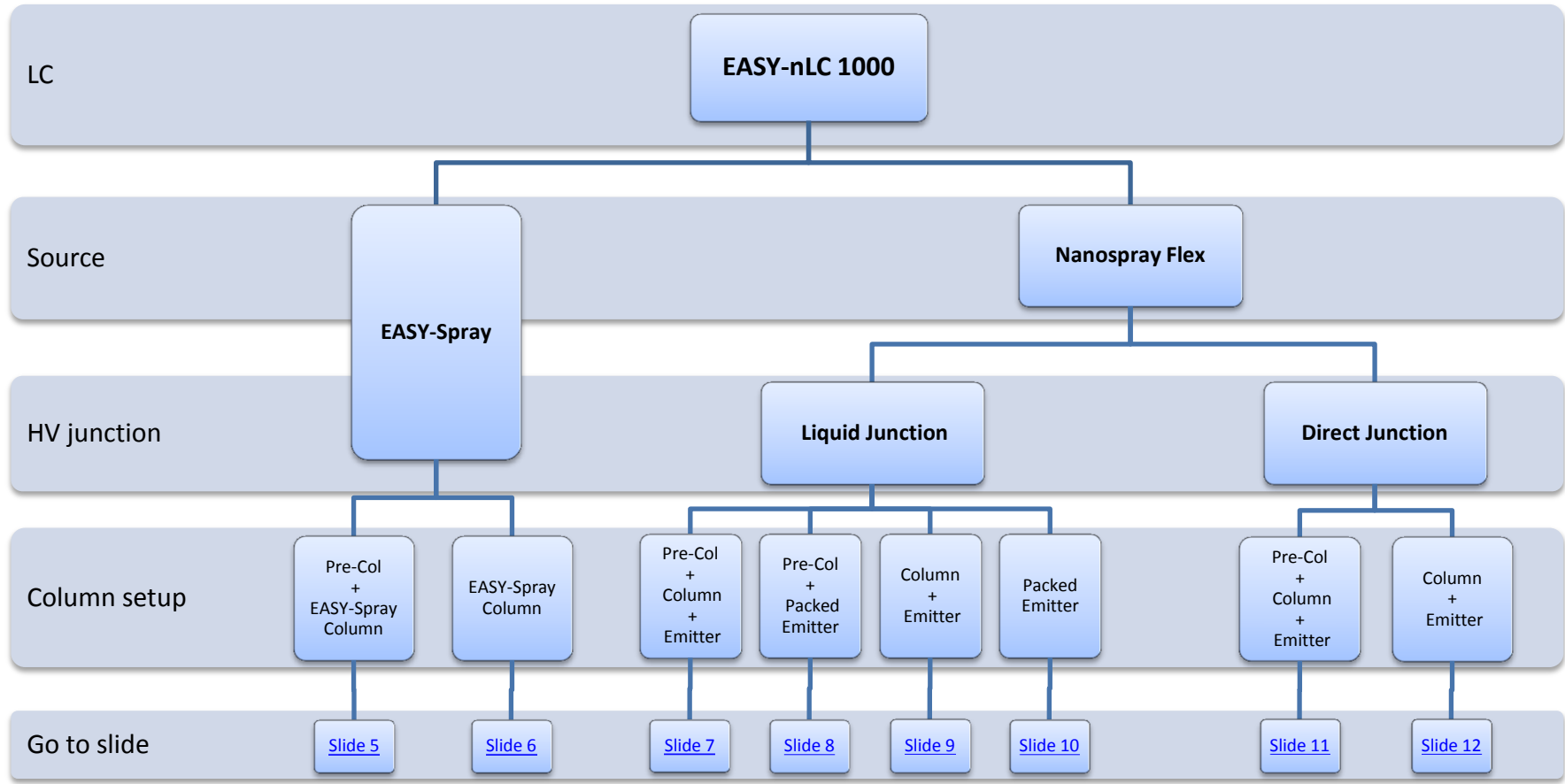
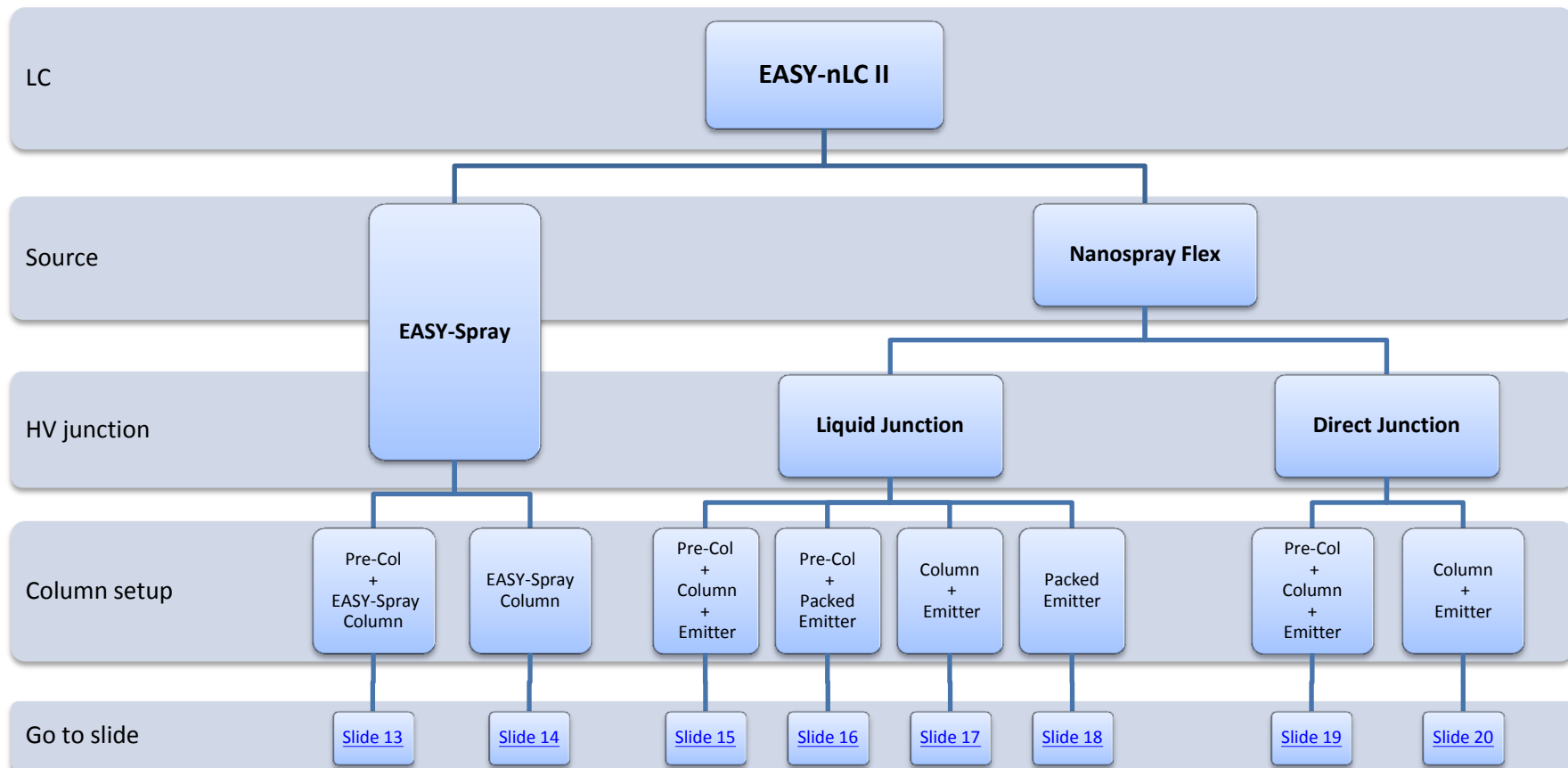


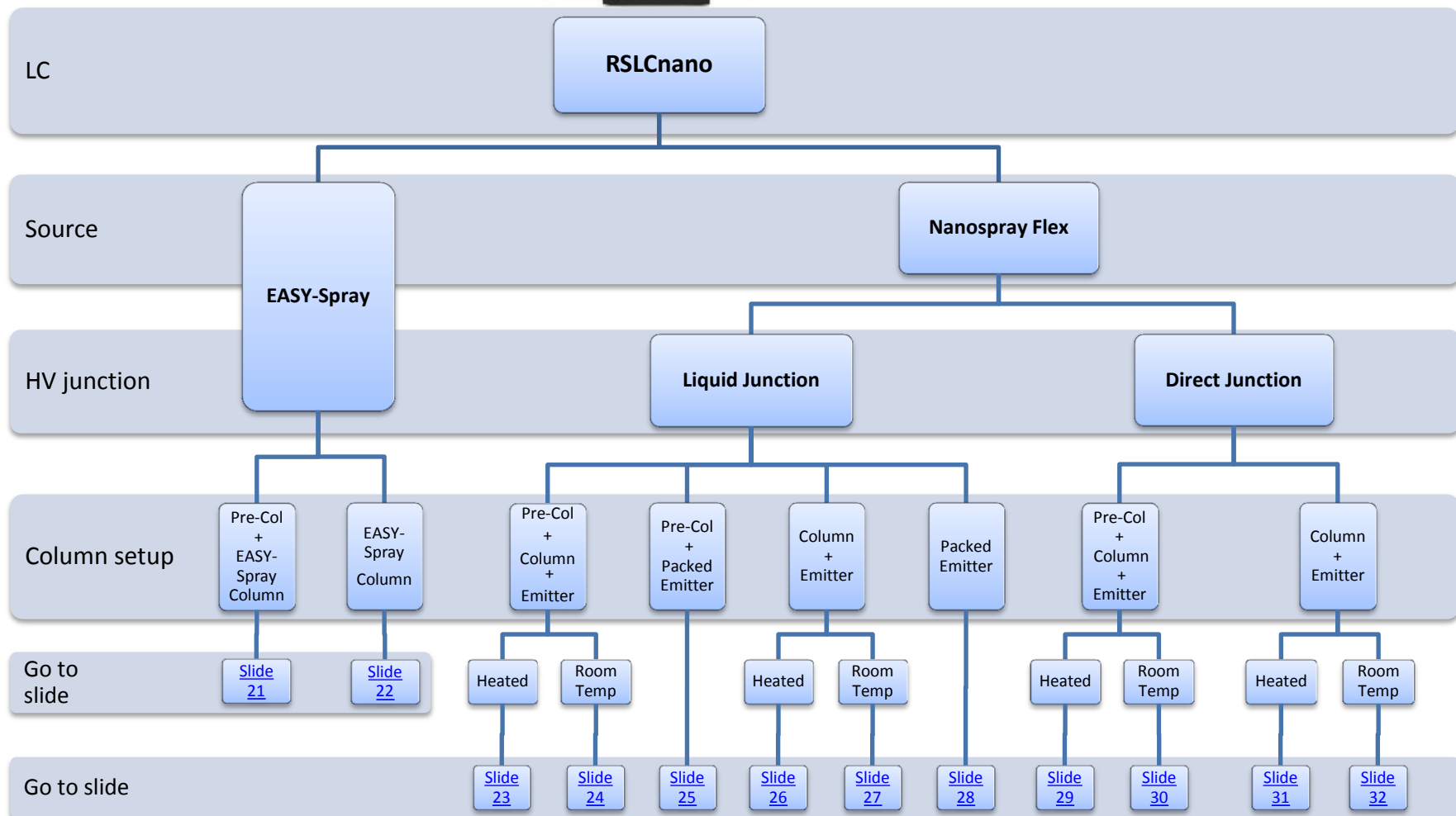
**The Complete and Easy Guide to Configuring Your
Specific Thermo NanoLC for Mass Spec Analysis**

