardless of the NGS platform, Hamilton has you covered for Library Prep and Enrichment for your sequencing chemistry of choice. Our NGS solutions provide workflows for either enzymatic or mechanical fragmentation methodologies for sequencing an entire genome, specific targets within the genome, or the transcribed RNA.







# Amplicon Enrichment Workflow





# NGS Family Overview

For high confidence in next-generation sequencing results, Hamilton's NGS Family of assay-ready workstations have you covered. Three platform sizes combine high precision liquid handling with all the peripheral tools needed for consistent and simplified NGS library prep in medium- to highthroughput. Each assay ready workstation may be pre-programmed to conveniently work with your assay chemistry of choice to satisfy the unique challenges of your NGS application.

- Optimized, pre-programmed methods
- High yields with repeatable performance
- Standardized configuration
- Flexibility
- Unparalleled efficiency
- Quality applications, support and service
- Ease of use

**DECK SIZE** 

THROUGHPUT

WALK-AWAY TIME

PERIPHERAL DEVICE INTEGRATION

**ALERTS/ERROR HANDLING** 

AUTOLOAD

**ON-DECK THERMAL CYCLING** 





### **Choice of Three Liquid Handling Platforms**

Select the model best suited for your space, budget, and throughput needs.

NGS NIMBUS	NGS STAR	NGS VANTAGE
Small-to-Medium	Medium	Large
1x 96-Well Plate	1x 96-Well Plates	2x 96-Well Plates
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•	• •	• • •
•	٠	۰
	•	٠
	(optional)	٠

# The Family of NGS Systems

The NGS family of systems provides the ultimate in assay flexibility. Whether you are looking to ensure pipetting reproducibility and sample traceability, increase your walk away time, or raise the level of sample throughput, we have you covered.



#### NGS NIMBUS

The most cost-effective path to consistent results.



#### **NGS STAR**

For those who require higher sample throughputs, this solution offers more hands-off time while boasting the largest availability of assay ready scripts.



### NGS VANTAGE

Speed and performance guarantee the greatest number of samples processed in the least amount of time. Additional options provide the opportunity to create a more custom sample-to-answer solution.



# NGS NIMBUS

#### Most Compact and Affordable Solution

CONVENIENCE AND RELIABILITY MAXIMIZED



HEATER SHAKER







# NGS NIMBUS Options

### **NGS NIMBUS Unique Benefits**

- Full plate processing capabilities
- Leverages Hamilton's proven pipetting technology
- On-deck incubation supported D
- Optional Clean Air Protection System b



- 60 mL Reagent Troughs Conductive Tips (Mixed Volume) 2 15–17 mm Tubes 3 8 Heater Shaker 12-13 mm Tubes Empty/Expansion Position 9 Conductive Tips (Mixed Volume) 10 Deep-Well Plate
- 11 12 13 14

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- Plate Magnet
- **Channel Waste**
- CO-RE II® Paddles
- Gantry Mounted Barcode Reader
- 1000 µL Pipetting Channel





# NGS STAR

Tried and True, Off the Shelf, Market Leading Platform Boasting the Largest Availability of Assay Ready Scripts





# NGS STAR Options

### **NGS STAR Unique Benefits**

- Processes up to one 96-well plate
- Robust, more compact than the VANTAGE for the space conscious
- Highest number of qualified methods
- NGS STAR configuration contains an optional 96MPH for increased throughput







# NGS VANTAGE

### The NGS VANTAGE can Accommodate the Simplest to the Most Complex Workflows

With benefits like on-deck thermal cycling and cooling for reagents, this workstation affords the largest amount of walkaway time for a user to analyze and interpret sequencing results.





# NGS VANTAGE Options

#### NGS VANTAGE's Unique Benefits

- Fastest pipetting speed of any of Hamilton's platforms
- Up to two 96-well plates processed simultaneously
- Modular, upgradeable architecture
- NGS VANTAGE configuration contains a 96MPH for increased throughput (optional in Europe, Africa, the Middle East, and China)
- Deptional Clean Air Protection System
- Optional tip boxes available for tip isolation
- Deptional logistics cabinet for consumable storage, and waste system







# NGS Automation Consumables



#### **CO-RE II Tips**

Patented CO-RE II (Compressed O-Ring Expansion) tips uniquely fit with Hamilton automated liquid handling platforms to deliver outstanding, true results under even the most rigorous conditions.

Together as an exclusive system, they create a tight, lock-and-key seal for extreme accuracy and precision; and employ force-free tip pickup and ejection to support performance without tip deformity or excessive instrument wear commonly found in inferior automated systems. No other disposable tip product can mimic this exacting performance.

The tips are manufactured to the highest consistency and quality standards.

- Automated cleanroom production with automatic digital vision inspections
- Full, documented traceability
- Manufacturing areas compliant to ISO-14644-1 (Class 8)
- Quality Management System compliant under ISO 9001, ISO 13485, 21 CFR 820 (FDA Quality System Regulation), and EU In Vitro Diagnostics Directive
- Sterile CO-RE II tips produced in compliance with ISO 11137-1, ISO 11137-2, and ISO 11137-3







#### Plates

#### PCR PLATES

Dual-component ANSI/SLAS format PCR plates ensure exceptional and reliable performance in extraction workflows, especially when integrated with NGS assay ready workstations.

#### DWP

96-well deep well plates in both 1.2 mL or 2.0 mL well volumes are supported.

### Tip Boxes

Both 50 µL and 300 µL CO-RE II tips may be obtained in pre-stacked tip box stacks that are wrapped in sleeves of 8 racks each, covered by a lid.



#### ComfortLids

Cost-effective and disposable ComfortLids prevent evaporation and contamination in PCR plates and feature a stackable design for convenient transport by all Hamilton robotic transport arms.

#### **Reagent Reservoirs**

From large to small, Hamilton reagent reservoirs streamline convenience and precise efficiency in NGS assay ready workstations.

# Support & Service

#### Outstanding

Hamilton's worldwide service organization is committed to providing the best quality service and support in the industry. Localized engineers are trained by certified Hamilton trainers and supported by service headquarters and distribution partners.

Hamilton's commitment to high quality standards extends beyond ISO 9001 certification, and includes ongoing training provided to all authorized service engineers. With Hamilton as an automation partner, customers will feel confident in receiving outstanding support.

#### Reliable

From in-house manufacturing to stateof-the-art quality control systems and final inspection, Hamilton guarantees high standards in quality, reliability, and precision in all products. Customers can rely on Hamilton's qualified support teams, from the technical support hotline to local service engineers, dedicated application specialists, and more.

#### **Everywhere**

Our worldwide field service and support network ensures quick response times to customer requests in order to minimize potential downtime. Whether routine maintenance, service, or application support, customers rely on Hamilton to keep them up and running as efficiently as possible.

#### System Installation

All Hamilton systems are installed according to strict procedures in conformity with ISO 9001. Each includes a comprehensive Installation Qualification (IQ) and detailed documentation.

#### Service Contracts

Ensure longevity and peak performance of your automated system through a Hamilton service contract, including regular monitoring and preventative maintenance. Three service and support contract levels are available to meet various customer needs.

#### **Training Courses**

Hamilton training courses are available as a pre-set format, or custom-tailored to satisfy unique customer needs and are offered at our headquarters or on-site at a customer's preferred location. The trainings combine theoretical knowledge with practical applications to instill a comprehensive understanding to all trainees. Upon course completion, participants receive a certificate or course confirmation letter from Hamilton.



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