thermo scientific



Vanquish Core HPLC Systems

Simple to the CORE

ThermoFisher SCIENTIFIC

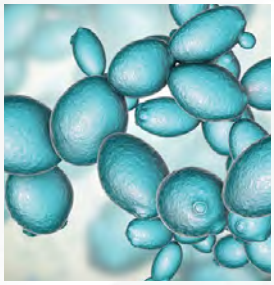
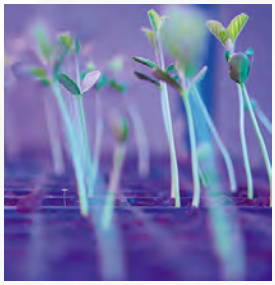

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Vanquish
0.1 bar
0.000 mL/min
0.0 %B
0:87
4.0 °C
26.2 °C
6-1

Continually deliver results

When you can't tolerate any disruptions to your daily analytical work, the Thermo Scientific™ Vanquish™ Core HPLC systems empower your operators to continually deliver exceptional results. Transferring methods to the Vanquish Core system is simple and seamless, regardless of your current HPLC setup.

Built upon the innovative Vanquish platform, the Vanquish Core HPLC systems provide exceptional analytical precision, detector sensitivity, and operational simplicity to enable unprecedented reliability and robustness. Designed specifically for routine analysis laboratories, the Vanquish Core HPLC systems provide:

- Dependable system uptime through innovative system health checks and improved system ruggedness
- Simple integration into existing infrastructure by enabling control under Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) software and Waters® Empower® CDS software
- Compliant-ready infrastructure that minimizes unexpected results and out-of-specification events
- Empower lab personnel with intuitive system operation and simplified user maintenance
- Seamless method transfer from all common HPLC systems
- Smooth integration into the broad Thermo Scientific LC-MS portfolio



Increase productivity

On-time delivery of your results is critical. The Vanquish Core HPLC system enables your laboratory to maximize productivity through novel intelligence features, ensuring exceptional instrument reliability.

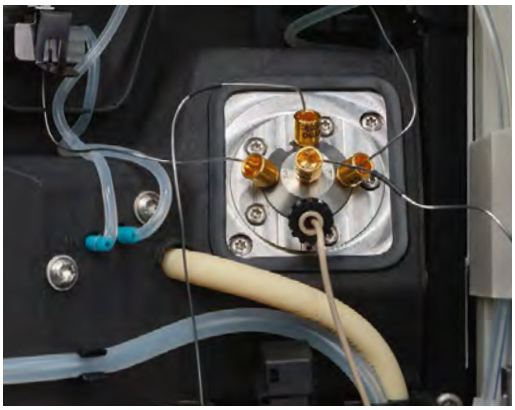
Reliability

- Long-life needle alignment
- Long-life injection valve
- Elimination of autosampler condensation issues
- Accurate and precise sample injections
- Improved ruggedness of optical detectors against thermal and mechanical stress

Intelligence

- Comprehensive instrument diagnostic procedures
- Integrated system health checks
- Solvent and waste level monitoring





