LC Capillaries and Fittings

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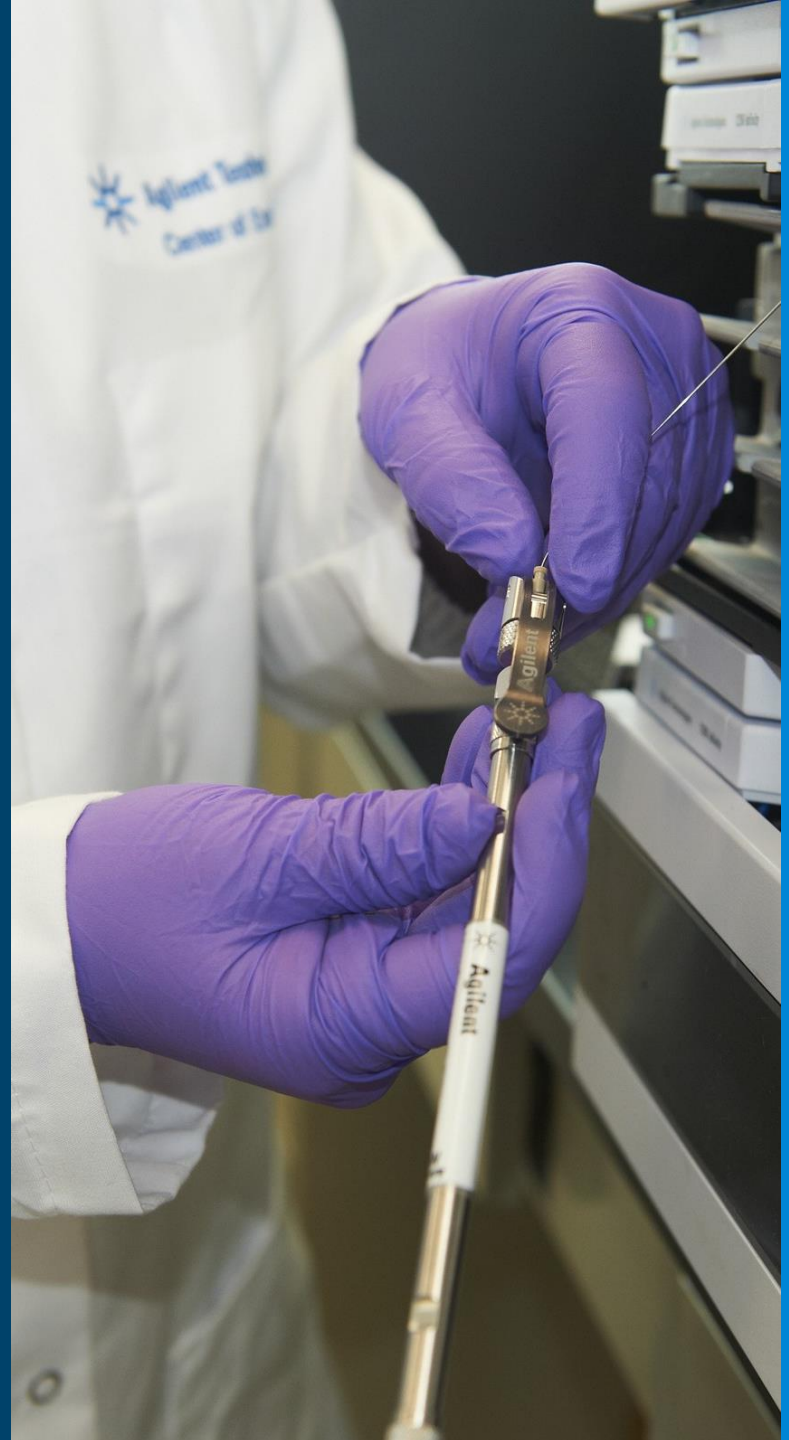


Agilent
Trusted Answers

Agenda

- Why is it important to use the right connecting capillaries?
- Dispersion contribution from capillaries and fittings
- Types of capillaries and fittings
- Connecting capillaries for each LC system

Why Is It Important to Use the Right Capillaries and Fittings?

Problems caused by poor/wrong connections

- Leaks
- Dispersion due to the volume of the capillaries (extracolumn dispersion)
- Mixing/dispersion due to use of the incorrect fitting
- Secondary interactions between the analytes and the body of the capillaries and fittings

Dispersion Reduces HPLC Performance

What is dispersion?

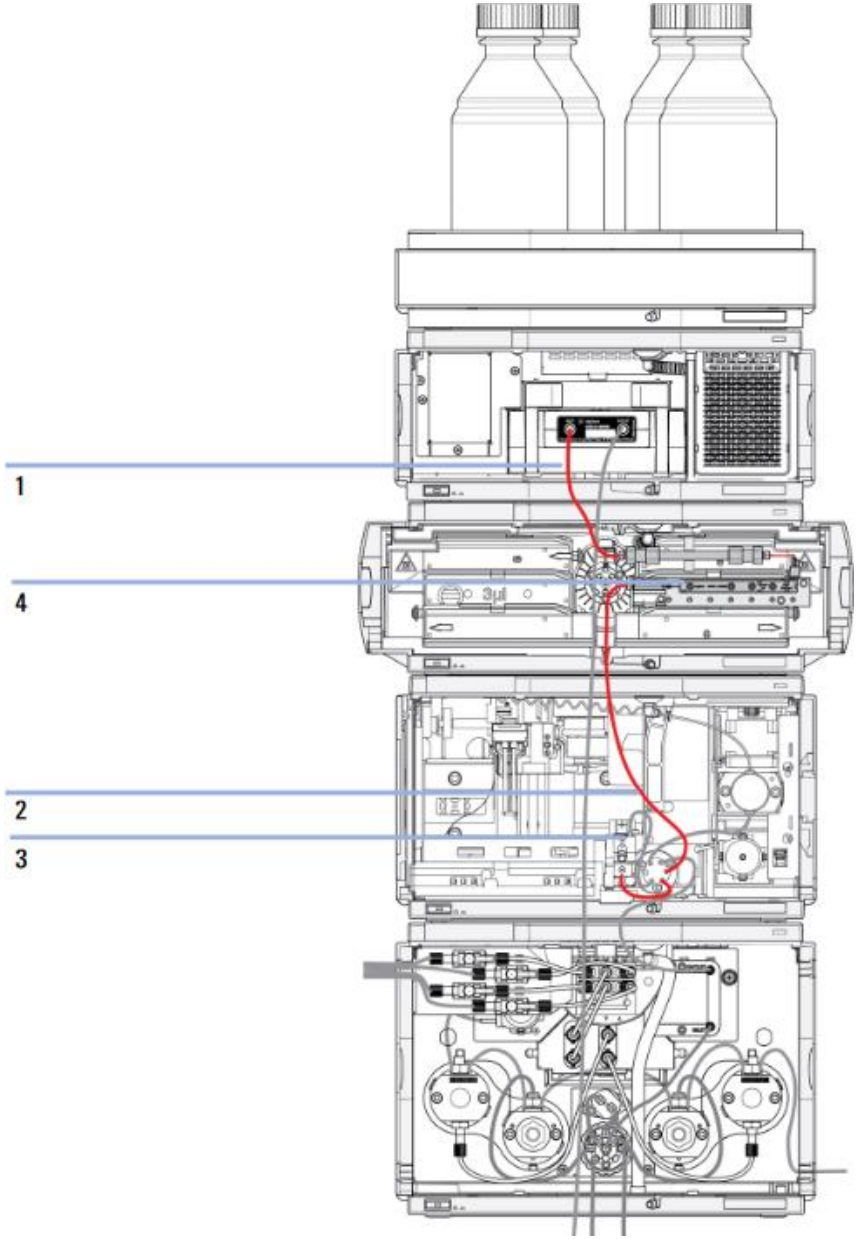
- It is the original sample concentration being diluted as it is carried through the system plumbing (extracolumn volume)

What increases dispersion?

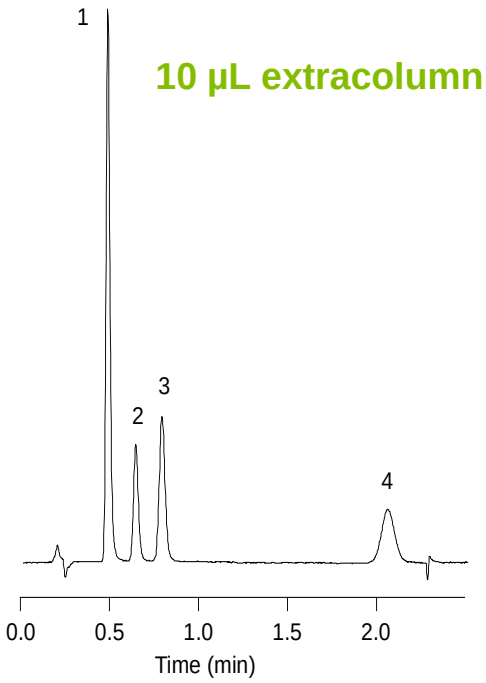
- Connecting tubing that is too long
- Connecting tubing that is too large in diameter
- Connections that have gaps and form small mixing chambers

Extracolumn Volume

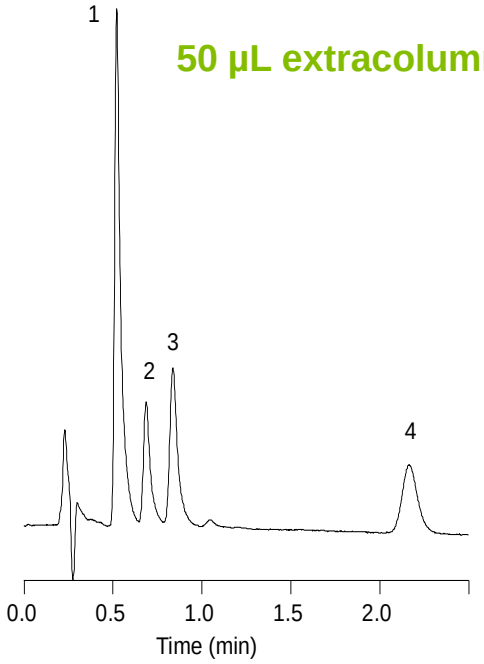
- Flow cell
- Heat exchanger
- Switching valve
- Needle seat
- **Connecting capillaries**



Extracolumn Volume



10 µL extracolumn volume



50 µL extracolumn volume

Column: StableBond SB-C18, 4.6 x 30 mm, 3.5 µm, mobile phase: 85% H_2O with 0.1% TFA: 15% ACN, flow rate: 1.0 mL/min
Temperature: 35 °C, sample: 1. phenylalanine 2. 5-benzyl-3,6-dioxo-2-piperazine acetic acid 3. Asp-Phe 4. aspartame.

Taylor-Aris Equation: Peak Dispersion in Cylindrical Tubing

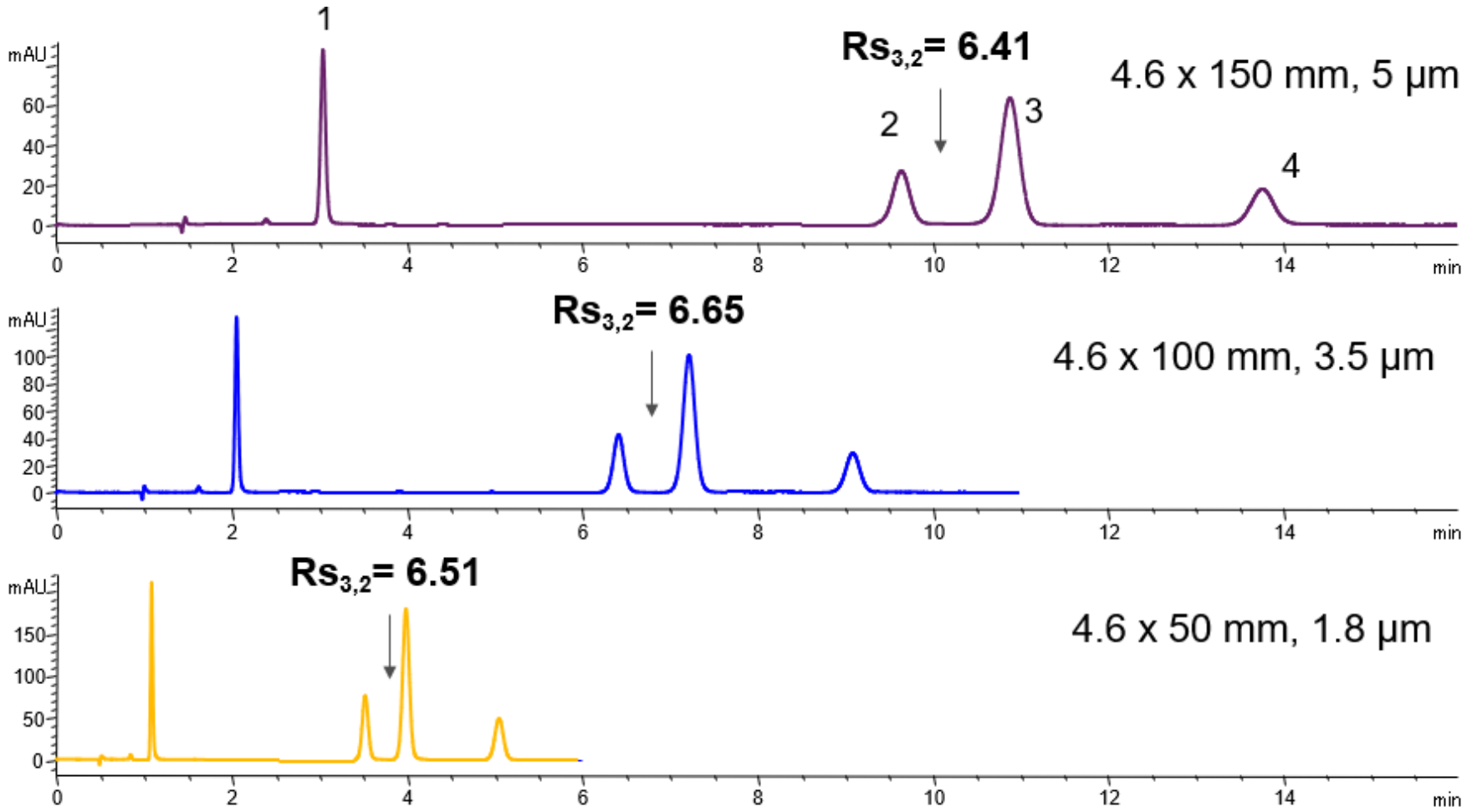
$$\sigma^2_{v,ext} = \frac{\pi\, d^4\, L_{cap}\, u_{cap}}{96 D_m}$$

