

# Thermo Scientific Dionex Viper Capillaries and Fingertight Fitting System

Universally Compatible

The Thermo Scientific Dionex Viper Fingertight Fitting system provides ease of use and virtually dead-volume-free plumbing for every conventional HPLC and modern UHPLC system. Together with flexible stainless steel capillaries, it opens a new dimension in modern liquid chromatography. The Viper™ Fingertight Fitting system improves chromatographic results, independent of different connection geometries and system backpressures. Connecting LC modules, valves, and columns quickly, easily, and reproducibly without any additional tools is simplicity and ease of use by design.

**UHPLC<sup>+</sup>**  
focused



## Features

- Virtually zero-dead-volume UHPLC fingertight fittings suitable for system pressures of up to 125 MPa (18,130 psi)
- Suitable for temperatures up to 120 °C
- Available in different lengths from 150 to 950 mm and in 0.13 mm and 0.18 mm i.d. (0.005" and 0.007")
- Easy-to-use flexible stainless steel capillaries ( $\frac{1}{32}$ " o.d.) and one-piece fingertight fitting design
- Works with virtually any valve and any column from any manufacturer
- Fits narrow connections, such as 10-port valves and enables mixed use with different fitting designs
- Paves the way for easy setup of even the most advanced column-and valve-switching configurations

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## Designed for Optimal Performance

Extra column volumes in HPLC have the most detrimental effects on the separation performance of an LC system and poor quality capillary connections can have significant effects on peak broadening. Therefore, establishing and maintaining optimal connections between all fluidic components in an LC system is critical to achieving optimum chromatographic performance.

## Viper vs Conventional Fittings

Conventional fittings, tightened by hand or with tools, present considerable drawbacks which may compromise efficiency (Figure 1):

- Accidental use of wrong ferrules creates dead volumes and risk of leakage
- Ferrules and capillaries can slip, especially during use with the high backpressures generated using UHPLC
- Conventional fitting systems may require laborious use of additional tools
- Dead volumes in each connection are unavoidable

- Change of column or valve requires repositioning of ferrules to re-establish proper connections
- Use of metal ferrules causes wear of connection ports

The Viper technology overcomes all downsides of conventional fitting systems. It works without ferrules and reduces the dead volume of any fluidic connection to virtually zero. The Viper system unifies robust performance, ease of use, acceptable lifetime, and universal compatibility with virtually all different valves and columns for HPLC users.

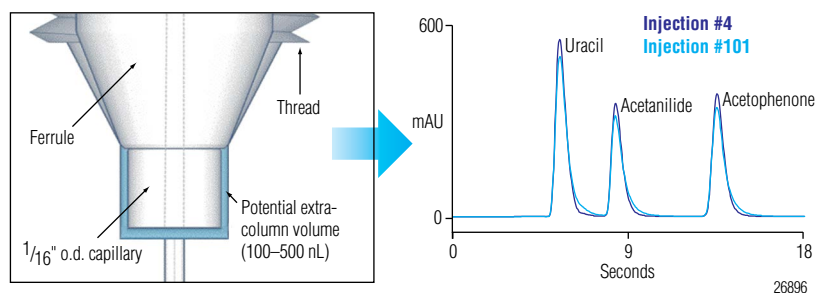


Figure 1. Conventional fitting systems often create extra column volumes by incorrect positioning of the ferrule or when the capillary slips within the ferrule at high pressures. The chromatogram demonstrates deteriorated peak shape caused by a slipped capillary at a backpressure of only 60 MPa (8,700 psi).