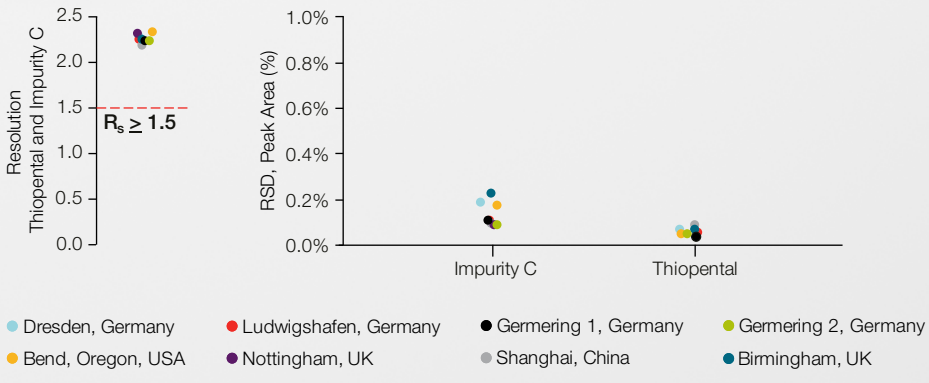
Maintenance-free injection valve

An optimally-functioning injection valve is critical to deliver precise and accurate quantitative results on an HPLC system. The Vanquish Core HPLC system uses innovative long-life injection valves, reducing cost of ownership, minimizing unexpected downtime, and increasing overall confidence in your results.

Deliver consistency

In today's connected and globalized world, instrument reliability is measured through the ability to deliver the right results in every lab, on every instrument, operated by any user in laboratories across the globe. The Vanquish Core HPLC system ensures that your labs deliver consistency, no matter where they are.





Above graph: Test sites of a Vanquish Core round robin test using eight different instruments with individual samples, users, and columns. Each analysis passed the specified SST criteria highlighting the reliability of the instrument and the ease of use for each user resulting in successful SST.

Bottom graphs: Results of a global round robin test showing that all eight data sets consistently surpass the SST criteria of resolution above 1.5 and excellent peak area reproducibility.

Support your infrastructure

Regardless of your current software infrastructure, you can take advantage of the latest chromatographic innovations. The Vanquish Core HPLC system pairs perfectly with Chromeleon CDS to take advantage of its unrivaled ease-of-use, reliability, and performance. When needed, the Vanquish Core HPLC system can also seamlessly integrate into other Chromatography Data Systems, saving you the time and cost of validating a new informatics platform.

- Chromeleon CDS feature release
  - Complete integration with all capabilities for intelligent system operation
  - Full control, operation, processing, and reporting within Chromeleon CDS workstation and enterprise infrastructures
- Chromeleon CDS long-term support
  - Enables basic functionality for direct control, operation, processing, and reporting without the need to update the existing enterprise installation
- Standard Instrument Integration (SII) for Empower 3
  - Enables direct operation, control, processing, and reporting within Empower workstation and enterprise infrastructures