$\sigma^2_{v,ext}$	is the volume variance
d	is the tubing diameter
L	is the tubing length
u	is the linear velocity of the liquid
D_m	is the molecular diffusion coefficient

Tubing Volume

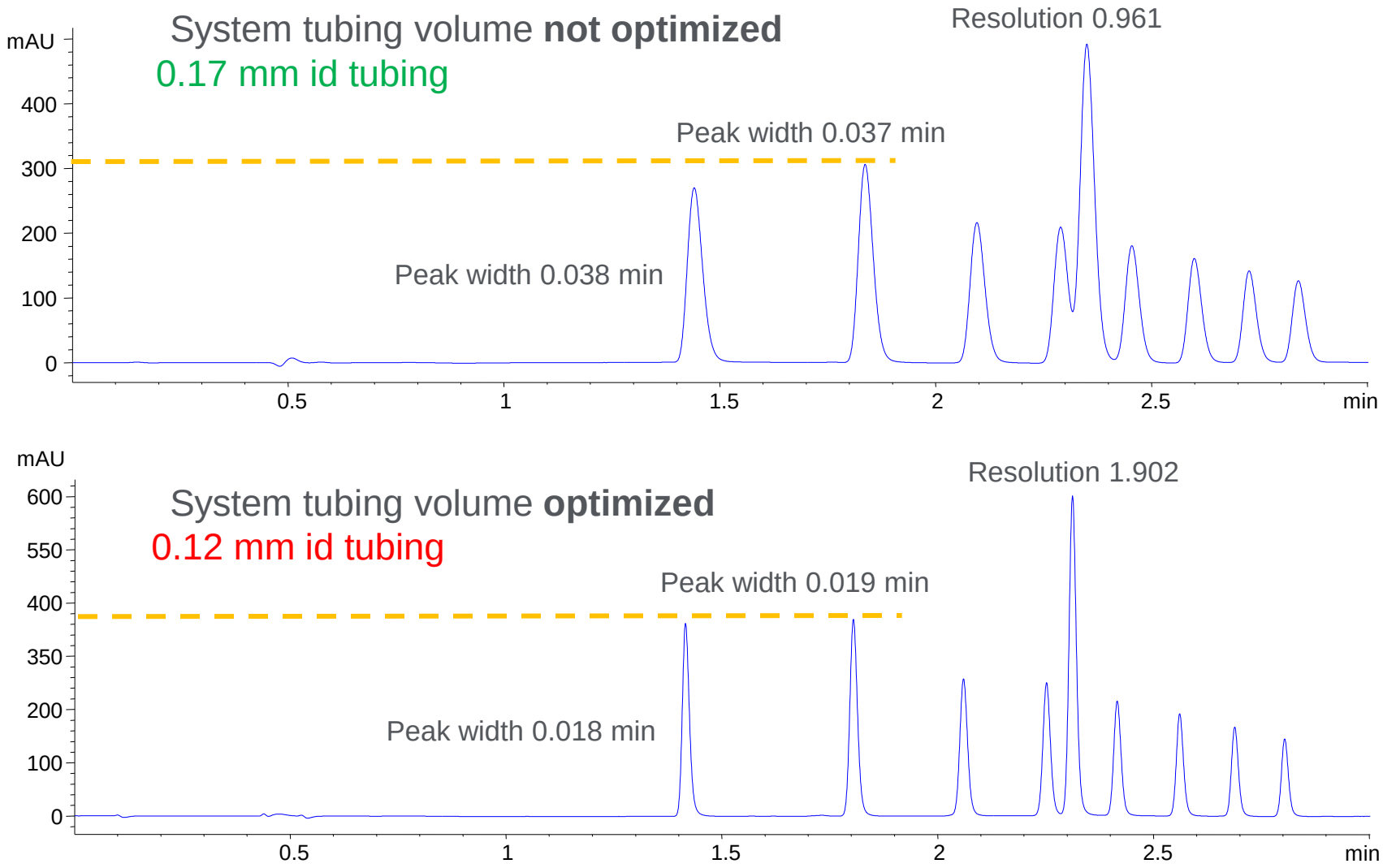
Tubing Length	10 mm	50 mm	100 mm	150 mm
Tubing id	Volume	Volume	Volume	Volume
0.17 mm (green)	0.227 µL	1.1 µL	2.27 µL	3.3 µL
0.12 mm (red)	0.113 µL	0.55 µL	1.13 µL	1.65 µL

As Column Efficiency Increases, Peak Width Decreases, and System Dispersion Becomes More of a Factor



Columns: **Eclipse Plus C18**, as described above. Mobile phase: A: water, B: MeOH, (15:85), injection volume: 6 µL
Temperature: 25 °C, flow rate: 1 mL/min. Detection: 310, 4 nm, 0.5 s response time, semimicro flow cell, sample: sunscreens.

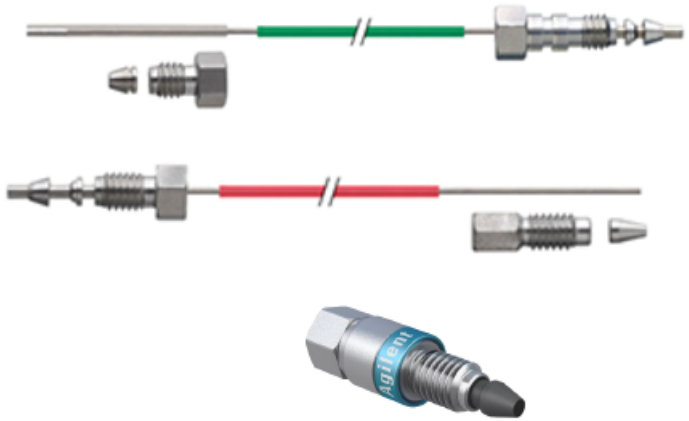
Optimizing Connecting Tubing Volume For UHPLC columns

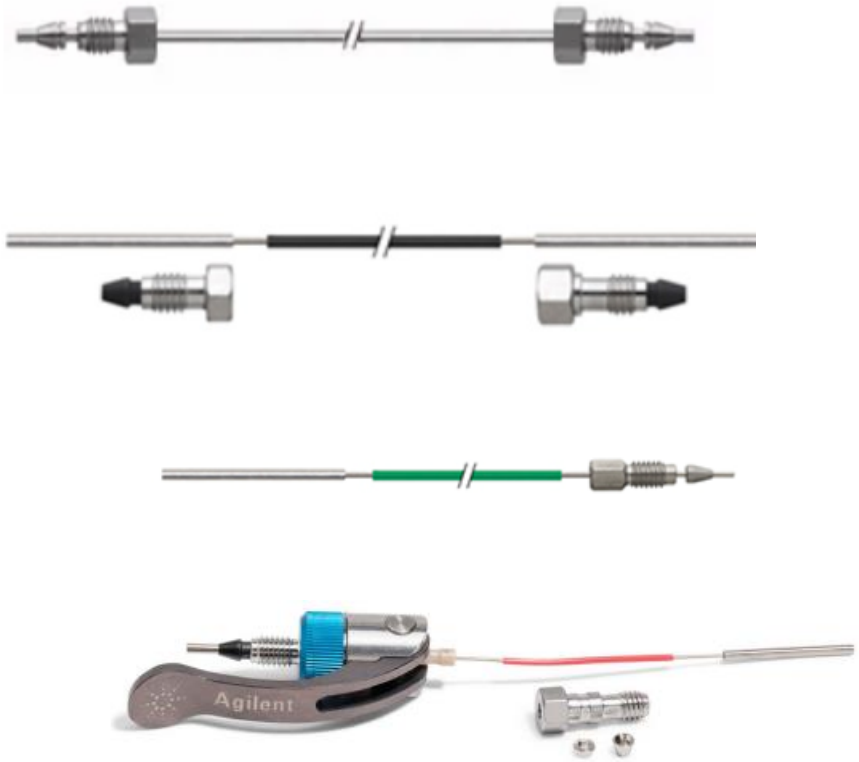


Types of Capillaries and Fittings

What to consider

- Material
- Inner diameter and length
- Rigid or flexible
- Socket
- Compatible fitting types
- LC instrument





Types of Capillaries and Fittings

Material of capillaries

Material	Internal Diameter	Application	Maximum Pressure	Instrument Model
Stainless steel (SST)	0.075 – 0.94 mm	Standard HPLC, UHPLC, GPC, SFC, preparative HPLC	1300 bar	1100 through 1290 Infinity II
PEEK	0.12 – 0.5 mm		250 bar	All
PEEK-coated fused silica (FS/PEEK)	25 – 100 µm	Microflow HPLC	400 bar	1100 through 1260 capillary/nano LC series
PEEK-lined stainless steel (PEEK/SST)	0.17 mm	Bio-inert	400 bar	1260/1260 Infinity II bio-inert system
Titanium (Ti)	0.17 mm	Bio-inert*	1300 bar	1260/1260 Infinity II bio-inert system
MP35N	0.075 – 0.17 mm	Bio-compatible	1300 bar	1290 Infinity II bio LC

*Only from pump to sampler.

Types of Capillaries and Fittings

Color coding of capillary inner diameters

Internal diameter in mm		Color code
0.015		Orange
0.025		Yellow
0.05		Beige
0.075		Black
0.075	MP35N	Black with orange stripe
0.1		Purple
0.12		Red
0.12	MP35N	Red with orange stripe
0.17		Green
0.17	MP35N	Green with orange stripe
0.20/0.25		Blue
0.20/0.25	MP35N	Blue with orange stripe
0.3		Grey
0.50		Bone White

Types of Capillaries and Fittings

Inner diameter for standard HPLC/UHPLC

0.17 mm:

- Standard for 1100, 1200, and 1260 series
- On 1290 Infinity and 1260/1290 Infinity II only used for pump-to-sampler connection

0.12 mm:

- Low-dispersion alternative for 1100, 1200, and 1260 series
- Standard on 1200 Series rapid resolution LC system
- Used as standard on the 1290 Infinity and 1260/1290 Infinity II for connections beyond the point of injection

0.075 mm:

- Ultralow dispersion kit, optional to optimize system for low dispersion

Types of Flexible Capillaries and Fittings

Socket

Standard socket: 1.6 mm od, 17 mm long

'Long socket' at both ends

Long socket: 1.6 mm od, 21 mm long

InfinityLab Quick Turn capillary

InfinityLab Quick Connect capillary

No socket: 0.8 mm od

M4

Types of Fittings

Nonremovable (permanent) fittings

Advantages

- Simple and familiar handling
- Robust
- Economical

Disadvantages

- Nonremovable
- Can’t be re-adjusted
- Require a wrench

Stainless steel fittings (S),
5062-2418

Stainless steel long fittings (SL),
5065-4454

Stainless steel extra long fitting (SX),
5065-9967

Stainless steel intermediate (SI)

M4

Typical preswaged (pilot) distance: 2.1 mm (0.090 in.)

Types of Fittings

Removable (re-adjustable) fittings

Finger-tight PEEK fitting (SPF), 0100-1516

PEEK long fittings (SPFL), 5062-8541

Finger-tight PEEK fittings (SPF), 5065-4426

Double winged fitting (SPF), 5042-6500

Finger-tight polyketone fitting (SPF), 5042-8957

1200 bar removable fitting (SV), 5067-4733

1200 bar removable long fitting (SLV), 5067-4738

1200 bar removable extra long fitting (SXV), 5067-4739

UHP-FF fitting, bio-inert (RLQ), 5067-5695

InfinityLab Quick Turn fitting, 5067-5966

Structure of a Standard Capillary

Compatible fittings

PTFE sleeve
Inner diameter color-coding

Socket (1.6mm od)

Capillary raw material
- Stainless steel
- Titanium
- MP35N

Suitable fittings:
- 1.6 mm (1/16 inch) id
- 10-32 coned thread (Swagelock)

Examples:

Stainless steel fittings (S), 5062-2418

Stainless steel long fittings (SL), 5065-4454

Stainless steel extra long fitting (SX), 5065-9967

Finger-tight polyketone fitting (SPF), 5042-8957

Finger-tight PEEK fitting (SPF), 0100-1516

PEEK long fittings (SPFL), 5062-8541

Finger-tight PEEK fittings (SPF), 5065-4426

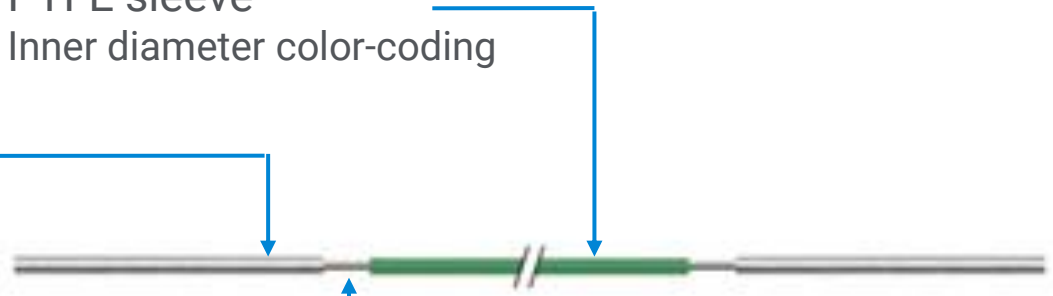
Double winged fitting (SPF), 5042-6500

Structure of a Quick Turn Capillary

Compatible fittings

PTFE sleeve
Inner diameter color-coding

"Long socket"
1.6 mm od
21 mm in length



Raw capillary tube
- Stainless steel
- MP35N

Suitable fittings:
- InfinityLab Quick Turn fitting
- All "standard" capillary compatible fittings

Finger-tight polyketone fitting (SPF), 5042-8957

Stainless steel fittings (S), 5062-2418

Stainless steel long fittings (SL), 5065-4454

Stainless steel extra long fitting (SX), 5065-9967

1200 bar removable fitting (SV), 5067-4733

200 bar removable long fitting (SLV), 5067-4738

200 bar removable extra long fitting (SXV), 5067-4739

Finger-tight PEEK fitting (SPF), 0100-1516

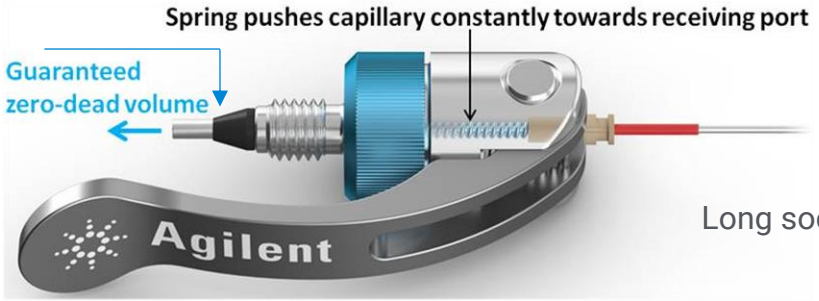
PEEK long fittings (SPFL), 5062-8541

Finger-tight PEEK fittings (SPF), 5065-4426

Double winged fitting (SPF), 5042-6500

Structure of a Quick Connect Capillary
Compatible fittings

Ferrule, replaceable



Long socket

Long socket

Spring

PEEK adapter

Rear-end fitting
(predefined)

Stainless steel nonswaged,
long socket

Female 10–32,
preswaged

M4, preswaged

One side is always intended for use with a Quick Connect fitting.
The opposite side is preconfigured with various fittings, typically with a nonpreswaged steel fitting.
SX for capillary lengths of up to 150 mm, above with SL fitting.

