

Hamilton VANTAGE

Start the future

HAMILTON 

Discover VANTAGE

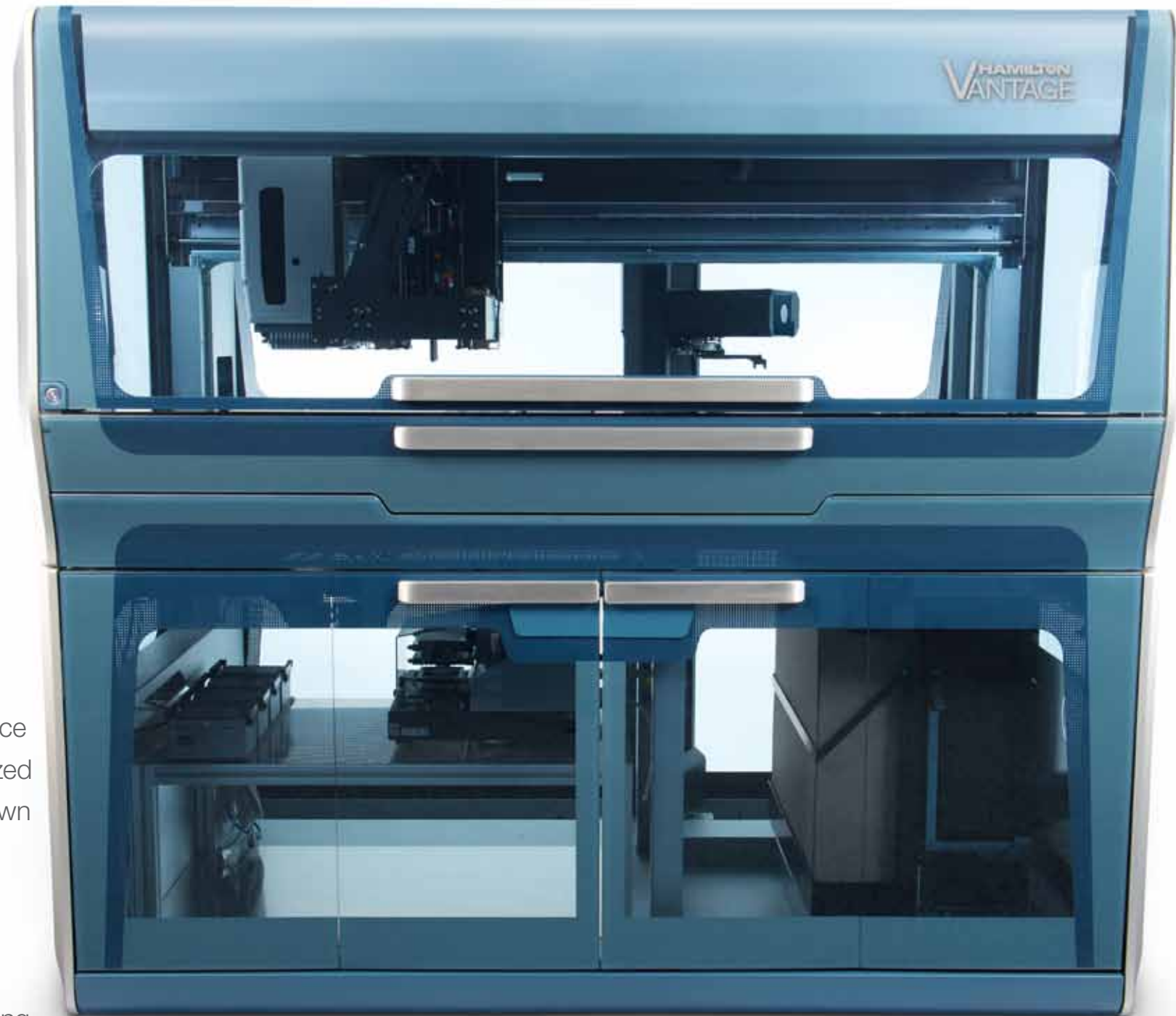
The Instrument for the Next Decade

Hamilton Company has set a precedence in liquid handling, combining **precision engineering**, **performance** and **craftsmanship** with **first-class support** and service to provide complete solutions to our customers.

We could have stopped there.
We didn't.

Hamilton has gone beyond assisting its users and instead has put the lab technician in control. Through superior space management, majestic styling and maximized agility, the Hamilton VANTAGE is hands-down the most intelligent and logistically-efficient model in our portfolio.