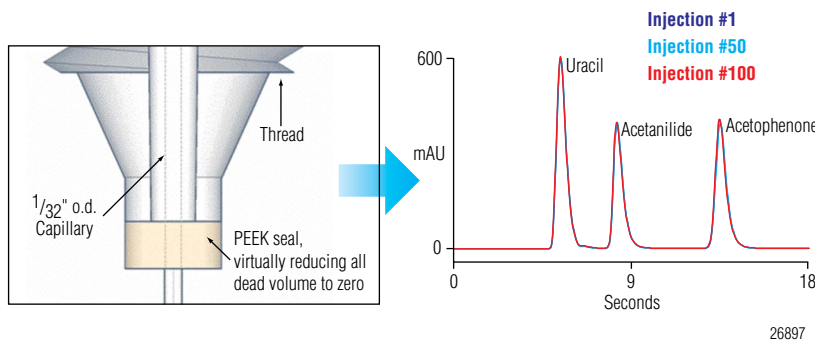


Figure 2. The Viper fingertight fitting system does not use a ferrule and virtually eliminates any extra-column volumes by design. The chromatogram overlay shows consistent peak shapes under identical conditions to those used in Figure 1.

Table 1. Comparison of chromatographic performance data achieved with Viper fittings vs conventional UHPLC fingertight fitting system.

Acetanilide	Conventional Fingertight Fitting (Slipped)	Conventional Fingertight Fitting (Optimally Mounted)	Viper Fingertight Fitting	Viper vs Optimal	Viper vs Slipped
Plates [N]	998	1112	1405	+ 26%	+ 41%
Peak Height [mAU]	308.1	349.8	392.5	+ 12%	+ 27%
Resolution [EP]	4.7	5.0	5.6	+ 12%	+ 19%

## Flexibility and Ease of Use

Today's laboratories require increased flexibility, increased sample throughput, and automation of complex sample preparation procedures.

Together with dual-gradient pumps, a range of switching valves, versatile UHPLC<sup>+</sup> solution kits, and UHPLC<sup>+</sup> features of the Thermo Scientific Dionex Chromeleon Chromatography Data System, we fully meet these demands. You can combine the

advantages of our ×2 Dual technology and benefit from advanced column-switching techniques and UHPLC.

## Benefits of ×2 Dual LC

- Double your sample throughput with parallel and tandem LC
- Alternate automatically between two different applications with the automated application switching setup
- Automate complex sample preparation and analysis of samples with on-line SPE-LC

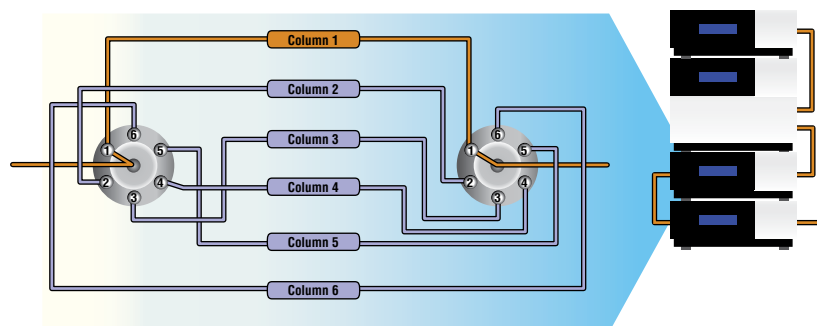
- Develop new methods overnight with the method scouting configuration

To equip analytical scientists with an optimized tubing and fitting system from the start, every Thermo Scientific Dionex UltiMate 3000 system comes with a set of Viper capillaries. Additional fluidic accessories, including precolumn heaters, postcolumn coolers, and large-volume static mixers, are available with Viper fitting technology.

Even dual-stack systems and advanced ×2 Dual configurations are easy to set up using the Viper fitting system.



Figure 3. Independent of the brand, the Viper system fits even the most narrow spaces, such as 10-port valves. A mix with existing fitting designs is also possible.



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Figure 4. The Viper system allows for easy plumbing of advanced system configurations, such as automated method scouting with column switching of up to six columns.