Structure of a Bio-inert Capillary (PEEK/ST)

Compatible fittings

Suitable fitting types:

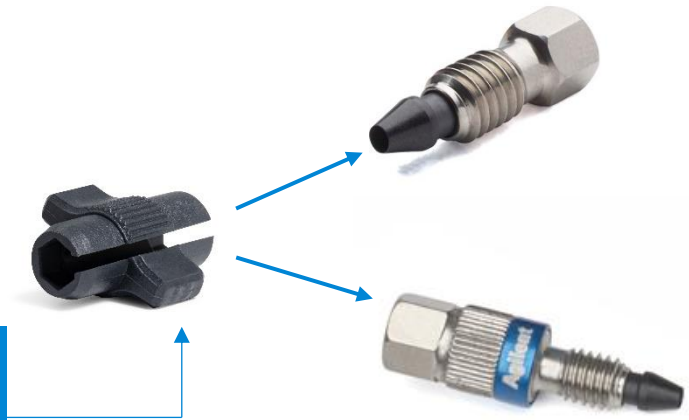
- UHP-FF fitting (typical)
- InfinityLab Quick Turn fitting (alternative)
- Quick Connect, only at InfinityLab bio-inert Quick Connect heat exchanger (G7116-60041)

PTFE sleeve
Inner diameter color-coding

Bio-inert socket
1.6 mm od
Stainless steel with PEEK-cap

Bio-inert fitting
UHP-FF fitting

Capillary raw material
Stainless steel with PEEK inner coating



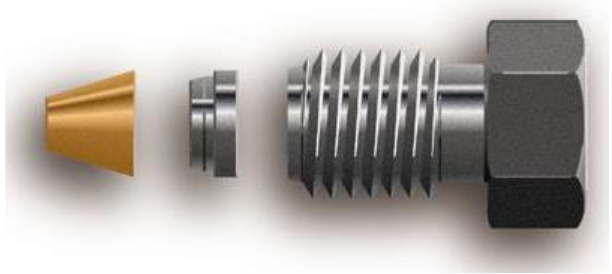
The socket with PEEK cap is comparatively soft compared to the conventional steel variant and requires a more careful approach to connectivity.
The use of the fitting tool (p/n 5043-0915) is recommended for both fittings.

Structure of Titanium Capillaries

Compatible fittings

A few Titanium (Ti) capillaries are for use only with the 1260 Infinity and 1260 Infinity II bio-inert series, as they are only for connections within the pump and between the pump and the autosampler.

These capillaries are used with SwageLok fittings with a gold ferrule, and with removable (SV) fittings.



5005-0067: Gold-plated front ferrule, 1/16 in, 10/pk

Structure of MP35N Capillaries

Compatible fittings

- System capillaries (predefined with fittings)
- Quick Turn capillaries (capillaries without fittings)
- Quick Connect capillaries

Suitable fittings:

- UHP-FF fittings
- “Standard” stainless steel fittings with gold ferrule
- Quick Turn fitting
- Quick Connect fitting with use of MP35N Quick Connect capillaries

MP35N long socket Quick Turn capillary

MP35N Quick Connect capillary

Stainless steel fittings with gold ferrule

All MP35N free-end capillaries can easily be used with a Quick Turn fitting, unless they are defined as an "M4" fitting.

Part numbers:

5005-0067: Gold-plated front ferrule, 1/16 in, 10/pk

5005-0442: Stainless steel fitting set, includes stainless steel nut, stainless steel back ferrule, and gold-plated front ferrule, 1/16 in, bio, 10/pk

PEEK-coated Fused Silica Capillaries

Compatible fittings

- Especially for micro and nano LC systems
- Most capillaries have a dedicated connection and come with the necessary fittings.
- Outer diameter: 0.8 mm
- Sensitive handling – risk of breakage when bending

Suitable fittings:

- 0.8 mm id PEEK fittings
- Depending on the connection goal, a stainless steel 10-32 or M4 thread fitting is necessary

Color code

15 µm id : black

25 um id: yellow

50 um id: green

75 um id: blue

100 um id: black

125 um id: red

Stainless steel fittings, male (G), 5063-6593

Ferrule and stainless steel lock ring (W), 5065-4423

PEEK fittings, plugs (MP), 5065-4410

Double winged PEEK nut and ferrule (WPF), 5065-4422

PEEk fitting, long (WPFL), 5022-6536

Capillaries with M4 Fitting Connections

- To connect to the corresponding multicolumn selection valves or microvalves
- Outer diameter at M4 end: 0.8 mm
- Stainless steel and MP35N available

M4 fitting end
- No socket - **0.8 mm od**
- **No standard fitting possible**

Standard (10-32) fitting end
- Socket: 1.6 mm od
- **No M4 fitting possible**

Capillaries for M4 fittings are marked accordingly with an M, for example, 5067-5110 capillary SST 0.17 x 90 SV/**M**

Labeling of Capillaries and Fittings

Type The type gives some indication on the primary function, like a loop or a connection capillary.		Material The material indicates which raw material is used.		Fitting left/fitting right The fitting left/right indicate which fitting is used on both ends of the capillary.	
Key	**Description**	**Key**	**Description**	**Key**	**Description**
Capillary	Connection capillaries	ST	Stainless steel	W	Swagelok + 0.8 mm Port id
Loop	Loop capillaries	Ti	Titanium	S	Swagelok + 1.6 mm Port id
Seat	Autosampler needle seats	PK	PEEK	M	Metric M4 + 0.8 mm Port id
Tube	Tubing	FS/PK	PEEK-coated fused silica[1]	E	Metric M3 + 1.6 mm Port id
Heat exchanger	Heat exchanger	PK/ST	Stainless steel-coated PEEK[2]	U	Swagelok union
		PTFE	PTFE	L	Long
		FS	Fused silica	X	Extra long
		MP35N	Nickel-cobalt-chromium-molybdenium alloy	H	Long head
				G	Small head SW 4
				N	Small head SW 5
				F	Finger-tight
				V	1200 bar
				B	Bio
				P	PEEK
				I	Intermediate

[1] Fused silica in contact with solvent

[2] Stainless steel-coated PEEK

Examples:

Capillary ST 0.12 x X mm SL/M ps/ps

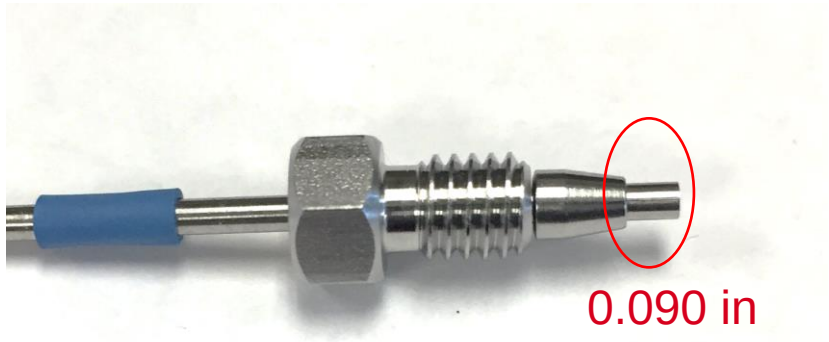
Capillary ST 0.17 x X mm S/S ps/ns

ps: preswaged
ns: nonswaged

Styles of Fittings

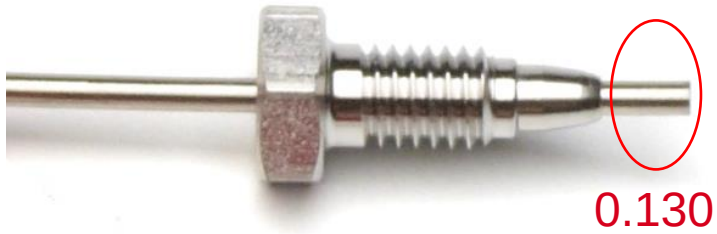
Swagelok

- Two-piece ferrule
- Used on Agilent LCs
- Short nut
- Also available with a long nut



