InfinityLab Purification Capillary Kits

Technical Note

This note describes the capillary connections for Agilent preparative systems.

Contents

Agilent Technologies

Modules and Components

Table 1 Legends for Components

Symbol	Abbreviation	Module #	Description
	BPR	5067-6840	Back pressure regulator
	LP	5043-0270	Leak Plane
	MAN	5023-3105	Manifold 5-port
	PRV	5067-6857	Pressure Relieve Valve
			Requires 5188-8053 ERI Remote and Leak Module
		5067-7021	Blank nut
		5123-3135	Fitting adapter
		0100-1259	Plastic fitting
		5062-2462	PTFE tubing
		5067-5966 (for flexible capillaries) 5067-5403 (for rigid capillaries	Removable fitting
			Restriction
		5023-3086	Tube ESD
		5022-2133	Union
		5188-8053	ERI Remote and Leak Module
	2/14		2-pos/14-port Valve
	A		Analytical
	ALS		Autosampler
	B	G9322-68002	Bridge
	BP	G1328-44121	Base Plate
	C1...3, UV1...5, MS1...6, FM1...2, A1...9		Flow connection
	COL		Column
	CV	G9322A	Clustering Valve
	DC	G9324A	Delay Coil Organizer
	DV		Diverter Valve

Table 1 Legends for Components

Symbol	Abbreviation	Module #	Description
	FC		Fraction Collector
	FM	G7170B	MS Flow Modulator
	IN		Inlet
	MI	G1328D	Manual Preparative Injector
	MSD	G6125B/G6135B	Mass Spectrometer Detector
	OUT		Outlet
	P		Preparative
	R		Removable fitting
	R1		Restriction for detector (for flow rates < 1 mL/min, connected to capillary A 6B)
	R2		Restriction for Injector Valve (for flow rates < 1 mL/min, prior capillary A4)
	RC		Recovery Collector (optional)
	S		Swagelock fitting
	SC	5067-6871	Solvent cabinet
		G1364E	Preparative Fraction Collector
		G7110B	Isocratic Pump
		G7111A/B	Quaternary Pump
		G7114A	Variable Wavelength Detector
		G7115A	Diode Array Detector WR
		G7157A	Preparative Autosampler
		G7158B	Preparative Open-Bed Sampler/Collector
		G7159B	Preparative Open-Bed Fraction Collector
		G7161A/B	Preparative Binary Pump
		G7163B	Preparative Column Compartment
		G7165A	Multiple Wavelength Detector
		G7166A	Preparative Valve-Based Fraction Collector
		G9328A	Column Organizer

Overview

General Installation Notes

The stack configurations as shown in this technical note are mandatory. The capillary connections only fit to these stack configurations. Other configurations can destroy the instrument.

Installation Notes

Capillaries and Fittings

- System capillary kits are flow dependent. The proper kit needs to be selected based on the desired flow range and column size.
- The MS Upgrade kit is only one kit. It contains all capillaries for all flow ranges.
- Five capillaries (UV 2A - 2E) are provided to connect sampler and column. The shortest capillary should be used for this connection (depending on the position of the column and configuration).
- UV 2B and UV 2C are used also for connection of the flow modulator in setups with G9328A (not in Autoscale Systems). The shortest if neither are used between injector and column.
- All capillaries with an inner diameter (ID) of 0.5 mm, 0.3 mm, and lower are flexible.

  Only the MS1B capillary from column to flow modulator is always rigid. This capillary is guided between modules and needs to remain in its fixed position.
- The bypass of the flow modulator is part of accessory kit G7170-68705.
- All capillaries going to the *ports of the flow modulator need UHP-FF fittings*.

NOTE Do not use nonremovable (preswaged) fittings for the flow modulator, the ports can be damaged.

- The Multiple Wavelength Detector (G7165A) is not depicted in the drawings. The same principles as for the Diode Array Detector (G7115A) apply.
- *Only* removable fittings are used for columns.
  - Either Quick Turn Fittings for flexible capillaries, or
  - UHP-FF for rigid capillaries.

General rules

- If the height of the stack configuration exceeds the safety limit, the solvent cabinet has to be placed next to the stack on the base plate.

  Some of the stack configurations exceed 0.85 m from the table top to the top of the solvent cabinet, these configurations are labeled.
- The base plate is needed in the case the Solvent Cabinet is placed on a bench by itself, and has to be ordered separately (p/n G1328-44121).

Pressure Relieve Valve (PRV, 5067-6857) and Back Pressure Regulator (BPR, 5067-6840)

- PRV must be installed with every configuration.

NOTE The PRV is required for safety reasons.

- The PRV and BPR come with each fraction collector.
- If the PRV is installed at the outlet of the Delay Coil Organizer, the following measures are required:
  - The PRV has to be connected to the outlet of the Delay Coil Organizer.
  - The short waste tubing is used for PRV to lead leaking solvents to the leak plate of the Delay Coil Organizer.
- If the PRV is used as a single item, the following measures are required:
  - The PRV has to be connected with system tubing from the detector. This connection requires union 10-32 to ¼-28 (5023-2875).
  - The PRV has to be fixed to the column organizer using S holders.
  - The PRV has to be placed on the upper part of the extrusion.

NOTE The length of the capillary from the detector to the PRV is intentionally limited.

  - The long PRV waste tubing is guided to the leak plate by S holders.

- The BPR needs to be installed ahead of the Recovery Collector at the outlet of the fraction collector tubing.
- The use of BPR is recommended only for certain flow rates, check for operating instructions.

NOTE Check for the proper installation of the BPR. The arrow on the BPR housing shows the flow direction.

- The BPR can be fixed at any position on the extrusion using S holders or on the leak plate of the G7166A using Velcro Tape (5043-1812).
- Use the provided 3 m long tube, of OD2.5 and ID1.6 (5023-3086) to connect the outlet of the BPR to waste barrel or the recovery collector. For installation of BPR the tubing needs to be cut to needed lengths. Use tubing cutter (8710-1930). The fittings are provided separately as either single piece (5023-2871) or 6 pack (5023-2883).

Installation Notes for 1260 Infinity II Column Organizer G9328A

Columns and Column Holders

- To keep the capillary from column to detector as short as possible, the column needs to be mounted at the highest possible position, and in the front of the column organizer.
- UV 2A-2E are used to connect injector to column.
- Fix columns with the following column holders:
  - M size holders (5067-6849) for 9.4 mm/10 mm, 21.2 mm and 30 mm columns,
  - L size holders (G7163-60002) for 50 mm columns.

    L size holders have to be ordered separately,
  - S size holders (5043-1356) for 4.6 mm or other analytical size columns.
- The 25 cm columns require two M size holders, shorter columns need only one M size holder.
- One M/S size holder can be used for pre-column.

Manual Injection Valve G1328D (MI)

- The MI must be installed in the first groove of the column organizer extrusion plate.
- The MI can be installed at any height.
- In combination with columns shorter than 25 cm, the MI can be positioned in the middle of the column organizer.
- In combination with columns 25 cm or longer, the MI needs to be installed at the lowest possible position.
- The MI requires a suitable waste container (bottle or beaker) for waste and siphoning capillaries.

NOTE The kit does not contain a waste container. The waste container must be provided by the customer. The waste container has to be placed on the leak plate.

- In the case that a 20 mL stainless steel loop is used, it has to be bent in the direction of the extrusion to leave enough space for the container on the leak plate. None of the other loops limit the space for the container.
- The waste and siphoning capillaries have to be bent. The end of the capillaries have to be at the same height as the position of the injection needle.

Installation Notes for 1290 Infinity II Column Compartment G7163B

- The Delay Coil Organizer must be installed at the highest valve position.
- The Flow Modulator must be installed at the second highest valve position.
- 2/14 System Valve (for Autoscale Systems only) needs to be positioned at the third highest position of the Column Compartment.
- The Recovery Collector can be installed at any available free valve position.
- Column Selection Valve 6/14, if used, must be installed at the fourth highest valve position.

Columns and Column Holders

- The column should be mounted at the highest possible position of the Column Compartment.
- Capillaries UV 2A-2E are used to connect injector to column
- Fix columns with the following column holders:
  - M size holders (5067-6849) for 9.4 mm/10 mm, 21.2 mm and 30 mm columns,
  - L size holders (G7163-60002) for 50 mm columns,
    L size holders have to be ordered separately.
  - S size holders (5043-1356) for 4.6 mm or other analytical size columns.
- The 25 cm columns require two M size holders, shorter columns need only one M size holder.
- One M/S holder can be used for pre-column.

Manual Injection Valve G1328D (MI)

- The MI should be installed on the bottom part of the small mounting plate of the Column Compartment in the first groove.
- The MI requires a suitable waste container (bottle or beaker) for waste and siphoning capillaries.

NOTE The kit does not contain a waste container. The waste container must be provided by the customer. The waste container has to be placed on the plateau of the Column Compartment.

- Columns need to be installed such that they do not collide with MI, loop or siphoning capillaries, usually on the left part of the extrusion.
- The waste and siphoning capillaries have to be bent. The end of the capillaries have to be at the same height as the position of injection needle and should point down to the waste container.

