

General Laboratory Consumables

Autosampler Vials and Accessories	29-48
Filter Membranes	15
Filtration System.....	13
Syringe Filters	10-12

GC Accessories

Autosampler Vials and Accessories	29-48
Capillary Unions and Splitters	171
Capillary Column Mini-Unions	171
Ceramic Scoring Wafer (Capillary Cutter)	174
Column Test Standards	175
Cool-Lock Nut	157-158
Ferrules	159-160
Ferrule Remover Tool Kit	174
FID Flame Detector Jet Cleaning Kit	174
Filtration Products	10-18
Gas Management	172-173
Gas Purifiers and Traps	174
GC Fittings	158
Injector Inlet Base Seals	155-156
Injector Inlet Septa	161
Injection Port Inlet Liners	163-170
Installation Nuts	157-158
Merlin Microseal Septum	162
Polyimide Resin	171
Sealing Rings.....	161
Septa	161-162
Syringes	20-24
Test Mixes	175
Vials and Accessories	29-48

HPLC Accessories

Adapters	393
Autosampler Vials and Accessories	29-48
Backpressure Regulators.....	397
Calibration Standards Kits	320
Column Protection	311, 390, 415
Column Heater	390
Column Sealing Plugs	396
Column Test Standards.....	398-399
Core-Shell Performance Enhancement Kit	395
Couplers.....	396
Equipment	390
Filters	10-18
Filter Cap	14
Filter Membranes	15
Filtration Products	10-18

HPLC Accessories (cont'd)

Filtration System.....	13
Fingertight Fittings	396
Fittings	393-397, 402, 404
Fitting Tightening Tool.....	394
Flangeless Fittings	397
Frits	402
Inlet Filters	16
In-line Filters	17-18
LC-MS Gas Filter	172-173
Mixing Tee, PEEK	397
Mobile Phase Accessories	13-18
Mobile Phase Pickup Adapter	14
Mobile Phase Reservoir and Reagent Bottles	14
Mobile Phase Safety Products	391-392
Polymer Calibration Standards.....	320
Reducing Adapters.....	393
Rheodyne Fitting Wrench.....	401, 405
Sample Injectors.....	403-405
SecurityCAP LC Solvent Safety Products	14, 391
SecurityGuard Column Protection.....	311, 390
SecurityLINK UHPLC Connections	317-318
Solvent Reservoir, Reagent Bottles, and Caps	14
Solvent Safety Products	14, 391
Standards	398-399
Sure-Fit Connectors	397
Sure-Lok Coupler	396
Syringes	25-26
Syringe Filters	10-12
Tubing	400-402
UHPLC Fittings	317-318, 394-395
Unions	393
Valves	403-405
Vials	29-48
Wrenches / Spanners	401
Zero Dead-Volume Unions	393

Accessories and Lab Safety



“Always pleasant dealing
with Phenomenex. I am a happy
customer.”





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The opinions stated herein are solely those of the speaker
and not necessarily those of any company or organization.

HPLC Column Protection / Equipment

The Most Important Thing You Can Do... Use Guard Columns

Phenomenex recommends the use of SecurityGuard™ to protect all your valuable HPLC/UHPLC/SFC/PREP columns from chemical contaminants and damaging microparticulates. See page 311.

Analytical	SemiPrep
<p>For analytical separations the SecurityGuard innovative design provides a universal fit to virtually any HPLC column endfitting. Learn more about this unique cartridge system and the many benefits SecurityGuard gives you.</p> <p>SecurityGuard ULTRA</p>  <p>All core-shell and / or < 3 μm particle columns (< 20000 psi / 1378 bar) Holder P/N AJ0-9000 See page 316.</p> <p>SecurityGuard Standard</p>  <p>All non core-shell and / or ≥ 3 μm particle columns (5000 psi / 345 bar) Holder P/N KJ0-4282 See page 311.</p>	 <p>10 mm ID Guard Holder P/N AJ0-9281</p>  <p>Use with 9 to 16 mm ID Columns Cartridge size: 10 x 10 mm ID</p>

Single-Column Heater 25 °C to 90 °C

ThermaSphere™ TS-130

Maintains the temperature of your HPLC column (and guard, if any) at a precise degree set by user, thus improving reproducibility and chromatographic results.

Essential for improving virtually all types (modes) of HPLC separations.

- Improves reproducibility and chromatographic results
- Improves baseline and overall detector performance
- Reduces analyte identification errors
- Improves peak efficiency and analyte quantitation (especially at low levels)
- Improves the ruggedness of separations (within-lab and lab-to-lab)



Column heater showing front control/display panel

Specifications

Column Size Accommodated:	Fits up to one 30 cm length column, or 25 cm column with guard column. Multiple inlet and outlet slots allow the shortest length of tubing to be used with any length column.
Temperature Range:	From 25 to 90 °C in 0.1 °C increments.
Temperature Stability:	±0.1 °C Calibration two-point, electronic, factory set.
Accuracy:	0.5 °C over the entire range.
Power:	12 volt DC universal power supply takes voltage inputs from 95 to 265 VAC, 50/60 Hz. CE approved.
Over-temperature Alarm:	Audible with automatic heater shutoff if column temperature exceeds 10 °C of target temperature.
Auto-Off Timer:	Count down timer with audible alarm turns off heater, settable to 30 days in days, hours, minutes and seconds.
Injection Counter:	Trigger on external switch closure.

Ordering Information

ThermaSphere TS-130 Column Heater

Part No.	Description
EH0-7057	ThermaSphere TS-130 HPLC Column Heater 25-90 °C, 95 to 265 VAC, 50/60 Hz



1. The ThermaSphere TS-130 is warranted for one year parts and labor. Each unit is individually calibrated and comes with a Certificate of Performance. No adjustment or re-calibration is ever necessary. CE approved system, UL and CSA approved power supplies.
2. Please specify Line Cord if other than North America (Australia, Germany, Italy and U.K. are available)

PREPARATIVE		
HPLC	SFC	
 <p>21.2 mm ID HPLC Holder P/N AJ0-8223</p>	 <p>21.2 mm ID SFC Holder P/N AJ0-8617</p>	 <p>Use with 18 to 29 mm ID Columns Cartridge size: 15 x 21.2 mm ID</p>
 <p>30 mm ID HPLC Holder P/N AJ0-8277</p>	 <p>30 mm ID SFC Holder P/N AJ0-8618</p>	 <p>Use with 30 to 49 mm ID Columns Cartridge size: 15 x 30.0 mm ID</p>

Increase Lab Safety with HPLC/UHPLC Solvent Protection SecurityCAPs

The SecurityCAP mobile phase and solvent waste safety caps inhibit dangerous vapors and gases from leaving HPLC/UHPLC solvent reservoirs. Over time, these chemicals can have a negative impact on the health of all employees and visitors in the lab. When lab safety and dependable results are a priority, you need SecurityCAPs!

Mobile Phase Safety Filter and Cap

- **Increases Health and Worker Safety**
Solvent vapors and gasses are restricted to their containers
- **Protects HPLC/UHPLC Results**
Eliminates dust and other air contaminants from testing results
- **Confidence During Quality and Safety Audits**
Eliminate aluminum foil or Parafilm® covering solvent bottles



The SecurityCAP mobile phase safety filters have an integrated one-way valve and filter membrane that captures dust, particulates, and other airborne contaminants. This prevents unwanted items from entering the solvent container which can cause irreproducible HPLC/UHPLC results, solvent contamination, bacterial growth and ghost peaks, all of which could negatively impact both your chromatography and HPLC/UHPLC system.

HPLC/UHPLC Solvent Top/Cap Comparison

SecurityCAP offers several advantages over insufficient non-sealed tops/caps which can lead to both hazardous lab conditions and poor chromatography results. When it comes to lab safety, saving money on expensive solvents and ensuring solvent protection, there is no comparison to SecurityCAP.

	Open Top	Aluminum foil wrapped bottle top	Cap with two 10 mm holes in the plastic	SecurityCAP™
Protects staff and visitors from volatile organic compounds released into lab	No	No	No	Yes
Ensures confidence during quality and safety audits	No	No	No	Yes
Protects solvents from both atmospheric particulates and contaminants	No	No	No	Yes
Saves money by preventing solvent evaporation	No	No	No	Yes
Prevents chemical spills/ splashes	No	No	No	Yes
Time monitor device for protection	No	No	No	Yes
100% Sealable	No	No	No	Yes
Easy to use	Yes	No	Yes	Yes
Improves lab safety	No	No	No	Yes

Waste Exhaust Filter and Cap

- **Safer Laboratory Work Environment**
Harmful chemical vapors are safely collected and air quality is protected
- **Large Capacity Waste Safety Filter**
High surface area (560m²/g) multi-compound adsorbent
- **Easy to Use**
No more twisting tubes during bottle exchange



SecurityCAP solvent waste caps and exhaust filters ensure lab air quality. Feel confident that volatile vapors from solvent waste containers are being captured safely, beyond fume cupboards or hoods.