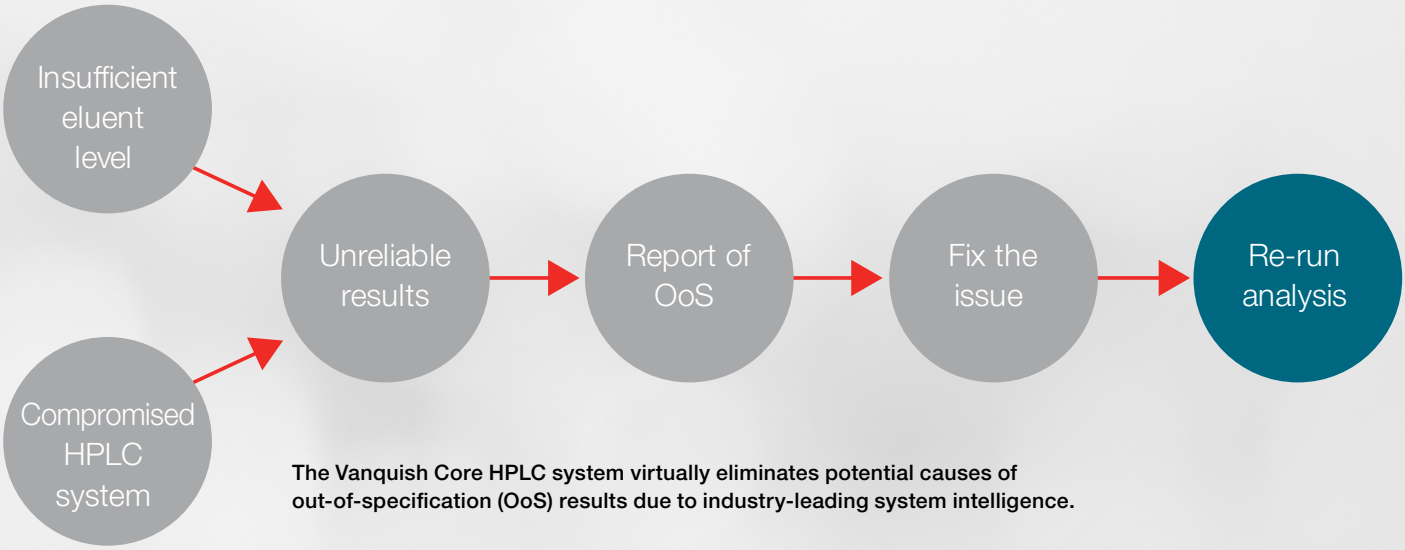


Streamline your compliance

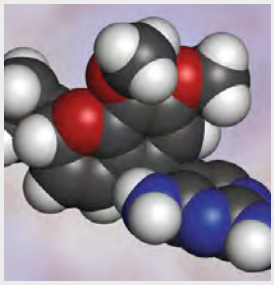
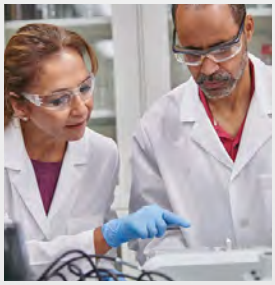
The Vanquish Core HPLC system supports you in minimizing both out-of-specification results and deviations from your Standard Operating Procedures (SOPs).

- Automatic warning if there is not enough eluent to complete the sample sequence
- Automatic recording in the audit trail of eluent bottle refill
- Monitoring of instrument operational readiness through routine and automated system health checks

Avoid these consequences



The Vanquish Core HPLC system virtually eliminates potential causes of out-of-specification (OoS) results due to industry-leading system intelligence.



Empower your operators

In today's analytical laboratory environment, your scientific personnel have limited time for in-depth familiarization with new instrumentation. An HPLC system should seamlessly fit into your existing workflows and processes without requiring extra training or expertise.

The Vanquish Core HPLC system brings ease of use to a new level, empowering every user to deliver exceptional results, independent of user experience.

- Thermo Scientific™ Viper™ finger-tight fittings for nearly zero dead-volume fluidic connections
- Automatic and remote instrument purging
- Thermo Scientific ™ Vanquish™ Solvent Monitor to ensure enough eluent for every sequence
- Vanquish User Interface to provide direct, at-instrument monitoring of system status and support for operator-controlled maintenance
- Instrument diagnostics to easily identify and troubleshoot issues



Vanquish Solvent Monitor manages your eluent and waste level for highest confidence during analysis.

Vanquish Solvent Monitor

The Vanquish Solvent Monitor extends Vanquish HPLC and UHPLC systems to accurately and automatically measure the liquid levels in each individual solvent channel and waste container.

Deep integration of the Vanquish Solvent Monitor into the Vanquish Core system provides direct viewing of solvent and waste volumes within Chromeleon CDS, on the Vanquish User Interface, or directly on the module itself.

Run large sample sets with confidence, avoid lost time, and eliminate procedural deviations by monitoring mobile phase levels; prevent hazardous spills by monitoring waste levels.

Monitor your instrument

The interactive Vanquish User Interface allows operators to intuitively, immediately, and intelligently monitor the current system status:

- Fulfills compliance needs with a direct interface to the system without the need for a network connection
- Glove-enabled and solvent resistant touch display
- Status display of current instrument parameters, such as flow and pressure
- Monitoring of column equilibration progress through graphical representation of pump pressure data
- Display of step-by-step maintenance videos
- Remote instrument monitoring, even without CDS
- Multi-language support