Kits

System Capillary Kits

Table 2 System Capillary Kits

P/N				**5067-7015**	**5067-7016**	**5067-7017**	**5067-7018**	
	Flow range:			4 - 8 mL/min	15 - 40 mL/min	40 - 80 mL/min	80 - 200 mL/min	
Name	From module	To module	Length [cm]	ID [mm]/type **P/N**	ID [mm]/type **P/N**	ID [mm]/type **P/N**	ID [mm]/type **P/N**	Fittings
UV 1A	Prep Pump	Injector	145	0.3/f **5500-1436**	0.5/f **5500-1439**	0.6/r **5500-1442**	0.94/r **5500-1445**	Swage-Swage
UV 1B	Prep Pump	Injector	65	0.3/f **5500-1308**	0.5/f **5500-1309**	0.6/r **5500-1318**	0.94/r **5500-1390**	Swage-Swage
UV 2A	Injector	Column	50	0.3/f **5500-1316**	0.5/f **5500-1317**	0.6/r **5500-1320**	0.94/r **5500-1391**	Swage-(Removable)
UV 2B	Injector	Column	65	0.3/f **5500-1314**	0.5/f **5500-1315**	0.6/r **5500-1319**	0.94/r **5500-1393**	Swage-(Removable)
UV 2C	Injector	Column	80	0.3/f **5500-1406**	0.5/f **5500-1384**	0.6/r **5500-1387**	0.94/r **5500-1392**	Swage-(Removable)
UV 2D	Injector	Column	100	0.3/f **5500-1407**	0.5/f **5500-1385**	0.6/r **5500-1388**	0.94/r **5500-1394**	Swage-(Removable)
UV 2E	Injector	Column	115	0.3/f **5500-1435**	0.5/f **5500-1438**	0.6/r **5500-1441**	0.94/r **5500-1444**	Swage-(Removable)
UV 3	Column	Detector	65	0.3/f **5500-1314**	0.5/f **5500-1315**	0.6/r **5500-1319**	0.94/r **5500-1393**	(Removable) -Swage
UV 4A	Detector	Delay Coil Box	55	0.3/f **5500-1408**	0.5/f **5500-1386**	0.7/r **5500-1389**	0.94/r **5500-1395**	Swage-Swage
UV 4B	Detector	Delay Coil Box	75	0.3/f **5500-1437**	0.5/f **5500-1440**	0.7/r **5500-1443**	0.94/r **5500-1446**	Swage-Swage
UV 5	Detector	Pressure relieve valve	65	0.3/f **5500-1308**	0.5/f **5500-1309**	0.6/r **5500-1318**	0.94/r **5500-1390**	Swage-Swage

UV Accessories

Table 3 Accessories for kits 5067-7015, 5067-7016, 5067-7017, 5067-7018

A-Line Quick Turn LC Fitting for Column 2 pcs for kits 5067-7015 and 5067-7016	5067-5966
UHP-FF FITTING for Column 2 pcs for kits 5067-7017 and 5067-7018	5067-5403
3m Tube ESD PTFE OD2.5 ID1.6	5023-3086
ESD-Fitting OD-2.5mm (3 pieces)	5023-2871
Union Flat-Bottom 1/4-28 ESD	5023-2508
Plastic and PEEK tubing cutter	8710-1930
Fitting-Handle	5043-1471
Sealtight-Handle	5043-0915

MS-based Preparative LC Upgrade Kit

Table 4 MS-based Preparative LC Upgrade Kit

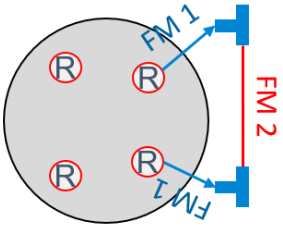
P/N				**5067-7023**				
Flow range:				4 - 8 mL/min	15 - 40 mL/min	40 - 80 mL/min	80 - 200 mL/min	Fittings
	From Module	To Module	length [cm]	ID [mm] / type **P/N**	ID [mm] / type **P/N**	ID [mm] / type **P/N**	ID [mm] / type **P/N**	
MS1A	Column	Flow modulator	90	0.3/r **5500-1450**	0.5/r **5500-1453**	0.6/r **5500-1456**	0.94/r **5500-1459**	(Removable)-(Removable)
MS1B	Column	Flow modulator	50	0.3/f **5500-1448**	0.5/f **5500-1451**	0.6/r **5500-1454**	0.94/r **5500-1457**	(Removable)-(Removable)
MS2	Flow modulator	VWD/DAD	55	0.3/f **5500-1449**	0.5/f **5500-1452**	0.6/r **5500-1455**	0.94/r **5500-1458**	(Removable)-Swage
MS3	Make up	Flow modulator	120	0.12/f **5500-1398**	flow independent			Swage-Swage
MS4	Flow modulator	MS	120	0.12/f **5500-1398**				Swage-Swage
MS5	MS restriction capillary		7	0.12/f **5500-1329**				Swage-Swage
MS6	MS waste capillary		70	0.25/f **5500-1330**				Swage-

MS Accessories

Table 5 Accessories

3 m Tube ESD PTFE OD 2.5 ID 1.6	5023-3086
UHP FF fitting (4 pieces)	5067-5403
ESD-Fitting OD-2.5 mm (2 pieces)	5023-2871
Fitting adapter 10-32 to 1-4-28 SST	5023-2875
TEE-LOW DEAD VOLUME	0100-1818
Fitting-Handle	5043-1471
Sealtight-Handle	5043-0915

Flow modulator Accessory Kit, G7170-68705



	Length/cm	ID/mm	Part No.	Fittings
FM1	8	0.25	5067-6820	Removable-Swage
FM2	10	0.12	5067-6821	Swage-Swage

G7158B/G7159B Tubing Kits

The following tubing kits are for the in- and outlet tubings of the Fraction Collector (FC IN, FC OUT).

Table 6 G7158B/G7159B Tubing Kits

Flow range	P/N
< 8 mL/min	G9321-60953
< 50 mL/min	G9321-60952
< 150 mL/min	G9321-60954
< 200 mL/min	G9321-60951

G1364E Tubing Kits

The following tubing kits are for the in- and outlet tubings of the Fraction Collector (FC IN, FC OUT).

Table 7 G1364E Tubing Kits

Flow range	P/N
4-8 mL/min	G1364-68603
15-40 mL/min	G1364-68604
40-100 mL/min	G1364-68605

1290 Infinity II Preparative LC System

Configurations with Column Organizer (G9328A)

Configuration without Delay Coil Organizer

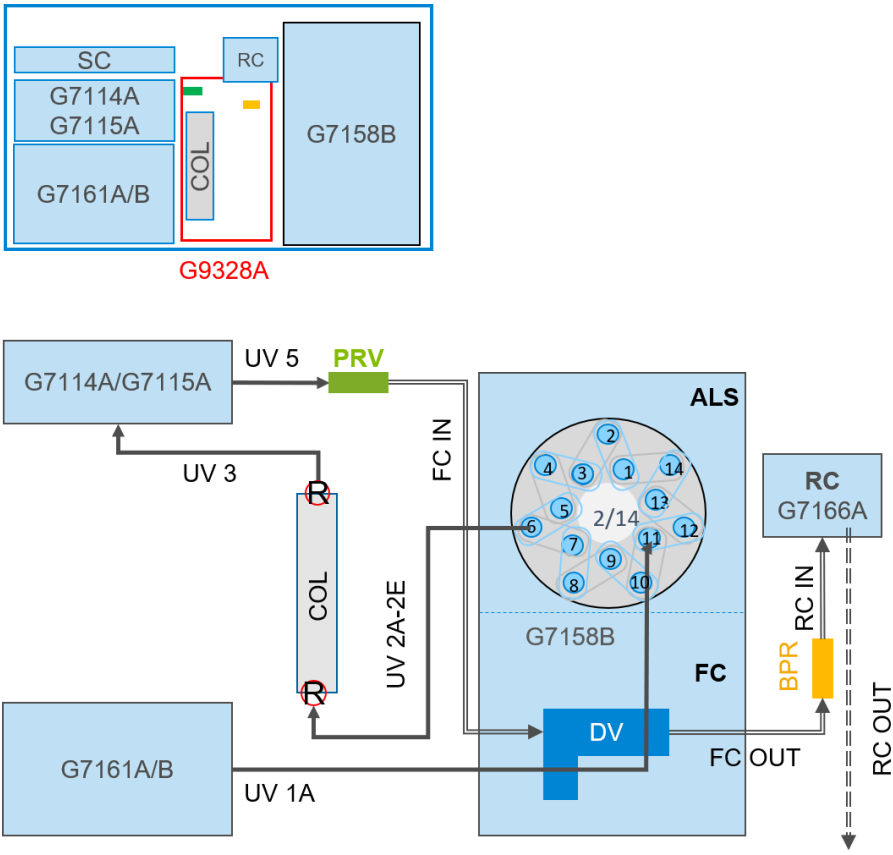


Figure 1 1290 Infinity II Preparative LC System with Column Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Delay Coil Organizer (G9324A)

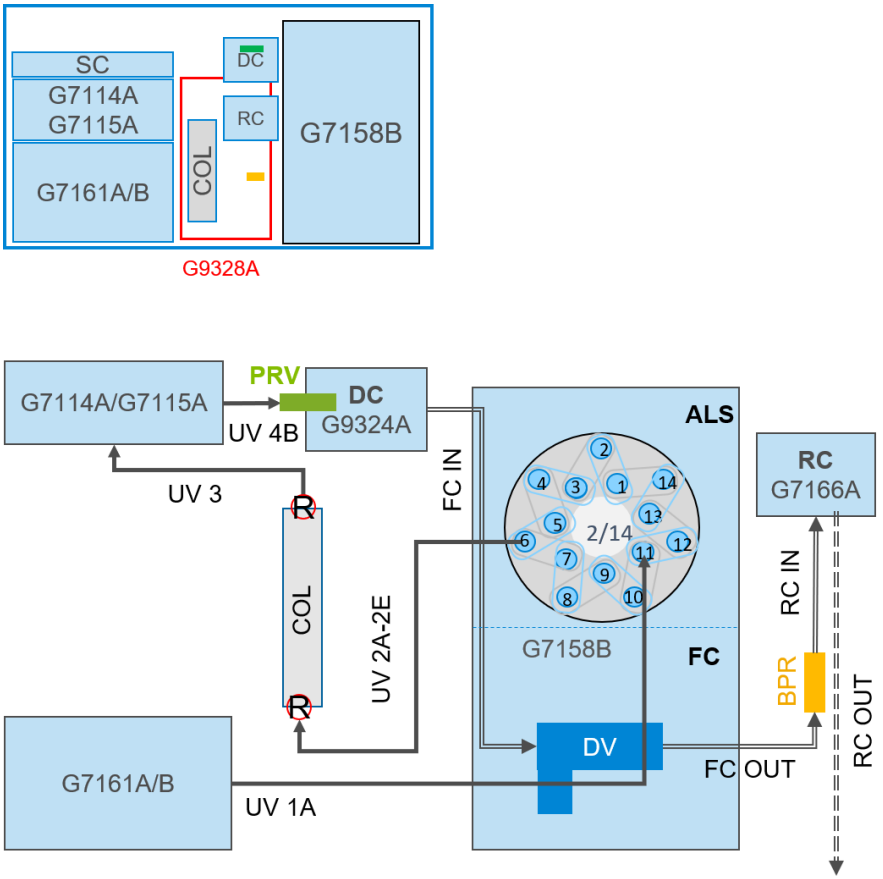


Figure 2 1290 Infinity II Preparative LC System with Column Organizer and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configurations with Preparative Column Compartment (G7163B)