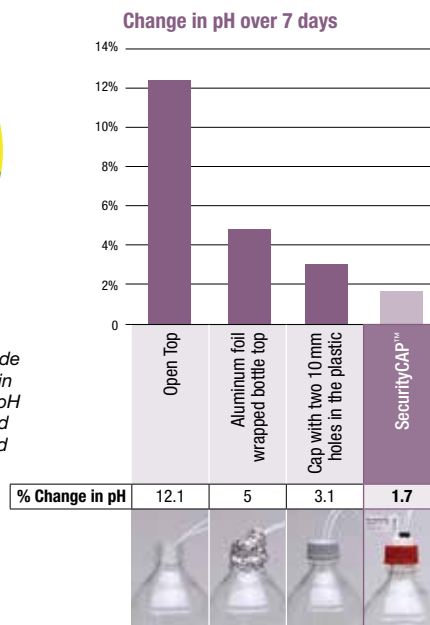
Prevent Unwanted Changes in Mobile Phase pH

As every chromatographer knows, the pH of the mobile phase can have dramatic effects on selectivity, capacity factor (retention factor), peak shape, resolution, and reproducibility of your HPLC/UHPLC analysis. Because slight variations in pH can have a dramatic impact on the separation, careful mobile phase preparation and protection are essential. When compared to other mobile phase solvent tops, SecurityCAP offers the solution to ensure the mobile phase pH will stay constant during use. This ensures reliable solvent conditions for results you can trust!

Download complete technical note at:
www.phenomenex.com/SecurityCAP



A 1L solution of 4 mM ammonium bicarbonate buffer at pH 11 was made for each bottle and left in a hood for 7 days. The pH was checked before and after the experiment and the percent difference was calculated.



Continued on next page

Lab Safety (cont'd)



Mobile Phase (Eluent) Safety Starter Kits

Ordering Information

SecurityCAP™ Mobile Phase Starter Kits

Part No.	Description	Unit
AC2-1245	2-port GL45 Cap and 6-month Safety Filter	ea
AC2-4245	2-port GL45 Caps (x4) and 6-month Safety Filter (x4)	ea
AC2-4240	2-port Merck S40 Caps (x4) and 6-month Safety Filter (x4)	ea
AC2-1345	3-port GL45 Cap and 6-month Safety Filter	ea
AC2-4345	3-port GL45 Caps (x4) and 6-month Safety Filter (x4)	ea
AC2-1445	4-port GL45 Cap and 6-month Safety Filter	ea
AC2-4445	4-port GL45 Cap (x1) and 2-port Cap (3x) and 6-month Safety Filter (x4)	ea
AC2-1545	5-port GL45 Cap and 6-month Safety Filter	ea
AC2-1561	5-port S60/S61 Cap and 6-month Safety Filter	ea

Waste Safety Starter Kits

Ordering Information

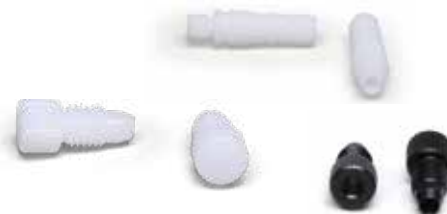
SecurityCAP Waste Starter Kits

Part No.	Description	Unit
AC1-1245	2-port GL/DIN45 Cap and 6-month Exhaust Filter and Barbed connector	ea
AC1-1545	5-port GL/DIN45 Cap and 6-month Exhaust Filter	ea
AC1-1551	5-port DIN51 Cap and 6-month Exhaust Filter	ea
AC1-1553	5-port B53 Cap and 6-month Exhaust Filter	ea
AC1-1561	5-port S61 Cap and 6-month Exhaust Filter	ea

Mobile Phase Safety Filter



Waste Safety Filters



Replacement Filters

Ordering Information

SecurityCAP Mobile Phase Safety Filter

Part No.	Description	Unit
AC2-0161	6-month Capacity, 1/4 in.-28 Threads	ea
AC2-0961	6-month Capacity, 1/4 in.-28 Threads	10/pk

SecurityCAP Waste Safety Filters

Part No.	Description	Unit
AC1-0161	6-month Exhaust Filter for SecurityCAP, 1/4 in.-28 Threads	ea
AC1-0361	6-month Exhaust Filter for SecurityCAP, 1/4 in.-28 Threads	3/pk
AC1-0162	6-month Exhaust Filter for Wide-port Caps, GL14 Threads	ea
AC1-0362	6-month Exhaust Filter for Wide-port Caps, GL14 Threads	3/pk

Fittings and Accessories

Ordering Information

SecurityCAP Fittings

Part No.	Description	Unit
AC3-1101	for 1/16 in. or 2.0 mm ID Tubing, 1/4 in.-28 Threads (POM), blue	ea
AC3-1201	for 2.3-2.6 mm ID Tubing, 1/4 in.-28 Threads (POM), white	ea
AC3-2101	for 1/8 in. ID Tubing, 1/4 in.-28 Threads (POM), black	ea

SecurityCAP Connectors

Part No.	Description	Unit
AC3-1001	Barbed connector, for 5-8 mm ID Tubing (PTFE), white	ea
AC3-1301	Y-connector for 6-8 mm ID Tubing (POM), white	ea

SecurityCAP Adapter

Part No.	Description	Unit
AC2-1138	Cap Thread Adapter, PTFE, GPI/GL 38 Female to GL45 Male	ea
AC3-1111	Waste Adapter for Male 1/4 in. NPT-port (PTFE)	ea

SecurityCAP Sealing Plug

Part No.	Description	Unit
AC3-2001	1/4 in.-28 Threads (POM), white	ea

i POM = polyoxymethylene
PTFE = polytetrafluoroethylene (Teflon®)

Disclaimer

The 6 month SecurityCAP filter lifetime is a general guideline based on running a single instrument for 8 hours a day at 1mL/min. SecurityCAP filters may need to be changed more or less frequently based on the system usage.

SecurityCAP Waste Safety Filter Compatibility Table

Supplier	Phenomenex SecurityCAP Filters	
	ea	3/pk
S.C.A.T.® SafetyWasteCaps	AC1-0162	AC1-0362
AIT® Smart Healthy Caps	AC1-0162	AC1-0362
Agilent® InfinityLab Stay Safe Caps	AC1-0162	AC1-0362
VICI Jour® Waste Caps	AC1-0161	AC1-0361
Canary-Safe™ Safety Caps	AC1-0162	AC1-0362
DURAN® DG Safety Caps	AC1-0162	AC1-0362
VapLock™ Safety Caps (with AC3-1111)	AC1-0161	AC1-0361

Fittings

1/4 in.-28 to 10-32 Standard Adapter

- Make connections between different pieces of liquid handling equipment
- Simple to use fingertight design
- Made of sturdy and inert PEEK
- Pressure rated to 1500 psi (103 bar)



Ordering Information

Standard Adapter

Part No.	Description	Unit
AQO-3351	1/4 in.-28 to 10-32 Standard Adapter, PEEK	ea

Ultra-High Performance LC/HPLC Stainless Steel Zero Dead-Volume Union

- Pressure rated to 28000 psi (1930 bar)
- For 1/16 in. OD tubing, with 10-32 threading
- 0.010 in. thru hole, 20 nL swept volume
- Includes 2 fittings (nuts and ferrules)



Ordering Information

Zero Dead-Volume Union (Stainless Steel)

Part No.	Description	Unit
AQO-8507	Zero Dead-Volume Union, SS, with Fittings, 10-32, for 1/16 in. Tubing, 28000 psi (1930 bar)	ea

Reducing Adapters

Two reducing adapters for 50mm ID Prep columns allow smaller 1/16 in. ID system tubing to be used with the larger 1/8 in. ID column inlet end fittings, forming a positive leak-free seal with zero dead volume. The smaller line from your system goes directly into the adapter and the sample goes directly into the column, without the short pieces of connecting tubing required if a reducing union was used instead. Once the fitting is installed, only one wrench is required to remove and reinstall it. Each end of the column requires a fitting.