May 2013

The world leader in serving science

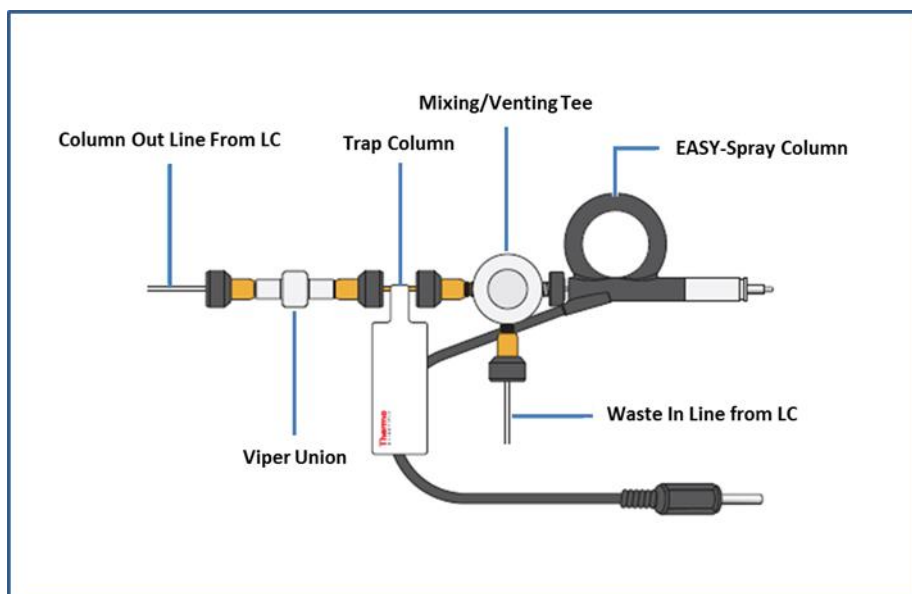






EASY-nLC 1000 with Precolumn and EASY-Spray Column

Schematic

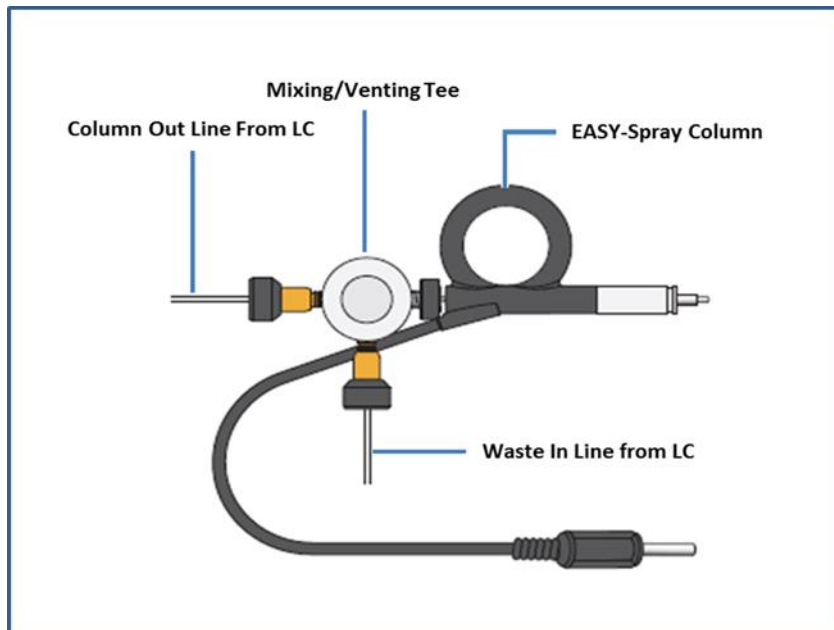


Consumables

Item	Image	Part number
Viper Union		SC900
Acclaim Pepmap precolumn		164705
A/B mixing & venting Tee		SC901
EASY-Spray column		Various: ES801 ES802 ES803

EASY-nLC 1000 with EASY-Spray Column

Schematic

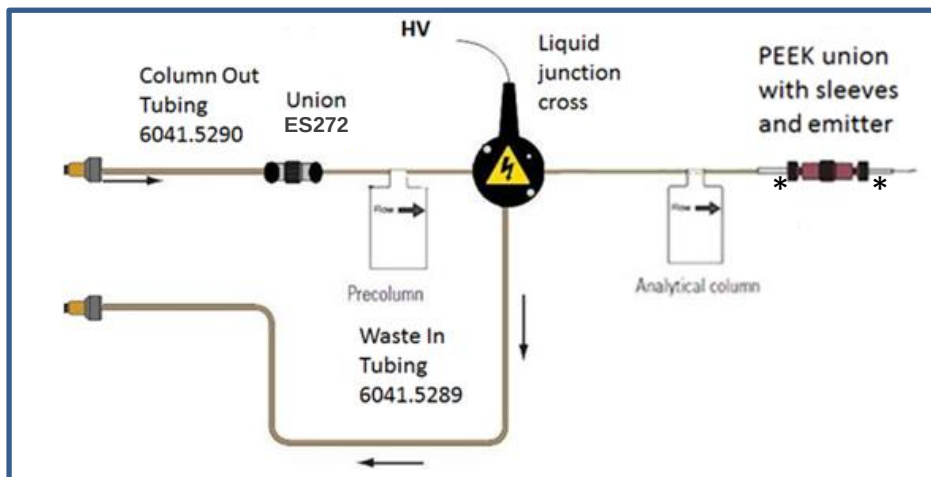


Consumables

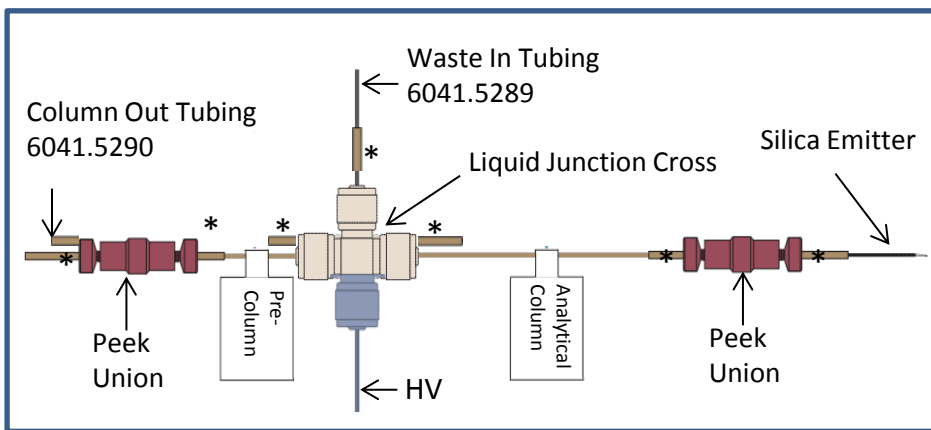
Item	Image	Part number
A/B mixing & venting Tee		SC901
EASY-Spray column		Various: ES801 ES802 ES803

EASY-nLC 1000 with Liquid Junction, Precolumn, Analytical Column and Emitter

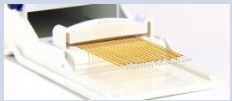
UHPLC Schematic--Preferred



HPLC Schematic--300 bar max

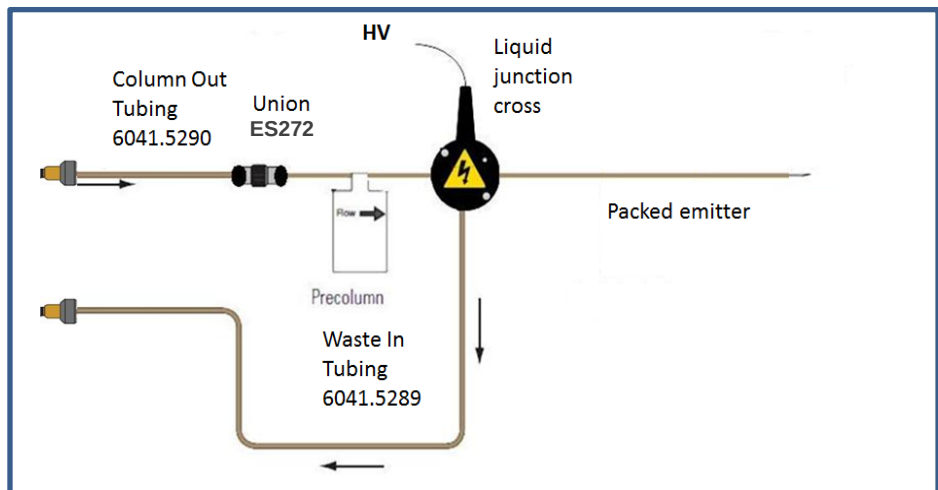


Consumables

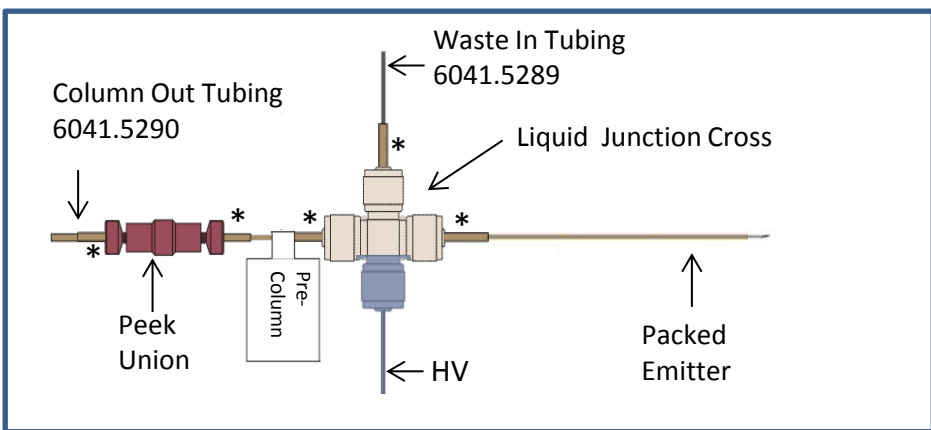
Item	Image	Part number
Column Out Tubing	Viper on LC side only	6041.5290
Waste In Tubing	Viper on LC side only	6041.5289
Union For 360 µm OD		ES272
UHPLC Liquid Junction Cross Kit		ES269
HPLC Liquid Junction Cross + Biege Sleeves		ES257
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*
Silica Emitter		FS360-20-10-N-20 (New Objective)

EASY-nLC 1000 with Liquid Junction, Precolumn, and Packed Emitter

UHPLC Schematic--Preferred



HPLC Schematic--300 bar max

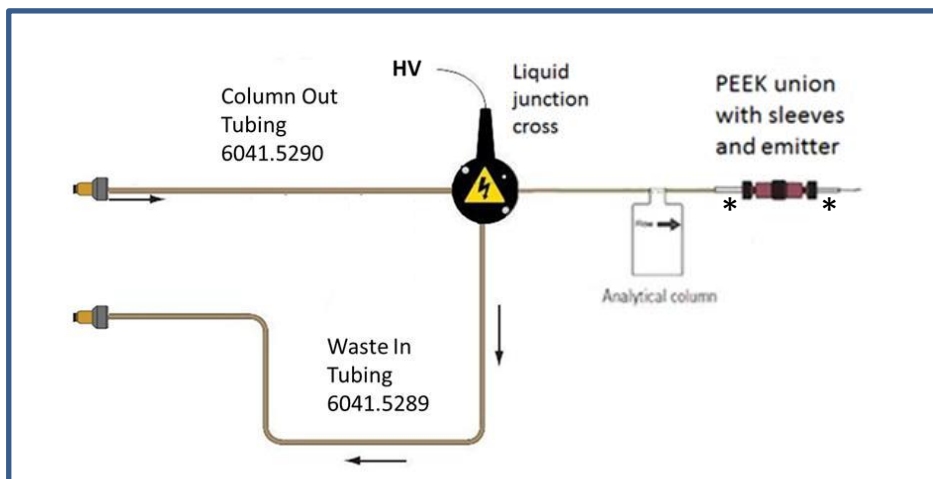


Consumables

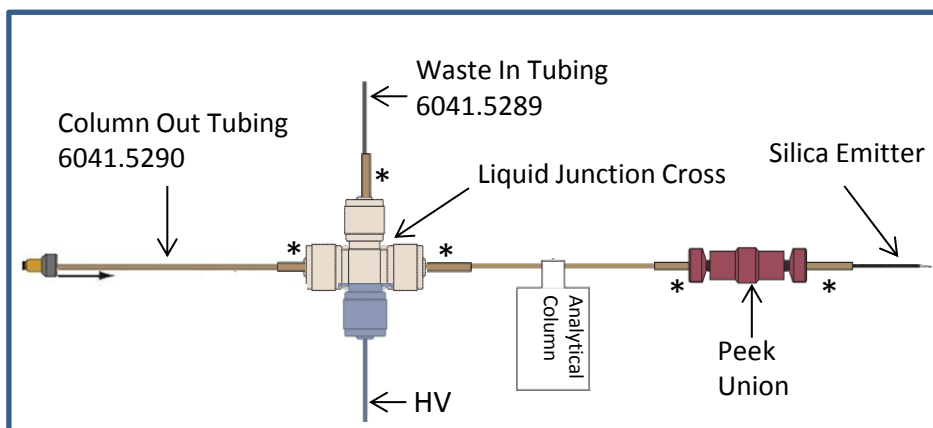
Item	Image	Part number
Column out tubing	Viper on LC Side Only	6041.5290
Waste in tubing	Viper on LC Side Only	6041.5289
Union For 360 μ m OD		ES272
UHPLC Liquid Junction Cross Kit		ES269
HPLC Liquid Junction Cross + Beige Sleeves		ES257
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 μ m capillary to unions*	Beige (360 μ m x 1/32")*	SC603*

