

## LC and LC-MS

# Viper and nanoViper Fingertight Fitting Systems

## Tool-free LC connections for HPLC, UHPLC and low-flow UHPLC systems

### Benefits

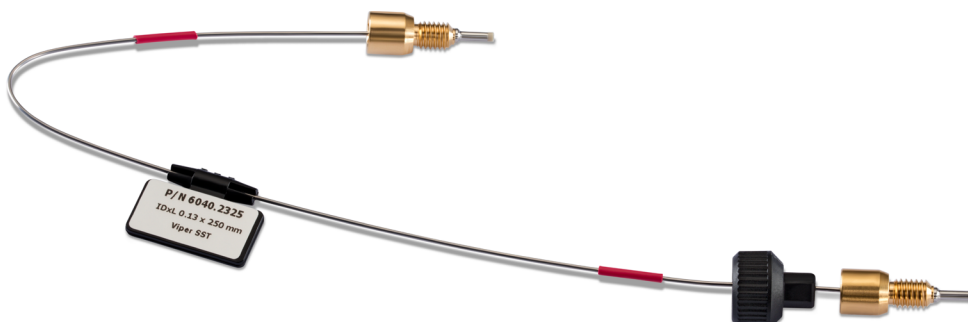
- Provides virtually zero-dead volume fingertight connections
- Easy to install even in tight spaces such as on 10-port valves
- Reliable and reproducible LC connections to ensure low carry over and easy method transfer
- Supports operating pressures up to 1,500 bar (22,000 psi)
- Works with virtually any standard LC system, valve, or column
- Tailored kits for easy installation of application-specific workflows

The Thermo Scientific™ Viper™ and Thermo Scientific™ nanoViper™ Fingertight Fitting Systems provide tool-free connections designed to be used for the entire fluidic pathway in LC systems to improve chromatographic results.

Virtually without any dead-volume, Viper and nanoViper fittings combine usability with high performance. Viper and nanoViper connections can be used on all standard LC modules, valves, and columns quickly.

### Advantages of Viper and nanoViper Fingertight Fitting Systems

- Available in various lengths: from 65 to 1100 mm
- Available in different inner diameters: from 10 µm (0.0004 in.) to 150 µm (0.006 in.) in nanoViper design and from 100 µm (0.004 in.) to 250 µm (0.010 in.) in Viper design
- Available in different materials: stainless steel (SST), PEEK, PEEK-shielded fused silica or biocompatible MP35N™



## Viper Fingertight Fitting Systems - Specifications

### Thermo Scientific Viper Fingertight Fitting System – SST

|                           |                                                                                |
|---------------------------|--------------------------------------------------------------------------------|
| Connection principle      | Fingertight                                                                    |
| Tubing type               | Stainless steel (SST)                                                          |
| Wetted material           | PEEK, SST                                                                      |
| Maximum pressure          | 131 MPa (1,310 bar; 19,000 psi)                                                |
| Maximum temperature limit | 120 °C                                                                         |
| Outer diameter            | 0.79 mm (1/32 in.)                                                             |
| Inner diameter            | 100 µm (0.004 in.), 130 µm (0.005 in.), 180 µm (0.007 in.), 250 µm (0.010 in.) |
| Available lengths         | Various lengths from 65 mm to 950 mm                                           |

### Thermo Scientific Viper Fingertight Fitting System – Biocompatible PEEK

|                           |                                                            |
|---------------------------|------------------------------------------------------------|
| Connection principle      | Fingertight                                                |
| Tubing type               | PEEK                                                       |
| Wetted material           | PEEK                                                       |
| Maximum pressure          | 34.5 MPa (345 bar; 5,000 psi)                              |
| Maximum temperature limit | 120 °C                                                     |
| Outer diameter            | 0.79 mm (1/32 in.)                                         |
| Inner diameter            | 65 µm (0.0026 in.), 90 µm (0.0035 in.), 130 µm (0.005 in.) |
| Available lengths         | Various lengths from 65 mm to 850 mm                       |

### Thermo Scientific Viper Fingertight Fitting System – Biocompatible MP35N

|                           |                                                            |
|---------------------------|------------------------------------------------------------|
| Connection principle      | Fingertight                                                |
| Tubing type               | MP35N                                                      |
| Wetted material           | PEEK, MP35N                                                |
| Maximum pressure          | 151 MPa (1,517 bar; 22,000 psi)                            |
| Maximum temperature limit | 120 °C                                                     |
| Outer diameter            | 0.79 mm (1/32 in.)                                         |
| Inner diameter            | 100 µm (0.004 in.), 130 µm (0.005 in.), 180 µm (0.007 in.) |
| Available lengths         | Various lengths from 65 mm to 950 mm                       |