[AQO-9222](#)

Reducing Adapter for 50 mm ID Axia Preparative HPLC/SFC Hardware



[AQO-7555](#)

Reducing Adapter for 50 mm ID Traditional (Non-Axia) HPLC/SFC Hardware



Ordering Information

Reducing Adapters

Part No.	Description	Unit
Complete Assembly		
AQO-9222	Reducing Adapter, 1/8 in. to 1/16 in. for 50 mm ID Axia Preparative HPLC/SFC Hardware, 1.0 mm (0.040 in.) ID thru-hole	2/pk
AQO-7555	Reducing Adapter, 1/8 in. to 1/16 in. for 50 mm ID Traditional (Non-Axia) HPLC/SFC Hardware	2/pk
Replacement Parts		
AQO-7554	1/8 in. Fittings for 50 mm ID Rounded Hardware, 2 Nuts and 2 Ferrules (Non-Axia Columns)	2/pk
AQO-3018	10-32 Threaded Male Nut and Ferrule Set for 1/16 in. OD capillary tubing	ea

PEEK Zero Dead-Volume Union

- Chemically inert and fully biocompatible
- Zero dead-volume connection, 0.010 in. thru-hole
- Wrench/fingertight fittings
- Pressure rated to 5000 psi (345 bar)



Ordering Information

PEEK Zero Dead-Volume Union

Part No.	Description	Unit
AQO-1674	PEEK Zero Dead-Volume Union, 0.010 in. thru-hole, with 2 fingertight fittings	ea



Maximum Temperature Ratings (°C)

Material	Tubing	Fitting
PEEK	100	150
Delrin®	N/A	60
Teflon® (PTFE)	80	80
Polyethylene (UHMW)	N/A	50
Polypropylene	N/A	40
KEL-F®	N/A	80
Tefzel®	80	80

Ultra-High Performance LC Fittings

UHPLC / HPLC Sure-Lok™ High Pressure PEEK Male Nut Fittings

- Pressure rated to 12000 psi (827 bar)
- Stable up to temperatures of 200 °C

Made of a proprietary PEEK blend, these ultra-high performance polymeric fittings are compatible for most UHPLC/HPLC applications, and best for ion- and bio-chromatography. High pressure nuts have a knurled surface designed to provide sufficient sealing force on the ferrule without wrenches. For 1/16 in. diameter tubing, there are two design types. The convenient one-piece design is pressure rated on S.S. tubing to 12000 psi (827 bar) and stable up to temperatures of 200 °C. The second type is engineered as a 3-piece unit, with a ferrule and stainless steel gripping ring, that will provide leak-free connections up to 19000 psi (1310 bar), on S.S. tubing. Upper pressure limits of these fittings when used with polymeric tubing (such as PEEK) depends on the pressure rating of the tubing. Phenomenex PEEK tubing is rated to 7000 psi (482 bar). For higher pressure-rated fittings use the stainless steel nut and ferrule set (AQO-8506).

AQO-8503
Pressure rated up to 12000psi (827 bar)



AQO-8504
shown with AQO-8505
Pressure rated to 19000psi (1310 bar)



Ordering Information

Sure-Lok High Pressure PEEK Nuts

Part No.	Description	Unit
AQO-8502	Sure-Lok High Pressure PEEK 1-Pc Nut, 10-32, for 1/16 in. Tubing, 12000 psi (827 bar)	2/pk
AQO-8503	Sure-Lok High Pressure PEEK 1-Pc Nut, 10-32, for 1/16 in. Tubing, 12000 psi (827 bar)**	10/pk
AQO-8504	Sure-Lok High Pressure PEEK Nut, 10-32, for 1/16 in. Tubing, 19000 psi (1310 bar) ***†	10/pk
AQO-8505	Sure-Lok PEEK Ferrule Assembly (2-pc), for High Pressure 2-Pc Nut (AQO-8504)	10/pk

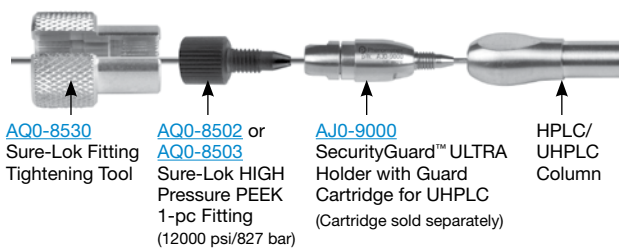
* Ferrule assembly ([AQO-8505](#)) must be ordered separately.

** Sure-Lok fitting tightening tool is required for [AQO-8503](#) and [AQO-8504](#)

† Recommended for PEEKsil™ tubing applications.

Sure-Lok™ Fitting Tightening Tool

Use this handy tool to tighten any standard, short- or long-style knurl-headed (high pressure) male nut like the ones above. The tool can also be used with many of the low-pressure nuts commonly used in the lab.



AQO-8530
Sure-Lok Fitting Tightening Tool

AQO-8502 or **AQO-8503**
Sure-Lok HIGH Pressure PEEK 1-pc Fitting (12000 psi/827 bar)

AJ0-9000
SecurityGuard™ ULTRA Holder with Guard Cartridge (Cartridge sold separately)

HPLC/ UHPLC Column

Ordering Information

Sure-Lok Fitting Tightening Tool

Part No.	Description	Unit
AQO-8530	Sure-Lok Fitting Tightening Tool, Aluminum	ea

Ultra-High Performance LC/HPLC Stainless Steel Nut and Ferrule Set

For the ultra-high pressure connections use this specially-designed 10-32 stainless steel nut and ferrule set. The metal ferrule cuts a ring near the end of the tube to swage the fitting to the tube, and will provide a maximum operational limit of 28000 psi (1930 bar).



Ordering Information

Nut and Ferrule Set (Stainless Steel)

Part No.	Description	Unit
AQO-8521	Nut and Ferrule Set, SS, 10-32, for 1/16 in. Tubing, 28000 psi (1930 bar)	2/pk
AQO-8506	Nut and Ferrule Set, SS, 10-32, for 1/16 in. Tubing, 28000 psi (1930 bar)	10/pk



Important: To achieve the maximum pressure rating, 45 lbs of torque is required.



PEEKlok™ Fitting Connections

PEEKlok is designed specifically for PEEKsil™ tubing, delivering better chromatography when connecting columns, valves, and LC modules.

- Holds to 22000 psi (>1500 bar) - Ultra High Pressure Liquid Chromatography (UHPLC) fitting
- For use with 1/16 in. OD and 1/32 in. OD PEEKsil tubing
- 10-32, 6-32, and 6-40 fitting options

AQO-7600
(2 x fittings, 6 x ferrules and 1 x wrench)



AQO-7602
(2 x fittings, 6 x ferrules and 1 x tightening tool)



Ordering Information

PEEKlok Fittings

Part No.	Description	Unit
AQO-7600	PEEKlok fittings with 10-32 thread for 1/32 in. OD tubing with low profile hex head (2 x fittings, 6 x ferrules and 1 x wrench)	ea
AQO-7601	PEEKlok fittings with 10-32 thread for 1/16 in. OD tubing with low profile hex head (2 x fittings, 6 x ferrules and 1 x wrench)	ea
AQO-7602	PEEKlok fittings with 6-40 thread for 1/32 in. OD tubing (2 x fittings, 6 x ferrules and 1 x tightening tool)	ea
AQO-7603	PEEKlok fittings with 6-32 thread for 1/32 in. OD tubing (2 x fittings, 6 x ferrules and 1 x tightening tool)	ea



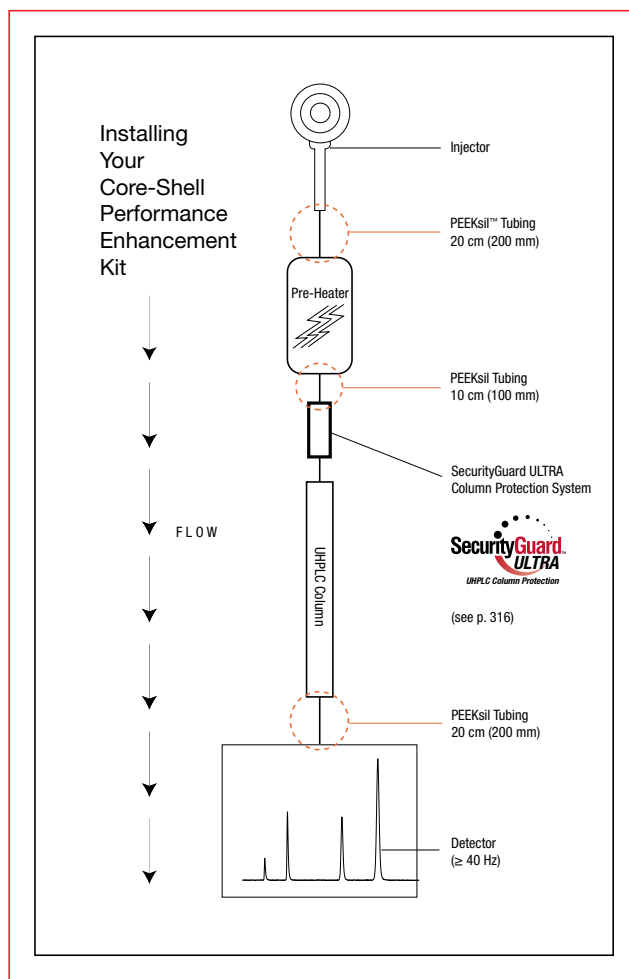
For UHPLC system connections, see SecurityLINK™ UHPLC fingertight fitting system on pp.317-318

For more about SecurityGuard ULTRA Guard Cartridge System for UHPLC, see p.316

Core-Shell Performance Enhancement Kit

- Optimize UHPLC system connections – for both routine and critical applications
- Increase method efficiency, resolution, and detection
- Minimize dead volume between injector and detector
- Improve results for sensitive and demanding applications

The connections made throughout the system are critical to maximizing the benefit from your UHPLC setup. The fittings and tubing used in this kit are carefully chosen to minimize dead volume and reduce band broadening. Combined with a core-shell column and the SecurityGuard™ ULTRA column protection system, the kit will provide reliable connections and quality performance every time.