Parker

- One-piece ferrule
- Short nut
- Very similar to Swagelok

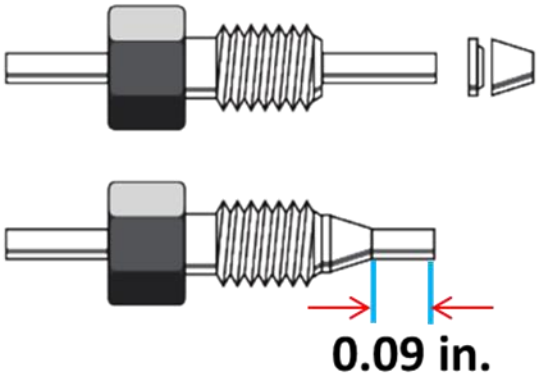


Waters

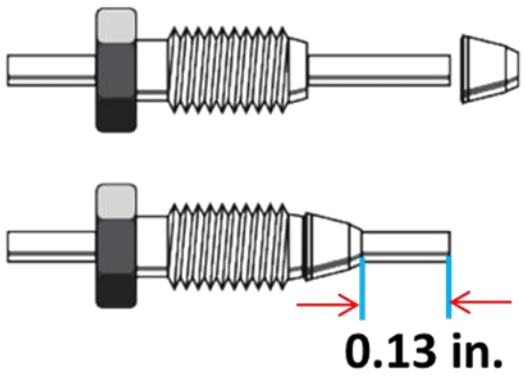
- Longer nut
- Used on Alliance systems

Styles of Fittings

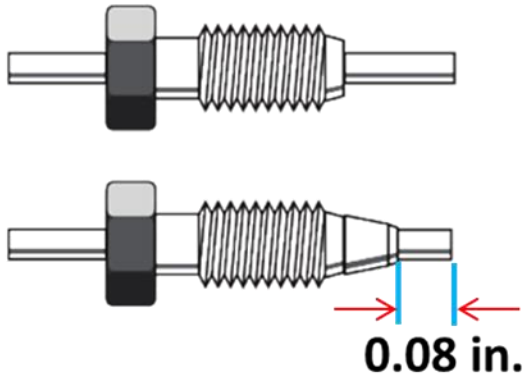
Swagelok



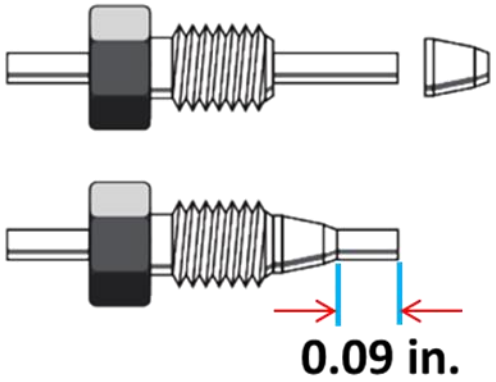
Waters



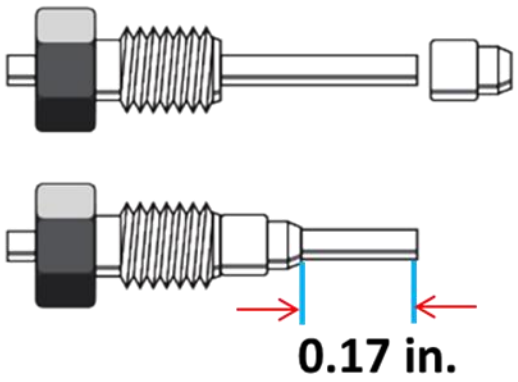
Valco



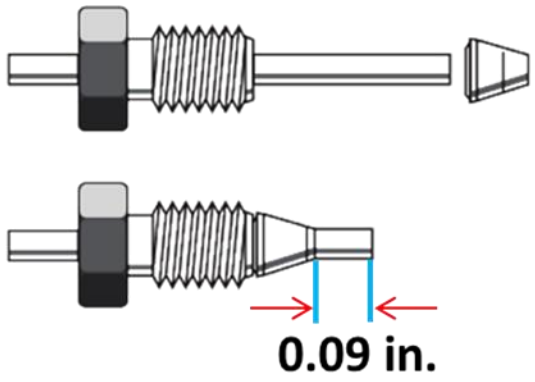
Parker



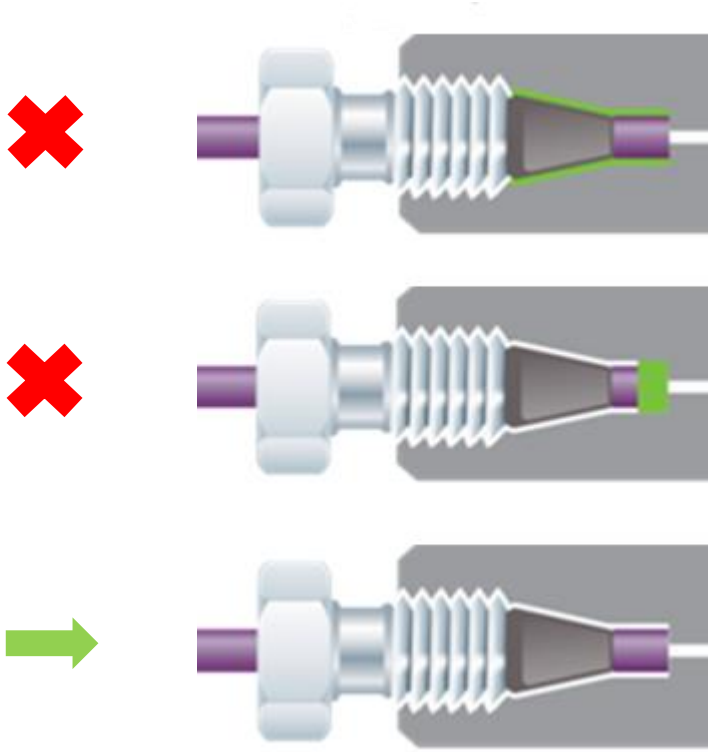
Rheodyne



Upchurch

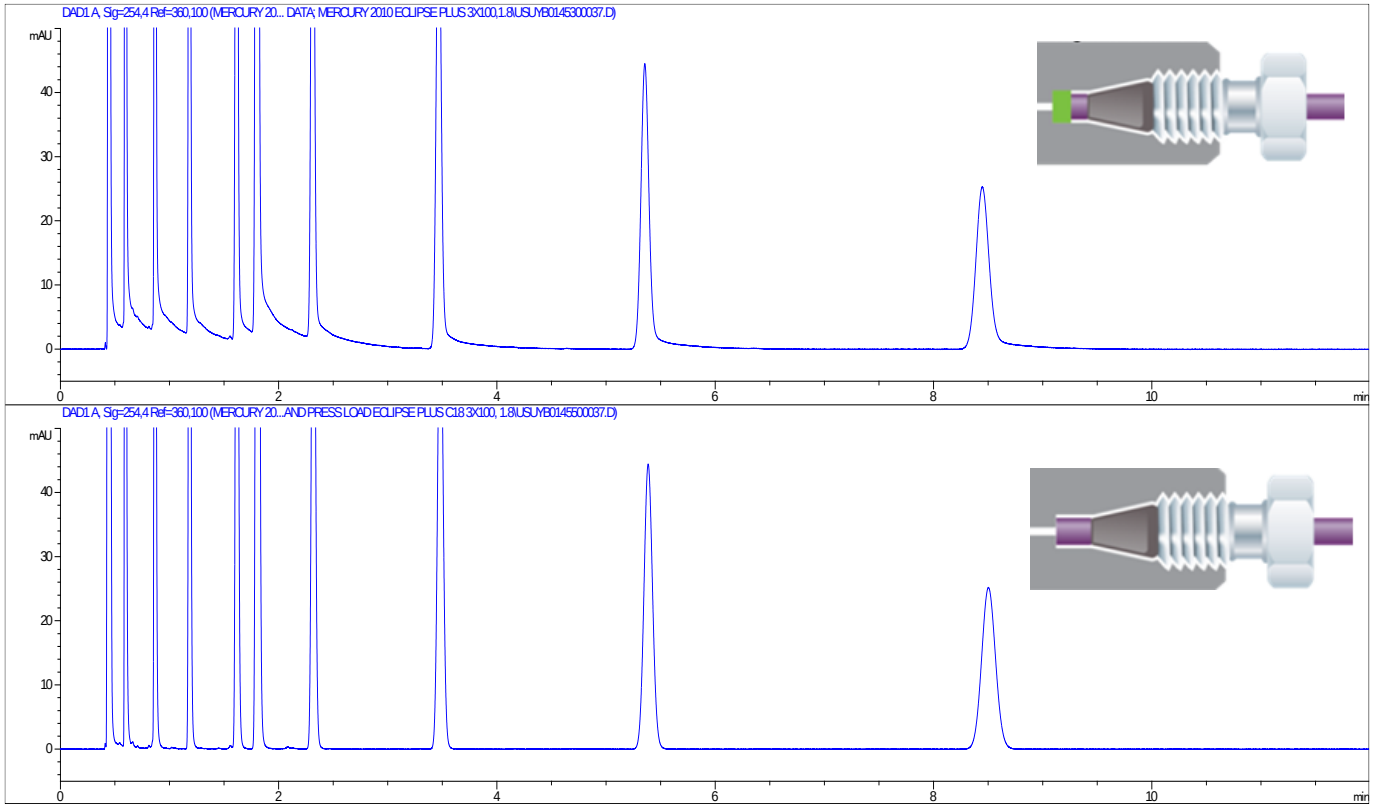


Potential Issues with Fittings



- Leak
- Peak shape problem
- No dead volume

Peak Shape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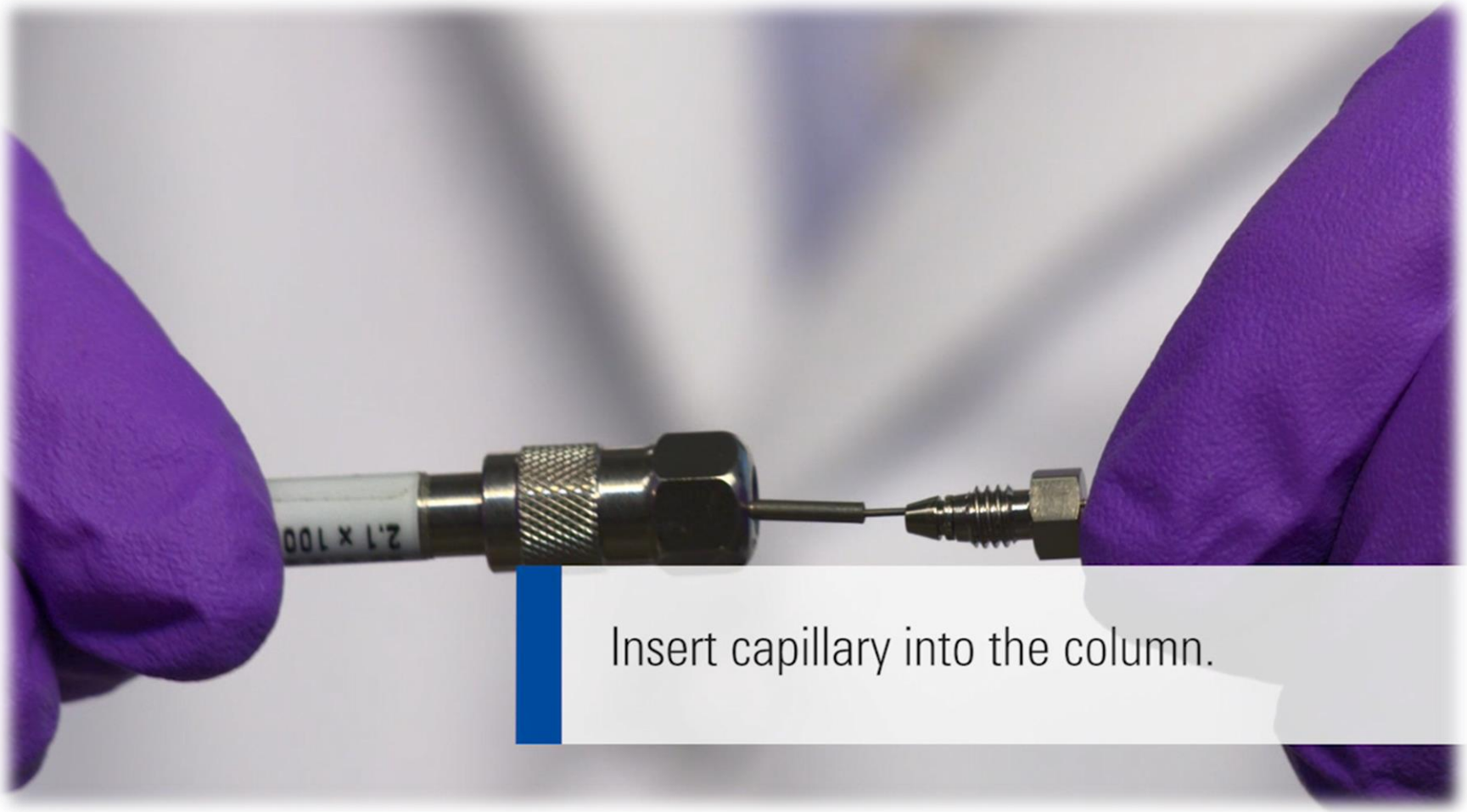
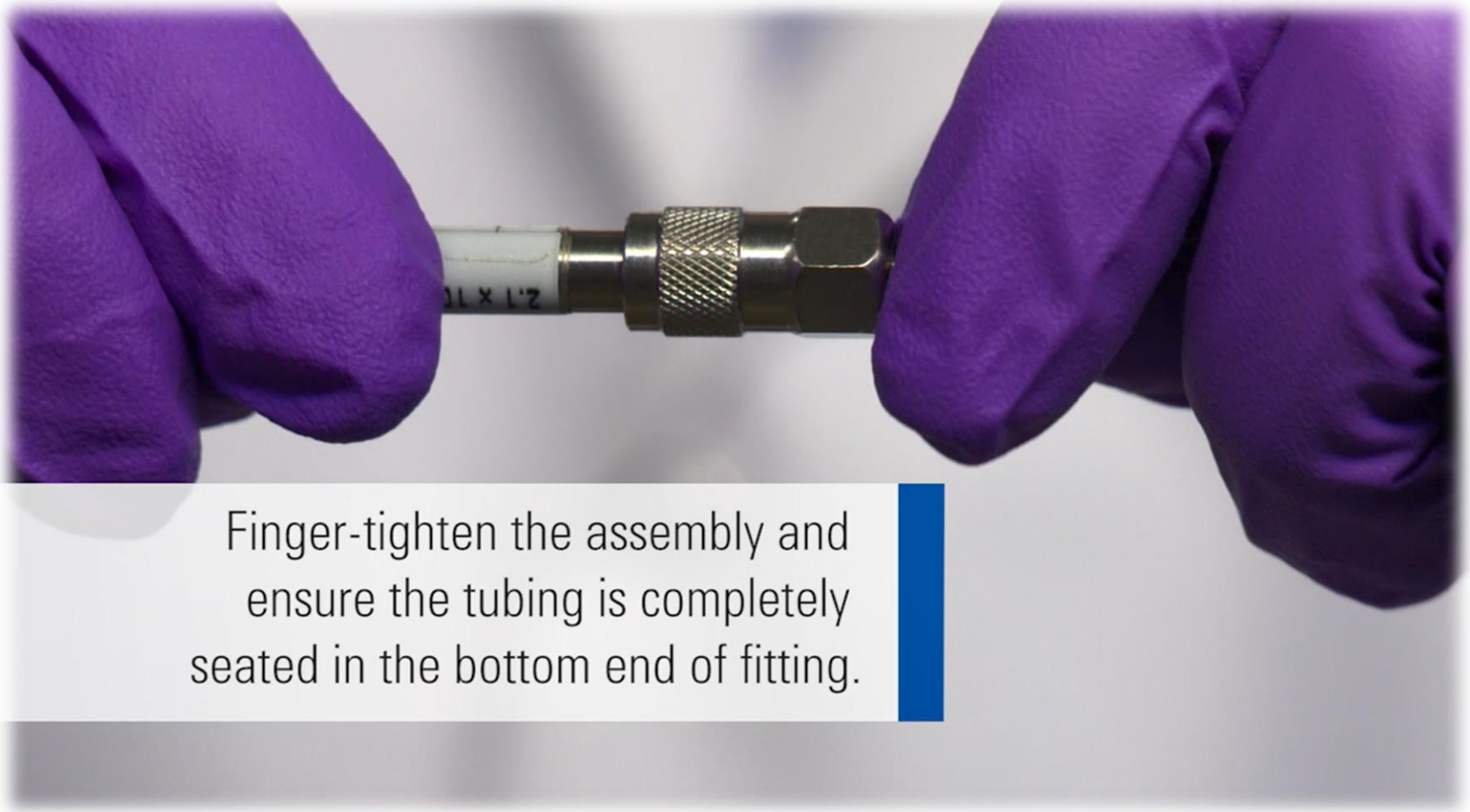
Swaging the SwageLok Fittings