Configuration without Delay Coil Organizer

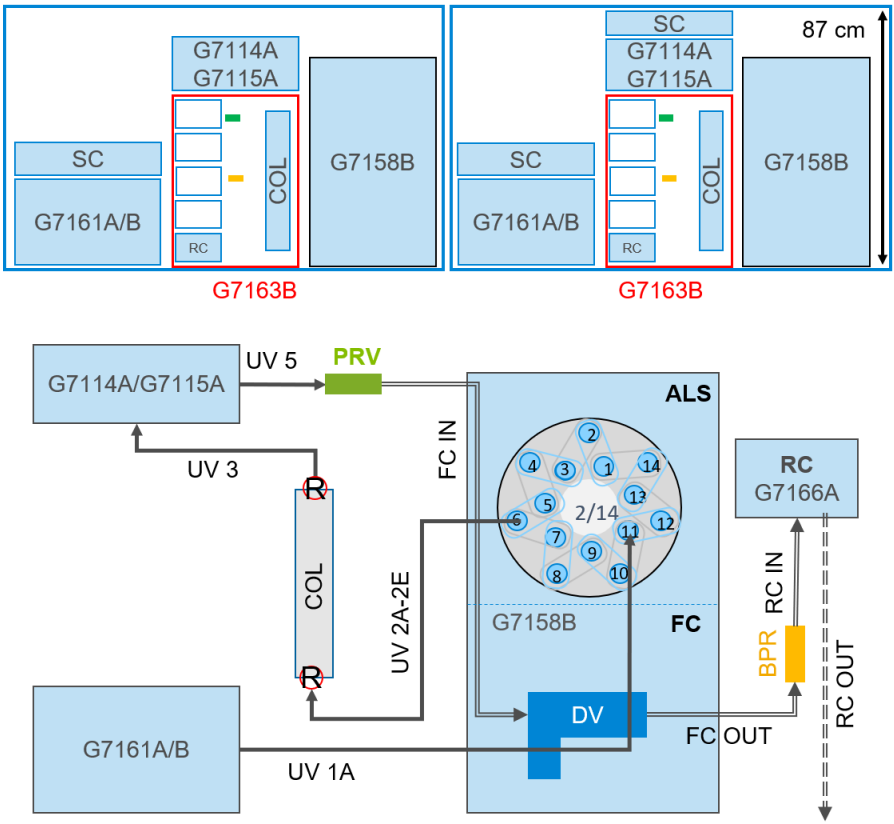


Figure 3 1290 Infinity II Preparative LC System with Preparative Column Compartment, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Delay Coil Organizer (G9324A)

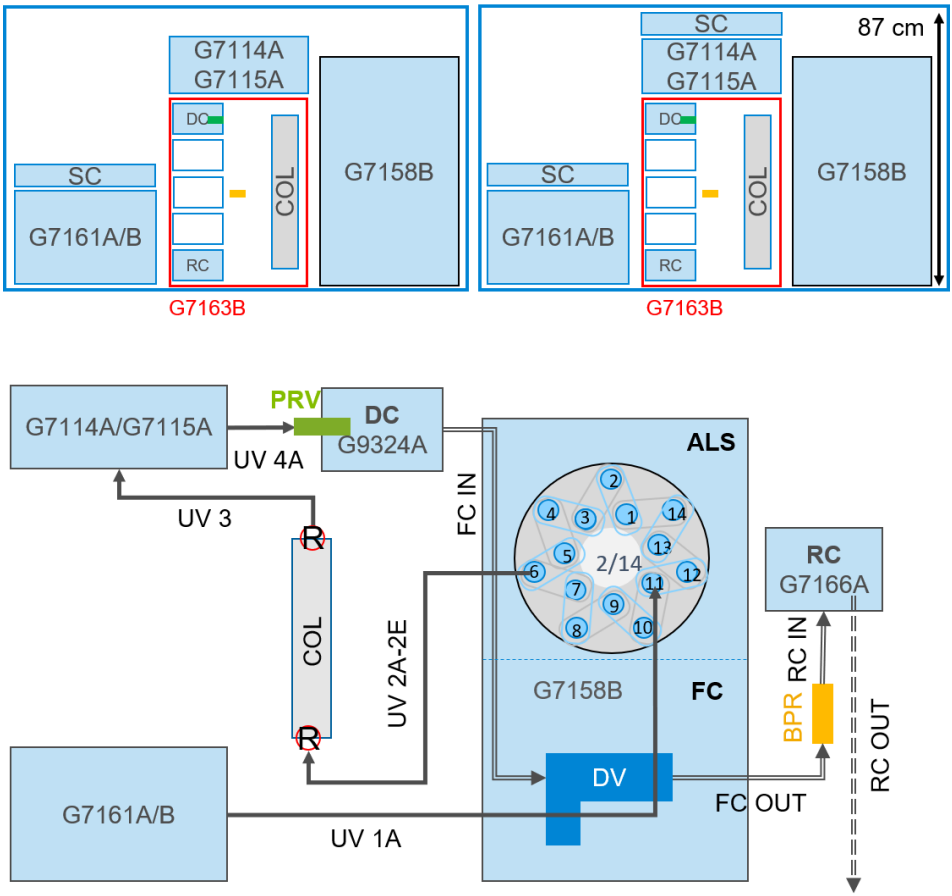


Figure 4 1290 Infinity II Preparative LC System with Preparative Column Compartment and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

1290 Infinity II Preparative LC/MSD System

Configuration with Column Organizer (G9328A)

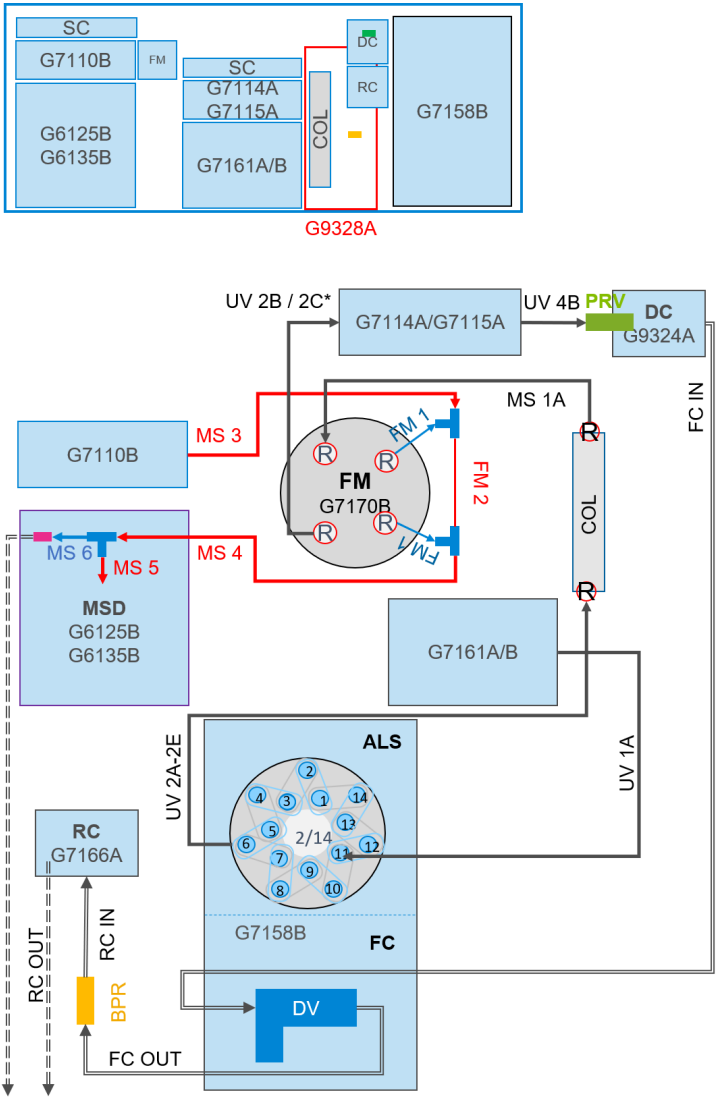


Figure 5 1290 Infinity II Preparative LC/MSD System with Column Organizer and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Preparative Column Compartment (G7163B)