Ordering Information

Core-Shell Performance Enhancement Kit

Part No.	Description	Unit
AQO-8892	Core-Shell Performance Enhancement Kit, Includes: PEEKsil™ Tubing, Fittings and Tool*	ea

*Kit [AQO-8892](#) includes the following components:

	Kit Quantity
PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 20 cm L, Red	2/pk
PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 10 cm L, Red	ea
Sure-Lok™ High Pressure PEEK 1-Pc Nut, 10-32, for 1/16 in. Tubing	10/pk
Sure-Lok Fitting Tightening Tool, Aluminum	ea

Accessories and Replacement Parts

Part No.	Description	Unit
ATO-8896	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 20 cm L, Red	5/pk
ATO-8897	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 10 cm L, Red	5/pk
AQO-8503	Sure-Lok High Pressure PEEK 1-Pc Nut, 10-32, for 1/16 in. Tubing	10/pk
AQO-8530	Sure-Lok Fitting Tightening Tool, Aluminum	ea



For more information on: Part No. [ATO-8896](#) and [ATO-8897](#) see p. 400.
 Part No. [AQO-8503](#) and [AQO-8530](#) see p. 394.
 SecurityGuard ULTRA Guard Cartridge System for UHPLC, see p. 316.

Fittings

Sure-Lok™ Fingertight Male Nut Fittings

- Fingertight to 5000 psi (345 bar)
- Compatible with all 10-32 HPLC fittings
- Polymer construction compatible with nearly all HPLC and GPC solvents



Sure-Lok Fingertight Male Nut (PEEK)

Ordering Information

Sure-Lok Fingertight Male Nuts

Part No.	Description	Unit
AQO-1388	PEEK Sure-Lok Fingertight Male Nut	ea
AQO-1389	PEEK Sure-Lok Fingertight Male Nut	10/pk

Nut and Ferrule Plugs

- Wrench tight to 10000 psi (690 bar)



Nut and Ferrule

Ordering Information

Nut and Ferrule

Part No.	Description	Unit
AQO-3018	10-32 Threaded Male Nut and Ferrule Set for 1/16 in. OD capillary tubing	ea

Column Sealing Plugs

- Seal column for storage
- 10-32 threads fit most columns



Ordering Information

Column Sealing Plugs

Part No.	Description	Unit
AQO-0217	Column Sealing Plug, 10-32 thread size	10/pk

Analytical Column Couplers

Sure-Lok Coupler

- Universal and reusable
- Solvent resistant material
- Low dead-volume connection
- Compatible with all 10-32 internal-threaded fittings

Applications:

- Filter to column
- Column to column
- Precolumn to column
- Column to detector



Sure-Lok Coupler (PEEK)

Sure-Lok Couplers contain two Sure-Lok male nuts at either end of a 5 cm long 1/16 in. tubing. The PEEK biocompatible coupler has all parts composed of PEEK, including the 0.010 in. ID tubing. Fingertight to 5000 psi (345 bar).

Ordering Information

Sure-Lok Couplers

Part No.	Description	Unit
AQO-1392	PEEK Sure-Lok Coupler, 0.010 in. ID	ea
AQO-1393	PEEK Sure-Lok Coupler, 0.010 in. ID	10/pk

Column Coupler

Don't let resolution be a limiting factor!

- Couple several columns together
- Maintain separation efficiency
- No influence on backpressure



Ordering Information

Column Coupler

Part No.	Description	Unit
AQO-7654	Onyx Column Coupler, PEEK, 0.020 in. ID	ea

PREP Column Coupler



Ordering Information

PREP Column Coupler

Part No.	Description	Unit
AQO-8376	PREP Coupler, Stainless Steel Tube, Nuts, and Ferrules 10-32 Threads, 1/16 in. OD x 0.030 in. ID	ea

Fittings

Sure-Fit™ Connectors

- Self-adjusting to any port depth regardless of manufacturer, with virtually no dead volume
- Fingertight to 6000 psi (414 bar)
- No twisting or bending of tubing



Ordering Information

Sure-Fit Connectors

Part No.	Description	Unit
Sure-Fit Single-Ended Connector		
AQO-5726	Stainless Steel Connectors, 0.007 in. ID x 20 cm L	2/pk

1/4 in.-28 Flangeless Fittings

- For use with 1/16 in. or 1/8 in. polymeric tubing
- Easy 2-piece design
- Replaces Cheminert® and Omnifit® fittings
- Pressure rated to 1400 psi (97 bar)



Ordering Information

Flangeless Fittings

Part No.	Description	Unit
AQO-2949	Flangeless Nut and Ferrule for 1/16 in. tubing, 1/4 in.-28 threads, red Delrin	10/pk
AQO-2950	Flangeless Nut and Ferrule for 1/8 in. tubing, 1/4 in.-28 threads, green Delrin	10/pk
AT0-2951	Teflon Tubing, 5 ft. L x 1/16 in. OD x 0.010 in. ID	ea
AT0-2953	Teflon Tubing, 5 ft. L x 1/16 in. OD x 1/32 in. (0.031 in.) ID	ea
AT0-2955	Teflon Tubing, 5 ft. L x 1/8 in. OD x 1/16 in. (0.062 in.) ID	ea

10-32 PEEK Mixing Tee

- Use with 1/16 in. OD polymeric or metal tubing
- Mixing tee for pre- or post-column derivatization
- Simple-to-use fingertight design
- Pressure rated to 4000 psi (276 bar)



Ordering Information

PEEK Mixing Tee

Part No.	Description	Unit
AQO-2002	PEEK Tee, 0.020 in. thru-hole*	ea

*Fittings not included, use PEEK Sure-Lok fingertights part no. [AQO-1389](#), see p.396

Backpressure Regulators

- Adjustable with preset pressure ratings
- Consistent backpressure at various flow rates
- Flow-through, low-volume design (146mL)



Ordering Information

Backpressure Regulators

Part No.	Description	Unit
AQO-0222	40 psi Backpressure Regulator	ea
AQO-0223	75 psi Backpressure Regulator	ea
AQO-0224	100 psi Backpressure Regulator	ea



For UHPLC Stainless Steel Zero Dead-Volume Union, see p. 393

SecurityLINK HPLC/UHPLC Fingertight Fittings

- No Tools
Easy installation
- Zero Dead-Volume
Fitting self-adjusts at column inlet
- Torque Limiting
Prevents system and column damage
- UHPLC/HPLC Compatibility
Pressure rated to 19000 psi

SecurityLINK 

UHPLC Connections in a Click

Try it Today at:

www.phenomenex.com/SecurityLINK

Standards

HPLC Column Check Standards

We recommend using check standards to verify performance of all new columns and periodically over their lifetime. Standards are grouped by column type (e.g. normal phase standard for Si, -NH₂, -Diol, -NO₂, alumina and PAC).



App ID 14744

Reversed Phase 1
(For C1, C18, CN and Phenyl)

Part No.: ALO-3034

Unit quantity: 2 mL
Contains: Uracil; Benzamide; Benzophenone; Biphenyl (refer to product insert for specific details)
Diluent: Acetonitrile

Test Conditions

Mobile Phase: Acetonitrile/Water (percentages depend on phase)
Flow Rate: 1.0 mL/min
Injection Volume: 1.0 µL for 3 and 5 µm particles*
1.5 µL for 10 µm particles
Detection: UV @ 254 nm

* For Ultracarb C8, ODS(20), ODS(30) inject 1.5 µL for all column sizes.