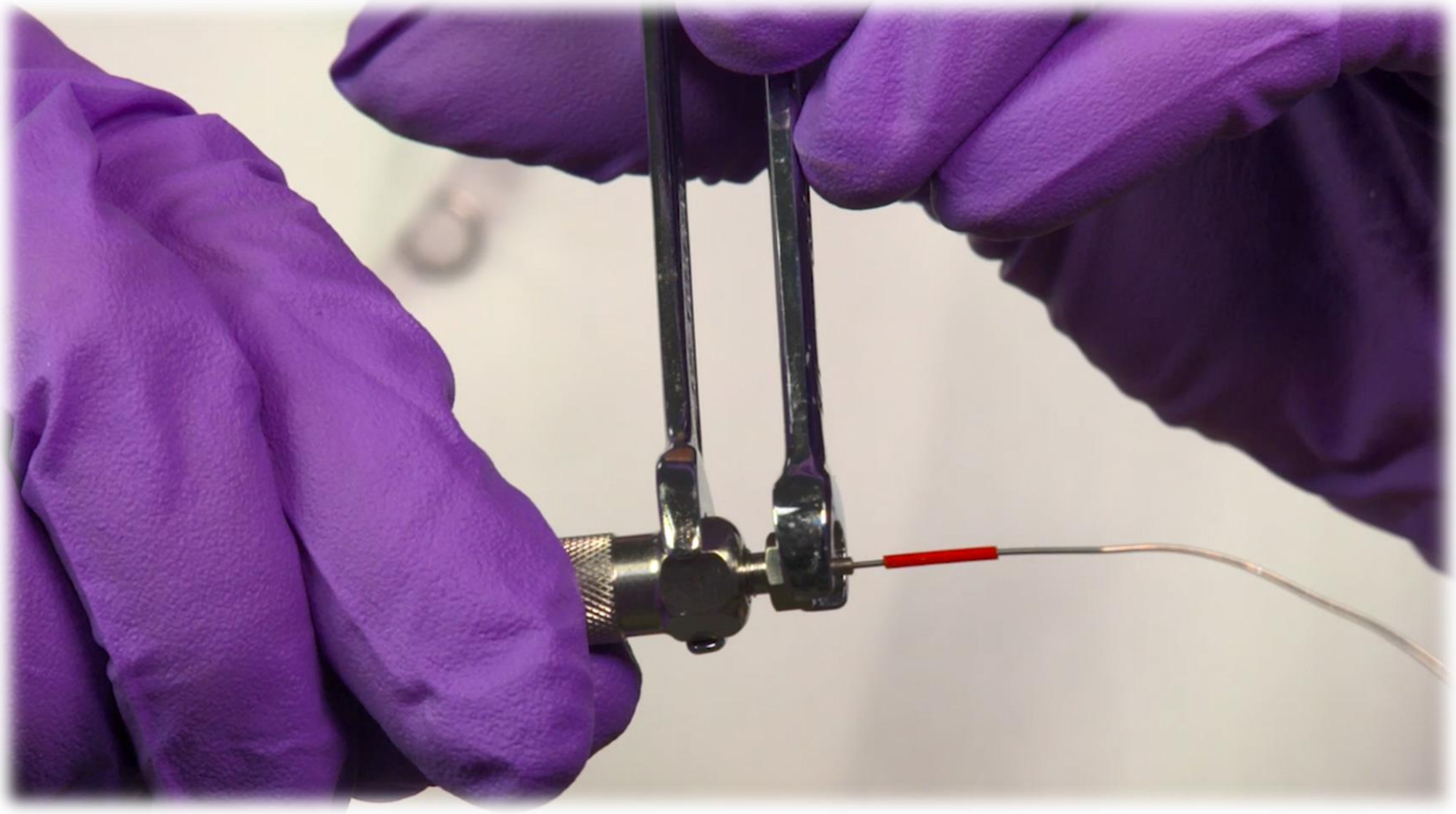
Swaging Fittings



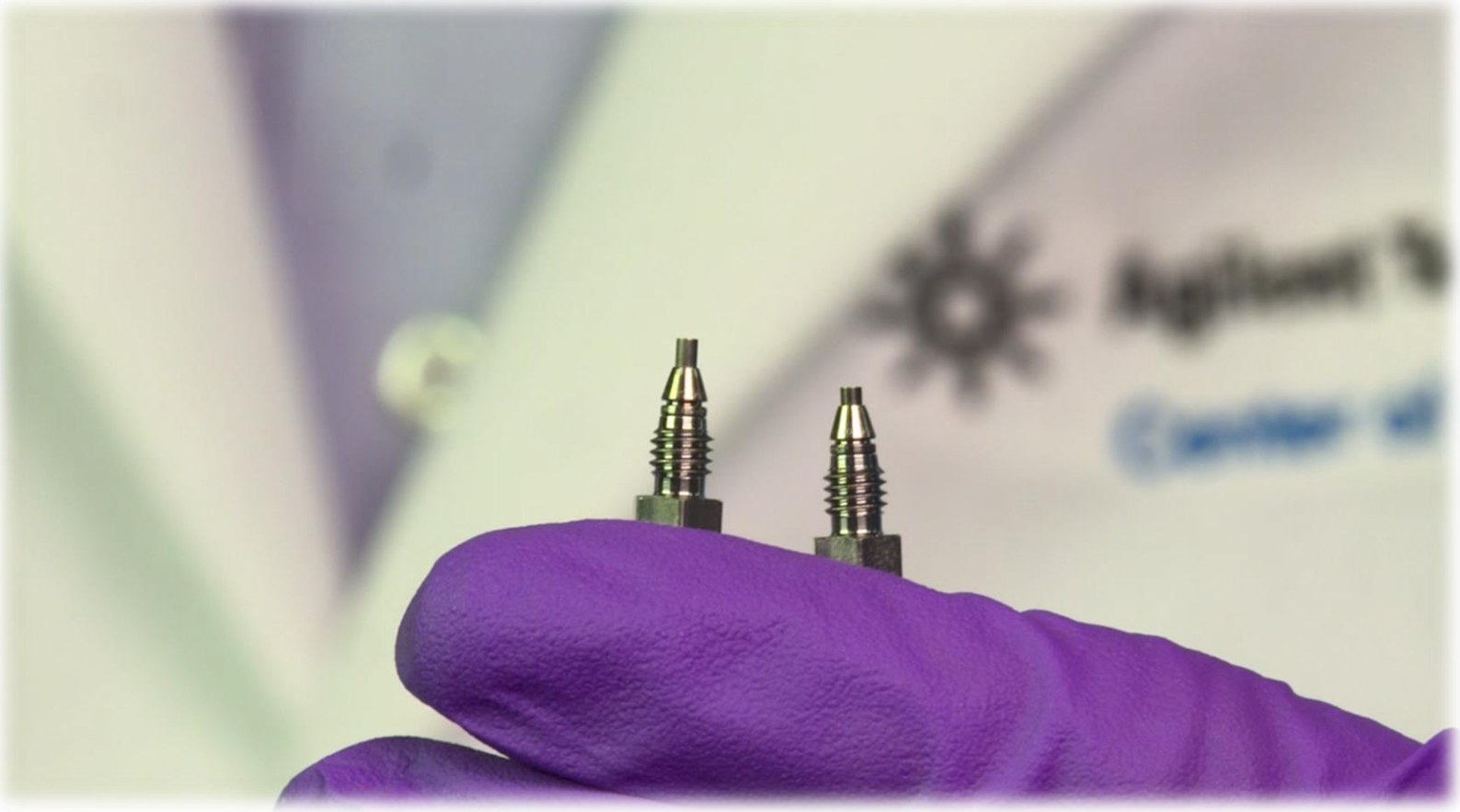
Swaging Fittings



Swaging Fittings

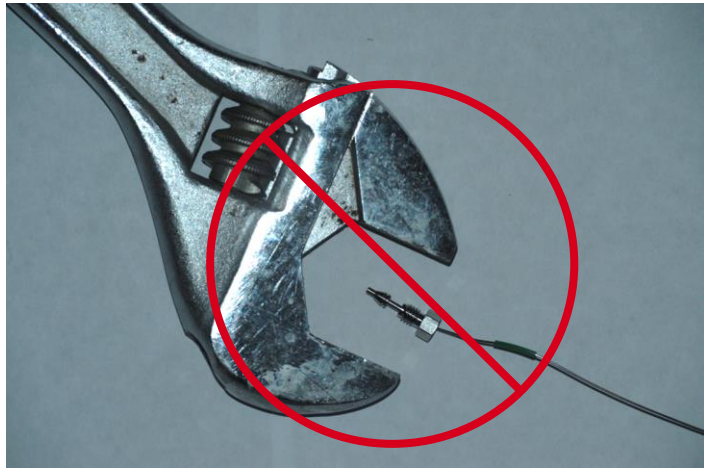


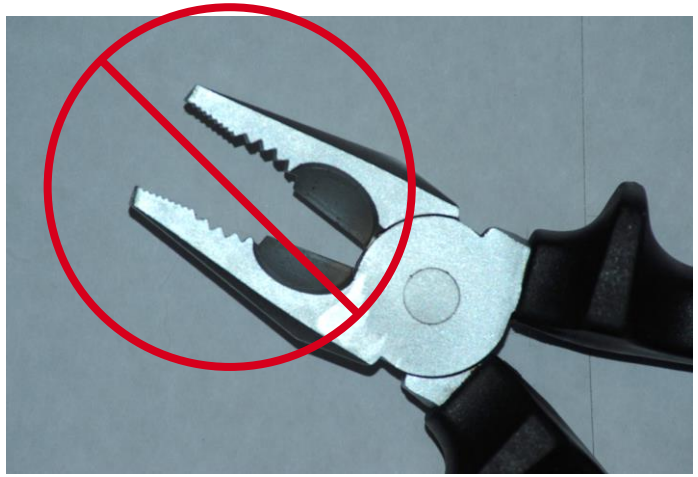
Inspect the Position of the Ferrule

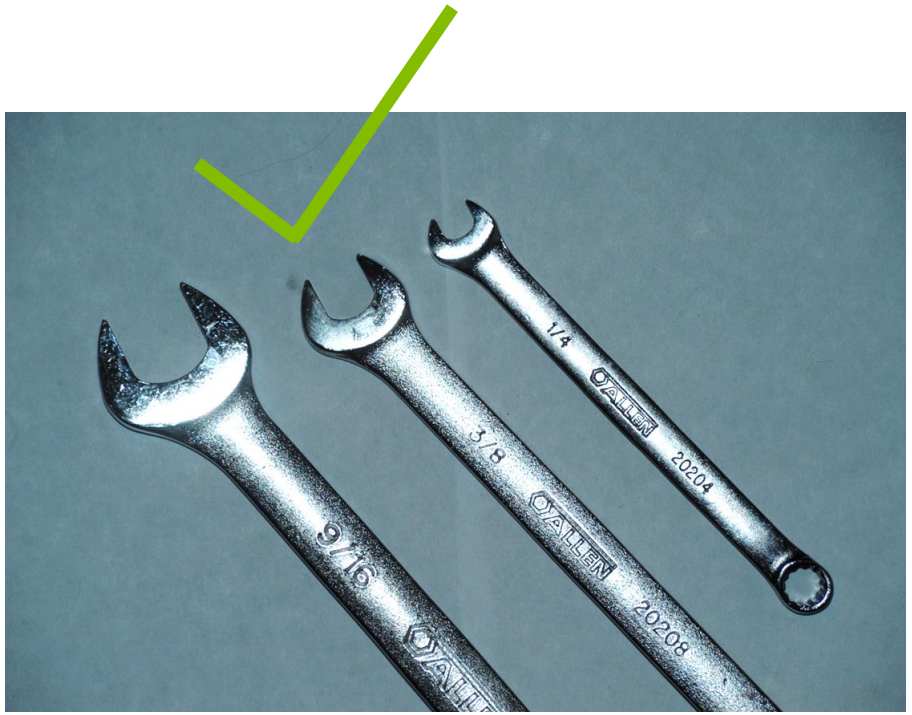


Video: How to properly swage stainless steel fittings onto stainless steel capillary tubing