EASY-nLC 1000 with Liquid Junction, Analytical Column and Emitter

UHPLC Schematic--Preferred



HPLC Schematic--300 bar max

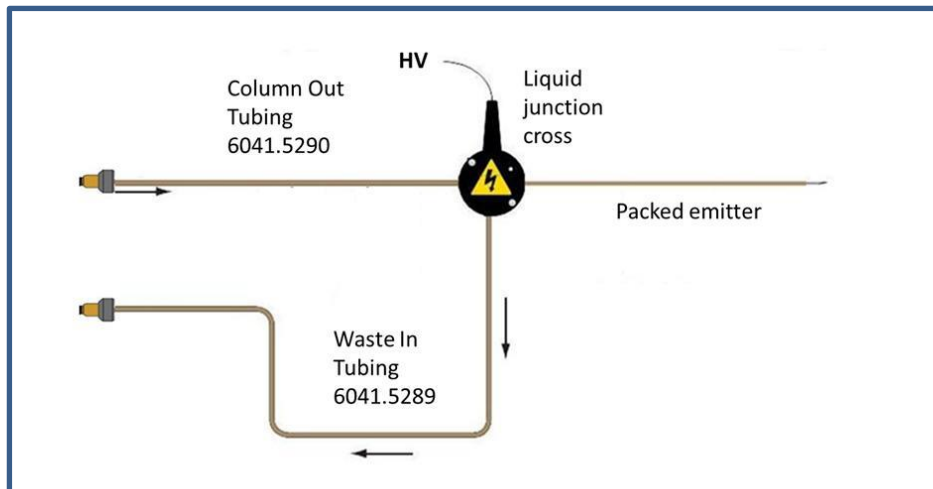


Consumables

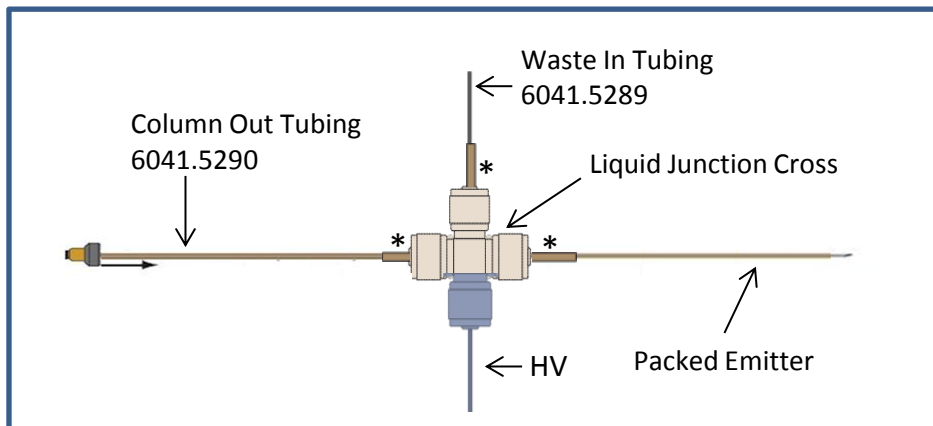
Item	Image	Part number
Column Out Tubing	Viper on LC side only	6041.5290
Waste In Tubing	Viper on LC side only	6041.5289
UHPLC Liquid Junction Cross Kit		ES269
HPLC Liquid Junction Cross + Beige Sleeves		ES257
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*
Silica Emitter		FS360-20-10-N-20 (New Objective)

EASY-nLC 1000 with Liquid Junction and Packed Emitter

UHPLC Schematic--Preferred



HPLC Schematic--300 bar max

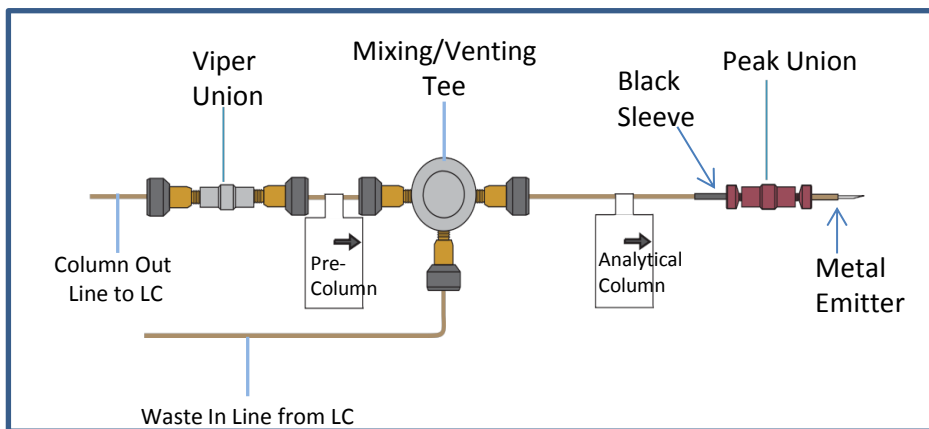


Consumables

Item	Image	Part number
Column out tubing	Viper on LC Side Only	6041.5290
Waste in tubing	Viper on LC Side Only	6041.5289
UHPLC Liquid Junction Cross Kit		ES269
HPLC Liquid Junction Cross + Beige Sleeves		ES257
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*

EASY-nLC 1000 with Direct Junction, Precolumn, Analytical Column and Emitter

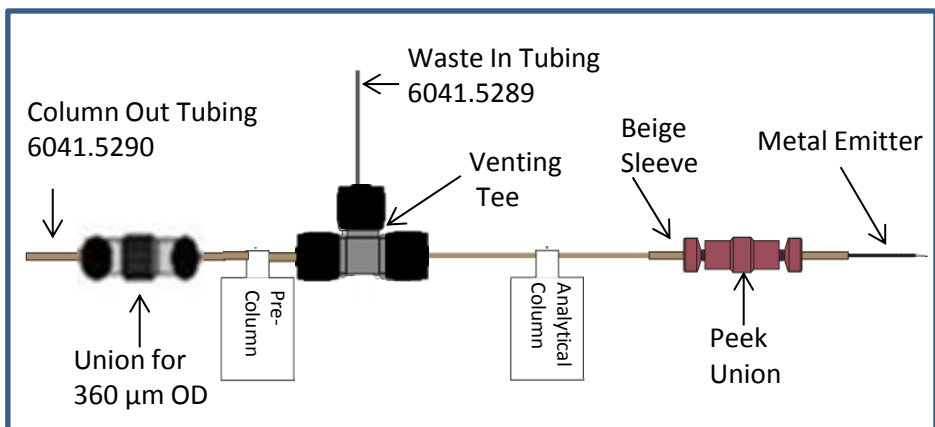
Viper Column Schematic



Consumables

Item	Image	Part number
Viper Union		SC900
Mixing/ Venting Tee		SC901
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 280 µm capillary to unions	Black (280µm x 1/32")	SC903
Metal Emitter		ES542
Column Out Tubing	Viper on LC side only	6041.5290*
Waste In Tubing	Viper on LC side only	6041.5289*
Union for 360 µm OD		ES272
Ultra High Pressure MicroTee for 360 µm OD Tubing		(IDEX) UH-750
Sleeves for connecting OD 360 µm capillary to unions	Beige (360µm x 1/32")	SC603

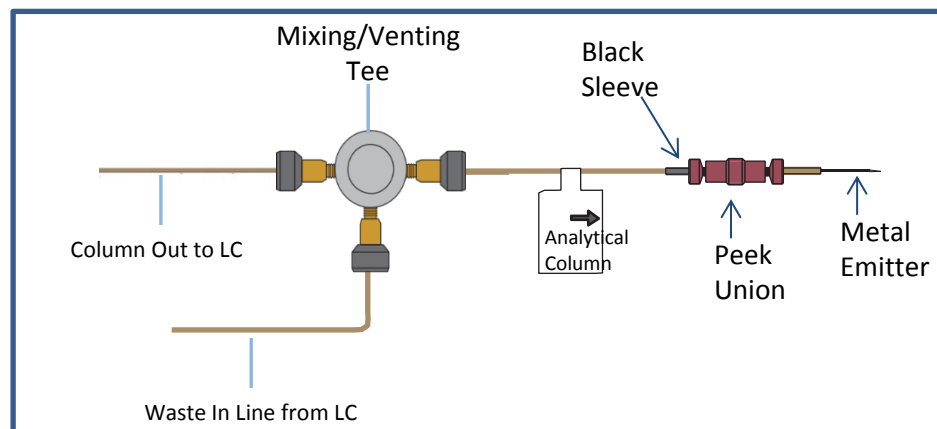
Non-Viper Column Schematic



*For non-Viper Column Connections

EASY-nLC 1000 with Direct Junction, Analytical Column and Emitter

Viper Column Schematic

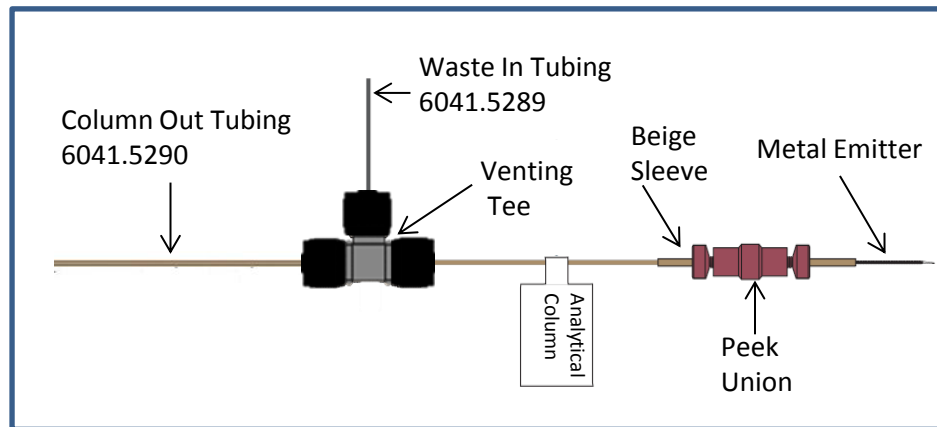


Consumables

Item	Image	Part number
Mixing/ Venting Tee		SC901
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 280 µm capillary to unions	Black (280µm x 1/32")	SC903
Metal Emitter		ES542
Column Out Tubing	Viper on LC side only	6041.5290*
Waste In Tubing	Viper on LC side only	6041.5289*
Ultra High Pressure MicroTee for 360 µm OD Tubing		(IDEX) UH750
Sleeves for connecting OD 360 µm capillary to unions	Beige (360µm x 1/32")	SC603