App ID 14754

Reversed Phase 2
(For Prodigy C8, ODS(2), ODS(3); Luna C5, C8, C18, PFP(2), Phenyl-Hexyl; Jupiter C4, C5, C18; Jupiter Proteo; Columbus C8, C18; Aqua; PhenoSphere-NEXT C8, C18; Synergi; Gemini C18, C6-Phenyl; Gemini NX-C18; Clarity Oligo-RP; Oligo-MS; Kinetex C8, C18, XB-C18, PFP, Phenyl-Hexyl; 4.6 mm ID Aeris WIDEPORE XB-C18, XB-C8, C4; Aeris PEPTIDE XB-C18)

Part No.: ALO-3045

Unit quantity: 2 mL
Contains: Uracil; Acetophenone; Toluene; Naphthalene
Diluent: Acetonitrile / Water (75:25)

Test Conditions
For Jupiter C18, all Luna (except CN), Aqua, Synergi, Gemini, Prodigy, Clarity Oligo-RP and Columbus columns

Mobile Phase: Acetonitrile/Water (65:35)*
Flow Rate: 1.0 mL/min; 0.75 mL/min for 3 µm particles
Injection Volume: 1.0 µL
Detection: UV @ 254 nm

Test Conditions
For Jupiter C4 and C5 columns

Mobile Phase: Acetonitrile/Water (50:50)
Flow Rate: 1.0 mL/min
Injection Volume: 1.0 µL
Detection: UV @ 254 nm

* Columns with dimensions of 50 x 2.0 mm, 30 x 2.0 or 1.0 mm, the mobile phase ratio should be 50:50. Some 50 x 2.0 mm columns use 65:35.
For other columns not listed above, see test chromatogram enclosed with column purchased.

App ID 15640

Onyx Monolithic Reversed Phase
(For Onyx C8, C18, and HD-C18)

Part No.: ALO-7836

Unit quantity: 2 mL
Contains: Thiourea 10 µg/mL; Progesterone 100 µg/mL; Anthracene 10 µg/mL
Diluent: Acetonitrile/Water (60:40)

Test Conditions

Mobile Phase: Acetonitrile/Water (60:40)
Flow Rate: 2.0 mL/min*
Injection Volume: 1.0 µL
Detection: UV @ 254 nm
Storage
Conditions: Refrigerate @ 4 °C

* For a 50 x 4.6 mm column

App ID 19812

Aeris™ Narrow ID
(For 2.1 mm ID Aeris WIDEPORE XB-C18, XB-C8, C4)

Part No.: ALO-8931

Unit quantity: 2 mL
Contains: Uracil; Acetophenone; Toluene; Naphthalene; Acenaphthalene (2.5 mg/mL)
Diluent: Acetonitrile/Water (50:50)

Test Conditions

Mobile Phase: Acetonitrile/Water (55:45)
Flow Rate: 0.25 mL/min*
Injection Volume: 0.1 µL
Detection: UV @ 254 nm

* For a 150 x 4.6 mm column

App ID 14743

Normal Phase
(For Si, NH₂, NO₂, Diol, Alumina, PAC, Clarity Oligo-WAX, and Luna CN)

Part No.: ALO-3033

Unit quantity: 2 mL
Contains: Meta-xylene; Nitrobenzene
Diluent: Hexane/Acetonitrile (99:1)

Test Conditions

Mobile Phase: Hexane/Acetonitrile (99:1)
Flow Rate: 1.0 mL/min
Injection Volume: 1.0 µL
Detection: UV @ 254 nm

App ID 16399

HILIC Phase
(For Luna HILIC; Kinetex HILIC)

Part No.: ALO-8317

Unit quantity: 2 mL
Contains: Toluene; Uracil; Cytosine
Diluent: Acetonitrile (containing toluene) / Water, no buffer (85:15)

Test Conditions

Mobile Phase: Acetonitrile/100 mM Ammonium Formate, pH 3.2 (90:10)
Flow Rate: 1.0 mL/min*
Injection Volume: 1.0 µL
Detection: UV @ 254 nm

* For a 150 x 4.6 mm column

App ID 14760

PolymerX™ RP-1

Part No.: ALO-7260

Unit quantity: 2 mL
Contains: Cytosine 13 mg/mL; Uracil 13 mg/mL; Uridine 33 mg/mL
Diluent: Water

Test Conditions

Mobile Phase: 0.05 M Citric Acid, pH 4.2
Flow Rate: 0.75 mL/min*
Temperature: Ambient
Injection Volume: 5 µL
Detection: UV @ 254 nm
Storage
Conditions: Refrigerate @ 4 °C

* For a 5 µm 250 x 4.6 mm column



Flow rates and Injection volumes are for 250 x 4.6 mm size columns, unless otherwise noted.

App ID 14752

Aqueous SEC 1
(For Yarra 3 µm SEC, BioSep-SEC-S, and other protein SEC columns)

Part No.: ALO-3042

Unit quantity: Dry; Reconstituted to 2 mL
Contains: Bovine thyroglobulin; Human gamma globulin (contains IgA and IgG); Ovalbumin; Myoglobin; Uridine (reconstitute with 1 mL of 100 mM Sodium Phosphate pH 6.8)
Diluent: 100 mM Sodium phosphate, pH 6.8
Storage: Add 0.1% Na₂S₂O₃ to the solution and refrigerate

Test Conditions

Mobile Phase: 100 mM Sodium phosphate, pH 6.8
Flow Rate: 1.0 mL/min for a 300 x 7.8 mm column
Injection Volume: 10 µL
Detection: UV @ 280 nm

App ID 14753

Aqueous SEC 2
(For PolySep GFC-P and other aqueous-soluble analysis columns)

Part No.: ALO-3043

Unit quantity: 2 mL
Contains: Ethylene Glycol
Diluent: Water

Test Conditions

Mobile Phase: Water
Flow Rate: 0.8 mL/min
Injection Volume: 15 µL
Detection: RI

App ID 14759

STAR-ION™ A300

Part No.: ALO-3420

Unit quantity: 2 mL
Contains: Fluoride (5 mg/mL); Chloride (10 mg/mL); Nitrite (20 mg/mL); Bromide (20 mg/mL); Nitrate (20 mg/mL); Phosphate (30 mg/mL); Sulfate (20 mg/mL)
Diluent: 1.7 mM NaHCO₃/1.8 mM Na₂CO₃

Test Conditions

Mobile Phase: 1.7 mM NaHCO₃/1.8 mM Na₂CO₃
Flow Rate: 1.5 mL/min for a 100 x 4.6 mm column
Injection Volume: 20 µL
Detection: Suppressed Conductivity

Standards

HPLC Column Check Standards (cont'd)

App ID 14756

Chiral Test Mix 2
(Applicable to the following Chirex columns)

Part No.: [ALO-3047](#)

Chirex Phase	Phase Description	Bond Type
3010	(S)-Valine and DNAn	Covalent
3011	(S)-Leucine and DNAn	Covalent
3012	(R)-Phenylglycine and DNAn (DNAn = 3,5-Dinitroaniline)	Covalent

Unit quantity: 2 mL
Contains: N-dansyl-DL-valine (cyclohexylammonium salt); CAS[84540-67-0]
Diluent: 10 mM ammonium acetate in methanol

Test Conditions

Mobile Phase: 10 mM ammonium acetate in methanol
Flow Rate: 1.0 mL/min
Injection Volume: 1.0 µL
Detection: UV @ 254 nm

App ID 14758

Chiral Test Mix 4
(Applicable to the following Chirex columns)

Part No.: [ALO-3049](#)

Chirex Phase	Phase Description	Bond Type
3126	N,S-dioctyl-(D)-Penicillamine	Ionic

Unit quantity: 2 mL
Contains: DL-Aspartic Acid CAS [617-45-8]
Diluent: 2 mM Copper sulfate pentahydrate in water/Isopropanol (95:5)

Test Conditions

Mobile Phase: 2 mM Copper sulfate pentahydrate in water/Isopropanol (95:5)
Flow Rate: 1.0 mL/min
Injection Volume: 1.0 µL
Detection: UV @ 254 nm

App ID 14746

Chiral Test Mix 5
(Applicable to the following Lux columns)

Part No.: [ALO-8412](#)

Phase	Description
Lux Cellulose-1	Cellulose Tris (3,5-Dimethyl-phenylcarbamate)
Lux Cellulose-2	Cellulose Tris (3-Chloro-4-methylphenylcarbamate)
Lux Cellulose-3	Cellulose Tris (4-Methyl-benzoate)
Lux Cellulose-4	Cellulose Tris (4-Chloro-3-methylphenylcarbamate)
Lux Amylose-2	Amylose Tris (5-Chloro-2-methylphenylcarbamate)

Unit quantity: 2 mL
Contains: trans-Stilbene oxide, 0.5 mg/mL, CAS [1439-07-2]
Diluent: Hexane/Isopropanol (90:10)

Test Conditions

Mobile Phase: Hexane/Isopropanol (90:10)
Flow Rate: 0.5 mL/min
Injection Volume: 2.0 µL
Detection: UV @ 220 nm

App ID 14745

Carbohydrate Mix 1
(For Rezex RNM, RAM & other carbohydrate analysis columns)

Part No.: [ALO-3035](#)

Unit quantity: 2 mL
Contains: Maltotriose Hydrate; Maltose; Ribitol
Diluent: Water

Test Conditions

Mobile Phase: Water
Flow Rate: 0.4 mL/min for a 300 x 7.8 mm column
Temperature: 85 °C
Injection Volume: 5.0 µL
Detection: RI