## nanoViper Fingertight Fitting Systems - Specifications

### Thermo Scientific nanoViper Fingertight Fitting System – Shielded Fused Silica (1200 bar)

|                           |                                                            |
|---------------------------|------------------------------------------------------------|
| Connection principle      | Fingertight                                                |
| Tubing type               | PEEK-shielded fused silica, blue sleeve                    |
| Wetted material           | PEEK, fused silica                                         |
| Maximum pressure          | 120 MPa (1,200 bar; 17,400 psi)                            |
| Maximum temperature limit | 120 °C                                                     |
| Outer diameter            | 0.79 mm (1/32 in.)                                         |
| Inner diameter            | Various I.D. from 10 µm (0.0004 in.) to 150 µm (0.006 in.) |
| Available lengths         | Various lengths from 70 mm to 1100 mm                      |

### Thermo Scientific nanoViper Fingertight Fitting System – Shielded Fused Silica (1500 bar)

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Connection principle      | Fingertight*                                              |
| Tubing type               | PEEK-shielded fused silica, purple sleeve                 |
| Wetted material           | PEEK, fused silica                                        |
| Maximum pressure          | 150 MPa (1,500 bar; 21,750 psi)                           |
| Maximum temperature limit | 120 °C                                                    |
| Outer diameter            | 0.79 mm (1/32 in.)                                        |
| Inner diameter            | Various I.D. from 10 µm (0.0004 in.) to 50 µm (0.002 in.) |
| Available lengths         | Various lengths from 70 mm to 950 mm                      |

\* For optimal performance in low-flow LC at pressure >1200 bar the Vanquish Neo torque tool (P/N 6250.2100) is recommended.

## Viper Fingertight Fitting Systems—ordering guide

Choose between individual standard or advanced Viper capillaries, or system and application-specific Viper kits to equip your HPLC and UHPLC systems.



**Standard Viper Fingertight Fitting Systems** are installed in the Thermo Scientific™ UltiMate™ 3000 SD and RS (U)HPLC Systems, and can optionally be installed in the Thermo Scientific™ Vanquish™ Core HPLC Systems.

| Viper Fingertight Fitting Systems – SST |                          |                          |                          |
|-----------------------------------------|--------------------------|--------------------------|--------------------------|
| Length (mm)                             | 0.10 mm (0.004 in.) I.D. | 0.13 mm (0.005 in.) I.D. | 0.18 mm (0.007 in.) I.D. |
| 65                                      | 6040.2207                | 6040.2307                | 6040.2357                |
| 100                                     | —                        | 6040.2322                | —                        |
| 150                                     | 6040.2215                | 6040.2315                | 6040.2360                |
| 200                                     | —                        | 6040.2327                | —                        |
| 250                                     | 6040.2225                | 6040.2325                | 6040.2385                |
| 300                                     | —                        | 6083.2300                | —                        |
| 350                                     | 6040.2235                | 6040.2335                | 6040.2375                |
| 450                                     | 6040.2245                | 6040.2345                | 6040.2365                |
| 550                                     | 6040.2255                | 6040.2305                | 6040.2355                |
| 650                                     | 6040.2265                | 6040.2310                | 6040.2395                |
| 750                                     | —                        | 6040.2320                | 6040.2370                |
| 850                                     | —                        | 6040.2330                | 6040.2380                |
| 950                                     | —                        | 6040.2340                | 6040.2390                |

**Standard Viper Fingertight Fitting Systems** are installed in biocompatible LC Systems such as the Thermo Scientific™ UltiMate™ 3000 BioRS UHPLC System, and can optionally be installed in the Thermo Scientific™ Vanquish™ Flex UHPLC Systems and the Thermo Scientific™ Vanquish™ Horizon UHPLC System.