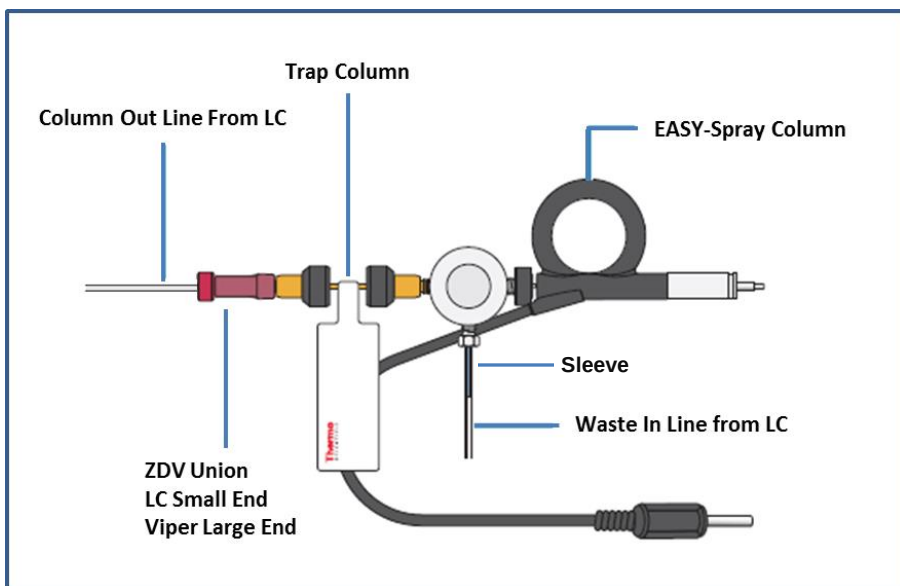
*For non-Viper Column Connections

Non-Viper Column Schematic



EASY-nLC II with Precolumn and EASY-Spray Column

Schematic

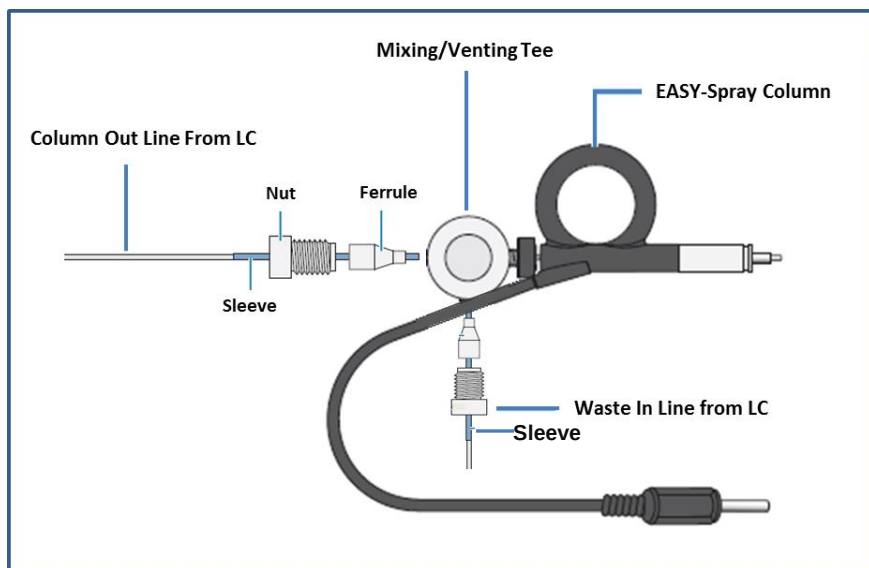


Consumables

Item	Image	Part number
Adapter Microtight 1/16" to 1/32", peek		(IDEX) P-881
Acclaim Pepmap precolumn		164705
A/B mixing & venting Tee		SC901
Acclaim PepMap 100	Pre-Column	164705
EASY-Spray column		ES800
Tubing Sleeve, 865 µm (0.034") ID x 1/16" OD, PEEK™, Blue		(IDEX) F233

EASY-nLC II with EASY-Spray Column

Schematic

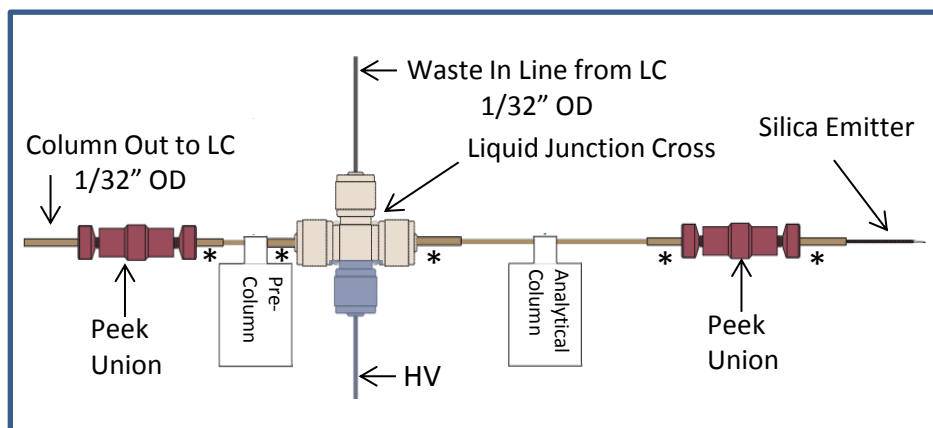


Consumables

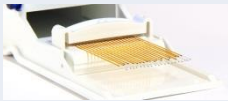
Item	Image	Part number
A/B mixing & venting Tee		SC901
EASY-Spray column		ES800
Tubing Sleeve, 865 μ m (0.034") ID x 1/16" OD, PEEK™, Blue		(IDEX) F233

EASY-nLC II with Liquid Junction, Precolumn, Analytical Column and Emitter

Schematic

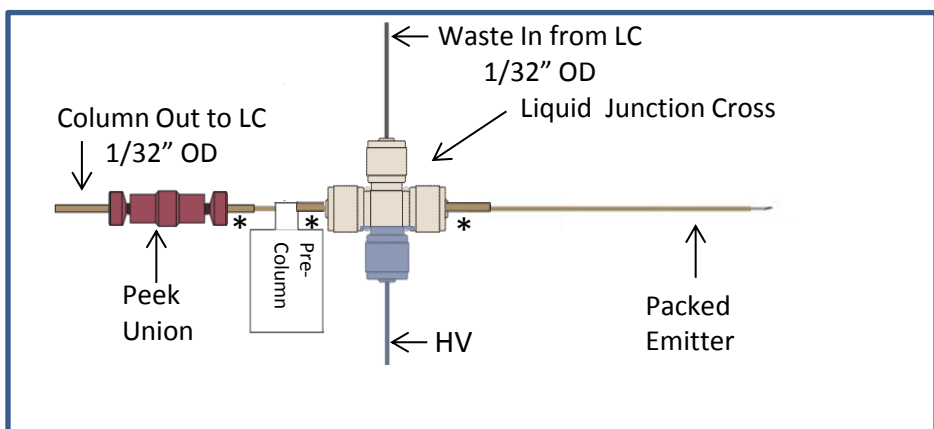


Consumables

Item	Image	Part number
HPLC Liquid Junction Cross + Beige Sleeves		ES257
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*
Silica Emitter		FS360-20-10-N-20 (New Objective)

EASY-nLC II with Liquid Junction, Precolumn, and Packed Emitter

Schematic

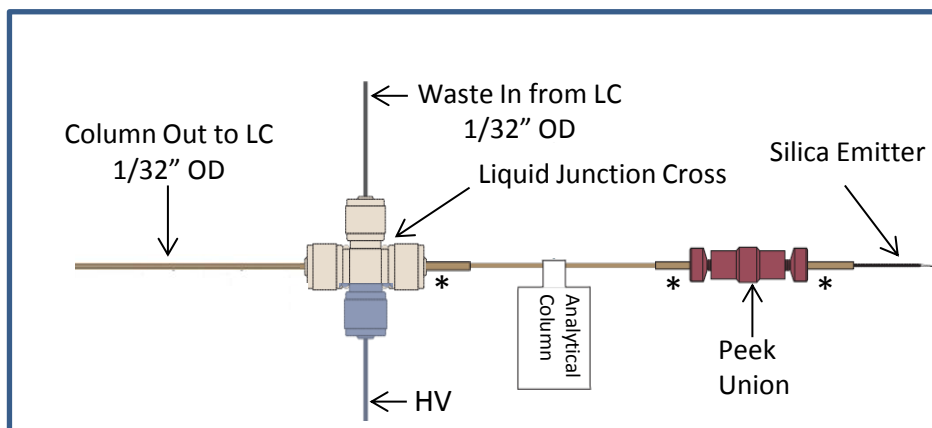


Consumables

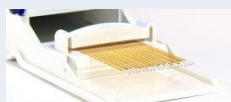
Item	Image	Part number
HPLC Liquid Junction Cross + Beige Sleeves		ES257
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*

EASY-nLC II with Liquid Junction, Analytical Column and Emitter

Schematic

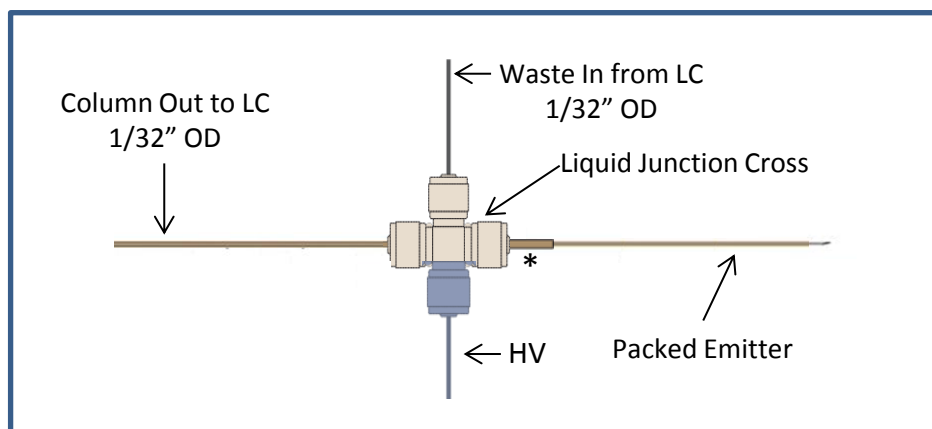


Consumables

Item	Image	Part number
HPLC Liquid Junction Cross + Beige Sleeves		ES257
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*
Silica Emitter		FS360-20-10-N-20 (New Objective)

EASY-nLC II with Liquid Junction and Packed Emitter

HPLC Schematic

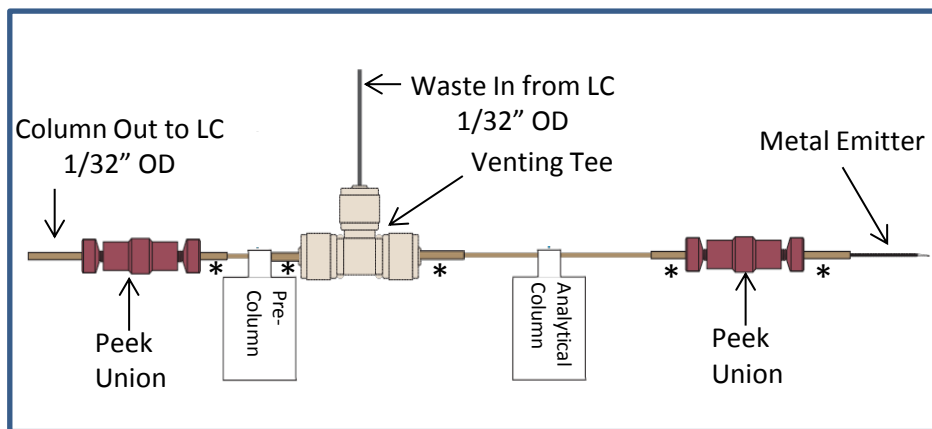


Consumables

Item	Image	Part number
HPLC Liquid Junction Cross + Beige Sleeves		ES257
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*

EASY-nLC II with Direct Junction, Precolumn, Analytical Column and Emitter

Schematic

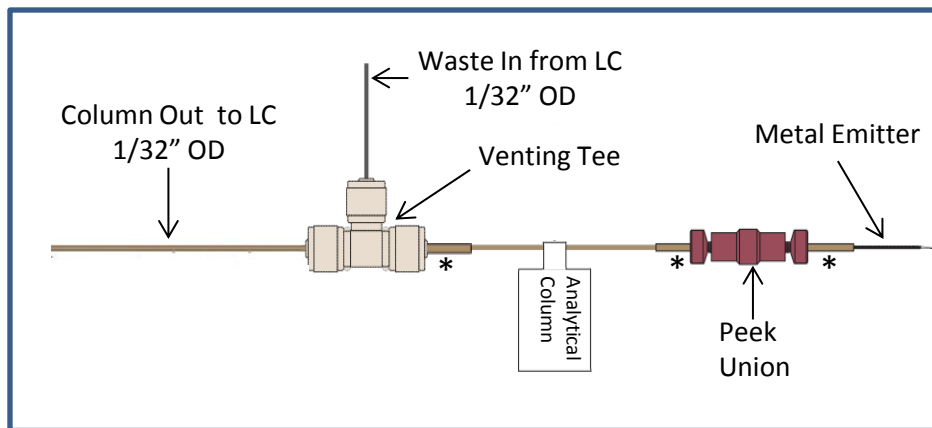


Consumables

Item	Image	Part number
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*
Venting Tee + Beige Sleeves		SC601
Metal Emitter		ES542