Vanquish User Interface



On-instrument maintenance instructions



Multi-language support



Instrument equilibration monitoring



Direct solvent level display



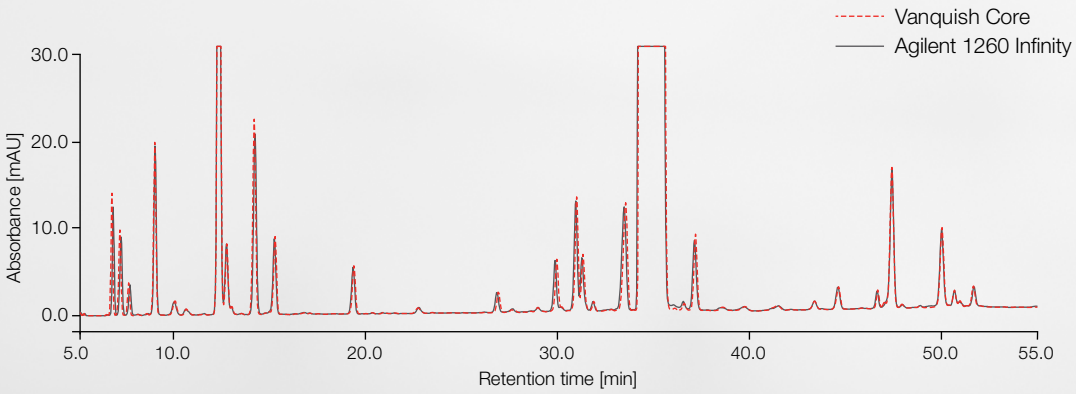
Instrument status display



Replicate your methods

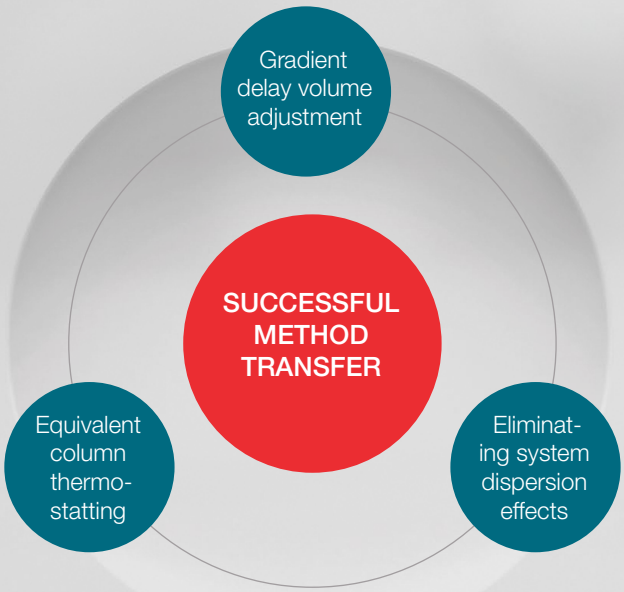
When you need to improve your lab's productivity while maintaining existing workflows, you need a system that has the flexibility to precisely replicate your current methods. The Vanquish Core HPLC system is designed to mimic other HPLC systems to transfer methods easily while boosting productivity and ease of operation.

- Tunable gradient delay volume to match analytes retention time and separation profile
- Custom injection programs to adapt for high organic solvent injections
- Still-air and forced-air thermostatting options to mimic your existing instrument



With the Vanquish Core HPLC system, the instrument gradient delay volume can be seamlessly adjusted in order to match legacy HPLC instruments. In this example the gradient delay volume was increased by a simple software command (Idle Volume=200 µL) in the instrument method to best match the Agilent® 1260 Infinity LC system.