Once again, we have brought engineering and capability to the lab by simply developing the **best instrument for the next decade**.



Integrated Simplicity

About Hamilton

Hamilton Company is a global family-owned enterprise with headquarters and subsidiary offices throughout the world.

With our extensive network of representatives and partners, we are able to provide the best service to our customers.

For over 50 years, Hamilton has focused on the best solutions for customers requiring the highest quality equipment for liquid handling, process analytics, robotics, long term storage of biological samples and intensive care respirators.



Be Fast

96 & 384 Multi Probe Heads allow quick pipetting of entire or partial plates. Liquid level detection ensures reliable liquid handling.

Be Flexible

The pipetting arm holds pipetting channels, transportation devices, camera technology, and lots more.

Be Nano

NanoPulse™ channels offer a dynamic range of less than half a microliter up to 1000 µL within a single channel. Up to 16 channels can be placed on one pipetting arm.

Be Unique

Carriers, tips, and waste positions can be freely placed and configured on the VANTAGE workspace to reflect your assay's individual needs.

Be Efficient

The Logistics Cabinet allows labs to optimize space by placing third party devices, additional labware and consumables, and liquid and solid waste below the pipetting workspace.

Be Intuitive

Simple graphic interface in a "lab person's language" reduces time and complexity of programming.

Be Safe

A completely sensor-controlled enclosure guarantees safe operation for users and protocols.

Be Independent

Independent transportation with the Track Gripper allows pipetting and labware movements to occur in parallel, including transportation from the workspace to devices behind, beside, or below the pipetting workspace.

Be Accessible

The Internal Plate Gripper (IPG) provides labware transportation to all locations on the pipetting workspace.

Be Free

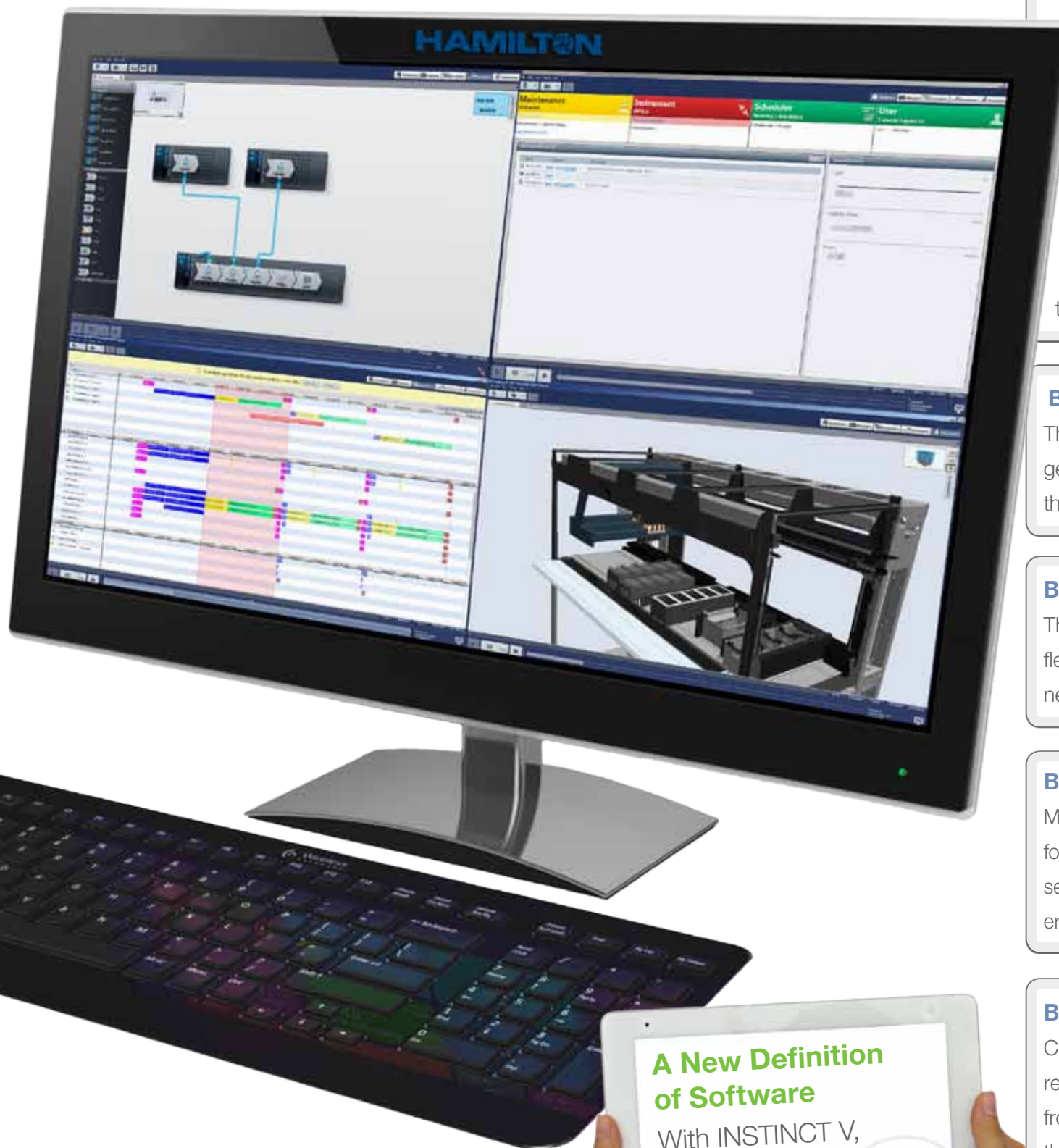
The large labware storage capacity of up to three Entry/Exit modules enables unattended overnight and weekend runs.