EASY-nLC II with Direct Junction, Analytical Column and Emitter

Schematic

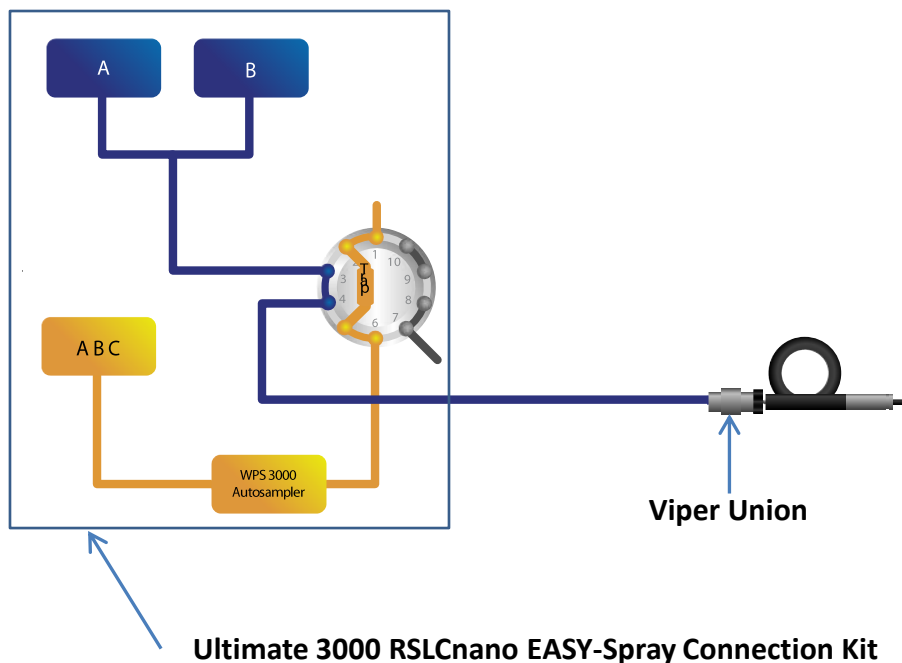


Consumables

Item	Image	Part number
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for connecting OD 360 µm capillary to unions*	Beige (360µm x 1/32")*	SC603*
Venting Tee + Beige Sleeves		SC601
Metal Emitter		ES542

RSLCnano with Precolumn and EASY-Spray Column

Schematic



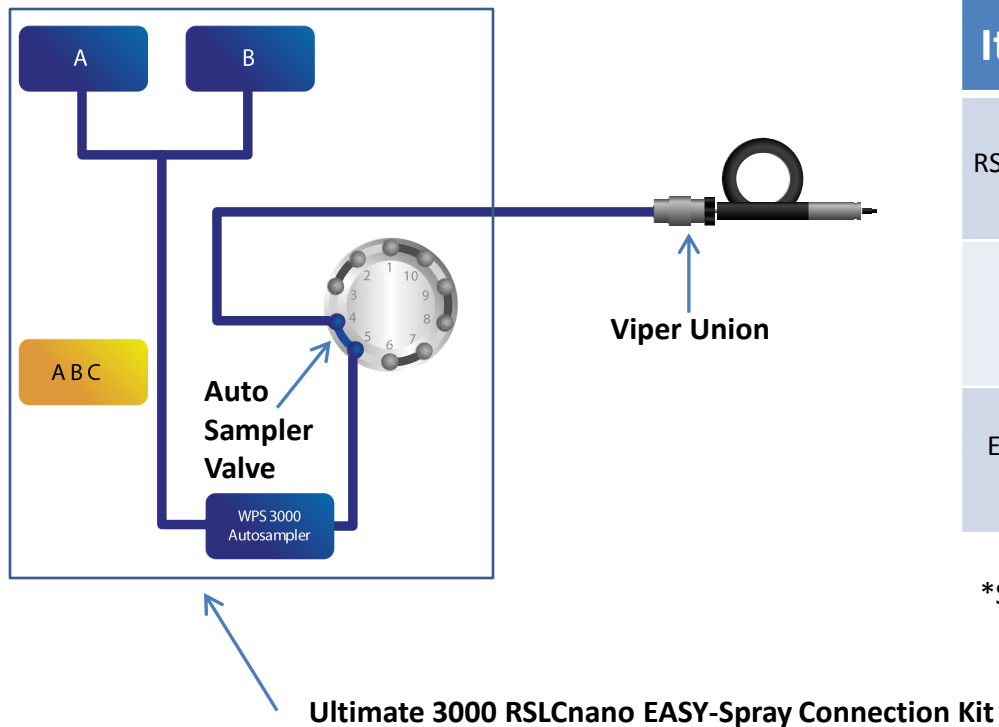
Consumables

Item	Image	Part number
Ultimate 3000 RSLCnano EASY-Spray Connection Kit	See Slide 33	6720.0395
Viper Union		SC900
Acclaim Pepmap Pre-Column + μ -Precolumn holder		160454 + 164649
EASY-Spray column		Various: ES801 ES802 ES803

*Shortest length necessary to attach valve to EASY-Spray Column

RSLCnano with EASY-Spray Column

Schematic

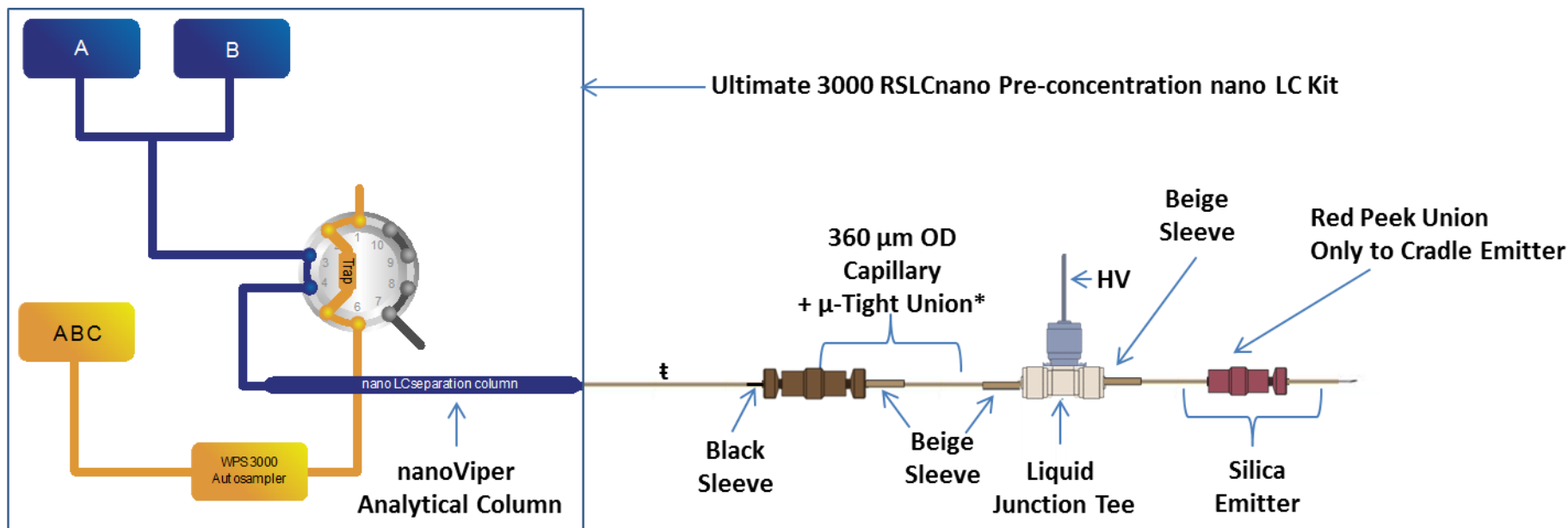


Consumables

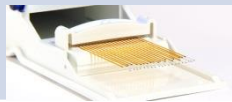
Item	Image	Part number
Ultimate 3000 RSLCnano EASY-Spray Connection Kit	See Slide 33	6720.0395
Viper Union		SC900
EASY-Spray column		Various: ES801 ES802 ES803

*Shortest length necessary to attach valve to EASY-Spray Column

RSLCnano with Liquid Junction, Precolumn, Heated Analytical Column and Emitter



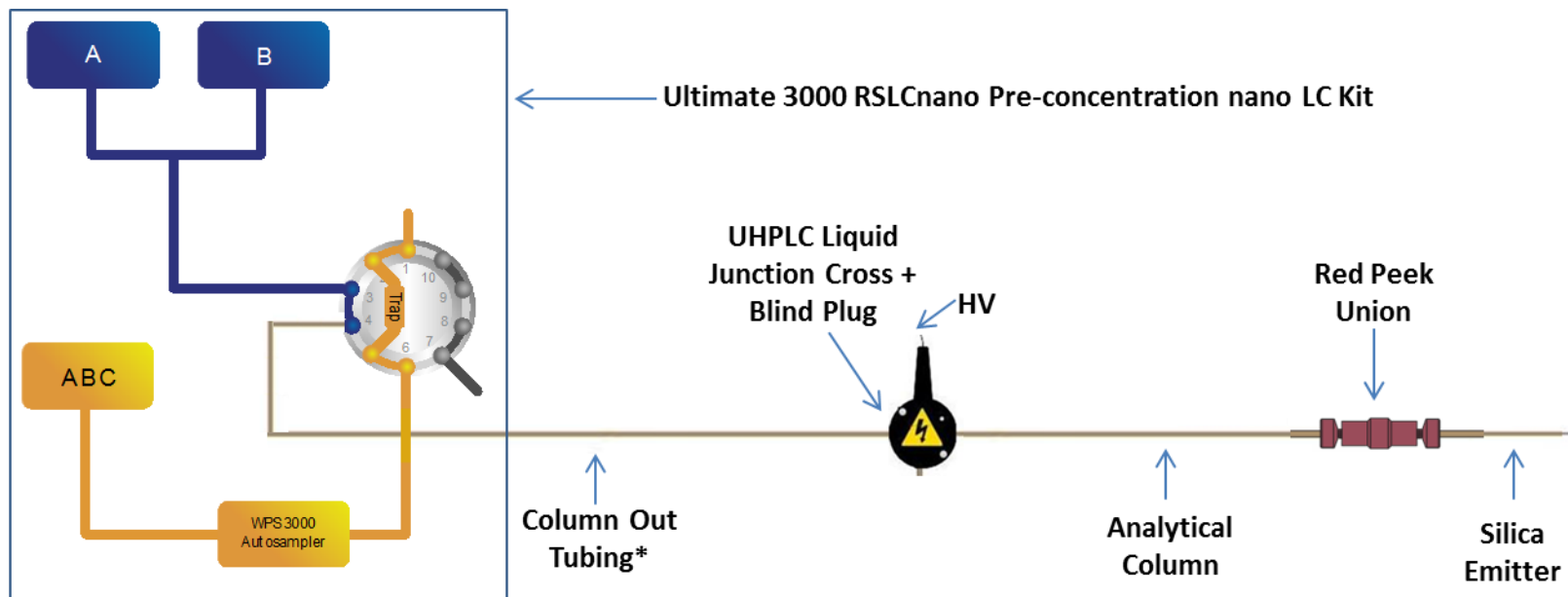
Item	Image	Part number
UltiMate 3000 RSLCnano Pre-concentration nano LC kit	Contents Slide 34	6720.0310
µ-Tight Union*		(IDEX) P-720*
Sleeves for Connecting Capillary to µ-Tight Union	Black (280µm x 1/32")	SC903
	Beige (360µm x 1/32")	SC603

Item	Image	Part number
HPLC Liquid Junction Tee + Beige Sleeves		ES258
Red peek union for 1/32" OD		(IDEX) P-771
Silica Emitter		FS360-20-10-N-20-C12 (New Objective)

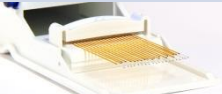
*Only necessary if analytical column is not long enough to reach the liquid junction tee

† Note: This tubing has a 280 µm OD

RSLCnano with Liquid Junction, Precolumn, Room Temperature Analytical Column and Emitter