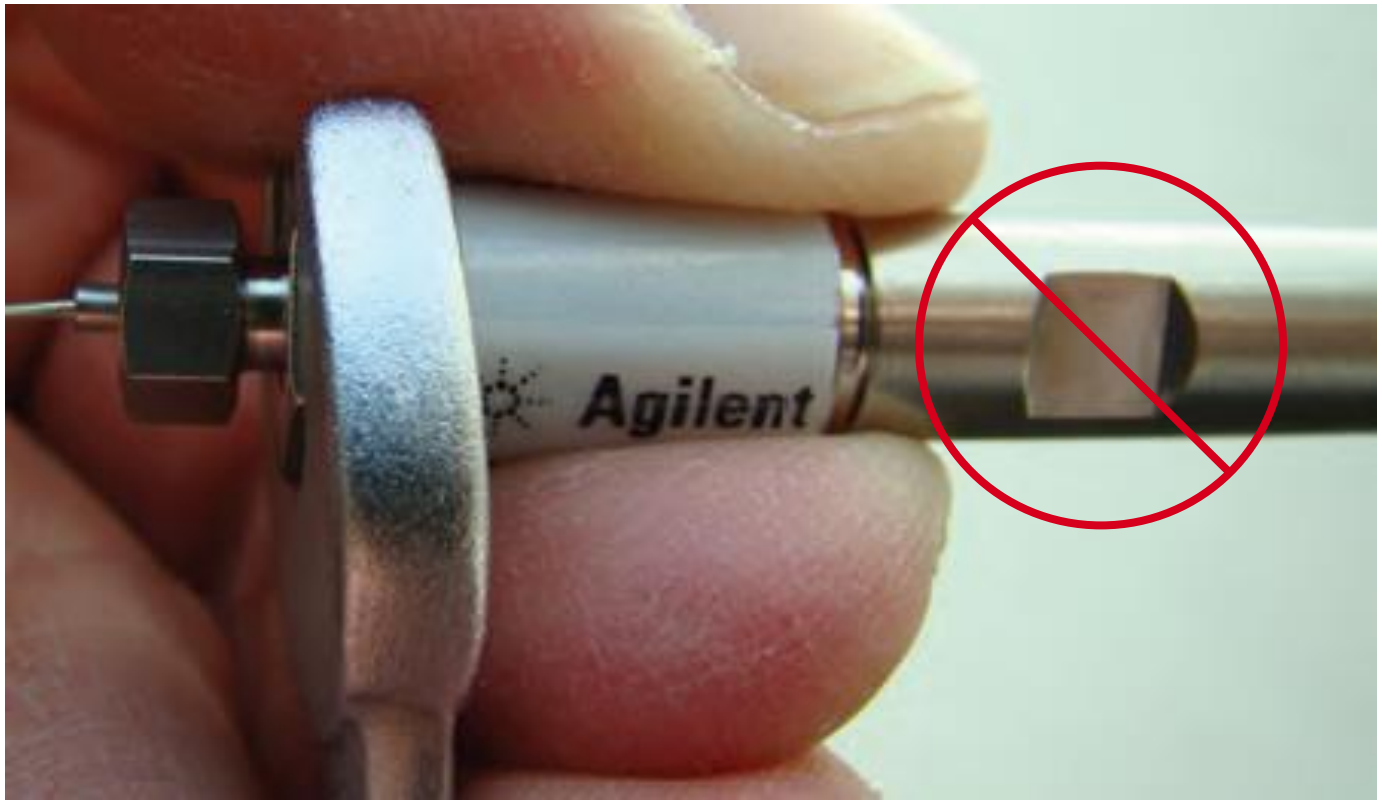
Tools



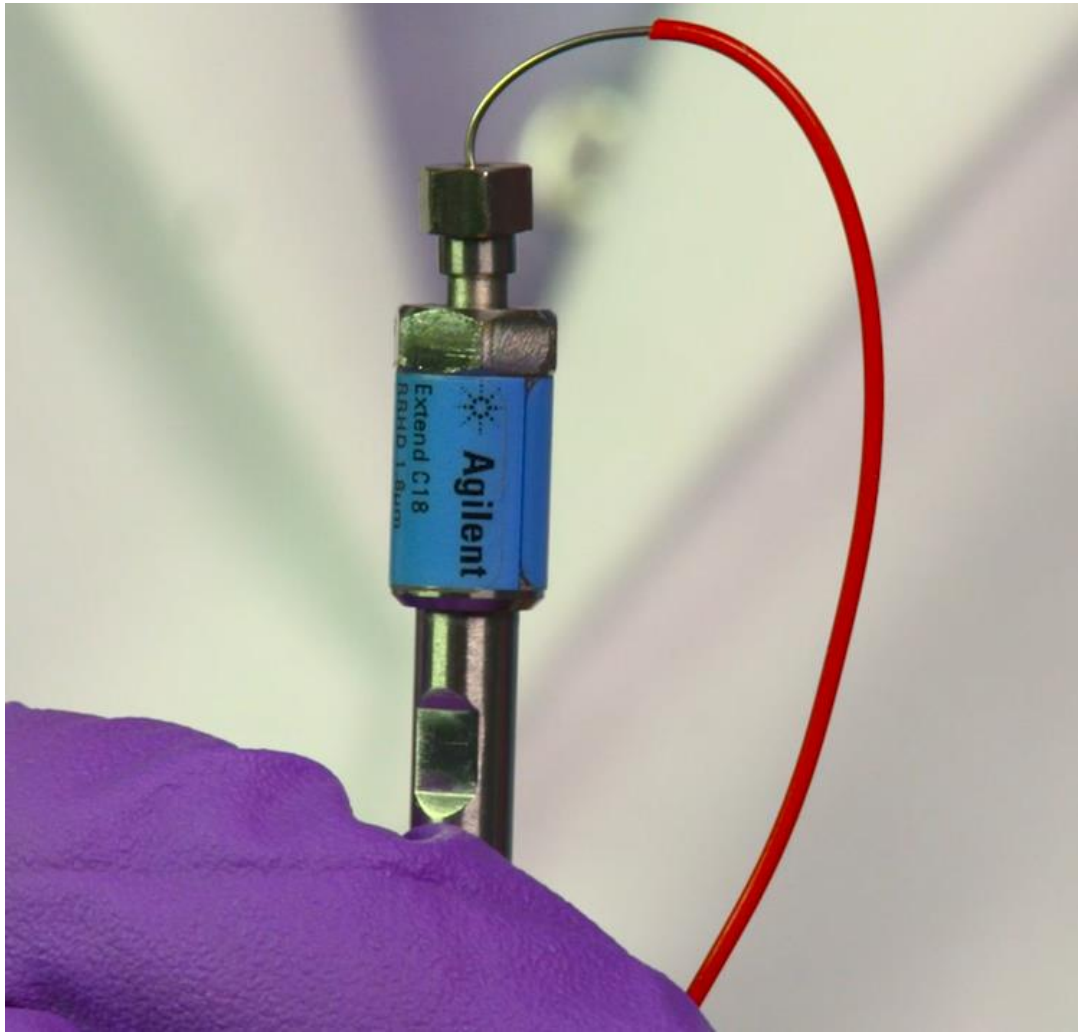




Tightening Fittings into a Column

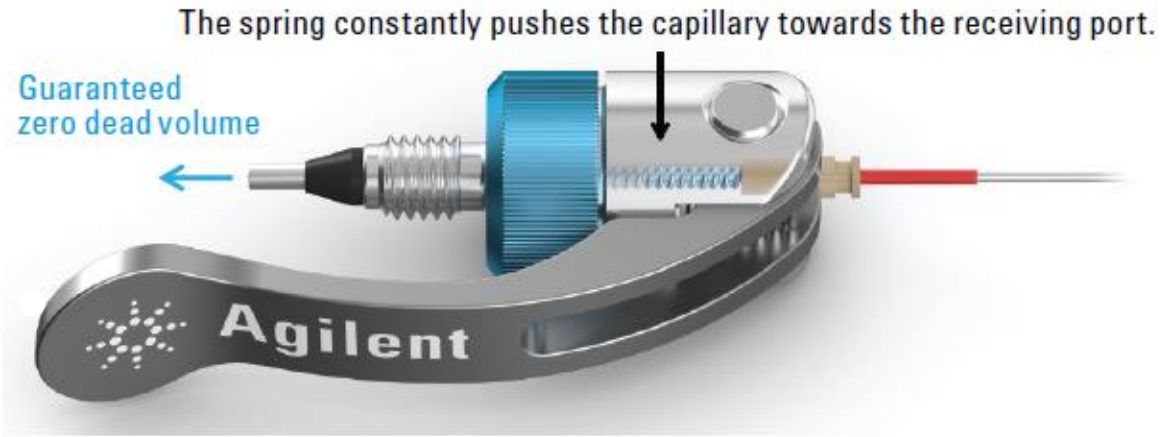


Overtightened Fittings



Agilent InfinityLab Fittings: Unique Spring-loaded Design

Quick Connect and Quick Turn



InfinityLab Quick Connect fitting, 5067-5965

InfinityLab Quick Turn fitting, 5067-5966

- The unique spring-loaded design applies a constant force to eliminate dead volume
- Finger tight to 1300 bar

400 bar (finger-tight, user-dependent)
1300 bar (tightened with a mounting tool (5043-0915)

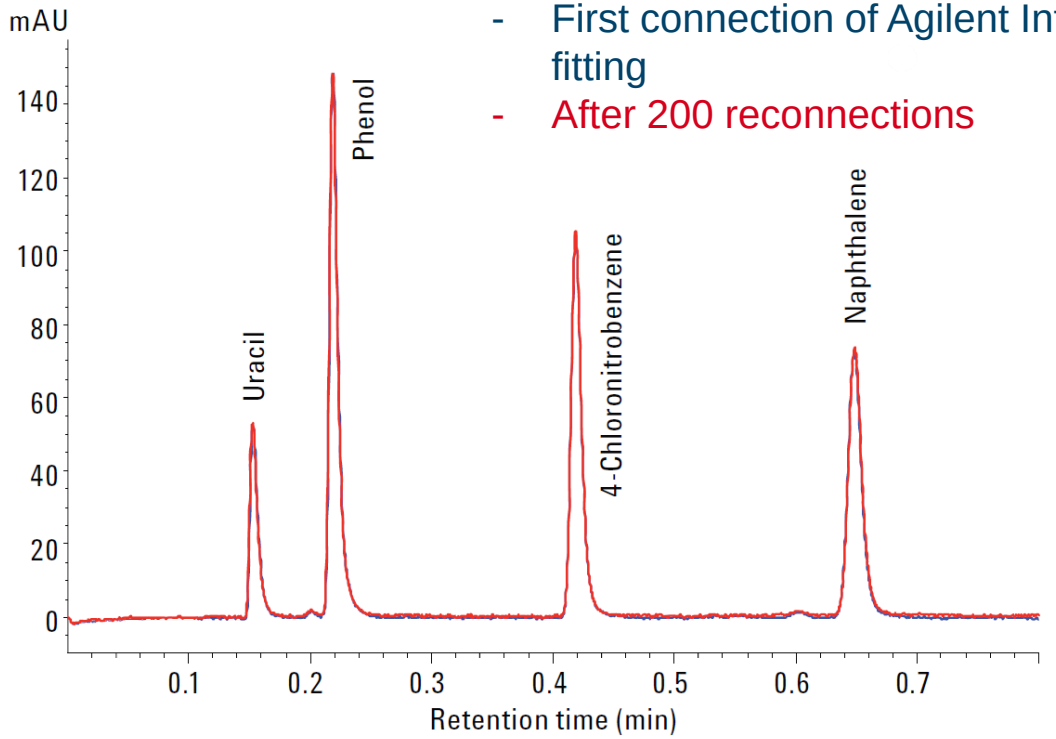
Flyer: 5991-5164EN

InfinityLab Quick Connect and Quick Turn Fittings

	Quick Connect Fitting	Quick Turn Fitting
Connects to	Columns (or inline filters)	Column, various receiving ports with 10-32 port geometry
Maximum pressure	1300 bar (finger-tight, by turning the lever)	To 400 bar (finger-tight, user-dependent) 1300 bar (with mounting tool, 5043-0915)  Bio-inert mounting tool, 5043-0915
Features	• Spring-loaded function for dead volume-free connections (special capillaries) • Replaceable ferrule and capillary • Capillaries in various lengths and diameters are available	• Spring-loaded function for dead volume-free connections • Replaceable ferrule and capillary • Capillaries in various lengths and diameters are available
Wetted material	PEEK (ferrule)	PEEK (ferrule)

InfinityLab Fittings Last Longer

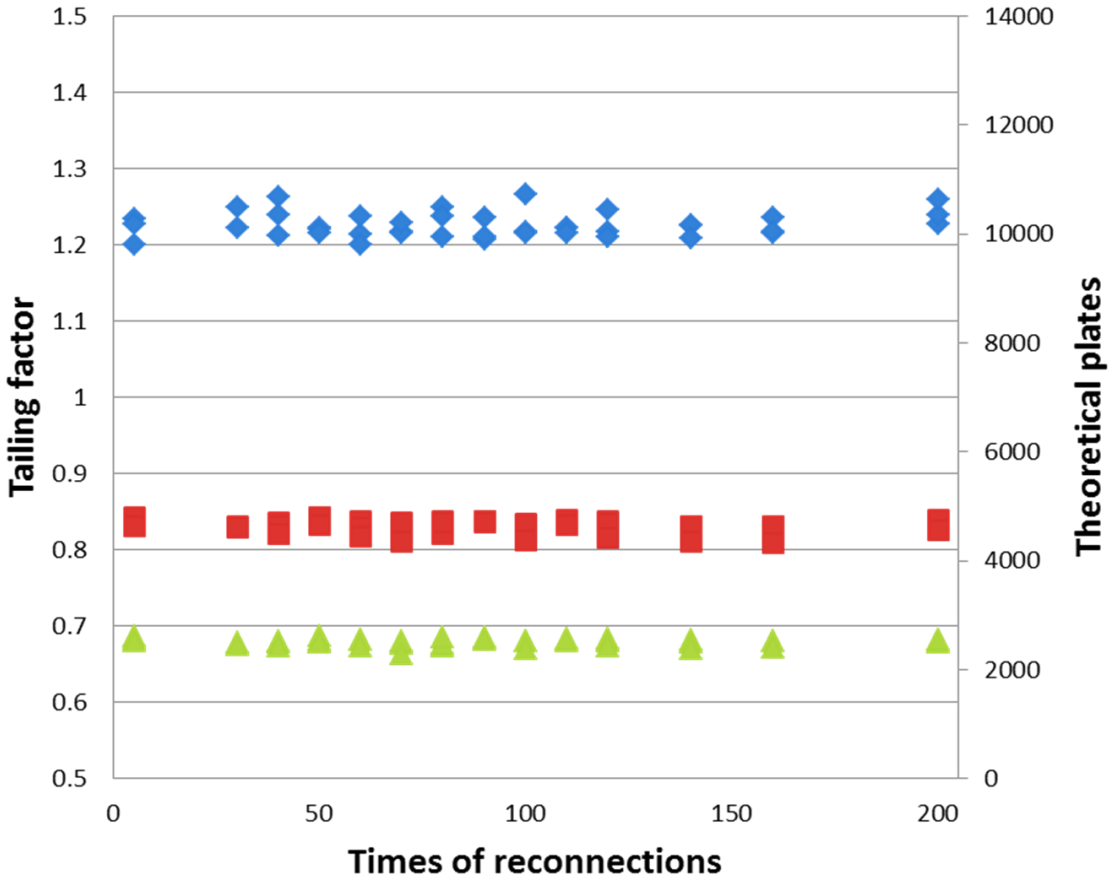
Chromatogram overlap before and after 200 reconnections



- First connection of Agilent InfinityLab Quick Connect fitting
- After 200 reconnections

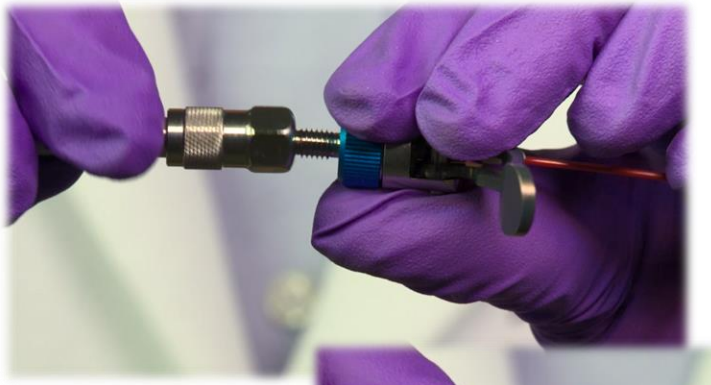
No visible change of chromatogram after 200 reconnections.

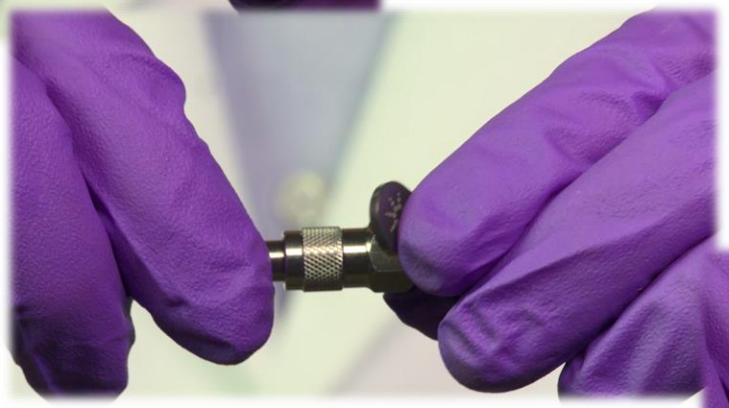
InfinityLab Fittings Last Longer



- Tailing factors and theoretical plates stayed constant within the experimental allowance through the reconnection procedures.

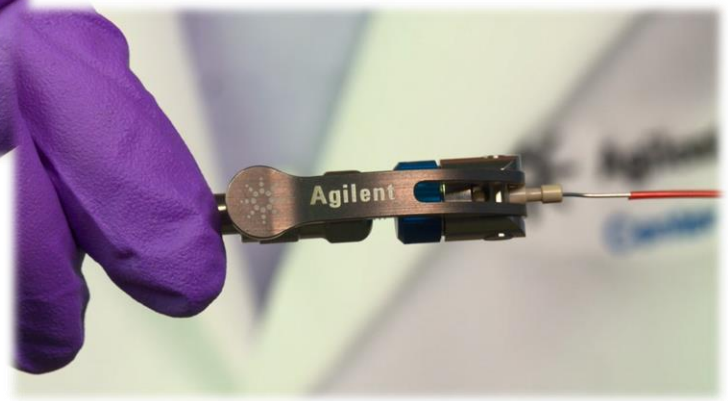
Installing the InfinityLab Quick Connect Fitting





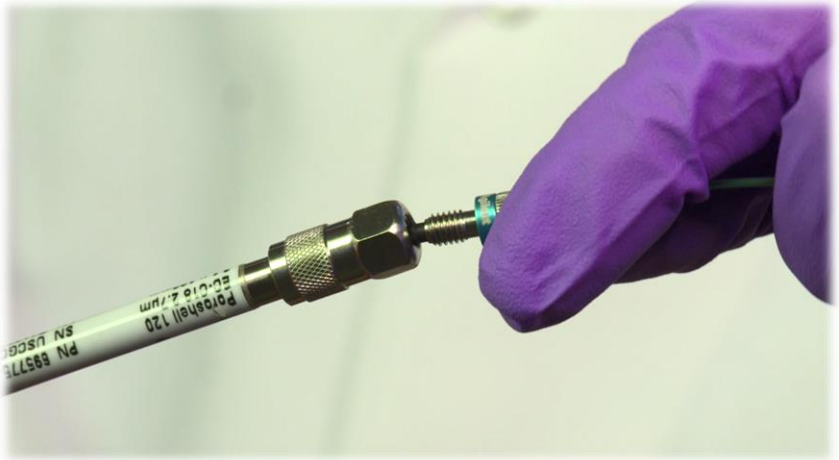
Finger tighten the fitting until you feel resistance, then close the lever.