| Viper Fingertight Fitting Systems – MP35N |                          |                          |                          |
|-------------------------------------------|--------------------------|--------------------------|--------------------------|
| Length (mm)                               | 0.10 mm (0.004 in.) I.D. | 0.13 mm (0.005 in.) I.D. | 0.18 mm (0.007 in.) I.D. |
| 65                                        | 6042.2306                |                          | 6042.2308                |
| 150                                       | 6042.2320                |                          | 6042.2315                |
| 250                                       | 6042.2330                |                          | 6042.2327                |
| 300                                       | 6083.7950                |                          | 6042.2322                |
| 350                                       | 6042.2340                |                          | 6042.2337                |
| 450                                       | 6042.2350                |                          | 6042.2365                |
| 550                                       | 6042.2360                |                          | 6042.2355                |
| 650                                       | 6042.2370                |                          | 6042.2380                |
| 750                                       | 6042.2390                | 6042.2373                | 6042.2375                |
| 950                                       | 6042.2395                |                          | 6042.2385                |

**Standard Viper Fingertight Fitting Systems** to be installed in LC Systems for metal-free flow path and for low pressure connections up to 345 bar:

| Viper Fingertight Fitting Systems – PEEK |                         |                         |                          |
|------------------------------------------|-------------------------|-------------------------|--------------------------|
| Length (mm)                              | 65 µm (0.0025 in.) I.D. | 90 µm (0.0035 in.) I.D. | 0.13 mm (0.005 in.) I.D. |
| 65                                       | —                       | —                       | —                        |
| 75                                       | —                       | 6041.9075               | —                        |
| 150                                      | 6041.5615               | —                       | 6041.5616                |
| 250                                      | 6041.5625               | 6041.9025               | —                        |
| 350                                      | —                       | 6041.1035               | 6041.1335                |
| 550                                      | —                       | 6041.1055               | 6041.1355                |
| 650                                      | 6041.5665               | —                       | —                        |
| 750                                      | 6041.5675               | 6041.1075               | 6041.1375                |
| 850                                      | 6041.5685               | —                       | —                        |

**Advanced Viper Fingertight Fitting systems** for dedicated purposes like improved detector performance or eluent temperature conditioning:

| For Thermo Scientific Vanquish HPLC and UHPLC Systems                                          |           |
|------------------------------------------------------------------------------------------------|-----------|
| Viper Capillaries to optimize Thermo Scientific™ Vanquish™ Diode Array Detector HL performance |           |
| Viper MP35N 0.100 × 250 mm, thermally insulated                                                | 6083.2406 |
| Viper MP35N 0.100 × 300 mm, thermally insulated                                                | 6083.2405 |
| Viper MP35N 0.130 × 350 mm, thermally insulated                                                | 6083.2410 |
| Viper MP35N 0.130 × 500 mm, thermally insulated                                                | 6083.2411 |
| Active Pre-heaters for Vanquish Column Compartments                                            |           |
| Active Pre-heater, MP35N, 0.100 × 380 mm                                                       | 6732.0110 |
| Active Pre-heater, MP35N, 0.100 × 610 mm                                                       | 6732.0150 |
| Passive Pre-heaters for Vanquish Column Compartments                                           |           |
| Passive Pre-heater, SST, 1 µL, 0.180 × 530 mm                                                  | 6732.0170 |
| Passive Pre-heater, SST, 5 µL, 0.25 × 580 mm                                                   | 6732.0180 |
| Passive Pre-heater, MP35N, 1 µL, 0.100 × 530 mm                                                | 6732.0174 |
| Passive Pre-heater, MP35N, 1 µL, 0.100 × 680 mm                                                | 6732.0184 |
| Post-column Coolers for Vanquish Column Compartment H                                          |           |
| Post-column Cooler, MP35N, 1 µL, 0.100 × 240 mm                                                | 6732.0510 |
| Post-column Cooler, MP35N, 1 µL, 0.100 × 590 mm                                                | 6732.0520 |
| For Thermo Scientific UltiMate 3000 LC Systems                                                 |           |
| Passive Pre-heaters for TCC-3000SD and TCC-3000RS                                              |           |
| Passive Pre-heater, coated SST, biocompatible, 2 µL, 0.130 mm I.D. (max. 345 bar)              | 6723.0232 |
| Passive Pre-heater, coated SST, biocompatible, 7 µL, 0.180 mm I.D. (max. 345 bar)              | 6723.0242 |
| Passive Pre-heater, coated SST, biocompatible, 11 µL, 0.250 mm I.D. (max. 345 bar)             | 6723.0252 |
| Passive Pre-heater, MP35N, biocompatible, 1 µL, 0.100 mm I.D.                                  | 6723.0235 |
| Passive Pre-heater, MP35N, biocompatible, 7 µL, 0.180 mm I.D.                                  | 6723.0245 |
| Passive Pre-heater, SST, 1 µL, 0.100 mm I.D.                                                   | 6722.0510 |
| Passive Pre-heater, SST, 2 µL, 0.130 mm I.D.                                                   | 6722.0530 |
| Passive Pre-heater, SST, 7 µL, 0.18 mm I.D.                                                    | 6722.0540 |
| Passive Pre-heater, SST, 11 µL, 0.25 mm I.D.                                                   | 6722.0550 |
| Post-column Cooler for TCC-3000RS                                                              |           |
| Post-column Cooler, SST, 2 µL, 0.130 mm I.D.                                                   | 6730.0008 |