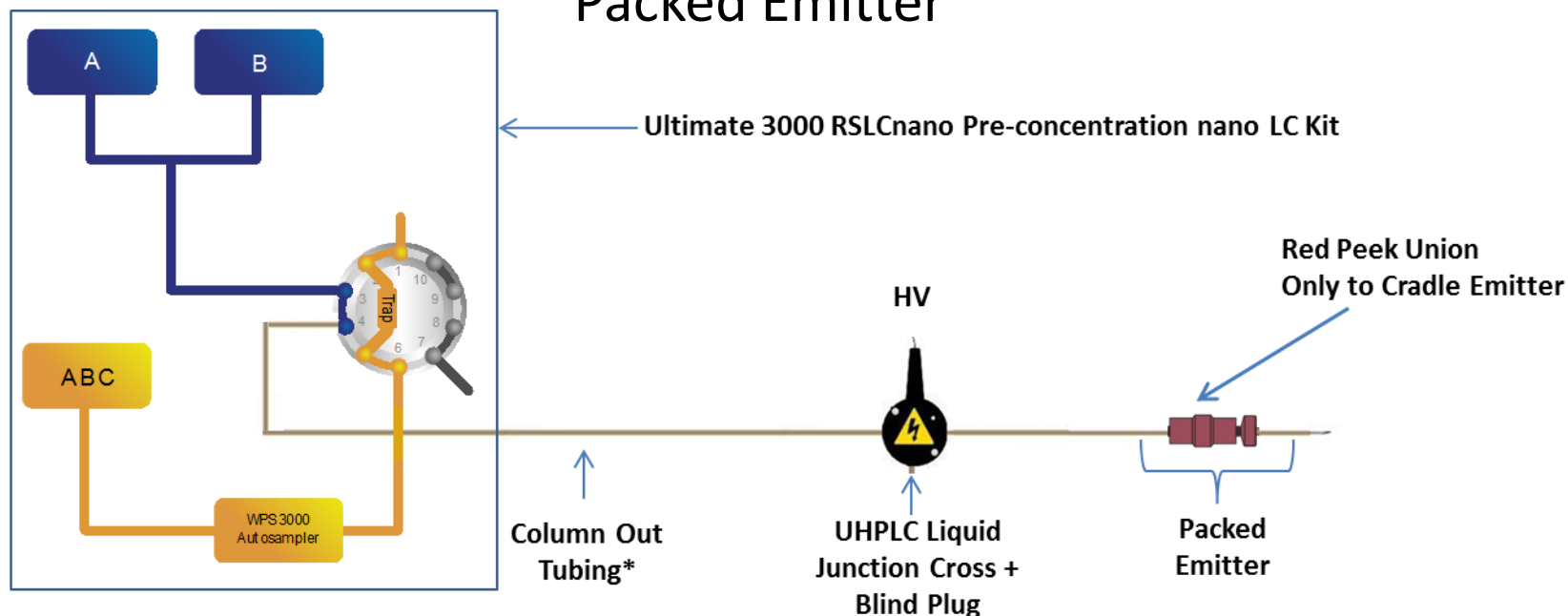


Item	Image	Part number
UltiMate 3000 RSLCnano Pre-concentration nano LC kit	Contents Slide 34	6720.0310
Column Out Tubing*	Viper on LC side only*	6041.5290*
UHPLC Liquid Junction Cross Kit		ES269

Item	Image	Part number
UHPLC Blind Plug		(IDEX) P-116
Red peek union for 1/32" OD + Beige Sleeves		(IDEX) P-771
Silica Emitter		SC603
		FS360-20-10-N-20 (New Objective)

*For non-Viper Column Connections

RSLCnano with Liquid Junction, Precolumn, and Packed Emitter

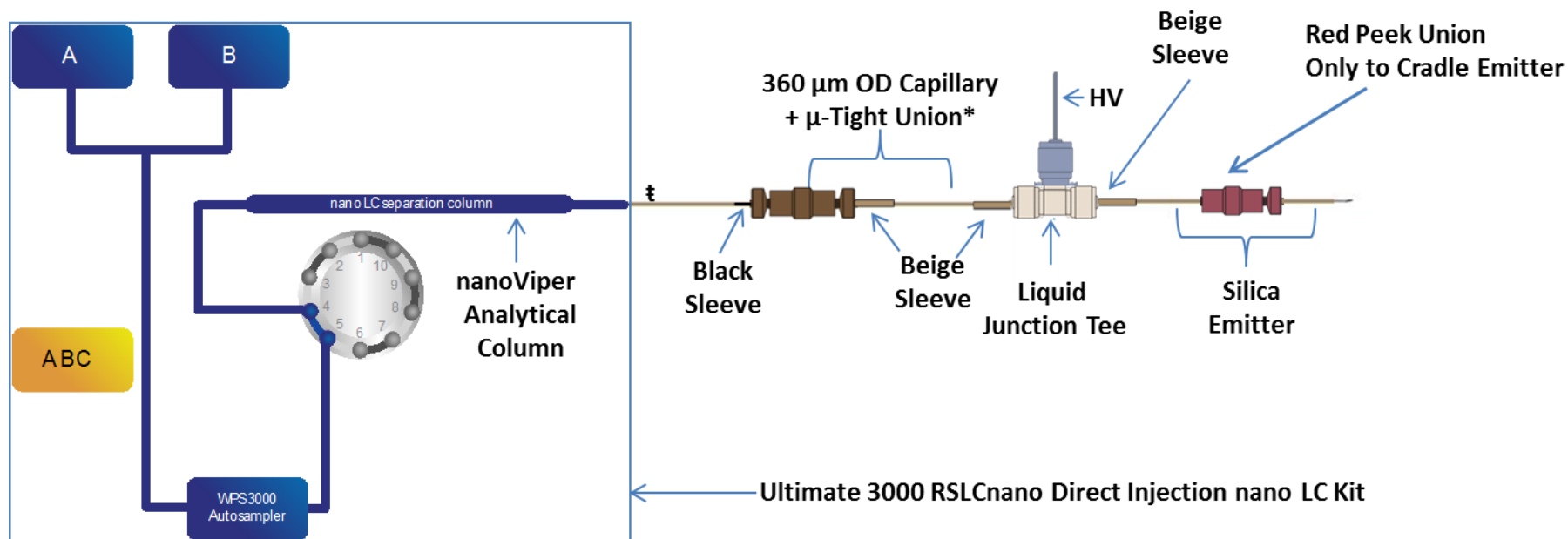


Item	Image	Part number
UltiMate 3000 RSLCnano Pre-concentration nano LC kit	Contents Slide 34	6720.0310
Column Out Tubing*	Viper on LC side only*	6041.5290*
UHPLC Liquid Junction Cross Kit		ES269

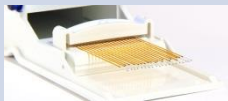
Item	Image	Part number
UHPLC Blind Plug		(IDEX) P-116
Red peek union for 1/32" OD		(IDEX) P-771

*For non-Viper Column Connections

RSLCnano with Liquid Junction Heated Analytical Column and Emitter



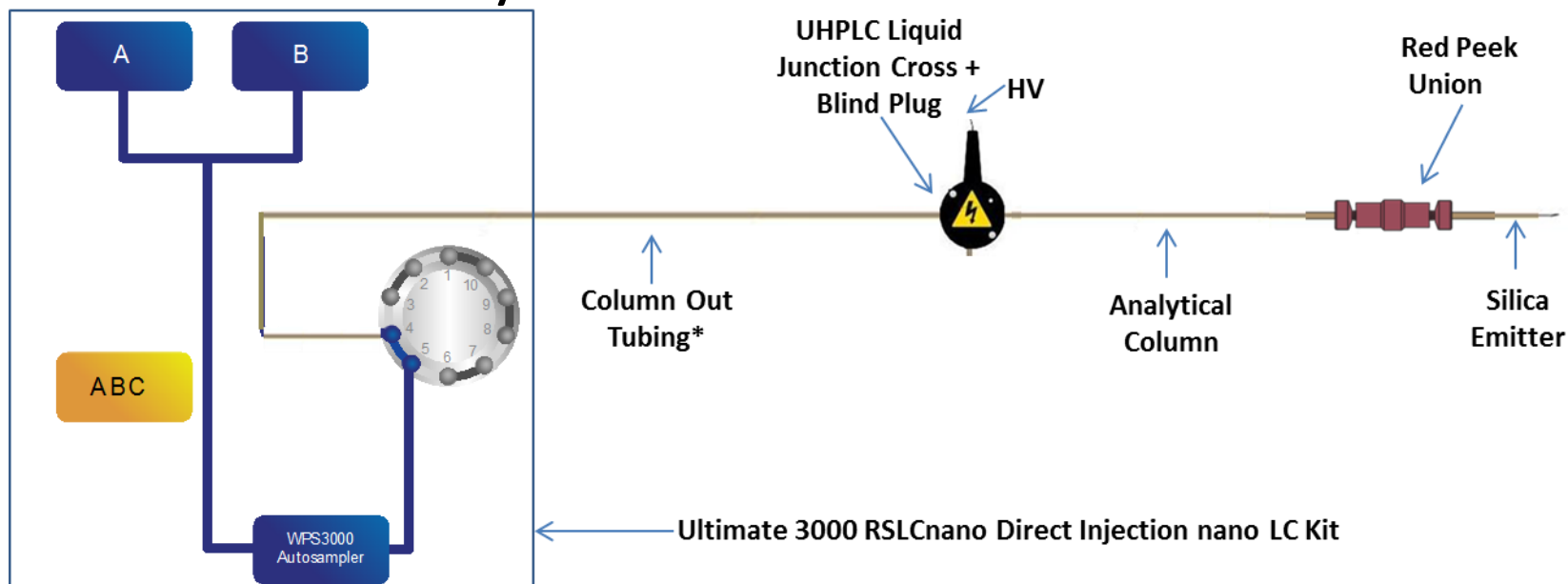
Item	Image	Part number
UltiMate 3000 RSLCnano Direct Injection nano LC kit	Contents Slide 34	6720.0300
µ-Tight Union*		(IDEX) P-720*
Sleeves for Connecting Capillary to µ-Tight Union	Black (280µm x 1/32")	SC903
	Beige (360µm x 1/32")	SC603

Item	Image	Part number
HPLC Liquid Junction Tee + Beige Sleeves		ES258
Red peek union for 1/32" OD		(IDEX) P-771
Silica Emitter		FS360-20-10-N-20-C12 (New Objective)

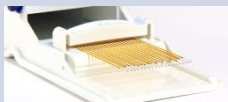
*Only necessary if analytical column is not long enough to reach the liquid junction tee

† Note: This tubing has a 280 µm OD

RSLCnano with Liquid Junction Room Temperature Analytical Column and Emitter

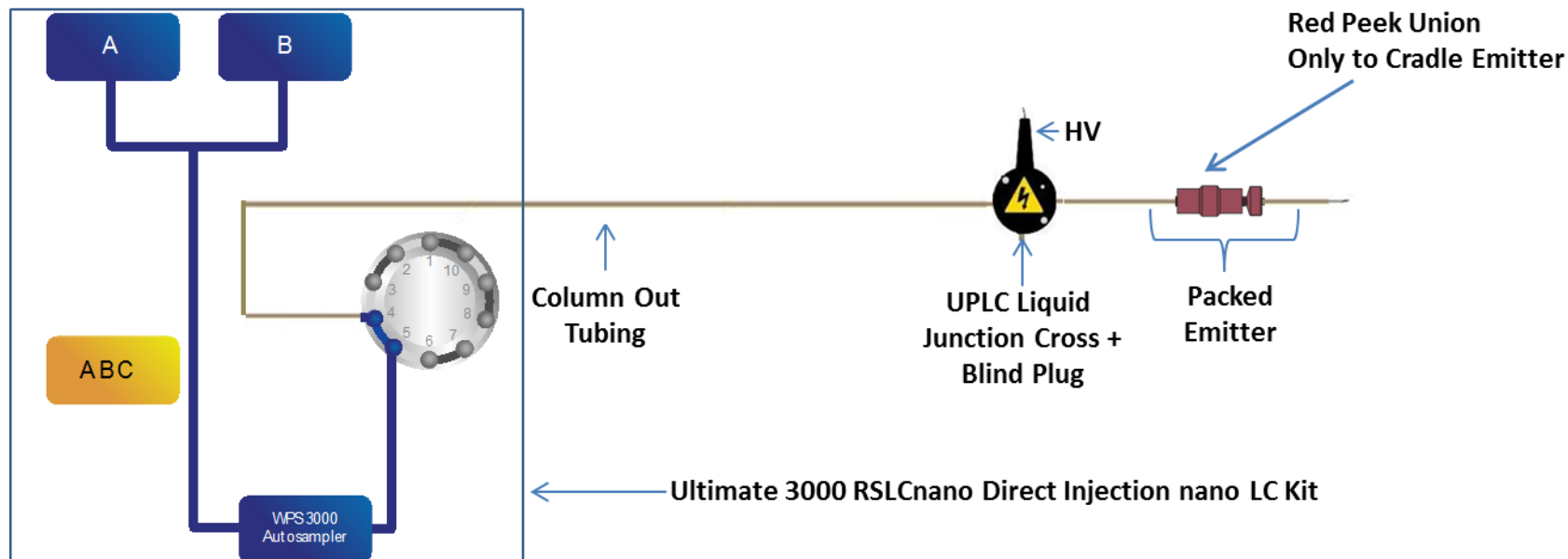


Item	Image	Part number
UltiMate 3000 RSLCnano Direct Injection nano LC kit	Contents Slide 35	6720.0300
Column Out Tubing*	Viper on LC side only*	6041.5290*
UHPLC Liquid Junction Cross Kit		ES269