## SPECIFICATIONS

Connection Principle	Fingertight
Maximum Pressure	125 MPa (18,130 psi)
Tubing Type	Flexible stainless steel (SST)
Outer Diameter	0.79 mm ( $1/32$ " )
Inner Diameter	0.13 mm (0.005") or 0.18 mm (0.007")
Temperature Compatibility	120 °C
Available Lengths	65 mm, 150–950 mm in 100 mm steps
Wetted Materials	PEEK™, SST

## Ordering Information

In the U.S., call (800) 346-6390 or contact the Thermo Fisher Scientific Regional Office nearest you. Outside the U.S., order through your local Thermo Fisher Scientific office or distributor. Refer to the following part numbers:

Individual Thermo Scientific Dionex Viper Capillaries, RS/Micro	Part Number
Viper SST Flex.-Cap., i.d. × L 0.13 × 65 mm	6040.2307
Viper SST Flex.-Cap., i.d. × L 0.13 × 150 mm	6040.2315
Viper SST Flex.-Cap., i.d. × L 0.13 × 250 mm	6040.2325
Viper SST Flex.-Cap., i.d. × L 0.13 × 350 mm	6040.2335
Viper SST Flex.-Cap., i.d. × L 0.13 × 450 mm	6040.2345
Viper SST Flex.-Cap., i.d. × L 0.13 × 550 mm	6040.2305
Viper SST Flex.-Cap., i.d. × L 0.13 × 650 mm	6040.2310
Viper SST Flex.-Cap., i.d. × L 0.13 × 750 mm	6040.2320
Viper SST Flex.-Cap., i.d. × L 0.13 × 850 mm	6040.2330
Viper SST Flex.-Cap., i.d. × L 0.13 × 950 mm	6040.2340
Individual Thermo Scientific Dionex Viper Capillaries, SD/Analytical	Part Number
Viper SST Flex.-Cap., i.d. × L 0.18 × 65 mm	6040.2357
Viper SST Flex.-Cap., i.d. × L 0.18 × 150 mm	6040.2360
Viper SST Flex.-Cap., i.d. × L 0.18 × 250 mm	6040.2385
Viper SST Flex.-Cap., i.d. × L 0.18 × 350 mm	6040.2375
Viper SST Flex.-Cap., i.d. × L 0.18 × 450 mm	6040.2365
Viper SST Flex.-Cap., i.d. × L 0.18 × 550 mm	6040.2355
Viper SST Flex.-Cap., i.d. × L 0.18 × 650 mm	6040.2395
Viper SST Flex.-Cap., i.d. × L 0.18 × 750 mm	6040.2370
Viper SST Flex.-Cap., i.d. × L 0.18 × 850 mm	6040.2380
Viper SST Flex.-Cap., i.d. × L 0.18 × 950 mm	6040.2390
Viper Capillary Kits, Single Systems	Part Number
Viper Capillary Kit, RS System, with LPG or DGP pump	6040.2301
Viper Capillary Kit, RS System, with HPG pump	6040.2308
Viper Capillary Kit, SD System, with HPG pump	6040.2309
Viper Capillary Kit, XRS System, with LPG XRS pump	6043.2301
Viper Capillary Kit, SD System, with LPG, DGP or ISO Pump	6040.2302
Viper Capillary Kits, ×2 Dual Systems	Part Number
Viper Capillary Kit, RS System, Online SPE	6040.2801
Viper Capillary Kit, RS System, Tandem Operation	6040.2803
Viper Capillary Kit, RS System, Parallel Setup	6040.2809
Viper Capillary Kit, RS System, Application Switching	6040.2805
Viper Capillary Kit, RS System, Method Scouting	6040.2807
Viper Capillary Kit, RS System, Inverse Gradient Kit	6040.2820
Viper Capillary Kits, ×2 Dual LC Systems	Part Number
Viper Capillary Kit, SD System, Online SPE	6040.2802
Viper Capillary Kit, SD System, Tandem Operation	6040.2804
Viper Capillary Kit, SD System, Parallel Setup	6040.2810
Viper Capillary Kit, SD System, Application Switching	6040.2806
Viper Capillary Kit, SD System, Method Scouting	6040.2808
Viper Capillary Kit, SD System, Inverse Gradient Kit	6040.2819

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

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