Be Conscious

Separated waste compartments (for biohazard and non-biohazard solid waste) and a liquid waste makes disposal of consumables and liquids more cost-effective.



INSTINCT V Software Solution



Be Flexible

INSTINCT V's different editors allow every user to work with the VANTAGE. While the Assay Editor enables quick, graphical programming, the XSL Editor solves more complex demands. To arrange multiple assays, use the Workflow Editor.

Be Informed

Use any smart device to monitor the status of your VANTAGE remotely as well as for guidance during instrument teaching and loading.

Be Safe

CARE (Contamination Avoidance Response) triggers automatic or semi-automatic tip changes whenever there is a risk of contamination.

Be Together

The VANTAGE is a group instrument. Multiple users can run different assays on the same instrument or schedule assays across a network of VANTAGE instruments for best lab efficiency.

Be Assisted

The Assay Editor automatically pre-populates most values required. Simply input the base values and simulate!

Be Guided

An intuitive guidance concept improves the usability both while editing and at runtime. A clean Dashboard, escalating error messages and clearly indicated parameters are only examples of this concept.

Be Economical

INSTINCT V's Dynamic Scheduler finds the most efficient way to run assays – even from multiple users. It allows users to add assays to workflows that are already running and provides clear loading instructions and consumable estimations.

Be Protected

The user management allows managers to set up to 60 different privileges to accounts and roles to meet all restrictions.

Be Carefree

The intelligence of INSTINCT V automatically generates transportation steps and keeps track from the starting position all the way to the final destination.

Be Adaptive

The software architecture is SiLA-compliant, enabling flexible third party device exchange as integration needs change.

Be a Finisher

Multiple, definable error recovery strategies are available for every step to keep your assay running. Use manual, semi-automated or walk-away options to cover each error in the best way for your process.

Be Efficient

Clear 3D run visualization with adjustable speed reduces setup-time as users can optimize runs from their desktop computer before occupying the real instrument.

A New Definition of Software

With INSTINCT V, designing an assay has never been this instinctive.



Optimization

Assay Editor

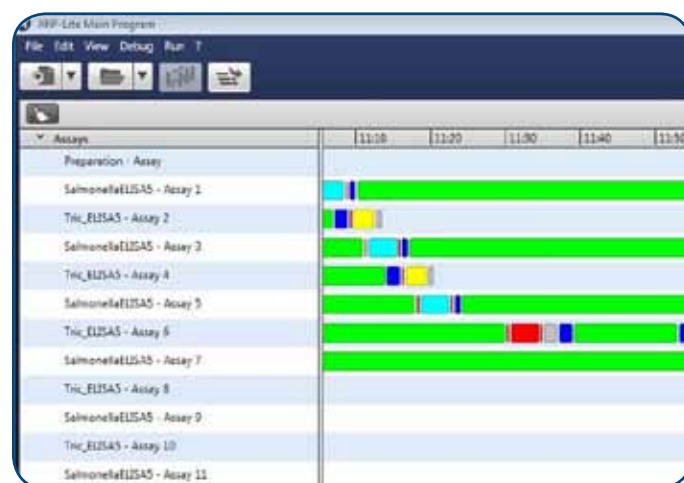
Simpler than ever, the Assay Editor intuitively allows laboratory personnel to design an assay graphically.