App ID 14746

Carbohydrate Mix 2
(For Rezex RPM & other carbohydrate analysis columns)

Part No.: [ALO-3036](#)

Unit quantity: 2 mL
Contains: Melezitose; Glucose; Fructose; Ribitol
Diluent: Water

Test Conditions

Mobile Phase: Water
Flow Rate: 0.6 mL/min for a 300 x 7.8 mm column
Temperature: 85 °C
Injection Volume: 5.0 µL
Detection: RI

App ID 14747

Carbohydrate Mix 3
(For Rezex RCM, RCU & other carbohydrate analysis columns)

Part No.: [ALO-3037](#)

Unit quantity: 2 mL
Contains: Melezitose; Maltose; Glucose; Mannose; Fructose; Ribitol
Diluent: Water

Test Conditions

Mobile Phase: Water
Flow Rate: 0.6 mL/min for a 300 x 7.8 mm column
Temperature: 85 °C
Injection Volume: 1.0 µL
Detection: RI

App ID 14748

Oligosaccharide Standard
(For Rezex RSO, RNO & other oligosaccharide analysis columns)

Part No.: [ALO-3038](#)

Unit quantity: 2 mL
Contains: Light corn syrup
Diluent: Water

Test Conditions

Mobile Phase: Water
Flow Rate: 0.3 mL/min for a 200 x 10 mm column
Temperature: 85 °C
Injection Volume: 5.0 µL
Detection: RI

App ID 14749

Organic Acid Standard
(For Rezex ROA & other organic acid analysis)

Part No.: [ALO-3039](#)

Unit quantity: 2 mL
Contains: Oxalic acid; Citric acid; Tartaric acid; Succinic acid; Formic acid; Acetic acid
Diluent: 5 mM Sulfuric Acid

Test Conditions*

Mobile Phase: 0.005N H₂SO₄
Flow Rate: 0.5 mL/min
Temperature: 85 °C
Injection Volume: 5.0 µL
Detection: UV @ 210 nm

* For a 300 x 7.8 mm column

App ID 14750

Cation-Exchange
(For SCX, SA, CM)

Part No.: [ALO-3040](#)

Unit quantity: 2 mL
Contains: Uracil; Cytosine
Diluent: Water

Test Conditions

Mobile Phase: 0.15 M (NH₄)₂HPO₄, pH 6.0
Flow Rate: 1.0 mL/min
Injection Volume: 1.0 µL
Detection: UV @ 254 nm

App ID 14751

Anion-Exchange
(For SAX, SB, DEAE, PEI)

Part No.: [ALO-3041](#)

Unit quantity: 2 mL
Contains: Uridine, UMP (refer to product insert for specific details)
Diluent: Water

Test Conditions

Mobile Phase: 0.15 M (NH₄)₂HPO₄, pH 6.0
Flow Rate: 0.6 mL/min
Injection Volume: 1.0 µL
Detection: UV @ 254 nm



Flow rates and Injection volumes are for 250 x 4.6 mm size columns, unless otherwise noted.



For GC Column Performance Check Standards, see p. 175

Capillary PEEK HPLC Tubing

- Chemically inert and biocompatible
- Pressure rated to 7000 psi (482 bar)
- Easily bendable and cuttable

PEEK HPLC tubing is an excellent alternative to stainless steel tubing for most HPLC applications. PEEK (polyetheretherketone) is chemically inert to virtually all HPLC solvents (only 100 % methylene chloride, THF, concentrated nitric acid or concentrated sulfuric acid will affect PEEK), and is 100 % biocompatible. PEEK tubing can be used with stainless steel nuts and ferrules or polymeric fittings such as the Phenomenex fingertight Sure-Lok™ fittings (see p. 396).

This PEEK HPLC tubing is pressure tested to 7000 psi and rated at 5000 psi for continuous use (for standard 0.010 in. ID tubing). PEEK withstands extremely high temperatures and is rated for continuous use up to 100 °C. PEEK tubing is color coded for easy identification. All colors are permanent and there is no leaching.



Standard PEEK



Polymer Tubing Cutter

Ordering Information

Straight PEEK Tubing

Part No.	Length (feet)	OD (inch)	ID (inch)	Color	Unit
ATO-1107	5	1/16	0.010	blue	ea
ATO-1260	5	1/16	0.007	yellow	ea
ATO-1259	5	1/16	0.005	red	ea

Part No.	Description	Unit
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PEEK Tubing Kit

ATO-1964	PEEK Tubing Kit, includes one each of: ATO-1259 (5 ft. x 1/16 in. x 0.005 in.) ATO-1260 (5 ft. x 1/16 in. x 0.007 in.) ATO-1107 (5 ft. x 1/16 in. x 0.010 in.) ATO-1265 (5 ft. x 1/8 in. x 0.080 in.) ATO-1110 (Polymer Tubing Cutter)	ea
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Part No.	Description	Unit
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Polymer Tubing Cutter

ATO-1110	Polymer Tubing Cutter	ea
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i PEEKsil is compatible with most organic solvents. Effective pH range from 0 to 10.

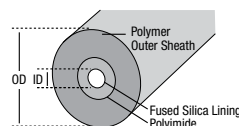
➔ For more information on Part Nos. [AQO-8503](#) and [AQO-8530](#), see p. 394
See also our Core-Shell Performance Enhancement kit on p. 395

➔ For UHPLC system connections, see SecurityLINK™ UHPLC fingertight fitting system on pp.317-318

PEEKsil™ Tubing for UHPLC / HPLC

- Minimizes extra-column effects and band broadening
- Exceptionally smooth inner surfaces

PEEKsil is polymer-sheathed fused silica tubing. The PEEK portion is mechanically strong and has ideal sealing characteristics when used with conventional metal or PEEK ferrule systems. Capable of withstanding high pressures up to 10000 psi (689 bar), the exceptionally smooth inner surfaces are free of the imperfections common in steel tubing, which lessens the possibility of path blockages, ultimately providing lower band broadening. The precision-cut, ultra-square and smooth tube ends enable optimal low volume connections to be made, which will improve overall chromatographic performance. For higher efficiencies and improved resolution, PEEKsil tubing is recommended to help optimize your UHPLC system. For critical UHPLC connections a convenient fittings and tubing kit Part No.: [AQO-8892](#) is available (see p. 395).



PEEKsil tubing showing the precision ground and square cut end enabling a zero dead volume connection.



Ordering Information

PEEKsil Tubing for UHPLC/HPLC

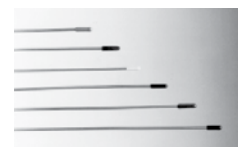
Part No.	Description	Unit
ATO-8896	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 20 cm L, Red	5/pk
ATO-8897	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 10 cm L, Red	5/pk

Related Accessory Items

AQO-8503	Sure-Lok High Pressure PEEK 1-Pc Nut, 10-32, for 1/16 in. Tubing	10/pk
AQO-8530	Sure-Lok Fitting Tightening Tool, Aluminum	ea

Capillary Stainless Steel Tubing

- Passivated and solvent rinsed
- Precut and polished ends



Ordering Information

Capillary Stainless Steel Tubing

Part No.	Length	Unit
0.005 in. ID x 0.062 in. (1/16 in.) OD		
ATO-2996	5 cm	5/pk
ATO-2997	10 cm	5/pk
ATO-2998	20 cm	5/pk
0.010 in. ID x 0.062 in. (1/16 in.) OD		
ATO-0456	5 cm	5/pk
ATO-0457	10 cm	5/pk
ATO-0458	20 cm	5/pk
ATO-0460	50 cm	2/pk
ATO-0461	1 m	2/pk
0.020 in. ID x 0.062 in. (1/16 in.) OD		
ATO-0465	10 cm	5/pk
ATO-0466	20 cm	5/pk
ATO-0469	1 m	2/pk

Tubing

Teflon® (PTFE) Tubing

- Resistant to virtually all corrosive chemicals and organic solvents
- Pressure rated to 500 psi (35 kg/cm²)



Ordering Information

Teflon Tubing

Part No.	OD (inch)	ID (inch)	Wall Thickness (inch)	Length (feet)
ATO-2951	1/16	0.010	0.026	5
ATO-2952	1/16	0.010	0.026	10
ATO-2953	1/16	1/32 (0.031)	0.015	5
ATO-2954	1/16	1/32 (0.031)	0.015	10
ATO-2955	1/8	1/16 (0.062)	0.030	5
ATO-2956	1/8	1/16 (0.062)	0.030	10
ATO-8609	1/4	1/8 (0.125)	0.060	5
ATO-8610	1/4	1/8 (0.125)	0.060	10

Tubing Cutters

Terry Tools are compact tubing cutters for either 1/16 or 1/8 in. OD glass-lined tubing or stainless steel tubing. The specially-hardened cutting wheels make clean, right-angle cuts with minimal burring or chipping of the tubing. Zero dead-volume connections, essential in most GC and MS and all HPLC plumbing applications, can be easily achieved.



