

# Thermo Scientific Vanquish – Quaternary Pump F

Better separations, more results, easier interaction

Thermo Scientific™ Vanquish™ UHPLC system is designed to offer:

- **Better separations** with the power of the system to unveil more compounds than ever before
- **More results** with throughput, speed and sample capacity to boost workflow productivity
- **Easier interaction** to make the system a joy to work with

The Vanquish UHPLC system is designed as an integrated UHPLC system, where the Vanquish Quaternary pump drives the separation with more flexibility.



*Vanquish Quaternary Pump*

## Solvent Delivery for Highest Confidence in Peak Identification and Quantification

The biocompatible Vanquish Quaternary Pump F extends the capabilities of the Vanquish platform by adding all the flexibility you can expect from state of the art quaternary solvent blending. Our SmartFlow™ pumping technology with automatic compensation for changing eluent compressibility ensures excellent flow and gradient precision, independent of eluent composition and backpressures up to 103 MPa. This gives you unrivaled retention time precision and highest data confidence, even for ternary and quaternary gradients, and for more freedom in method development and application switching.

- Get more flexibility by multiple solvent blending – for method development, for challenging ternary and quaternary gradient applications, e.g. for fully exploiting specialty column chemistries
- Rely on excellent flow accuracy and precision by ultra-precise piston drives
- Profit from built-in solvent degassing for enhanced flow stability and best detector sensitivity
- Benefit from outstanding durability for highest system up-time and low total cost of ownership
- Forget about tedious fluidic setup thanks to our innovative Thermo Scientific™ Viper™ fingertight fitting technology

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## PRODUCT SPECIFICATIONS

Specification	Value
Operating Principle	Serial dual-piston pump
Flow Range (settable)	0.001–8 mL/min, in 1 $\mu$ L/min increments
Pressure Range	2–103 MPa (20–1034 bar, 290–15,000 psi). With a flow rate of >5 mL/min, the pressure range decreases linearly down to 80 MPa (11,600 psi).
Compressibility Compensation	Fully automated, independent of the composition of the mobile phase
Flow Accuracy	$\pm$ 0.1%
Flow Precision	<0.05% RSD or <0.01 min SD, whichever is greater
Pulsation	Typically <1.0% or <0.2 MPa, whichever is greater
Gradient Formation	Low-pressure gradient proportioning
Proportioning Accuracy	$\pm$ 0.5% of full-scale*
Proportioning Precision	<0.15% SD
Number of Solvent Lines	4
Mixer Volume	400 $\mu$ L (50 $\mu$ L proprietary capillary mixer and 350 $\mu$ L static mixer, default configuration)
Dwell Volume	679 $\mu$ L (default configuration)
Solvent Degassing	Built-in, 4 Channels
GLP	Predictive Performance functions for scheduling maintenance procedures based on the actual operating and usage conditions of the pump. All system parameters logged in the Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data System Data System Audit Trail.
PC Connection	USB 2.0; 3-port-HUB to connect further Vanquish modules
I/O Interfaces	2 $\times$ 6 pin Mini-DIN connectors each having functionality: 1 input, 1 relay out, 1 bidirectional input/output
Safety Features	Leak detection and safe leak handling, excess pressure monitoring
Wetted Parts	MP35N, titanium, zirconium oxide (ZrO <sub>2</sub> ), sapphire, aluminium oxide (Al <sub>2</sub> O <sub>3</sub> ), PEEK, PTFE, ECTFE, FEP, UHMW polyethylene, perfluoro-elastomer, amorphous fluoropolymer (AF)
Biocompatible	Yes; pH range 2–12, chloride concentration up to 1 mol/L
Power Requirements	100–240 V AC, 50/60 Hz, max. 245 W/255 VA
Environmental Conditions	5–35 °C; 20–80% RH (non condensing)
Dimensions (h $\times$ w $\times$ d)	192 mm $\times$ 420 mm $\times$ 620 mm (7.6 in. $\times$ 16.5 in. $\times$ 24.4 in.)
Weight	17 kg (37.5 lbs)

## ORDERING INFORMATION

Description	Part Number
Vanquish Quaternary Pump F	VF-P20-A
Static mixer, volume: 150 $\mu$ L (for total volume of mixing system: 200 $\mu$ L**)	6044.5110
Static mixer, volume: 350 $\mu$ L (for total volume of mixing system: 400 $\mu$ L**)	6044.5310
Static mixer, volume: 750 $\mu$ L (for total volume of mixing system: 800 $\mu$ L**)	6044.5750
Static mixer, volume: 1500 $\mu$ L (for total volume of mixing system: 1550 $\mu$ L**)	6044.5450
Capillary mixer, volume 50 $\mu$ L (for use with static mixers, volumes: 150 $\mu$ L up to 1500 $\mu$ L)	6044.5026
Mixing system, volume: 100 $\mu$ L, including: Static mixer, volume: 75 $\mu$ L, capillary mixer, volume: 25 $\mu$ L	6044.5100
Capillary to connect the pump to the autosampler, for use with the 100 $\mu$ L mixing system	6042.2330

\*  $\pm$ 1.0% (of full-scale) for other combinations than AB \*\* Static mixers for use with 50  $\mu$ L capillary mixer

To order in the U.S., call 1-800-346-6390, or contact the Thermo Fisher Scientific office nearest you. Outside the U.S., order through your local Thermo Fisher Scientific office or distributor. Refer to the following part numbers.

[www.thermofisher.com/chromatography](http://www.thermofisher.com/chromatography)

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