Working default values make sure that the assay runs with minimal user inputs. To guarantee the well-appreciated software flexibility, all values and settings are accessible and may be changed for fine-tuning.



Dynamic Scheduler

Dynamic scheduling organizes multiple assay runs depending on their usage of resources and duration. This provides the most efficient use of the instrument, giving users the chance to run their experiments in parallel. Additionally, the Scheduler calculates the amount of required labware, liquids and tips which simplifies the loading process and minimizes user interactions.



3D Simulation

Detailed 3D simulation allows users to execute an assay on a computer without having to test it on the instrument.

This means that the setup-time for a new assay is shorter, the instrument is more available for productive runs and the amount of test material such as liquids, labware and tips is reduced.



Flexibility



Multi-User Access

The VANTAGE is a group instrument and allows multiple users to run their assays in parallel (depending on the available resources). Even when an assay is running, another user can log on to the controlling INSTINCT V software and run another experiment on the same instrument. The Scheduler will figure out when to start the newly introduced assay and let all users know when their assay has finished.

Network Capability

Assays can be developed at the office PC and tested in simulation before being sent to an instrument. If multiple instruments are connected to the corporate or dedicated network, INSTINCT V figures out which instrument fits the needs for a given assay. The active instrument is selected by the user and the assay is started at the next possible point in time, should another user be using that instrument simultaneously. The network capability also allows remote monitoring of status, messages, replenishment requests & error messages via tablet or PC.

Multiple Editors

INSTINCT V features an environment for every user level.

While the Assay Editor is dedicated to program assays in the easiest way possible by dragging and dropping labware and activities to a virtual lab bench, the XSL Editor enables a more advanced user to program assays with a higher level of complexity, advanced data handling, etc. Instrument configurations and workspace layouts can be created and changed using a straightforward drag-and-drop System Editor.



Pipetting

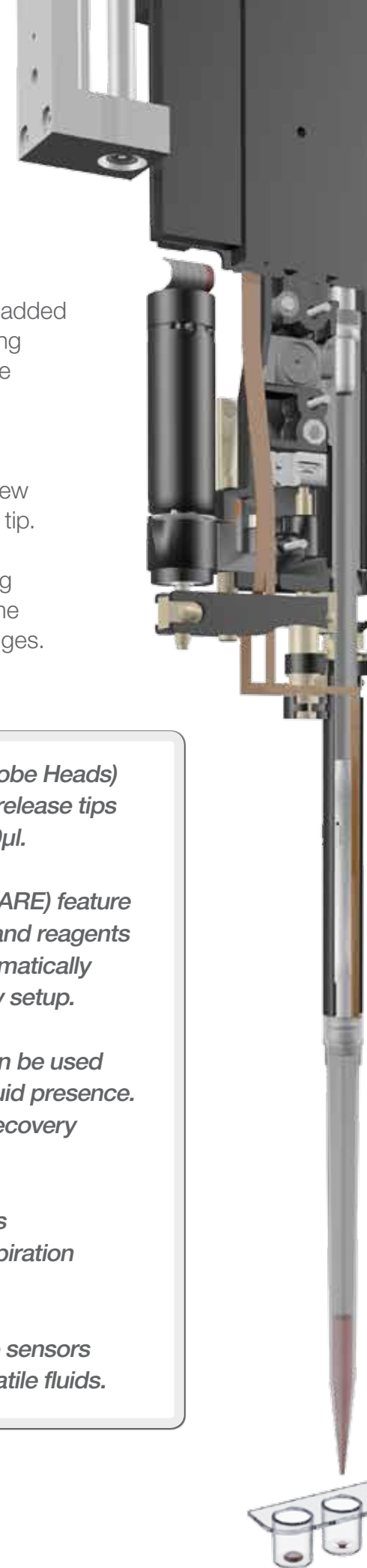
Reduce to Maximize

To fulfill the need for lower and lower pipetting volumes, Hamilton added NanoPulse technology to the pipetting channels. Instead of creating an impulse with the acceleration of the plunger, a high-speed valve has been added to the barrel of the pipetting head.

The closed valve allows the plunger to generate pressure inside the pipetting head. The high precision valve is then opened for a few milliseconds, allowing the air impulse to move the liquid out of the tip.

Users are still able to benefit from large volume pipetting by leaving the valve open. Thus, the VANTAGE covers a wide dynamic volume range within the same channel without requiring mechanical changes.