Terry Tool
Stainless Steel Tubing Cutter



The Polymer Tubing Cutter makes clean, square cuts on both 1/16 and 1/8 in. OD polymeric tubing, especially PEEK tubing

Ordering Information

Tubing Cutters

Part No.	Description	Unit
AQO-1305	1/16 in. Terry-Tool tubing cutter	ea
AQO-1306	1/8 in. Terry-Tool tubing cutter	ea
AQO-1307	Replacement cutting wheels for both AQO-1305 and AQO-1306	3/pk
ATO-1110	Polymer Tubing Cutter	ea

Wrenches / Spanners

Three of the most popular sizes of wrenches (spanners) used in UHPLC/HPLC are offered.



Ordering Information

Wrenches/Spanner

Part No.	Description	Unit
AQO-8903	Wrench, Open End, 1/4 x 5/16 in.	ea
AQO-8959	Wrench, Open End, 3/8 x 7/16 in.	ea
AQO-8904	Wrench, Open End, 1/2 x 9/16 in.	ea



SecurityGuard ULTRA installation onto core-shell columns, as well as later cartridge replacement, requires 3 wrenches, which must be purchased separately: one 3/8 in. wrench ([AQO-8959](#) fits core-shell column end-fitting), and two 1/16 in. wrenches ([AQO-8903](#) fits ULTRA cartridge and holder). See SecurityGuard ULTRA p. 316

Rheodyne Fitting Wrench



Ordering Information

Real Rheodyne Fitting Wrench

Part No.	Mfr. No.	Description	Unit
AVO-4219	6810	The Real Rheodyne Fitting Wrench	ea

*For additional information, see p. 405

Empty HPLC Column Assemblies

Stainless Steel

- Thoroughly washed, ultrasonically cleaned and passivated
- Highly polished mirror-finish tubing
- Female/inverted Type 316 stainless steel end-fittings, 4 stainless steel frits and 2 column plugs included



Ordering Information

Stainless Steel Empty HPLC Column Assemblies

Part No.	ID (mm)	OD (inches)	Length (mm)
AQQ-3019	1.0	1/8	100
AQQ-0182	2.0	1/4	150
AQQ-0183	2.0	1/4	250
AQQ-7262	4.6	1/4	30
AQQ-0186	4.6	1/4	50
AQQ-0187	4.6	1/4	100
AQQ-0188	4.6	1/4	150
AQQ-0189	4.6	1/4	250
AQQ-0195	7.8	3/8	300
AQQ-0197	10.0	1/2	250
AQQ-7849	21.2	1	100
AQQ-7499	21.2	1	150
AQQ-0200	21.2	1	250

Column End-Fittings

Ordering Information

HPLC Column End-Fittings**

Part No.	Size (Column-Capillary)	Unit
AQQ-1874	1/8 in. - 1/16 in. (for 1.0 mm ID)	ea
AQQ-1875	1/4 in. - 1/16 in. (for 2.1 to 4.6 mm ID)	ea
AQQ-1876	3/8 in. - 1/16 in. (for 7.8 mm ID)	ea
AQQ-1877	1/2 in. - 1/16 in. (for 10.0 mm ID)	ea
AQQ-1878	1 in. - 1/16 in. (for 21.2 mm ID)	ea

**Includes male and female end fittings with ferrule and column sealing plug. Purchase frits separately.

Frits

- 316 stainless steel
- 1/16 and 1/32 inch thicknesses
- 0.5 and 2.0 µm pore sizes

To ensure proper frit selection, match the frit pore size with the packing material particle size (Table 1). Problems may occur if a large pore frit is used with a small particle size material. This combination can lead to the packing material escaping or clogging the frit, resulting in shortened column life or a damaged flow cell.

Table 2 will assist you in choosing the proper size (diameter, thickness, and porosity) frit in relation to the material particle size and column internal diameter.

Table 1. Frit Pore Size Selection Guide

When particle size of your material is:		Frit pore size should be:	
2-4 µm		0.5 µm	
5-20 µm		2 µm	

Table 2. Frit Size Selection Guide

Material Particle Size (µm)	Column Internal Diameter (mm)	Frit Diameter (inches)	Frit Thickness (inches)	Frit Pore Size (µm)
2 - 4	1.0	1/8	1/32	0.5
5 - 20	1.0	1/8	1/32	2.0
2 - 4	2.0-5.0	1/4	1/32	0.5
5 - 20	2.0-5.0	1/4	1/32	2.0
5 - 20	6.0-8.0	3/8	1/32	2.0
5 - 20	9.0-10.0	1/2	1/32	2.0
5 - 20	11.0-23.0	1	1/16	2.0



Ordering Information

Frits

Part No.	Diameter (inches)	Thickness (inches)	Pore Size (µm)	Unit
AQQ-0537	1/8	1/32	2.0	10/pk
AQQ-0538	1/4	1/32	0.5	10/pk
AQQ-0539	1/4	1/32	2.0	10/pk
AQQ-0541	3/8	1/32	2.0	10/pk
AQQ-0543	1/2	1/32	2.0	10/pk
AQQ-8166*	1	1/16	2.0	2/pk

* Only for use with Column Assembly Part No. [AQQ-0200](#).



All Phenomenex Valco-compatible end-fittings listed are female/inverted (internal threaded) and compatible with 10-32 threaded male nuts.

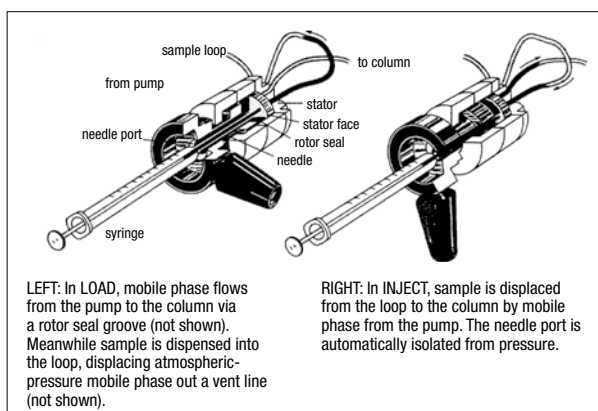


For Fittings, see pp. 393-397

Sample Injector

Rheodyne® 7725

- Sample loading by syringe through built-in needle port
- Continuous flow during switching (no interrupt)
- A front-end pressure screw for easy seal adjustment
- Wide port angles for improved access to fittings
- Pressure rated to 7000 psi (490 kg/cm²)
- 5 µL to 5 mL removable sample loops



Ordering Information

7725 Sample Injectors

Part No.	Mfr. No.	Description
AVO-2346	7725	Sample Injector ¹
AVO-2347	7725i	Sample Injector, with Position Sensing Switch ¹

Sample Loops for 7725 Valves Only

Part No.	Mfr. No.	Description
AVO-2349	7755-020	5 µL Sample Loop
AVO-2350	7755-021	10 µL Sample Loop
AVO-2351	7755-022	20 µL Sample Loop
AVO-2352	7755-023	50 µL Sample Loop
AVO-2353	7755-024	100 µL Sample Loop
AVO-2354	7755-025	200 µL Sample Loop
AVO-2355	7755-026	500 µL Sample Loop
AVO-2356	7755-027	1 mL Sample Loop
AVO-2357	7755-028	2 mL Sample Loop
AVO-2358	7755-029	5 mL Sample Loop

Spare Replacement Parts for Model 7725 Injector

Part No.	Mfr. No.	Description
AVO-3500	7725-999	Complete RheBuild® Kit for valves 7725, 7725i, 7726 (see p.405 for description)
AVO-0169	7125-047	Vespel Rotor Seal
AVO-2416	7125-079	Tefzel Rotor Seal
AVO-2362	7725-026	Stator Face Assembly
AVO-0171	7125-054	Needle Port Cleaner
AVO-0180	7215	#22-Gauge Needle
AVO-2365	6000-263	Nut 10pk
AVO-2366	6000-264	Long Nut 10pk
AVO-2368	6000-110	Ferrule 5pk

¹The 7725 and 7725i have a 20 µL stainless steel loop installed. They are supplied with instructions, fittings for all ports, needle port cleaner, two vent tubes, two hex wrenches, mounting screws, and a #22-gauge needle with Luer hub. Maximum operating temperature is 80 °C.

→ Syringes for Rheodyne sample injectors are listed on pp. 25-26.