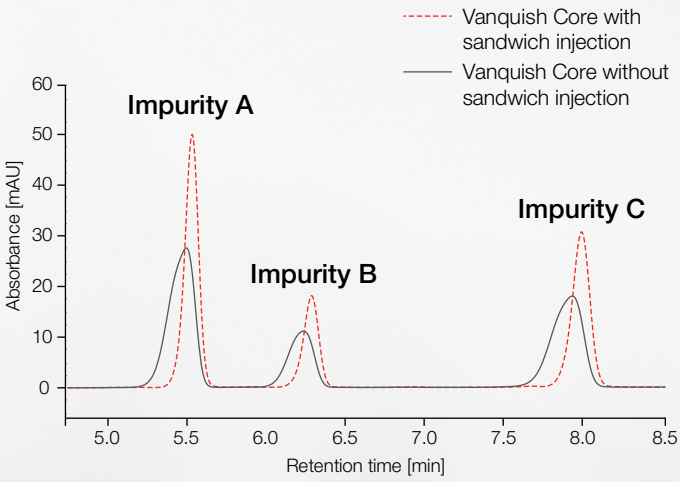
Transferring analytical HPLC methods can be challenging if you do not have the right instrumental tools at hand. The reason for that is that the success of method transfer is not only determined by a single instrumental parameter such as the gradient delay volume of the HPLC system. In fact, the system dispersion and the column thermostatting technology also play a major role. The Vanquish Core HPLC system is the only instrument that can cover all of these parameters to allow for the easiest method transfer.



Simplify your transition

In addition to gradient delay volume, matching the column thermostatting mode and overall system dispersion are critical to ensure your method is successfully transferred from one system to another. Vanquish Core offers two column thermostatting options to change to the column thermostatting principle of your legacy HPLC instrument with a single mouse click.

Furthermore, modern HPLC instruments offer lower system dispersion, which benefits overall separation power but might lead to undesirable peak shapes when samples with high organic content are injected. The Vanquish Core HPLC system uses custom injection programs to do a simple in-needle dilution to the sample and enable you to run your method as usual while benefiting from improved separation power.



High organic sample solvents can cause peak shape distortions on modern HPLC instruments. Vanquish Core HPLC systems conduct sandwich injections to be able to inject high organic samples while keeping the chromatographic efficiency.



Method Transfer kit for Vanquish Core HPLC system. In combination with the Vanquish Split Samplers metering device, the gradient delay volume can be adjusted on a microliter scale over a wide range. Audit trail tracking of the settings and full qualification ensure regulatory compliance.

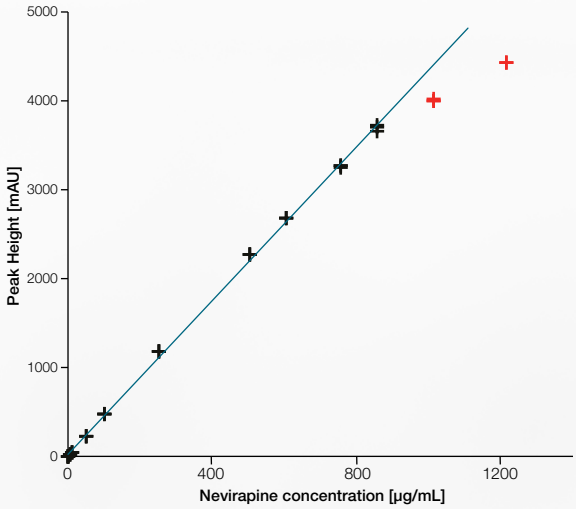
Detect your analyte

Choosing the right detection technology is key to revealing all the components of interest in your sample. The Vanquish Core HPLC systems offer a wide range of detection capabilities that can be easily integrated and combined to fit your methods.