- ▶ *All channel types (as well as 96 and 384 Multi-Probe Heads) use CO-RE technology to smoothly pick up and release tips and needles with a capacity from 10µl up to 1000µl.*
- ▶ *The new Contamination Avoidance Response (CARE) feature empowers users to prevent the loss of samples and reagents due to contamination. Tips can be changed automatically depending on substances specified during assay setup.*
- ▶ *Capacitive and pressure liquid level detection can be used for refined liquid handling as well as to detect liquid presence. Also, foam can be detected, triggering an error recovery response as defined by the user.*
- ▶ *Monitored Air Displacement (MAD) feature allows for real-time detection of pipetting errors, e.g. aspiration of air or errors due to a clot.*
- ▶ *Anti-Droplet Control (ADC) uses built-in pressure sensors to eliminate droplet formation when pipetting volatile fluids.*



Versatility

Third Party Device Integration

The VANTAGE as an integration platform offers plenty of space for third party devices.

The VANTAGE can accommodate washers, readers, peelers, sealers, incubators, etc. located beside the Pipettor, below in the Logistics Cabinet or behind the instrument in the full-height Rear Integration Cabinet. All areas can be accessed in just seconds with the independent Track Gripper. Moreover, plate and tip shuttles called Entry/Exits can be placed below the workspace to increase instrument walk-away time.

All device integrations, including external systems like Cytomats and sample stores, are controlled by the INSTINCT V software via the SiLA* interface.

SiLA

* Standards in Laboratory Automation
www.sila-standard.org

Modular System Architecture

The VANTAGE was designed to grow with your needs for sample processing. As throughput needs increase, the instrument can be expanded either to the side or to the rear with additional 2.0m or 1.3m Pipettors, Logistics Cabinets, or Track Grippers.



Ready to Connect!

The VANTAGE hardware provides the flexibility required for your assay, meeting both today's and tomorrow's needs.

Security

Safety First

VANTAGE has been designed to be completely safe.

This includes an enclosed housing with sensor-controlled door locks to protect users against injuries and samples from unwanted access.

A database software structure prevents data manipulation and data loss, and the controlled user access and role definition allow tailored access to any level of the software.

Multiple optimization systems, including the Dynamic Scheduler, pressure-sensed pipetting tools, Contamination Avoidance Response (CARE), TADM, and many more, guarantee the safest process handling in the industry.

A versatile instrument structure, amazing network capabilities and the fully flexible software make your investment future-proof.



- user protection
- efficiency
- process control
- data safety
- future proof



Quality

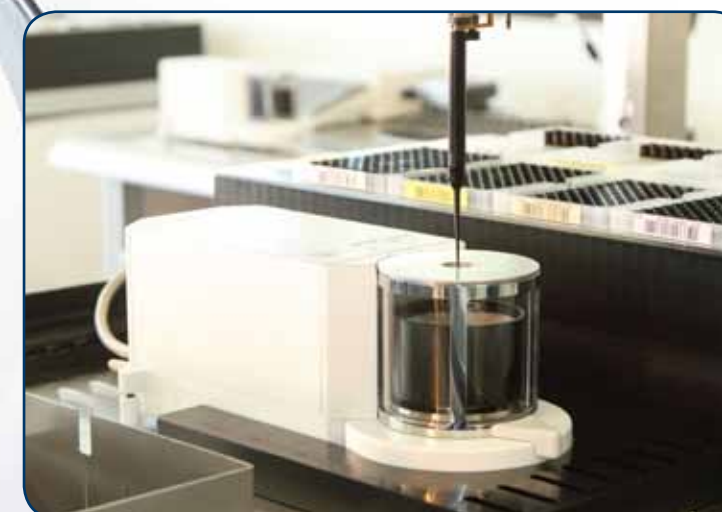
Success, Homemade

Hamilton continues to fulfill scientists' high expectations for exceptional quality with its decades of experience.

Through one of the highest levels of in-house development and production in the industry, all products, systems and processes are constantly tested and continuously improved, thereby guaranteeing Swiss Quality to fulfill our customers' needs.

Building the best pipetting system not only demands a modern infrastructure, highly skilled and motivated personnel, clear development and construction processes. It also requires **the ability to listen and empathise** with the customer.

Quality is not a department.
Quality is our state of mind.