Leak tight to 1300 bar

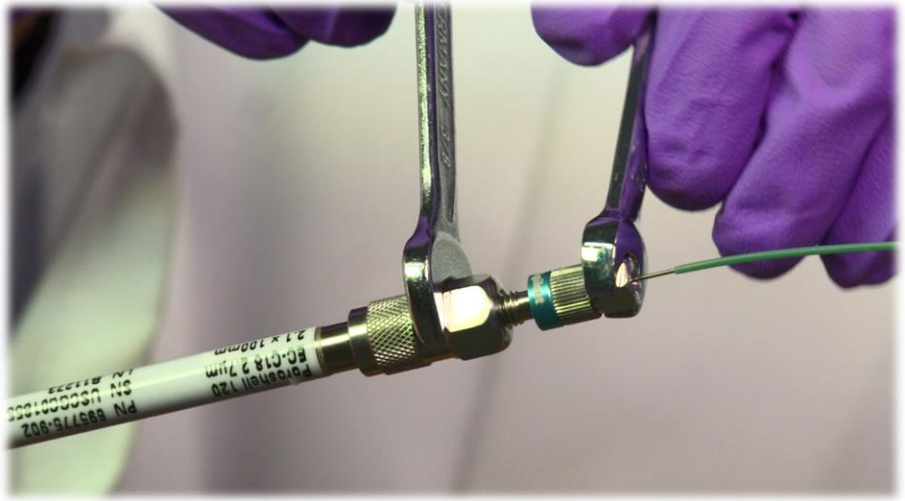


Video: Making Great Connections – Less stress, more reliable fittings

Installing InfinityLab Quick Turn Fitting



Finger tighten for 400 bar (user-dependent)



Tighten using a wrench/mounting tool for 1300 bar

Mounting tool, p/n 5043-0915

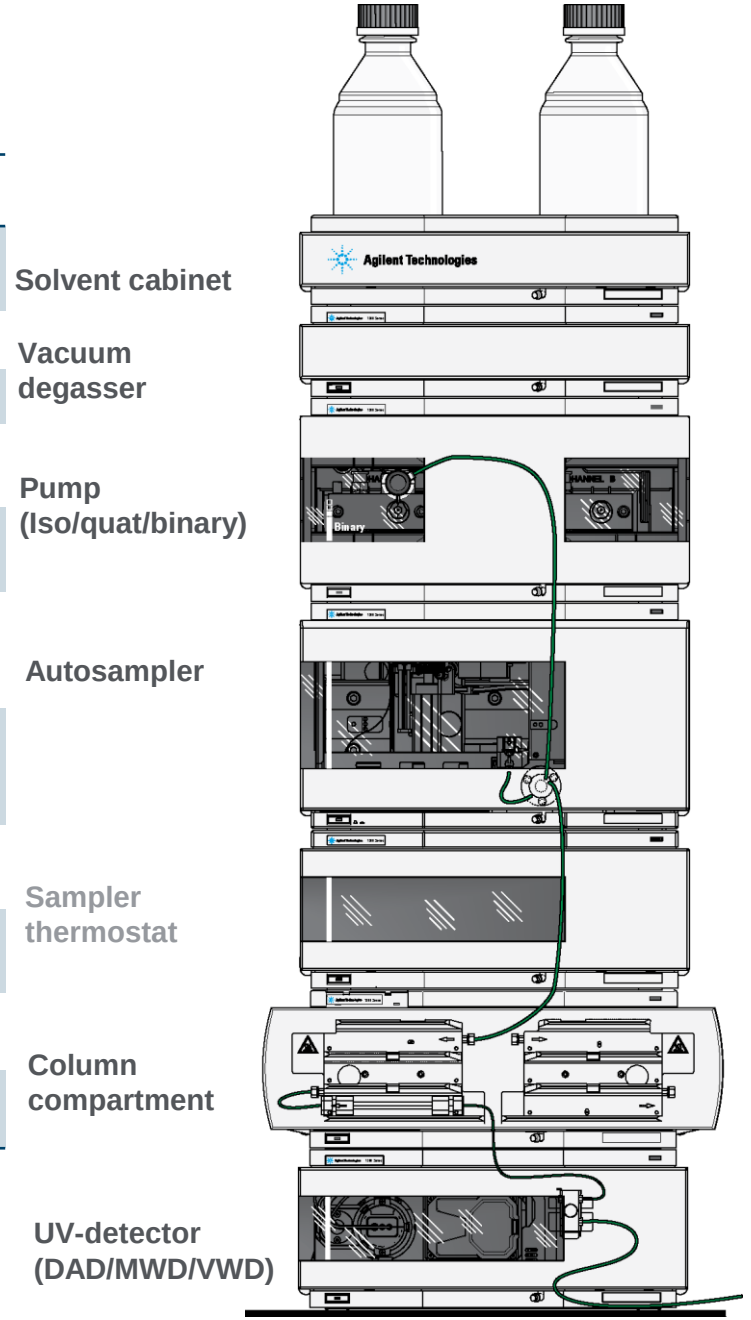
Not Just for Agilent Columns

Connecting Capillaries for Each LC System

1100/1200/1260 Series System

Connection	p/n	Description
Solvent bottle to vacuum degasser	G1311-60003	Bottle head assembly for screw bottle (GL45), with glass filter, 20 µm (5041-2168)
Degasser to pump	G1322-67300	Tubing kit degasser, 300 mm tubing, 4/pk
Pump to autosampler	G1312-87303	Capillary, 0.17 mm x 400 mm
Pump (purge valve) to waste	5062-2461	PTFE tube, 5000 mm
Autosampler to column compartment	G1313-87305 G1313-87304	Capillary, 0.17 mm x 180 mm Capillary, 0.12 mm x 180 mm
Thermostatted ALS to column compartment	01090-87306 01090-87610	Capillary, 0.17 mm x 380 mm Capillary, 0.12 mm x 280 mm
Column compartment to column	G1316-87300 01090-87611	Capillary, 0.17 mm x 90 mm Capillary, 0.12 mm x 105 mm
Column to VWD (std flow cell)	5062-8522	Inlet tubing assembly PEEK, 0.17 mm x 600 mm
Column to DAD/MWD	G1315-87311 G1315-87312	Capillary, 0.17 mm x 380 mm (S/S, ps/ns) Capillary, 0.12 mm x 150 mm
VWD to waste	5062-8535	Waste accessory kit
DAD to waste	5062-2462	PTFE tubing 0.7 mm id, 1.6 mm od, 5 m

0.17 mm id capillaries	Standard setup
0.12 mm id capillaries	Rapid Resolution LC setup

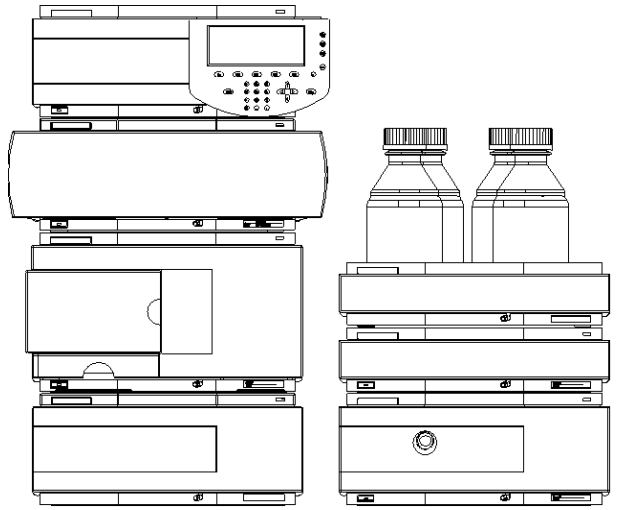


1100/1200/1260 Infinity Series System

Dual – stack configuration with cooled ALS

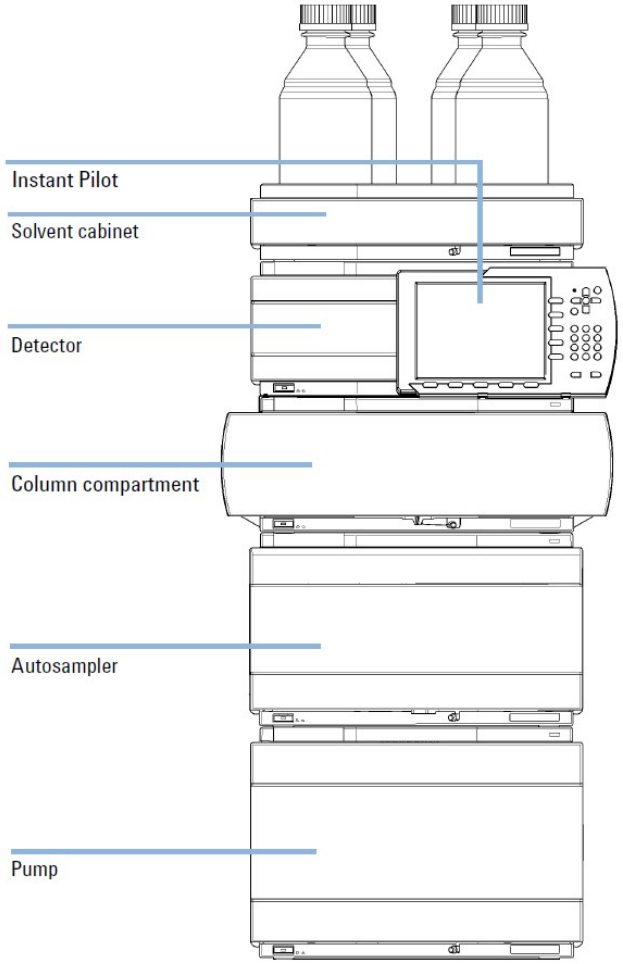
Connection	p/n	Description
Solvent bottle to vacuum degasser	G1311-60003	Bottle head assembly for screw bottle (GL45), with glass filter, 20 µm (5041-2168)
Degasser to pump	G1322-67300	Tubing kit degasser, 300 mm tubing, 4/pk
Pump to autosampler	G1312-87304	Capillary, 0.17 mm x 700 mm
Pump (purge valve) to waste	5062-2461	PTFE tube, 5000 mm
Thermostatted ALS to column compartment	01090-87309 01090-87610	Capillary, 0.17 mm x 380 mm Capillary, 0.12 mm x 280 mm
Column compartment to column	G1316-87300 01090-87611	Capillary, 0.17 mm x 90 mm Capillary, 0.12 mm x 105 mm
Column to VWD (std flow cell)	5062-8522	Inlet tubing assembly PEEK, 0.17 mm x 600 mm
Column to DAD/MWD	G1315-87311 G1315-87312	Capillary, 0.17 mm x 380 mm Capillary, 0.12 mm x 150 mm
VWD to waste	5062-8535	Waste accessory kit
DAD to waste	5062-2462	PTFE tubing, 0.7 mm id, 1.6 mm od, 5 m

0.17 mm id capillaries	Standard setup
0.12 mm id capillaries	Rapid Resolution LC setup



1290 Infinity Series System

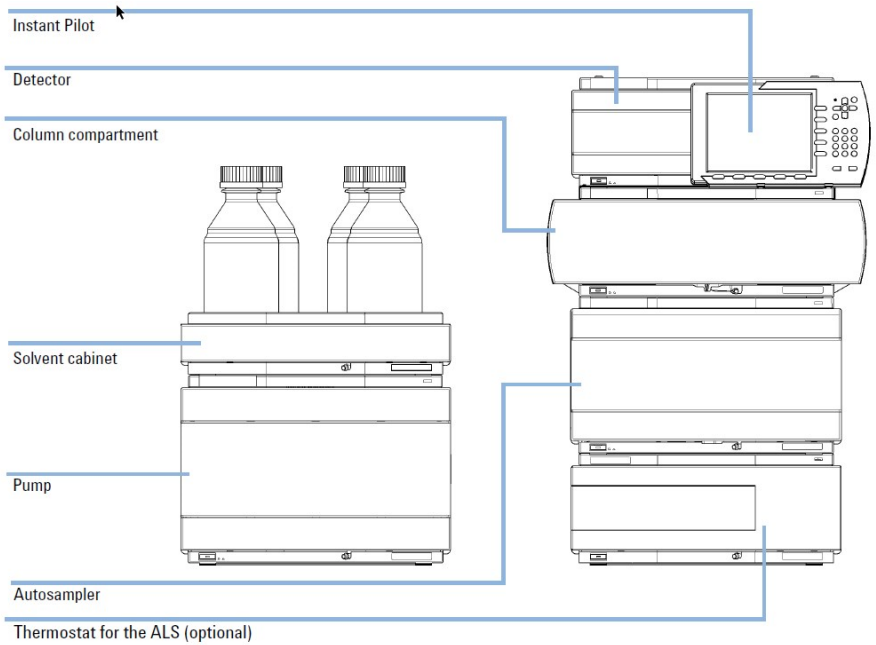
Connection	p/n	Description
Solvent bottle to pump	G7120-60007	Bottle head assembly for screw bottle (GL45), with glass filter 20 µm (5041-2168)
Pump to autosampler	5067-4657	Capillary, 0.17 mm x 300 mm
Autosampler to column compartment	5067-4659	Capillary, 0.12 mm x 340 mm
Column compartment to column	5500-1188	Capillary, 0.12 mm x 105 mm (capillary comes without fittings, use Quick Turn fittings or SST fittings)
Column to DAD	5067-4660	Capillary, 0.12 mm x 280 mm
DAD to waste	5062-2462	PTFE tubing, 0.7 mm id, 1.6 mm od, 5 m



1290 Infinity Series System

Dual – stack configuration with cooled ALS

Connection	p/n	Description
Solvent bottle to vacuum degasser	G7120-60007	Bottle head assembly for screw bottle (GL45), with glass filter, 20 µm (5041-2168)
Pump to autosampler	5500-1217	Capillary, 0.17 mm x 900 mm
Autosampler to column compartment	5067-4659	Capillary, 0.12 mm x 340 mm
Column compartment to column (low dispersion heat exchanger double)	5500-1188	Capillary, 0.12 mm x 105 mm (capillary comes without fittings, use Quick Turn fittings or SST fittings)
Column to DAD	5067-4660	Capillary, 0.12 mm x 280 mm
DAD to waste	5062-2462	PTFE tubing, 0.7 mm id, 1.6 mm od, 5 m