Item	Image	Part number
UHPLC Blind Plug		(IDEX) P-116
Red peek union for 1/32" OD + Beige Sleeves	 360 µm x 1/32"	(IDEX) P-771 SC603
Silica Emitter		FS360-20-10-N-20 (New Objective)

*For non-Viper Column Connections

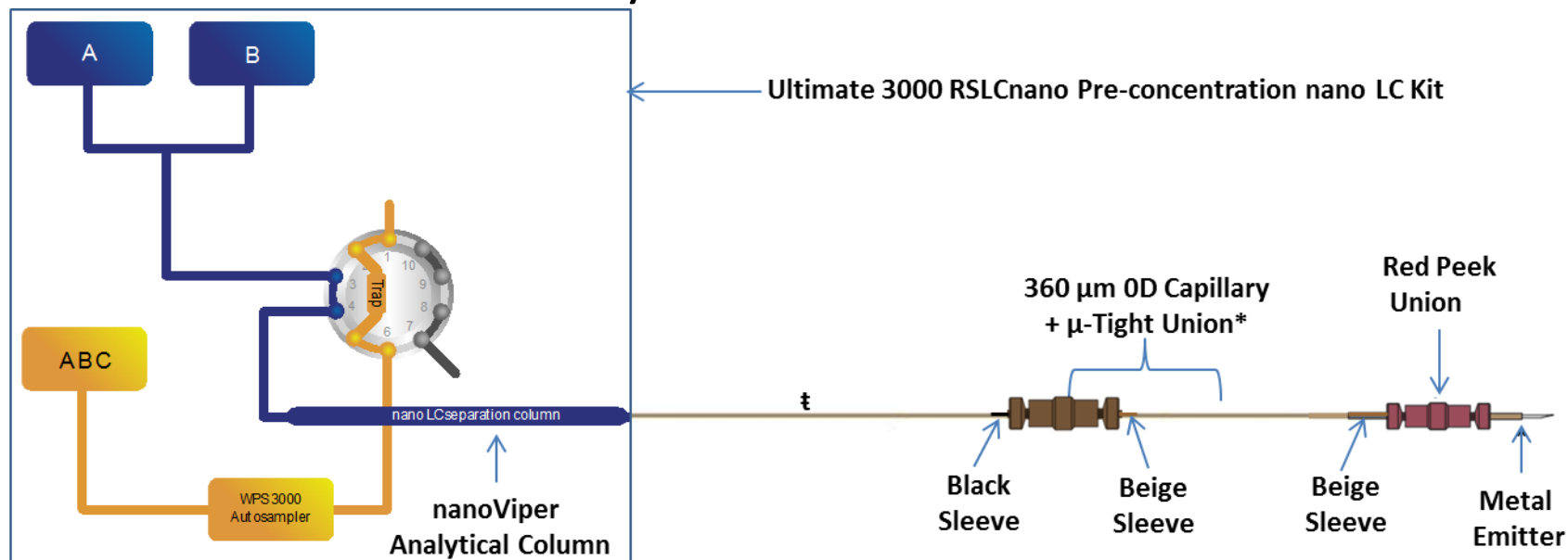
RSLCnano with Liquid Junction and Packed Emitter



Item	Image	Part number
UltiMate 3000 RSLCnano Direct Injection nano LC kit	Contents Slide 35	6720.0300
Column Out Tubing	Viper on LC side only	6041.5290*
UHPLC Liquid Junction Cross Kit		ES269

Item	Image	Part number
UHPLC Blind Plug		(IDEX) P-116
Red peek union for 1/32" OD		(IDEX) P-771

RSLCnano with Direct Junction, Precolumn, Heated Analytical Column and Emitter



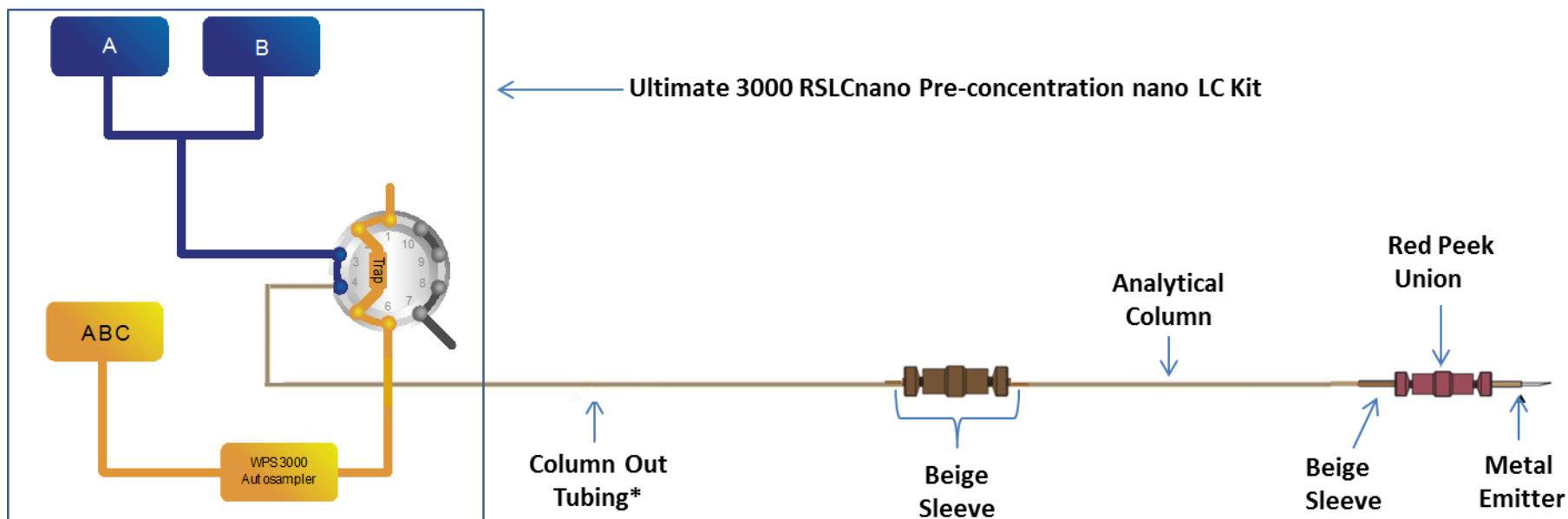
Item	Image	Part number
UltiMate 3000 RSLCnano Pre-concentration nano LC kit	Contents Slide 34	6720.0310
µ-Tight Union*		(IDEX) P-720*
Sleeves for Connecting Capillary to unions	Black (280µm x 1/32")	SC903
	Beige (360µm x 1/32")*	SC603

Item	Image	Part number
Red peek union for 1/32" OD		(IDEX) P-771
Metal Emitter		E542

*Only necessary if analytical column is not long enough to reach the liquid junction tee

† Note: This tubing has a 280 µm OD

RSLCnano with Direct Junction, Precolumn, Room Temperature Analytical Column and Emitter

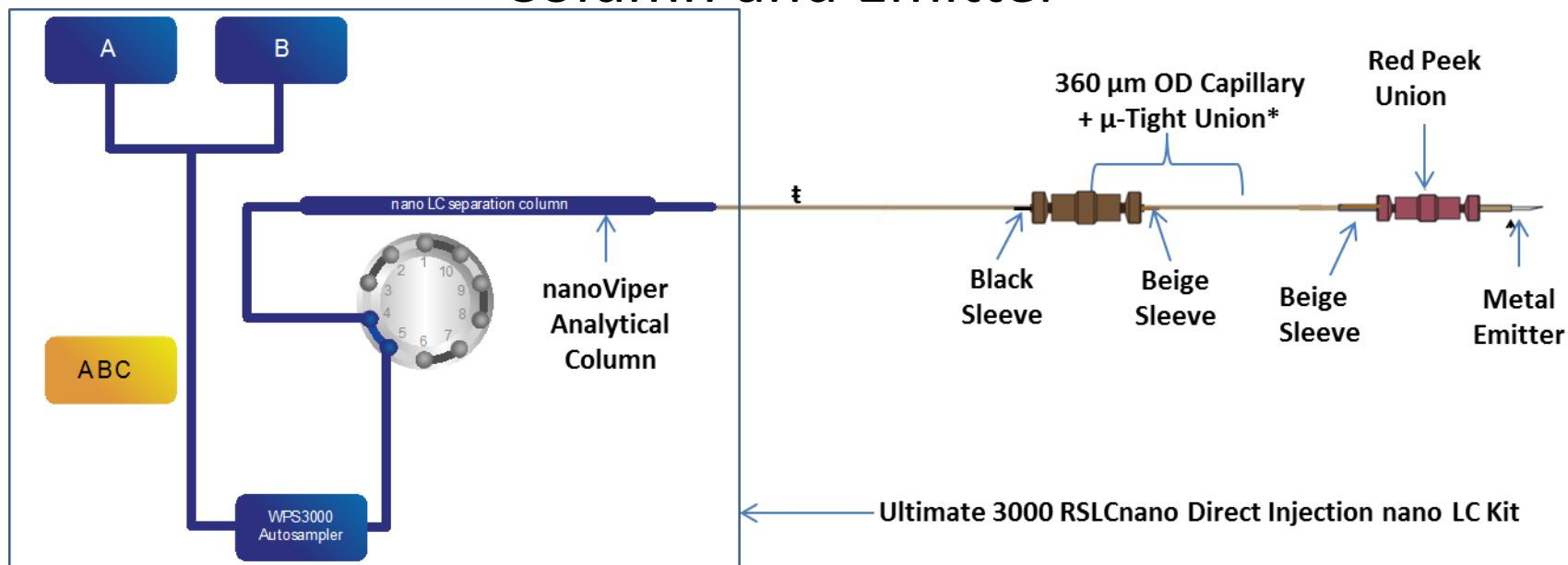


Item	Image	Part number
UltiMate 3000 RSLCnano Pre-concentration nano LC kit	Contents Slide 34	6720.0310
Column Out Tubing*	Viper on LC side only*	6041.5290*
μ -Tight Union		(IDEX) P-720

Item	Image	Part number
Red peek union for 1/32" OD + Beige Sleeves	 Beige (360 μ m x 1/32")	(IDEX) P-771 SC603
Metal Emitter		ES542

*For non-Viper Column Connections

RSLCnano with Direct Junction Heated Analytical Column and Emitter



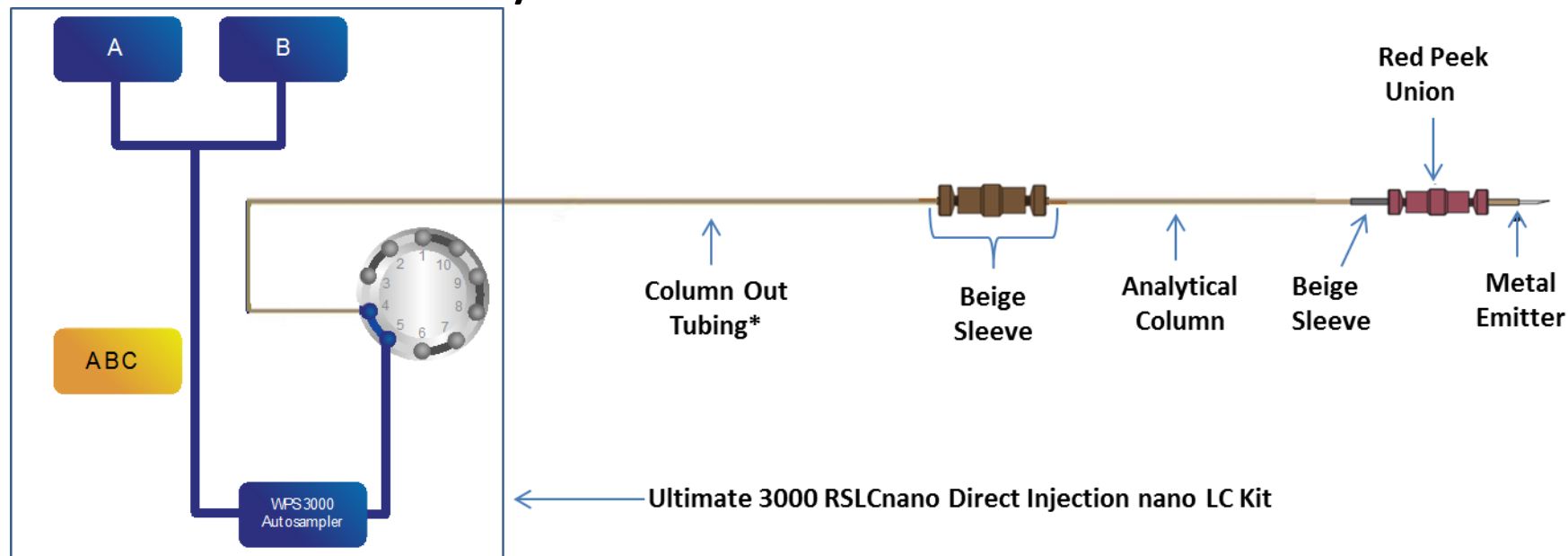
Item	Image	Part number
UltiMate 3000 RSLCnano Direct Injection nano LC kit	Contents Slide 35	6720.0300
µ-Tight Union*		(IDEX) P-720*
Sleeves for Connecting Capillary to µ-Tight Union	Black (280µm x 1/32")	SC903
	Beige (360µm x 1/32")	SC603