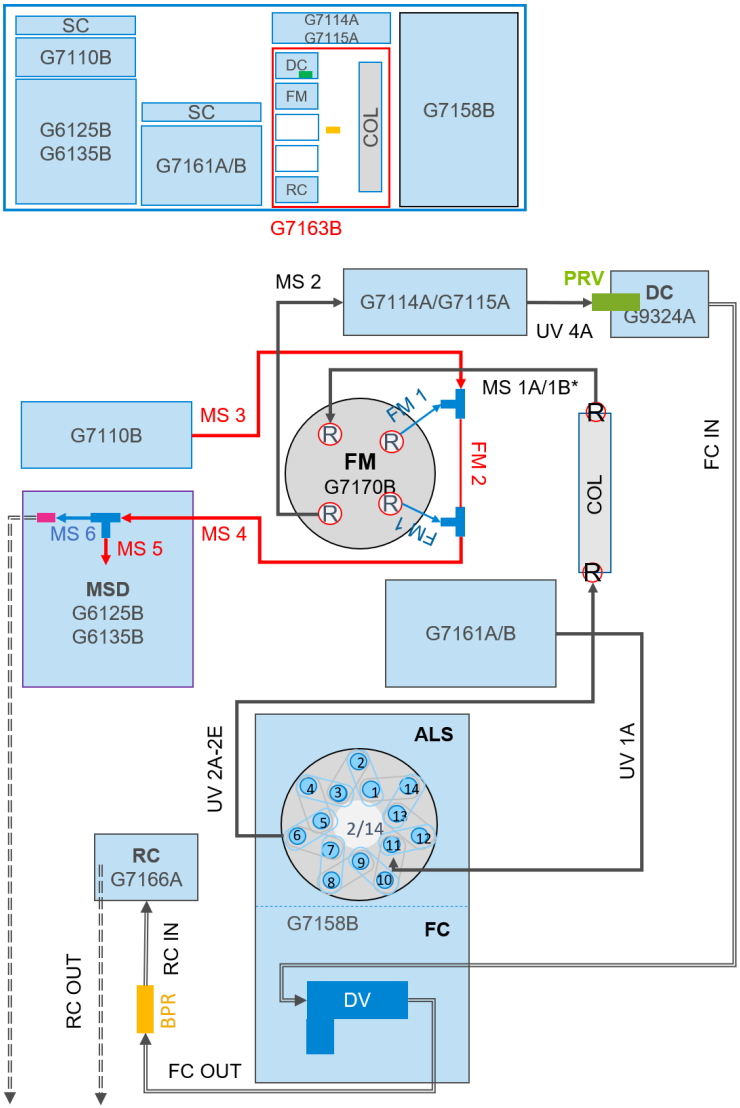


Figure 6 1290 Infinity II Preparative LC/MSD System with Preparative Column Compartment and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

1260 Infinity II Preparative LC System

Configurations with Column Organizer (G9328A)

Configuration with Preparative Open-Bed Fraction Collector

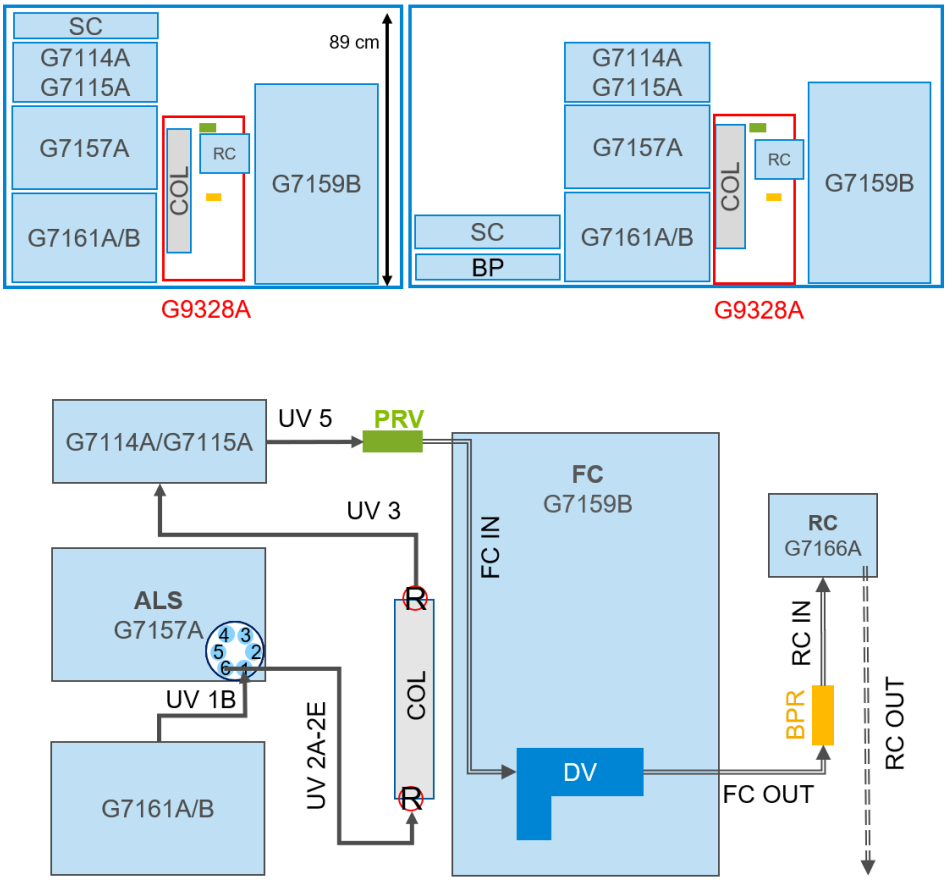


Figure 7 1260 Infinity II Preparative LC System with Preparative Open-Bed Fraction Collector, and Column Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Preparative Open-Bed Fraction Collector and Delay Coil Organizer (G9324A)

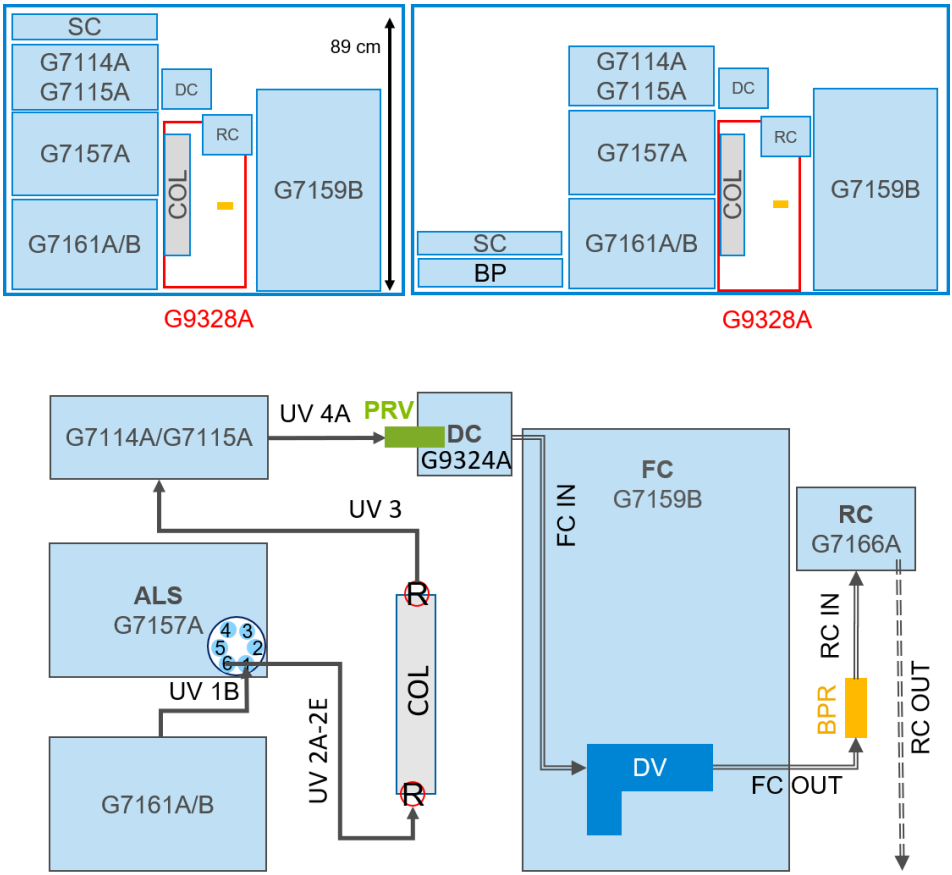
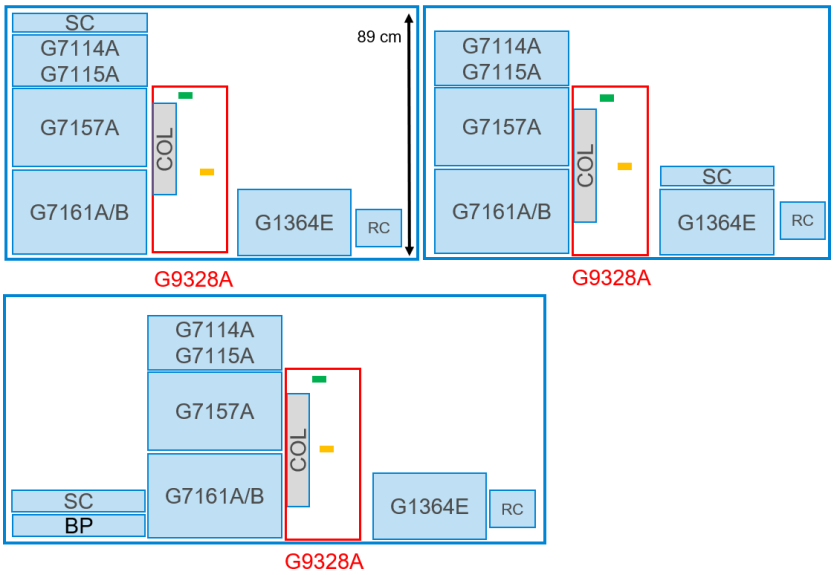


Figure 8 1260 Infinity II Preparative LC System with Preparative Open-Bed Fraction Collector, Column Organizer and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Preparative Fraction Collector (G1364E)



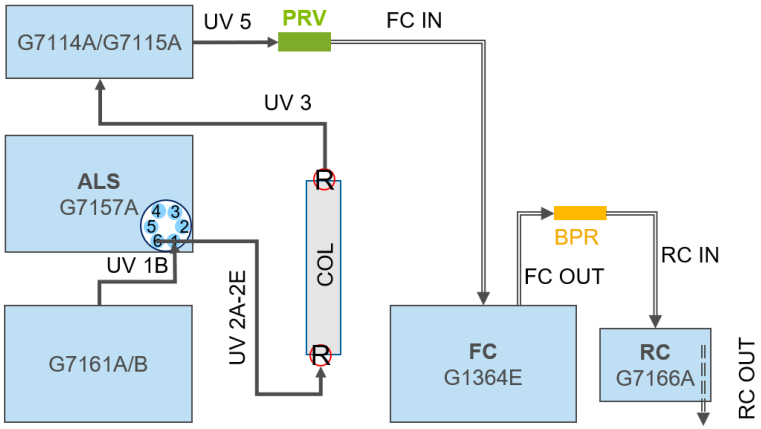


Figure 9 1260 Infinity II Preparative LC System with Preparative Fraction Collector, Column Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Preparative Fraction Collector (G1364E) and Delay Coil Organizer (G9324A)