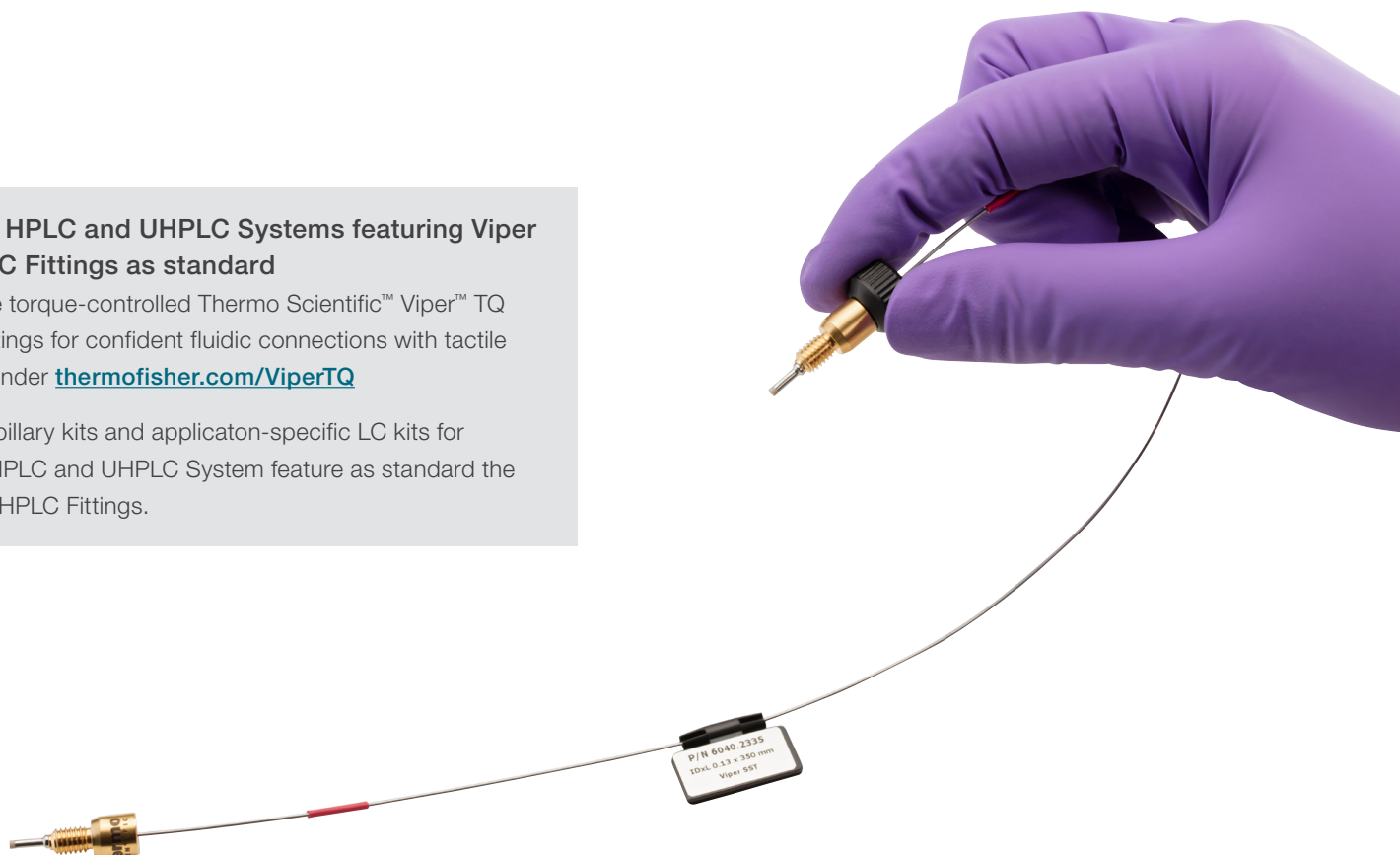
**Viper Capillary Kits** for easy set up of Thermo Scientific UltiMate 3000 LC Systems.