1260/1290 Infinity II Series System

S

SI

SL

SX

M4

Single stack with multisampler and MCT

Connection	p/n	Description
Solvent bottle to pump	G7120-60007	Bottle head assembly for screw bottle (GL45), with glass filter, 20 µm (5041-2168)
Pump to multisampler	5500-1246	Capillary, 0.17 mm x 500 mm (SI/SI, ps/ps)
Multisampler to MCT	5500-1157	Capillary, 0.12 mm x 500 mm, (SI/SI, ps/ns)
Heat exchanger to column	5067-5957	Quick Connect assembly, 0.12 mm x 105 mm
	5500-1173	Quick Connect capillary, 0.12 mm x 105 mm
	5067-5965	Quick Connect fitting
Column to DAD	5500-1191	Quick Turn capillary, 0.12 mm x 280 mm (comes without fitting)
	5067-5966	Quick Turn fitting
DAD to waste	5062-2462	PTFE tubing, 0.7 mm id, 1.6 mm od, 5 m

Solvent cabinet

DAD

Multicolumn thermostat (MCT)

Multisampler

Pump (flex/high speed)

1260 Infinity II Series System

Single stack with vialsampler and internal column compartment

S

SI

SL

SX

M4

Connection	p/n	Description
Solvent bottle to pump	G7120-60007	Bottle head assembly for screw bottle (GL45), with glass filter, 20 µm (5041-2168)
Pump to vialsampler	5500-1217	Capillary, 0.17 mm x 900 mm (SI/SX, ps/ps)
Sampler to 3 µL heat exchanger 6 µL heat exchanger	 5500-1249 5500-1250	 Capillary, 0.12 mm x 120 mm, (SL/SL, ps,ns) Capillary, 0.17 mm x 120 mm (SL/SL, ps,ns)
Heat exchanger to column 3 µL heat exchanger 6 µL heat exchanger	 5500-1238 5500-1240	 Capillary, 0.12 mm x 105 mm (SL/SL, ps,ps) Capillary, 0.17 mm x 105 mm (SL/SL, ps,ps)
Column to DAD	5500-1191	Quick Turn capillary, 0.12 mm x 280 mm (comes without fitting)
DAD to waste	5062-2462	PTFE tubing, 0.7 mm id, 1.6 mm od, 5 m

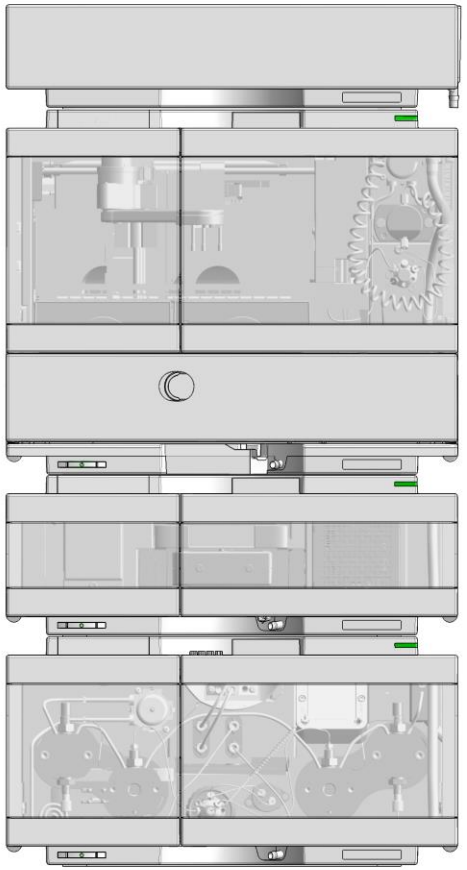
Solvent cabinet

Vial sampler

Internal column compartment (ICC)

UV detector (DAD/MWD/VWD)

Pump (quat/binary)



1260/1290 Infinity II Series System

Single stack with vialsampler and multicolumn thermostat

S 

SI 

SL 

SX 

M4 

Connection	p/n	Description
Solvent bottle to pump	G7120-60007	Bottle head assembly for screw bottle (GL45), with glass filter, 20 µm (5041-2168)
Pump to vialsampler	5500-1245	Capillary, 0.17 mm x 400 mm (SI/SX, ps/ps)
Sampler to heat exchanger	5500-1157	Capillary, 0.12 mm x 500 mm, (SL/SL, ps,ns)
Heat exchanger to column	5067-5957	Quick Connect assembly, 0.12 mm x 105 mm
	5500-1173	Quick Connect capillary, 0.12 mm x 105 mm
	5067-5965	Quick Connect fitting
Column to DAD	5500-1191	Quick Turn capillary, 0.12 mm x 280 mm (comes without fitting)
	5067-5966	InfinityLab Quick Turn fitting
DAD to waste	5062-2462	PTFE tubing, 0.7 mm id, 1.6 mm od, 5 m

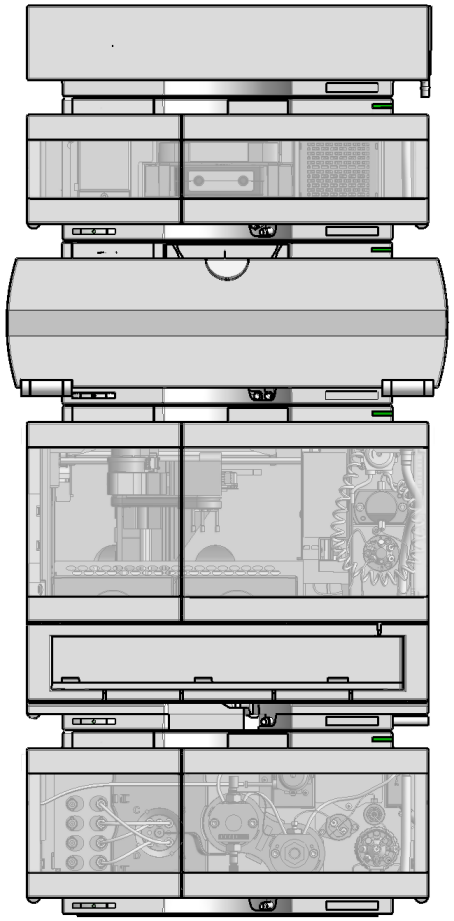
Solvent cabinet

UV detector (DAD/MWD/VWD)

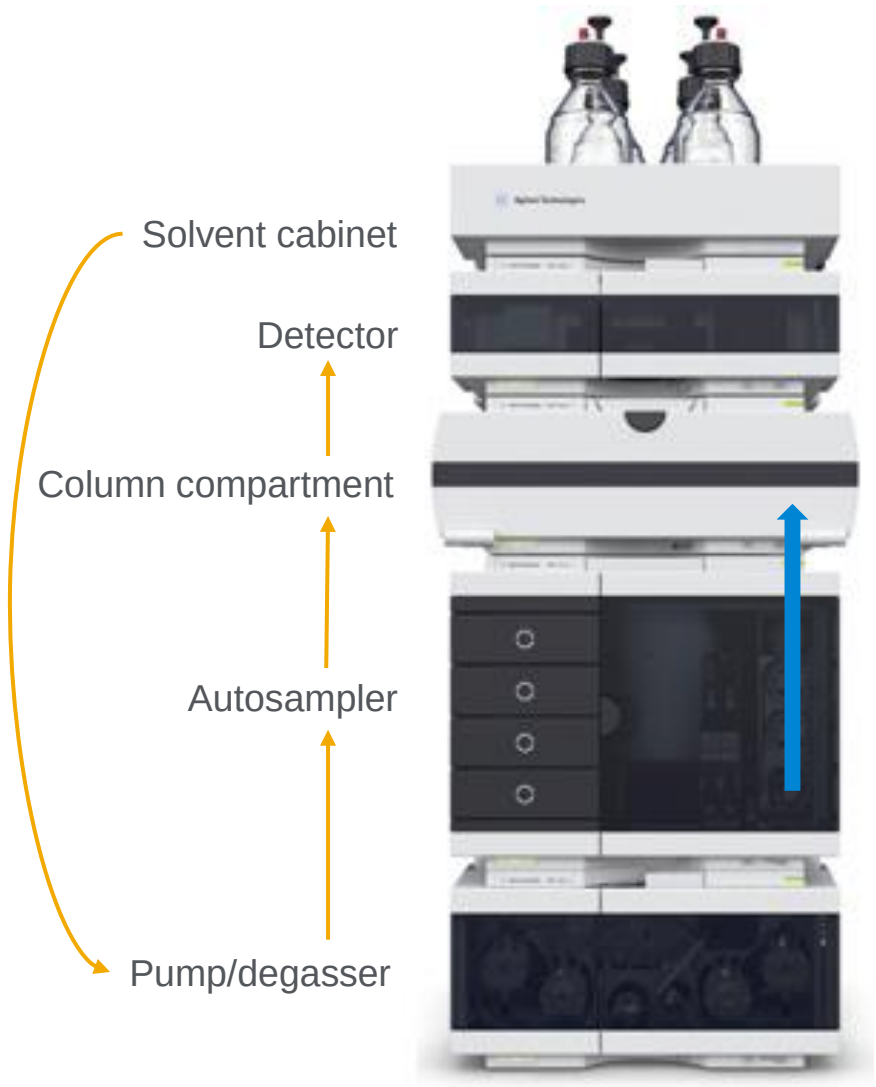
Multicolumn compartment

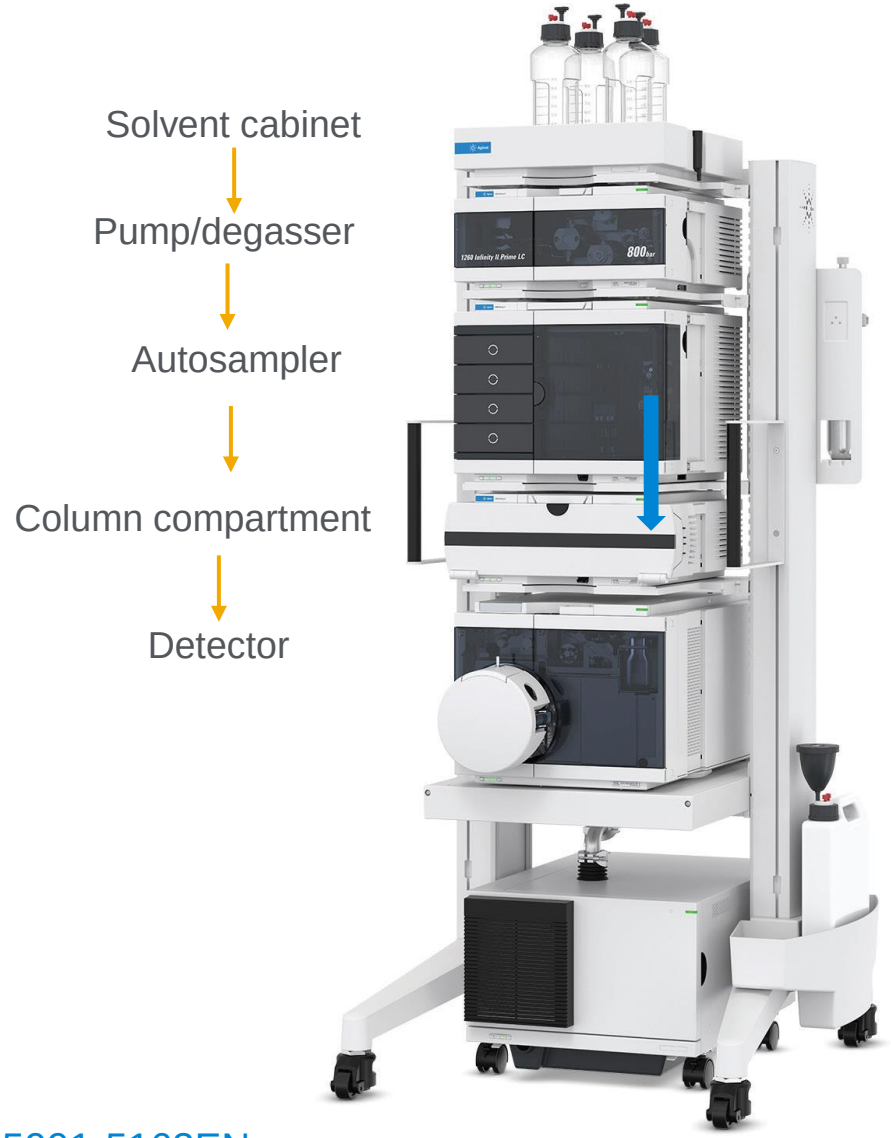
Vialsampler

Pump (flex/high speed)



InfinityLab Flex Benches





Flyer: 5991-5163EN

Resources on the Web

InfinityLab fittings on Agilent.com

InfinityLab LC Supplies catalog

Product catalog

Less Stress. More Reliable Connections.

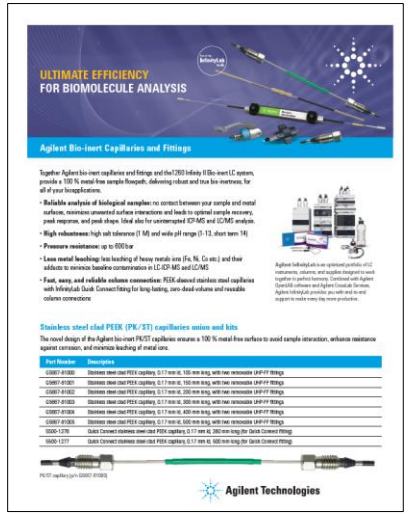
Product flyer

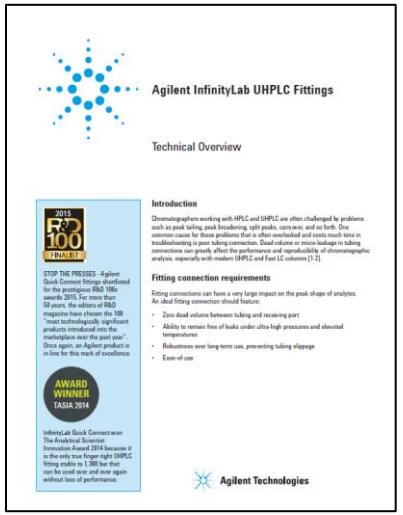
Agilent Bio-inert Capillaries and Fittings flyer

Product overview

Agilent InfinityLab UHPLC Fittings

Technical overview





Contact Agilent Chemistries and Supplies Technical Support

1-800-227-9770 option 3, option 3:

Option 1 for GC and GC/MS columns and supplies

Option 2 for LC and LC/MS columns and supplies

Option 3 for sample preparation

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Option 6 for former Prozyme products

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Thank You!