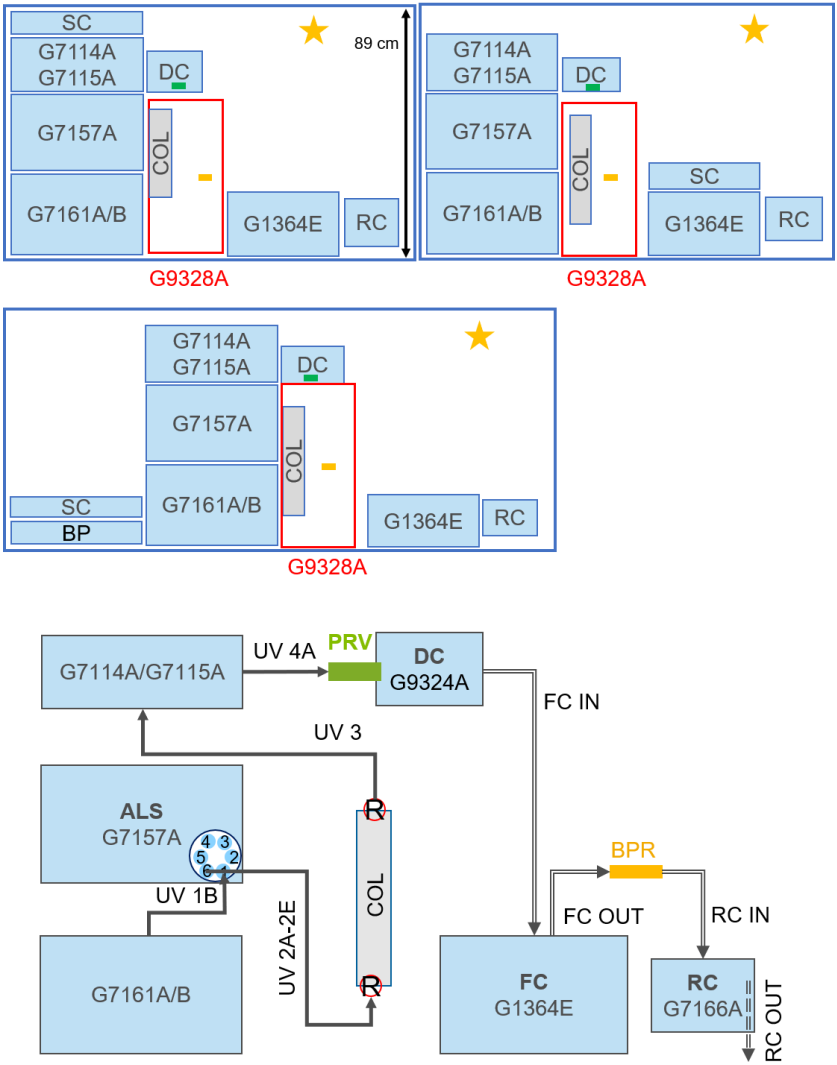


Figure 10 1260 Infinity II Preparative LC System with Preparative Fraction Collector, Column Organizer and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configurations with Preparative Column Compartment (G7163B)

Configuration with Preparative Open-Bed Fraction Collector (G7159B)

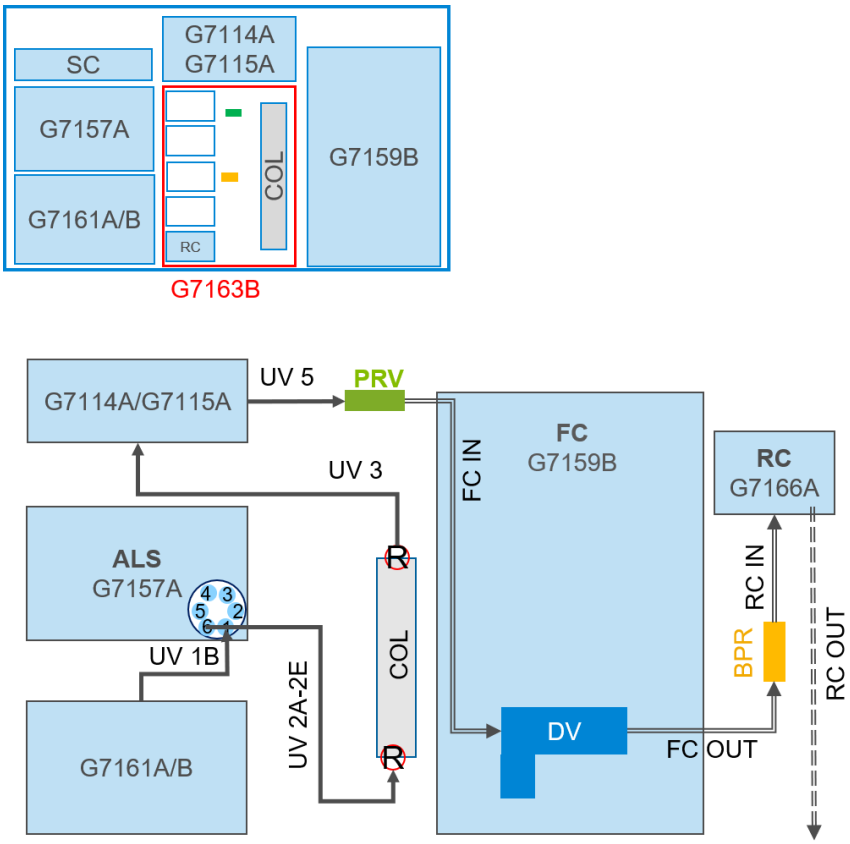
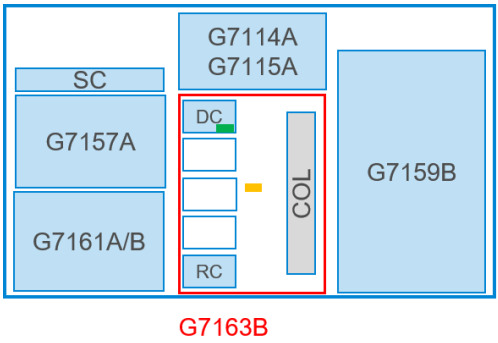


Figure 11 1260 Infinity II Preparative LC System with Preparative Open-Bed Fraction Collector and Preparative Column Compartment, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Preparative Open-Bed Fraction Collector (G7159B) and Delay Coil Organizer (G9324A)



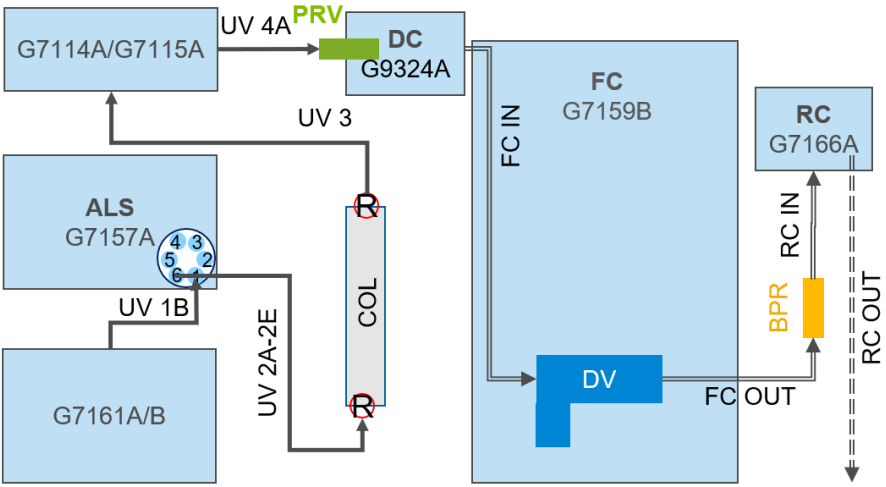


Figure 12 1260 Infinity II Preparative LC System with Preparative Open-Bed Fraction Collector, Preparative Column Compartment, and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Preparative Fraction Collector (G1364E)

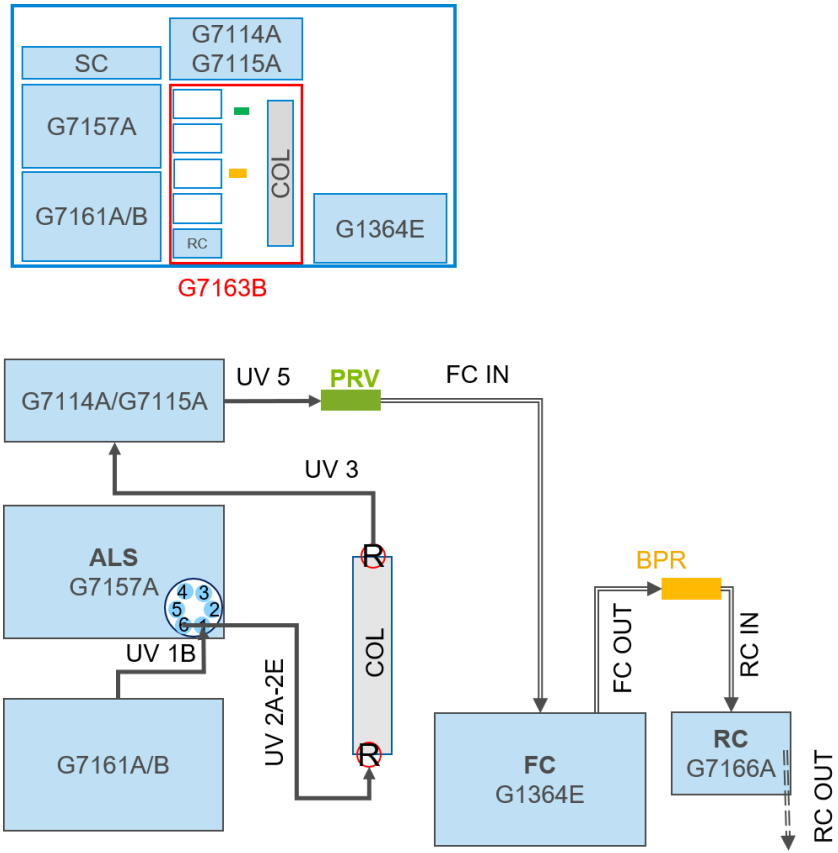


Figure 13 1260 Infinity II Preparative LC System with Preparative Fraction Collector, and Preparative Column Compartment, mandatory stack configuration (top), and schematic flow connections (bottom).