| For Thermo Scientific UltiMate 3000 LC Systems                      |            |            |
|---------------------------------------------------------------------|------------|------------|
| Viper System Capillary Kits for UltiMate 3000 LC Systems            | SD Systems | RS Systems |
| Viper Capillary Kit for ISO, LPG, DGP pumps                         | 6040.2302  | 6040.2301  |
| Viper Capillary Kit for HGP pumps                                   | 6040.2309  | 6040.2308  |
| Viper Capillary Kit for Biocompatible RS Systems                    | –          | 6841.2301  |
| Viper Capillary Kits for UltiMate 3000 LC Solutions                 |            |            |
| Viper Tandem Operation Solution Kits                                | 6040.2804  | 6040.2803  |
| Viper Parallel Setup Solution Kit                                   | 6040.2810  | 6040.2809  |
| Viper Online SPE Solution Kit                                       | 6040.2802  | 6040.2801  |
| Viper Application Switching Solution Kit                            | 6040.2806  | 6040.2805  |
| Viper Automated Method Scouting Solution Kit                        | 6040.2808  | 6040.2807  |
| Viper Automated Method Scouting Solution Kit, biocompatible         | 6042.2808  | 6042.2807  |
| Extension Kit for Automated Method Scouting Solution                | 6040.0100  |            |
| Extension Kit for Automated Method Scouting Solution, biocompatible | 6042.0100  |            |
| Viper Inverse Gradient Kit                                          | 6040.2819  | 6040.2820  |

### Vanquish HPLC and UHPLC Systems featuring Viper TQ UHPLC Fittings as standard

Explore the torque-controlled Thermo Scientific™ Viper™ TQ UHPLC Fittings for confident fluidic connections with tactile feedback under [thermofisher.com/ViperTQ](https://thermofisher.com/ViperTQ)

System capillary kits and application-specific LC kits for Vanquish HPLC and UHPLC System feature as standard the Viper TQ UHPLC Fittings.



## nanoViper Fingertight Fitting Systems—ordering guide

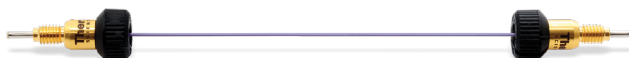
Choose between individual standard or advanced nanoViper capillaries, or application-specific nanoViper kits to equip your HPLC and UHPLC systems.



**Standard nanoViper Fingertight Fitting Systems** to be installed in the Thermo Scientific™ Vanquish™ Neo UHPLC Systems, the Thermo Scientific™ UltiMate™ 3000 RSLCnano Systems and the Thermo Scientific™ EASY-nLC™ Systems:

| nanoViper Fingertight Fitting Systems |                                                     |                 |                |                         |                 |                |                |                |                |
|---------------------------------------|-----------------------------------------------------|-----------------|----------------|-------------------------|-----------------|----------------|----------------|----------------|----------------|
| Length<br>(mm)                        | 1500 bar (purple)<br>For Vanquish Neo UHPLC system* |                 |                | 1200 bar (blue)         |                 |                |                |                |                |
|                                       | 10 µm I.D.                                          | 20 µm I.D.      | 50 µm I.D.     | 10 µm I.D.              | 20 µm I.D.      | 50 µm I.D.     | 75 µm I.D.     | 100 µm I.D.    | 150 µm I.D.    |
|                                       | 0.0004 in. I.D.                                     | 0.0008 in. I.D. | 0.002 in. I.D. | 0.0004 in. I.D.         | 0.0008 in. I.D. | 0.002 in. I.D. | 0.003 in. I.D. | 0.004 in. I.D. | 0.006 in. I.D. |
| 70                                    | —                                                   | 6250.5120       | 6250.5123      | —                       | 6041.5120       | 6041.5123      | 6041.5126      | 6041.5810      | 6041.5817      |
| 150                                   | 6250.5118<br>(L 180 mm)                             | 6250.5121       | 6250.5124      | 6041.5118<br>(L 180 mm) | 6041.5121       | 6041.5124      | 6041.5127      | 6041.5811      | 6041.5818      |
| 250                                   | —                                                   | —               | —              | —                       | —               | —              | 6041.5730      | 6041.5812      | 6041.5819      |
| 350                                   | 6250.5135                                           | 6250.5240       | 6250.5540      | —                       | 6041.5240       | 6041.5540      | 6041.5735      | 6041.5813      | 6041.5820      |
| 450                                   | 6250.5145                                           | 6250.5250       | 6250.5550      | —                       | —               | —              | —              | 6041.5814      | 6041.5821      |
| 550                                   | 6250.5155                                           | 6250.5260       | 6250.5560      | —                       | 6041.5260       | 6041.5560      | 6041.5760      | 6041.5815      | 6041.5822      |
| 650                                   | —                                                   | 6250.5275       | 6250.5575      | —                       | 6041.5275       | 6041.5575      | 6041.5775      | 6041.5824      | —              |
| 750                                   | —                                                   | 6250.5280       | 6250.5580      | —                       | 6041.5280       | 6041.5580      | 6041.5780      | 6041.5816      | 6041.5823      |
| 850                                   | —                                                   | —               | —              | —                       | —               | —              | 6041.5785      | —              | —              |
| 950                                   | —                                                   | 6250.5122       | 6250.5125      | —                       | 6041.5122       | 6041.5125      | 6041.5128      | —              | —              |
| 1100                                  | —                                                   | —               | —              | —                       | —               | —              | 6041.5711      | —              | 6041.5828      |