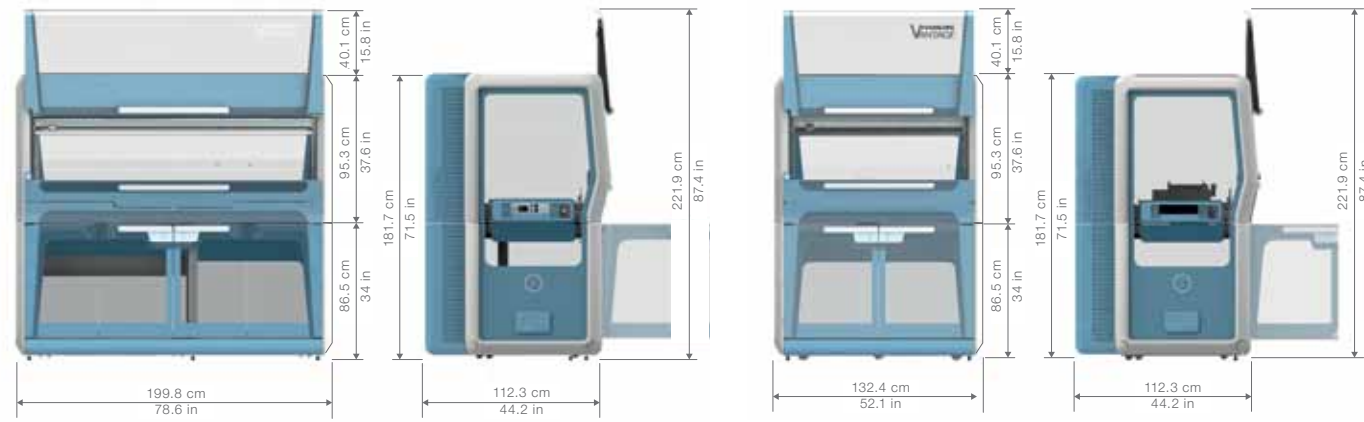


Certificates

Hamilton fulfills your needs through:
EN ISO 9001:2008
EN ISO 13485:2003 +
AC:2009

Specifications

Instrument Dimensions:



Instrument Weights:

PIPETTOR

Pipettor (2.0 m)	694.5 lbs	315 kg
Pipettor (1.3 m)	397 lbs	180 kg

LOGISTIC CABINET

Logistics (2.0 m)	300 lbs	136 kg
Logistics (1.3 m)	205 lbs	93 kg
Entry/Exit	99.2 lbs	45 kg
Power Socket	17.6 lbs	8 kg
AC Box	21 lbs	9.5 kg
Waste	32 lbs	14.5 kg

TRACK GRIPPER

Track Gripper (2.0 m)	320 lbs	145 kg
Track Gripper (1.3 m)	250 lbs	113.4 kg

Workspace Accessibility:

Pipettor	Total number of Track	Accessible Tracks *
2.0 m	80	72
1.3 m	54	46

* Track positions reachable by the ID Loading Device

Pipetting Specifications for 1000 µl NanoPulse™ Channel**:

Tip Size	Volume	Accuracy (%)	Precision CV (%)
10 µl	0.5 µl	5.0 %	6.0 %
	1 µl	3.5 %	4.0 %
	5 µl	2.5 %	2.0 %
50 µl	10 µl	1.0 %	1.0 %
	1 µl	3.5 %	4.0 %
	5 µl	2.5 %	2.0 %
300 µl	10 µl	1.0 %	1.0 %
	50 µl	1.0 %	0.75 %
	5 µl	5.0 %	3.7 %
1000 µl	100 µl	1.5 %	2.0 %
	300 µl	1.0 %	2.0 %
	3 µl	6.5 %	4.5 %
1000 µl	5 µl	5.8 %	4.0 %
	10 µl	4.9 %	3.4 %
	1000 µl	1.0 %	0.75 %

Pipetting Specifications for 1000 µl Pipetting Channel**:

Tip Size	Volume	Accuracy (%)	Precision CV (%)
10 µl	1 µl	5.0 %	5.0 %
	5 µl	2.5 %	2.0 %
	10 µl	1.5 %	2.0 %
50 µl	1 µl	5.0 %	5.0 %
	5 µl	2.5 %	2.0 %
	50 µl	1.5 %	0.75 %
300 µl	10 µl	3.0 %	2.0 %
	100 µl	1.5 %	2.0 %
	300 µl	1.0 %	2.0 %
1000 µl	1000 µl	1.0 %	0.75 %

Operating Conditions:

Temperature Range	15°C - 30°C
Operating Humidity	15% - 85% (no condensation, indoors)
Electrical Power Requirements	+42 V + 5%
Operating Altitude	up to 2000m / 6561ft. above sea level

** The pipetting accuracy and precision was measured in a controlled environment with defined liquids. Tests with other liquids may deliver different results





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