Configuration with Preparative Fraction Collector (G1364E) and Delay Coil Organizer (G9324A)

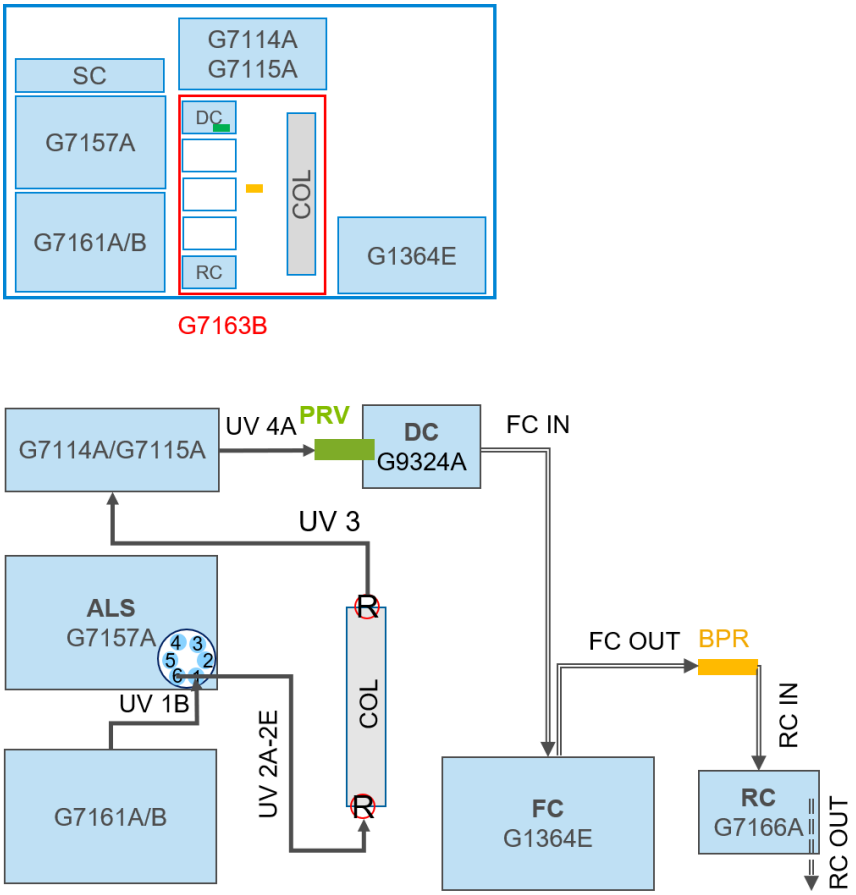


Figure 14 1260 Infinity II Preparative LC System with Preparative Fraction Collector, Preparative Column Compartment and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

1260 Infinity II Preparative LC/MSD System

Configurations with Column Organizer (G9328A)

Configuration with Preparative Fraction Collector (G1364E)

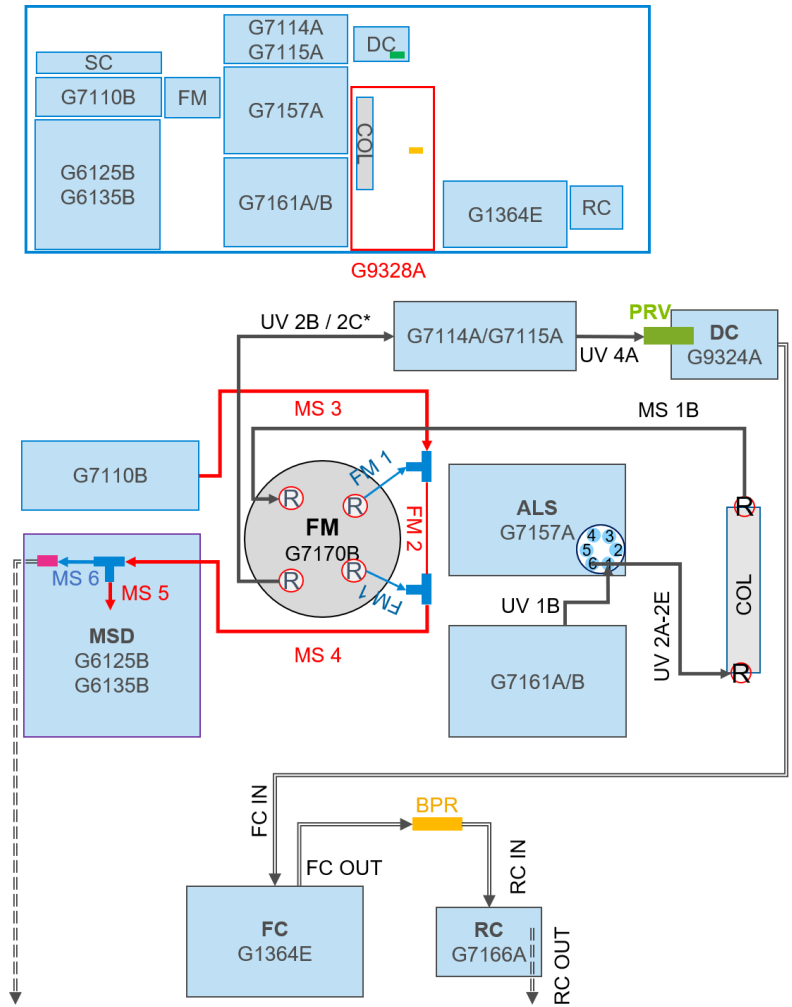


Figure 15 1260 Infinity II Preparative LC/MSD System with Preparative Fraction Collector, Column Organizer and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

* Use the shortest capillary

Configuration with Preparative Open-Bed Fraction Collector (G7159B)

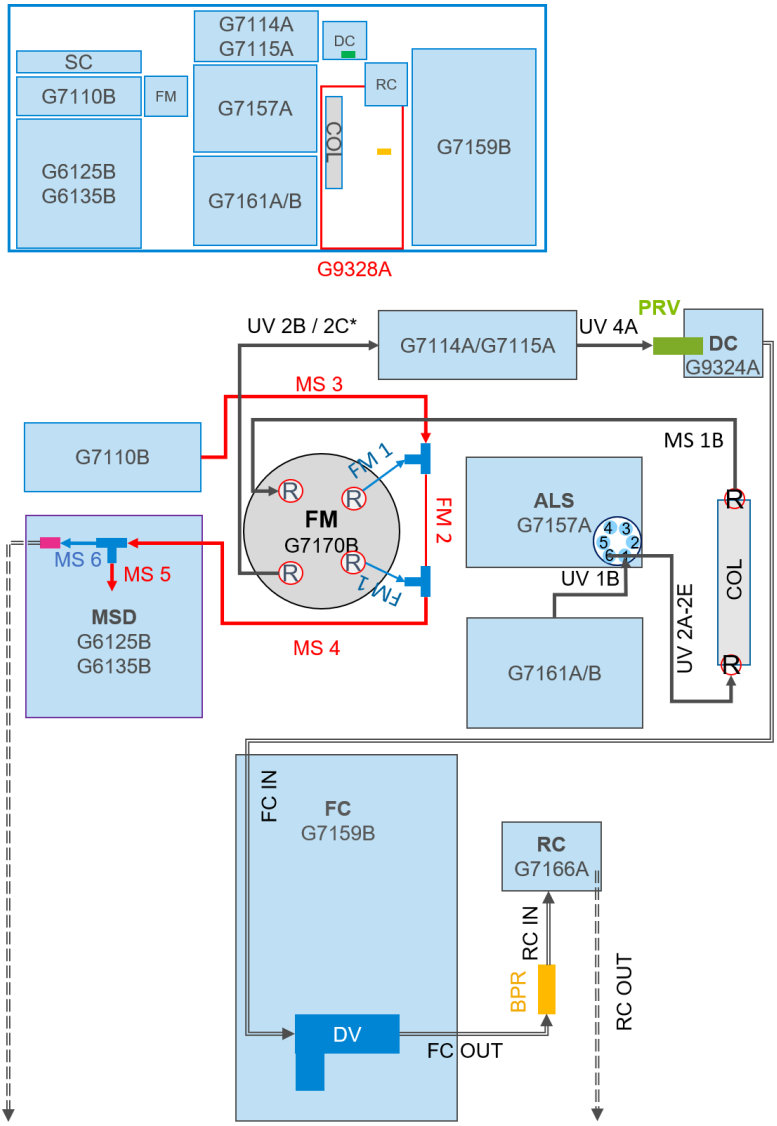


Figure 16 1260 Infinity II Preparative LC/MSD System with Preparative Open-Bed Fraction Collector, Column Organizer and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

* Use the shortest capillary

Configurations with Preparative Column Compartment (G7163B)

Configuration with Preparative Fraction Collector (G1364E)