\* For optimal performance at pressures >1200 bar the Vanquish Neo torque tool (P/N 6250.2100) is recommended.



**Advanced nanoViper Fingertight Fitting Systems** for dedicated purposes like improved detector performance or establishing low-flow UHPLC connections:

| nanoViper Capillaries to optimize Thermo Scientific™ Vanquish™ Diode Array Detector HL performance |           |
|----------------------------------------------------------------------------------------------------|-----------|
| nanoViper 0.075 × 300 mm, thermally insulated                                                      | 6083.2415 |
| Single-sided nanoViper Capillaries                                                                 |           |
| nanoViper 0.075 × 550 mm, single-sided, 360 µm O.D., for UHPLC liquid junction waste in            | 6041.5289 |
| nanoViper 0.020 × 550 mm, single-sided, 360 µm O.D., for UHPLC liquid junction column out          | 6041.5290 |
| nanoViper 0.020 × 1000 mm, single-sided, 280 µm O.D., LC column to MS tubing                       | 6041.5292 |
| nanoViper 0.020 × 1000 mm, single-sided, 360 µm O.D., LC column to MS tubing                       | 6041.5293 |
| nanoViper 0.050 × 1000 mm, single-sided, 280 µm O.D., LC column to MS tubing                       | 6041.5294 |
| nanoViper 0.050 × 1000 mm, single-sided, 360 µm O.D., LC column to MS tubing                       | 6041.5295 |

**nanoViper Capillary Kit** for easy set-up of low-flow UHPLC Systems like the Thermo Scientific™ Vanquish™ Neo UHPLC System:

| For Thermo Scientific Vanquish Neo UHPLC Systems        |           |
|---------------------------------------------------------|-----------|
| Standard Application Kit for Vanquish Neo UHPLC Systems | 6250.1010 |
| Tandem Workflow Kit for Vanquish Neo UHPLC Systems      | 6250.1030 |
| For Thermo Scientific UltiMate 3000 RSLCnano Systems    |           |
| nanoViper EASY-Spray Connection Kit                     | 6720.0395 |
| nanoViper MS Connection for Low-flow UHPLC Systems      | 6720.0345 |



## Viper and nanoViper Fingertight Fitting System accessories—ordering guide

Accessories help you to complete the installation depending on your application needs.

| Accessories                                                           |            |
|-----------------------------------------------------------------------|------------|
| Viper TQ union (for connecting (nano)Viper with Viper TQ capillaries) | 6261.5060  |
| Viper union (for connecting (nano)Viper capillaries)                  | 6040.2304  |
| Viper Plug                                                            | 6040.2303  |
| Calibration Tool for Viper and nanoViper Fingertight Fitting Systems  | 6040.2312  |
| Viper Inline Filter (Titanium) for column protection                  | 6036.1045  |
| Adapter for Viper Fingertight Fitting Systems, SST, 2 pcs             | 6261.5065A |



Learn more at [thermofisher.com/viper](https://thermofisher.com/viper)

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