Item	Image	Part number
Red peek union for 1/32" OD		(IDEX) P-771
Sleeve for connecting to red peek union	Beige (360µm x 1/32")*	SC603
Metal Emitter		ES542

*Only necessary if analytical column is not long enough to reach the liquid junction tee

† Note: This tubing has a 280 µm OD

RSLCnano with Direct Junction Room Temperature Analytical Column and Emitter



Item	Image	Part number
UltiMate 3000 RSLCnano Direct Injection nano LC kit	Contents Slide 35	6720.0300
Column Out Tubing*	Viper on LC side only	6041.5290*
μ -Tight Union		(IDEX) P-720

Item	Image	Part number
Red peek union for 1/32" OD		(IDEX) P-771
Sleeves for Connecting to Unions	Beige (360 μ m x 1/32")	SC603
Metal Emitter		ES542

*For non-Viper Column Connections

UltiMate 3000 RSLCnano EASY-Spray Connection Kit

UltiMate 3000 RSLCnano EASY-Spray connection kit		6720.0395
Item		Replacement P/N
300 µm I.D. x 5 mm, packed with Acclaim PepMap100 C18, 5 µm, 100Å (set of 5 cartridges)*		160454*
µ-Precolumn holder, 5 mm, with 30 µm I.D. connecting tubing, nanoViper fittings*		164649*
nanoViper Capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 350 mm		6041.5240
nanoViper Capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 550 mm		6041.5260
nanoViper Capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 650 mm		6041.5275
nanoViper Capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 750 mm		6041.5280
nanoViper Capillary FS/PEEK sheathed 1/32" I.D. x L 75 µm x 550 mm		6041.5760
nanoViper Capillary FS/PEEK sheathed 1/32" I.D. x L 75 µm x 650 mm		6041.5775
nanoViper Sample Loop 20 µL, FS/PEEK sheathed		6826.2420
Union Viper		2261.5061
PTFE tubing, 500 µm I.D. x 100 cm, used as waste tubing		6720.0077
1/16" Universal Fingertight Fitting, one-piece design, extra long thread, 4 pieces		6720.0015
Polypropylene vials for WPS with glass insert, 250 µL, 25 pieces		6820.0027
Polypropylene caps for WPS vials, 25 pieces		6820.0028
Cytochrome C digest, 1.6 nmol, Lyophilized		161089

*For Pre-concentration Set Up Only

UltiMate 3000 RSLCnano Pre-concentration nano LC Kit

UltiMate 3000 RSLCnano Pre-concentration nano LC kit		6720.0310
Item		Replacement P/N
75 µm I.D. x 15 cm, packed with Acclaim PepMap RSLC C18, 2 µm, 100Å, nanoViper		164534
300 µm I.D. x 5 mm, packed with Acclaim PepMap100 C18, 5 µm, 100Å (set of 5 cartridges)		160454
µ-Precolumn holder, 5 mm, with 30 µm I.D. connecting tubing, nanoViper fittings		164649
nanoViper capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 350 mm		6041.5240
nanoViper capillary FS/PEEK sheathed 1/32" I.D. x L 75 µm x 650 mm		6041.5775
nanoViper capillary FS/PEEK sheathed 1/32" I.D. x L 75 µm x 550 mm		6041.5760
nanoViper capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 750 mm		6041.5280
nanoViper Sample Loop 20 µL, FS/PEEK sheathed		6826.2420
PTFE tubing, 500 µm I.D. 100 cm, used as waste tubing		6720.0077
1/16" Universal Fingertight Fitting, one-piece design, extra long thread, 4 pieces		6720.0015
Polypropylene vials for WPS with glass insert, 250 µL, 25 pieces		6820.0027
Polypropylene caps for WPS vials, 25 pieces		6820.0028
Cytochrome C digest, 1.6 nmol, Lyophilized		161089

UltiMate 3000 RSLCnano Direct Injection nano LC Kit

UltiMate 3000 RSLCnano Direct Injection nano LC kit		6720.0300
Item		Replacement P/N
75 µm I.D. x 15 cm, packed with Acclaim PepMap RSLC C18, 2 µm, 100Å, nanoViper		164534
nanoViper capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 750 mm		6041.5280
nanoViper capillary FS/PEEK sheathed 1/32" I.D. x L 20 µm x 550 mm		6041.5260
nanoViper sample loop 1 µL, FS/PEEK sheathed I.D. x L 100 µm x 127 mm		6826.2401
Polypropylene vials for WPS with glass insert, 250 µL, 25 pcs.		6820.0027
Polypropylene caps for WPS vials, 25 pcs.		6820.0028
Cytochrome C digest, 1.6 nmol, Lyophilized		161089

How to Guideline

- Making Viper Connections— [Slide 37](#)
- Making Connections with Sleeves— [Slide 38](#)
- Limit Pressure on EASY nLC Systems— [Slide 39](#)
- Limit Pressure on RSLCnano— [Slide 40](#)
- How Frequently Should I Replace My Unions and Sleeves?— [Slide 41](#)

Making Viper Connections

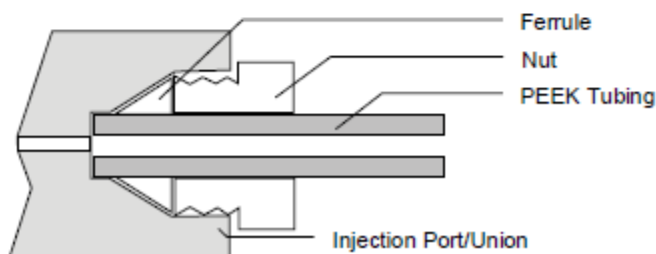
nanoViper

- Carefully tighten the nut fingertight using the black knurled screw.
- Do not overtighten - Maximum of 1/8 turn extra after fingertight.
- Remove the black knurled screw when tightened / after installation.



Making Connections With Sleeves

- When installing fused silica tubing (for example, a nano column):
 - Insert the PEEK sleeve with the stainless steel nut (standard) or PEEK nut (biocompatible system) and the appropriate ferrule in a port (or the preassembly tool, when working on a biocompatible system!).
 - Push the sleeve all the way into the port. It is essential for a zero dead volume connection that the assembly seats firmly.
 - Tighten the nut by two or three turns to make certain that the ferrule grabs the sleeve.
 - Remove the pre-assembled fitting, and then slide the capillary (or column) into the sleeve.
 - When re-installing the fitting together with the capillary (or column), make certain that the tip of the tubing does not extend the tip of the sleeve. Tighten the nut fingertight.
 - Push the capillary (or column) all the way into the sleeve (port) to minimize dead volume. It is essential for a zero dead volume connection that the assembly seats firmly.



Limiting Pressure on EASY nLC Systems

To limit the EASY-nLC 1000 to 300 bars when running with a column setup rated to max 300 bar please change the Max pressure setting to 300 bar in:

- Methods; for Sample loading and Analytical and Precolumn equilibration
- Scripts; for Analytical and Precolumn equilibration

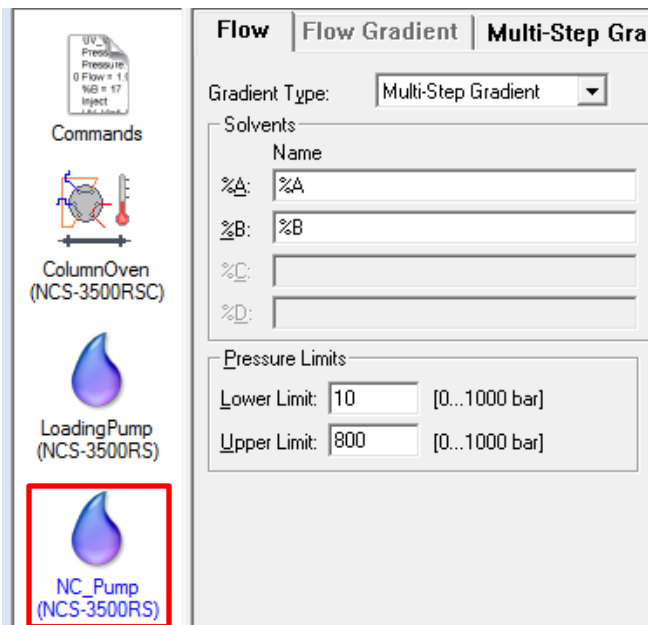
Choose only flows for gradient, isocratic flow and idle flow that will create less than 300 bar on your column setup.

The screenshot displays the Thermo Scientific EASY nLC software interface, showing four panels for method setup. Each panel includes a 'Name' field, a 'Category' dropdown, and a 'Max. pressure' field. The 'Parameters' table in the rightmost panel lists the following parameters and values:

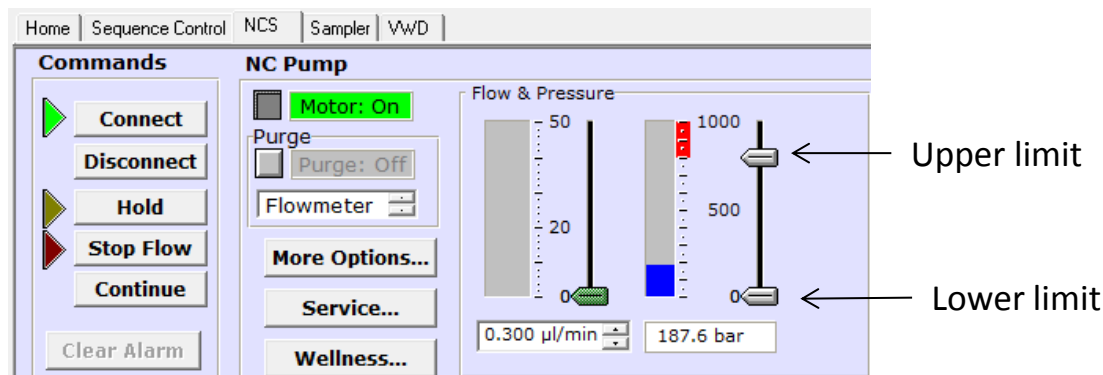
Parameter	Value
Volume [μl]	
Flow [μl/min]	
Max pressure [bar]	

Limiting the Pressure on RSLCnano systems

- The RSLCnano has an upper and lower pressure limit
- The pressure limit can be set in each instrument method
 - NC_Pump icon on the flow tab



- Or directly on the control panel, using the sliders



How Frequently Should I Replace My Unions and Sleeves?

Item	Image	Part number	Keep on hand	When to replace
Red peek union for 1/32" OD		(IDEX) P-771	10	No more than two connections
μ-Tight Union		(IDEX) P-720	10	No more than two connections
Sleeves for connecting OD 280 μm capillary to unions	Black (280μm x 1/32")	SC903	20	Every time you make a new connection
Sleeves for connecting OD 360 μm capillary to unions	Beige (360μm x 1/32")	SC603	20	Every time you make a new connection
Column Out Tubing	Viper on LC side only	6041.5290	2	Whenever viper is damage, silica is too short, or line is clogged
Waste In Tubing	Viper on LC side only	6041.5289	2	
Column Out Flow Line	  Column Waste	LC560	1	When Viper is damaged or line is clogged
Waste In Flow Line		LC562	1	
Viper Union		SC900	2	Good to have on hand for EASY nanoLC Leak Tests
Ultimate 3000 RSLCnano EASY-Spray Connection Kit	Contents Slide 33	6720.0395	1	When tubing clogs or column fails
UltiMate 3000 RSLCnano Pre-concentration nano LC kit	Contents Slide 34	6720.0310	1	When tubing clogs or column fails
UltiMate 3000 RSLCnano Direct Injection nano LC kit	Contents Slide 35	6720.0300	1	When tubing clogs or column fails