Industry-leading diode array detection

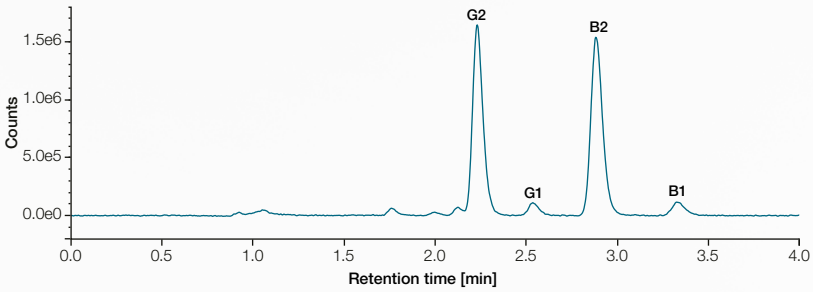
The industry-leading Thermo Scientific™ Vanquish™ diode array detectors offer excellent signal-to-noise performance and the widest linear range, exceeding that of variable wavelength detectors. Based on diode array detection technology, the multiple wavelength detector offers a cost-effective solution for simultaneously acquiring up to eight UV-Vis wavelength channels.



Concentration vs. peak height plot of nevirapine with data points that were considered for calibration (black) and data points that were eliminated from calibration due to curve decline (red). Linear calibration with permitted offset and no weighting.

Powerful fluorescence detection

Fluorescence detection enables high sensitivity and selectivity.



FLD chromatogram of the four aflatoxins: G2, G1, B2 and B1 at a concentration of 0.9 µg/kg for G2 and B2 and 2.9 µg/kg for G1 and B1.

Variable wavelength detection

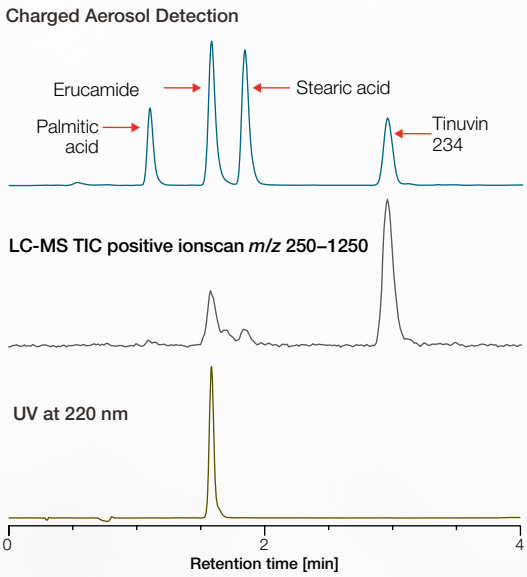
UV-Vis detection with excellent sensitivity and linearity is a cost-effective and powerful solution for quantitative compound analysis.





Uniquely universal charged aerosol detection

The Thermo Scientific™ Vanquish™ charged aerosol detector is powerful, uniform, and universal; able to detect virtually any large and small molecule with sub-nanogram-level sensitivity, even those that lack a chromophore or that poorly ionize. The flexibility and performance of charged aerosol detection is ideal for analytical R&D, while its simplicity and reproducibility benefit manufacturing QA/QC applications.



Unlike mass spectrometry and UV, the CAD is able to measure all analytes in the sample. Mass spectrometry (MS) requires the analyte to form gas phase ions while response by a UV detector depends upon the nature of the chromophore.



Simple mass detection

Mass spectrometry gives access to valuable data no other technology can deliver. The easy to use Thermo Scientific™ ISQ™ EM single quadrupole mass spectrometer or the Thermo Scientific™ ISQ™ EC single quadrupole mass spectrometer integrates with LC systems for reliable, robust, and easy LC-MS routine analysis with an extended mass range for more flexibility. Integrated software allows both novices and experts to quickly master MS to gain more insights from every sample.