Sample Injector

Rheodyne Injector Model 9725 Totally Metal-Free (PEEK)

- Inert flow passages of Tefzel®, PEEK, and alumina-ceramic (pH range 0 to 14)
- Not affected by buffers, acids, bases or halide salts
- Complete fill 5 µL to 5 mL sample loops using excess sample
- Partial-fill 0.1 µL to 5 mL with zero sample waste
- Valve will operate to 5000 psi (344 bar)
- Loops will operate to 5000 psi (344 bar) depending on ID and solvent
- Use with 1 to 2 mm ID micro, 3 to 6 mm analytical or milligram-scale prep columns



Ordering Information

PEEK Sample Injectors

Part No.	Mfr. No.	Description
AVO-1074	9725	PEEK Sample Injector
AVO-4642	9725i	PEEK Sample Injector, with Position Sensing Switch
AVO-1086	9125-076	Suction Needle Adapter
AVO-3433	9725-999	Complete RheBuild® Kit for valves 9725, 9725i (see p. 405 for description)

i Although PEEK material is highly resistant to most chemicals, PEEK is not recommended for applications requiring high concentrations of THF (Tetrahydrofuran), methylene chloride, nitric acid or sulfuric acid.

Sample Injector

Rheodyne 8125 Low-Dispersion

- For microbore and analytical HPLC columns
- Accurately inject as little as 0.1 µL of sample
- Improve peak resolution

Ordering Information

Low-Dispersion Sample Injector

Part No.	Mfr. No.	Description
AVO-0181	8125	Low-Dispersion Sample Injector
AVO-3431	8125-999	Complete RheBuild® Kit for valve 8125 (see p. 405 for description)

Sample Injectors

Rheodyne® 3725i Preparative

- For preparative HPLC columns, 1 to 10 cm ID



Ordering Information

Preparative Sample Injectors

Part No.	Mfr. No.	Description
AVO-2054	3725i	PEEK Preparative Sample Injector, with Position Sensing Switch
AVO-2056	3725i-038	Stainless Steel Preparative Sample Injector, with Position Sensing Switch
AVO-3432	3725-999	Complete RheBuild® Kit for valves 3725, 2715i, 3725-038, 3725i-038 (see p. 405 for description)

Switching Valve/Injector

Rheodyne Valve Model 7000

- Permits column switching and selection in various configurations
- Enables sample clean-up and trace sample enrichment
- Enables column programming and backflushing
- Enables dual-column selection
- Field-changeable switching patterns



Ordering Information

Switching Valves

Part No.	Mfr. No.	Description
AVO-2376	7000	Switching Valve/Injector
AVO-2378	7010	Sample Injection Valve
AVO-3430	7010-999	Complete RheBuild® Kit for valves 7010, 7000 (see p. 405 for description)
AVO-1073	7012	Loop Filler Port
AVO-1092	9010	PEEK Switching Valve/Injector
AVO-2381	9013	PEEK Needle Port

Sample Injector Loops and Fittings

Stainless steel external loops are supplied with unattached fittings so the tube can be completely bottomed in the injector port before the ferrule is swaged on. RheFlex PEEK loops do not require this precaution, because the ferrule can slide and reposition itself along the tube when the fitting is reinserted into a port.



Ordering Information

Sample Injector Loops

Part No.	Mfr. No.	Description	Unit
Stainless Steel Loops for 7125 and 7010 Valves			
AVO-2390	7020	5 µL, 0.007 in. ID	ea
AVO-2391	7021	10 µL, 0.012 in. ID	ea
AVO-2392	7022	20 µL, 0.020 in. ID	ea
AVO-2393	7023	50 µL, 0.020 in. ID	ea
AVO-2394	7024	100 µL, 0.020 in. ID	ea
AVO-2395	7025	200 µL, 0.030 in. ID	ea
AVO-2396	7026	500 µL, 0.030 in. ID	ea
AVO-2397	7027	1 mL, 0.030 in. ID	ea
AVO-2398	7028	2 mL, 0.040 in. ID	ea
AVO-2399	7029	5 mL, 0.040 in. ID	ea

Loops for 8125 Low Dispersion Injector (Stainless Steel)

AVO-2937	8020	5 µL, 0.008 in. ID	ea
AVO-2938	8021	10 µL, 0.008 in. ID	ea
AVO-2939	8022	20 µL, 0.010 in. ID	ea

PEEK (for all valves)

AVO-1076	9055-020	5 µL, 0.007 in. ID	ea
AVO-1077	9055-021	10 µL, 0.010 in. ID	ea
AVO-1078	9055-022	20 µL, 0.010 in. ID	ea
AVO-1079	9055-023	50 µL, 0.020 in. ID	ea
AVO-1080	9055-024	100 µL, 0.020 in. ID	ea
AVO-1081	9055-025	200 µL, 0.020 in. ID	ea
AVO-1082	9055-026	500 µL, 0.030 in. ID	ea
AVO-1083	9055-027	1 mL, 0.030 in. ID	ea
AVO-1084	9055-028	2 mL, 0.030 in. ID	ea
AVO-1085	9055-029	5 mL, 0.030 in. ID	ea



1. Loops for the 7725 Valve are listed with the valve on p. 403. Note: Loops designed for 7125, 7010 and 8125 valves are not interchangeable with the wide-angle ports of 7725 valves.
2. Loops not listed for other valves are available. Call your Phenomenex Technical Consultant.



Ordering Information

RheFlex Fittings

Part No.	Mfr. No.	Description	Unit
AVO-2383	6000-054	RheFlex Std. Fitting Set (5 nuts and 5 ferrules)	ea
AVO-2384	6000-055	RheFlex Short Fitting Set (5 nuts and 5 ferrules)	ea
AVO-2386	6000-051	RheFlex Ferrules (5 ferrules)	ea

Valves

RheBuild® Kits

Each kit contains all the parts necessary to refurbish the corresponding valve. For front-loading injection valves, the kit includes: rotor seal, stator face assembly, isolation seal, needle guide, needle port cleaner, 2 hex keys and repair instructions. Type 70's Switching Valves and Model 7010 Injector Valve do not include Stator Face Assemblies. Refer to the specific valve on the previous pages for ordering information.



Valve Stators



Ordering Information

Valve Stators

Part No.	Mfr. No.	Description	Unit
AV0-0172	7125-067	Stator Face Assembly for Valve Model 7125	ea
AV0-4719	7725-010	Stator for Valve Models 7725, 7725i	ea
AV0-0175	7010-040	Stator for Valve Models 7000, 7010, 7125, 7030, 7040	ea
AV0-2422	8125-098	Stator for Valve Model 8125	ea
AV0-2423	9125-043	Peek Stator & Support Ring for 9010/9125	ea

Rheodyne® Fitting Wrench

Slotted Wrench for Rheodyne Valves

- Fits around tubing to tighten any 1/4 or 5/16 in. nut
- Access hard-to-reach areas
- Saves time and effort



Ordering Information

Real Rheodyne Fitting Wrench

Part No.	Mfr. No.	Description	Unit
AV0-4219	6810	The Real Rheodyne Fitting Wrench	ea

Rotor Seals

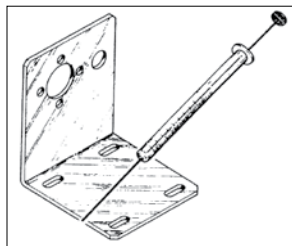


Ordering Information

Rotor Seals

Part No.	Mfr. No.	Description	Unit
VespeI® (pH Range 0 to 10)			
AV0-2412	7010-039	Rotor Seal for Valve Models 7000, 7010, 7040	ea
AV0-0169	7125-047	Rotor Seal for Valve Models 7125, 7725, 7725i	ea
AV0-2414	8125-038	Rotor Seal for Valve Model 8125	ea
Tefzel® (pH Range 0 to 14)			
AV0-2415	7010-071	Rotor Seal for Valve Models 7000, 7010, 7040	ea
AV0-2416	7125-079	Rotor Seal for Valve Models 7125, 7725, 7725i	ea
AV0-2417	8125-097	Rotor Seal for Valve Model 8125	ea
AV0-2418	9010-051	Rotor Seal for Valve Model 9010	ea
AV0-2419	9125-082	Rotor Seal for Valve Models 9725 and 9125	ea

Syringe and Injector Accessories



The #22-gauge needle (Mfr. No. 7215) has a Kel-F® luer hub that fits any luer tip syringe.

Model 7160 and 7160-010 mounting bracket (shown) accommodate all Rheodyne high pressure injectors and valves.

Ordering Information

Syringe and Injector Accessories

Part No.	Mfr. No.	Description	Unit
AV0-0180	7215	#22-Gauge Needle with CTFE Luer Hub	ea
AV0-0170	7125-008	Needle Guide	ea
AV0-0171	7125-054	Needle Port Cleaner	ea
AV0-2425	7160-010	Valve Angle Bracket	ea
AV0-2426	7160	Mounting Panel	ea

→ Syringes for Rheodyne sample injectors are listed on pp. 25-26.

i All other Rheodyne valves and accessories not listed are available.

→ For Stainless Steel and PEEK Capillary Tubing used with Rheodyne valves, see p. 400



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