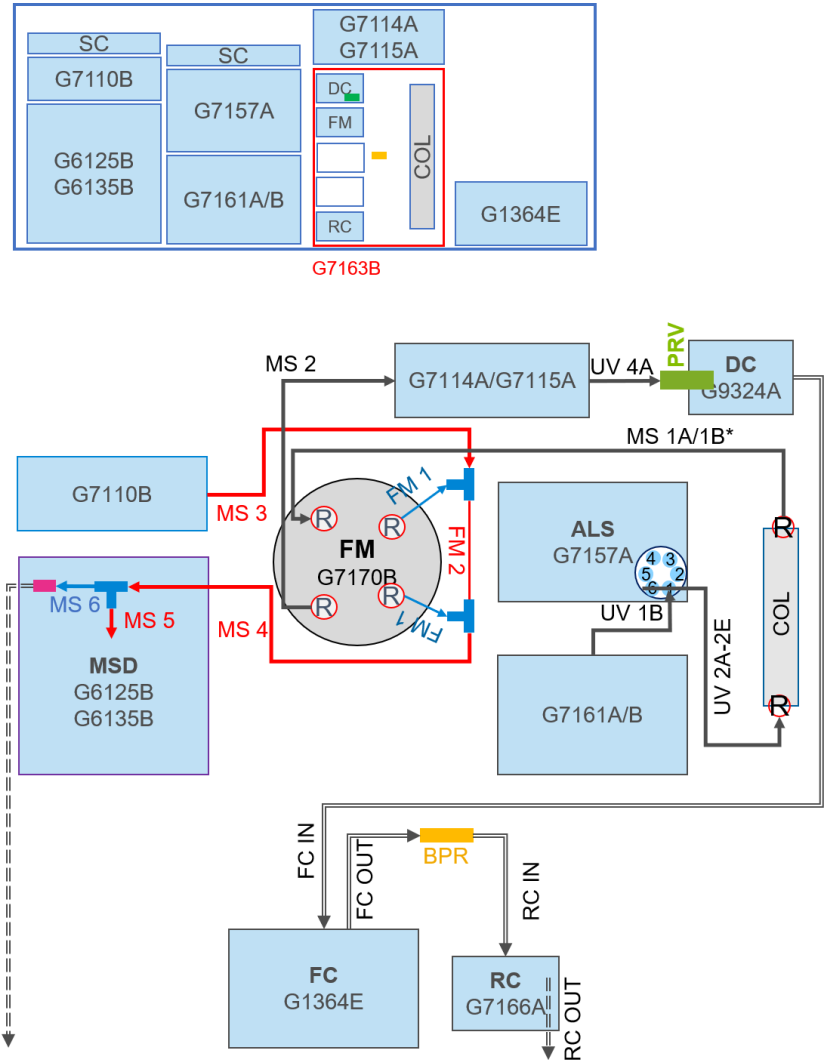


Figure 17 1260 Infinity II Preparative LC/MSD System with Preparative Fraction Collector, Preparative Column Compartment and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

* Use the shortest capillary

Configuration with Preparative Open-Bed Fraction Collector (G7159B)

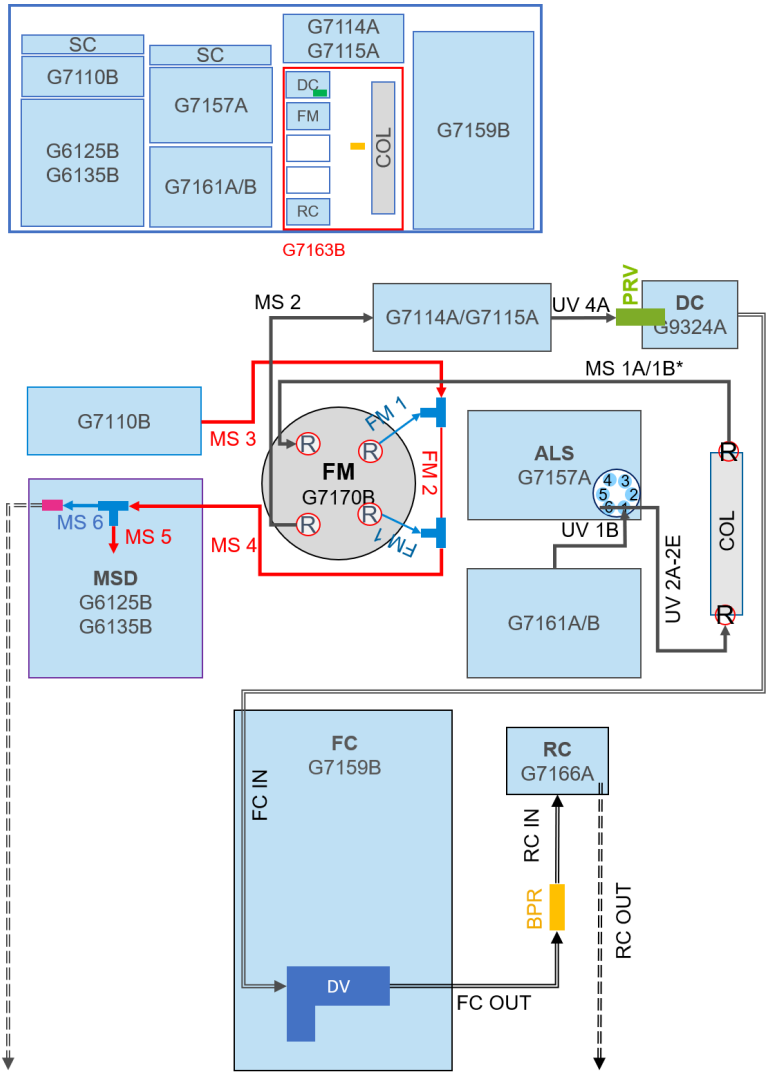


Figure 18 1260 Infinity II Preparative LC/MSD System with Preparative Open-Bed Fraction Collector, Preparative Column Compartment and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

* Use the shortest capillary

1260 Infinity II Manual Preparative LC System

Configurations with Column Organizer (G9328A)

Entry Level Configurations

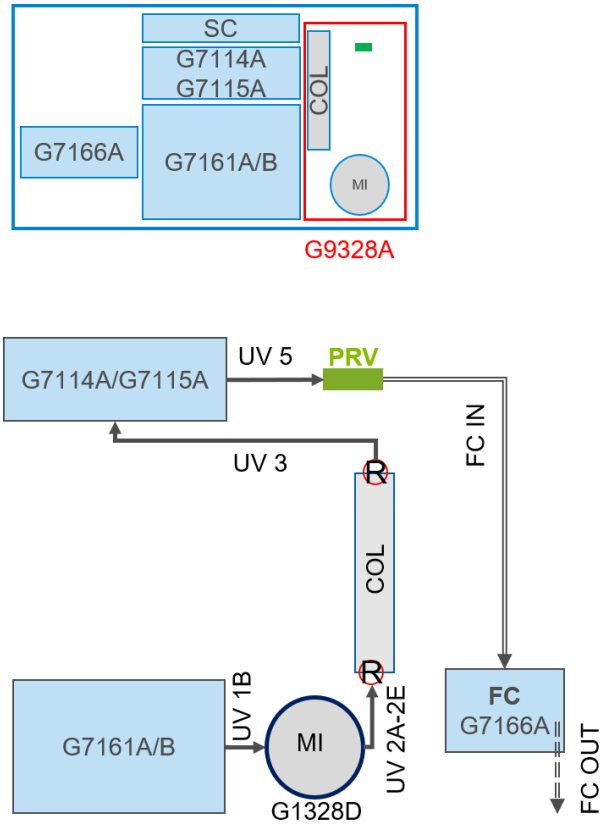


Figure 19 1260 Infinity II Manual Preparative LC System with Preparative Valve-Based Fraction Collector, and Column Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

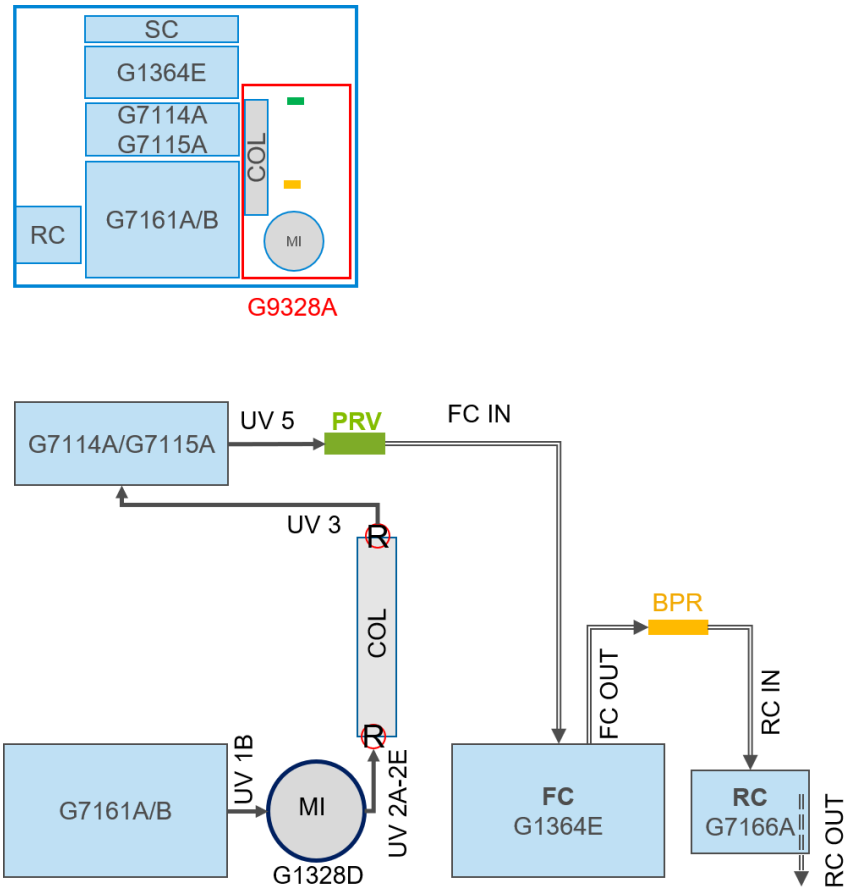


Figure 20 1260 Infinity II Manual Preparative LC System with Preparative Fraction Collector, and Column Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