Pairing smoothly with your LC-MS

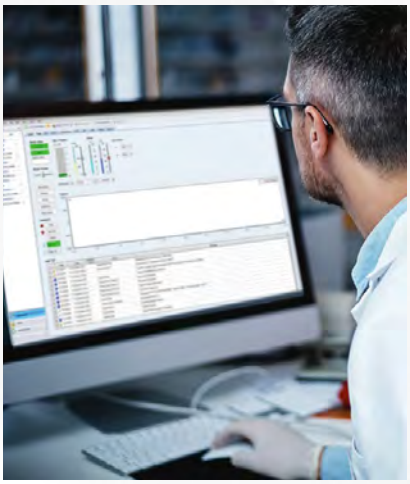
LC-MS quantification is a widely used technology in many application fields, including food safety and environmental monitoring. In conjunction with the Thermo Scientific mass spectrometer portfolio, Vanquish Core delivers a great solution for ultra-sensitive detection. For control of your LC-MS setup you can choose between the feature-rich Thermo Scientific™ Xcalibur™ software, the powerful Thermo Scientific™ TraceFinder™ software or the compliant-ready Chromeleon CDS control.

Innovating for you



2





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1 Vanquish Solvent Monitor

Use the Vanquish Solvent Monitor to increase your regulatory compliance, productivity, and safety of your laboratory. That device guarantees that your HPLC systems will never run dry and the waste will not spill over, reducing loss of valuable measurement time and sample material.

2 Vanquish User Interface

With the Vanquish User Interface, you are the master of your LC instrument. The display always shows you the key parameters of your instrument such as flow and pressure and guides you in a visual step-by-step video tutorial through key maintenance tasks.

3 Detection capabilities

Differing molecular characteristics of your analyte, from small molecules to complex biomolecules, necessitates multiple detector technologies. The Vanquish Core systems have been built to utilize a wide range of analytical detectors, including mass spectrometry (MS), diode array detection (DAD), multi wavelength detection (MWD), charged aerosol detection (CAD), variable wavelength detection (VWD), and fluorescence detection (FLD).

4 SmartInject Technology

Superior retention time precision and accuracy, as well as enhanced column protection.

5 Proprietary injection and switching valves

The valves used in the Vanquish Core HPLC systems are designed to meet the reliability needs to make HPLC run robustly and routinely. The valves are long-life and follow a no maintenance philosophy reducing your overall cost of ownership.

6 Easier operation

Utilizes tool-free Thermo Scientific™ Viper™ Fingertight Fittings with near-zero dead volume operation and ergonomic design.



7 Simple maintenance

Modules can be repaired without de-stacking; each unit has handles for ease of maneuvers; light bars on the front of the system indicate system status; and the entire system supports tool-free maintenance.

8 Keep your lab tidy

The built-in drawer stores accessories, related documents, or any other useful material for the system.

9 Easy to adopt

The tunable gradient delay volume and multiple thermostatting options allow you to precisely replicate your legacy HPLC methods.

10 Compatible with your software infrastructure

Support under various software environments, including the latest Chromeleon CDS feature release and long-term support versions, and Waters Empower CDS.

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Thermo Scientific LC Portfolio Overview

HPLC systems	UHPLC systems	
Routine analysis	Method development	Research and high throughput

Thermo Scientific™ Vanquish™ Duo HPLC and UHPLC system workflows

Thermo Scientific Vanquish Core HPLC system

- Workhorse instrument to dependably deliver results
- System intelligence for improved productivity
- Seamless method transfer
- Low pressure, high pressure, and isocratic solvent blending



700 bar

Thermo Scientific Vanquish Flex UHPLC system

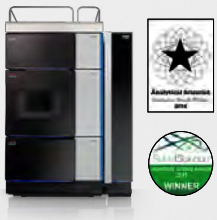
- Unparalleled flexibility and control
- High throughput, high sensitivity
- Low pressure and high pressure solvent blending



1000 bar

Thermo Scientific™ Vanquish™ Horizon UHPLC system

- Industry-leading precision and accuracy in delivering sample information
- Unmatched detection, sensitivity and speed
- Truly future-proof with specifications far in excess of all others
- Optimizes the benefits of LC-MS analysis



1500 bar

The collective power of chromatography

LC that takes your productivity to new heights

GC | IC | LC | C | CDS | SP | UNITY LAB SERVICES

Find out more at **thermofisher.com/vanquishcore**

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