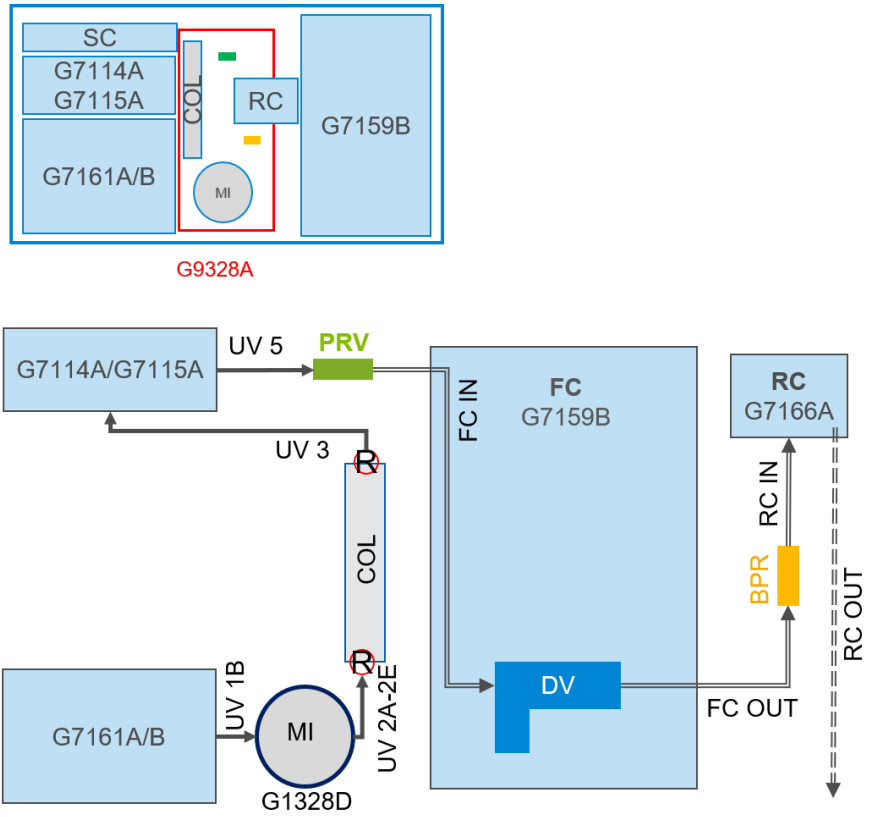


Figure 21 1260 Infinity II Manual Preparative LC System with Preparative Open-Bed Fraction Collector, and Column Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Entry Level Configurations with Delay Coil Organizer (G9324A)

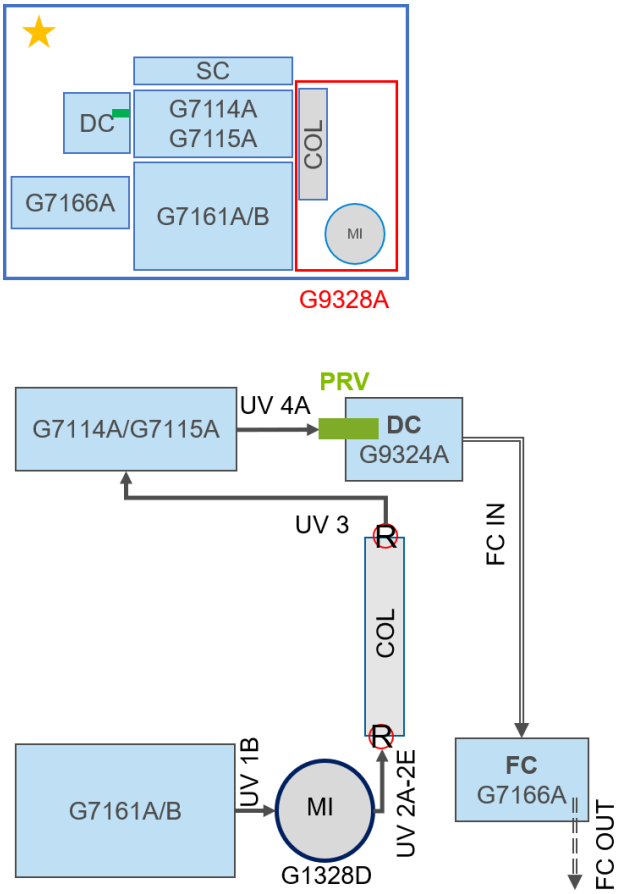


Figure 22 1260 Infinity II Manual Preparative LC System with Preparative Valve-Based Fraction Collector, Column Organizer, and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

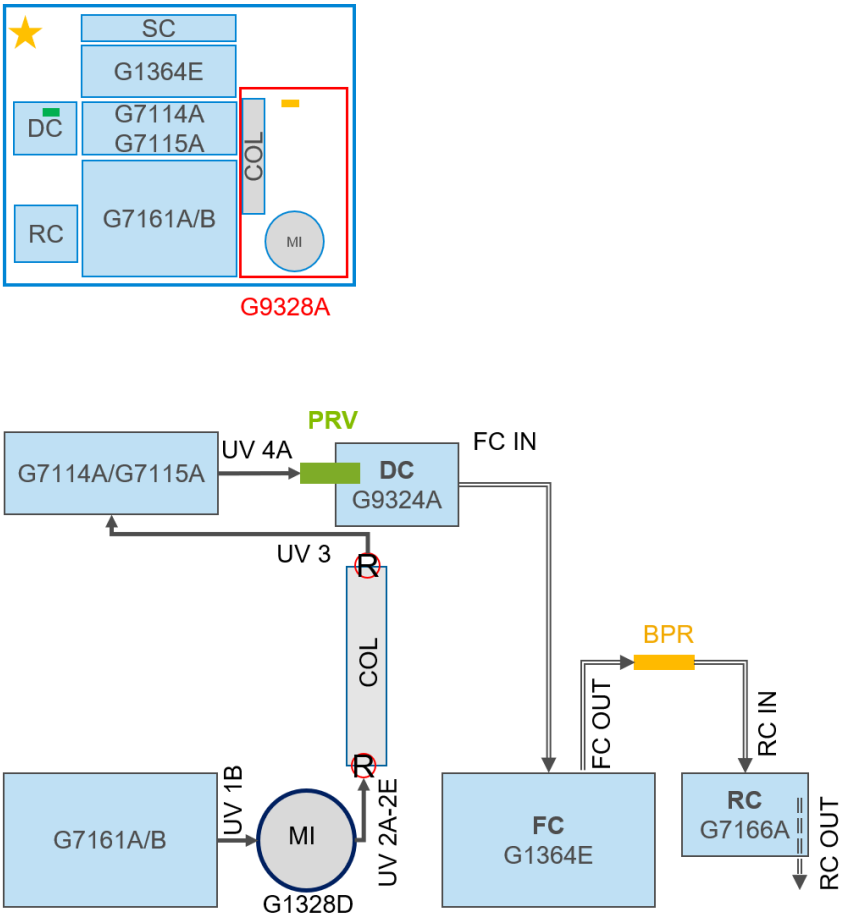


Figure 23 1260 Infinity II Manual Preparative LC System with Preparative Fraction Collector, Column Organizer, and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

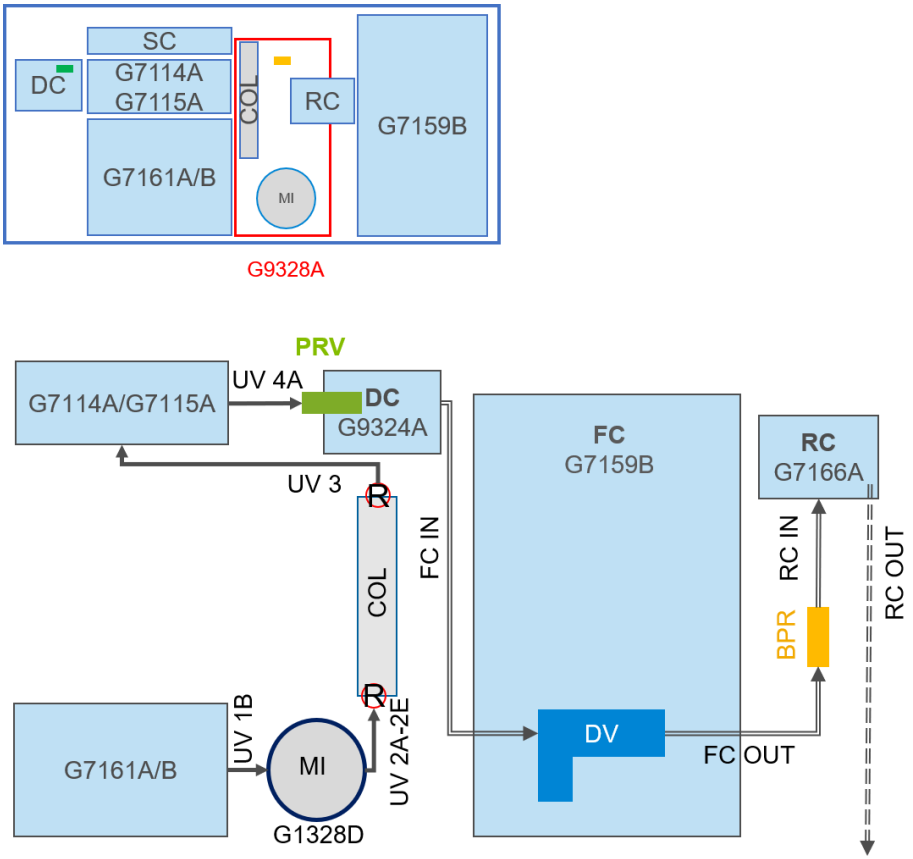


Figure 24 1260 Infinity II Manual Preparative LC System with Preparative Open-Bed Fraction Collector, Column Organizer, and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

Configurations with Preparative Column Compartment (G7163B)

Entry Level Configurations

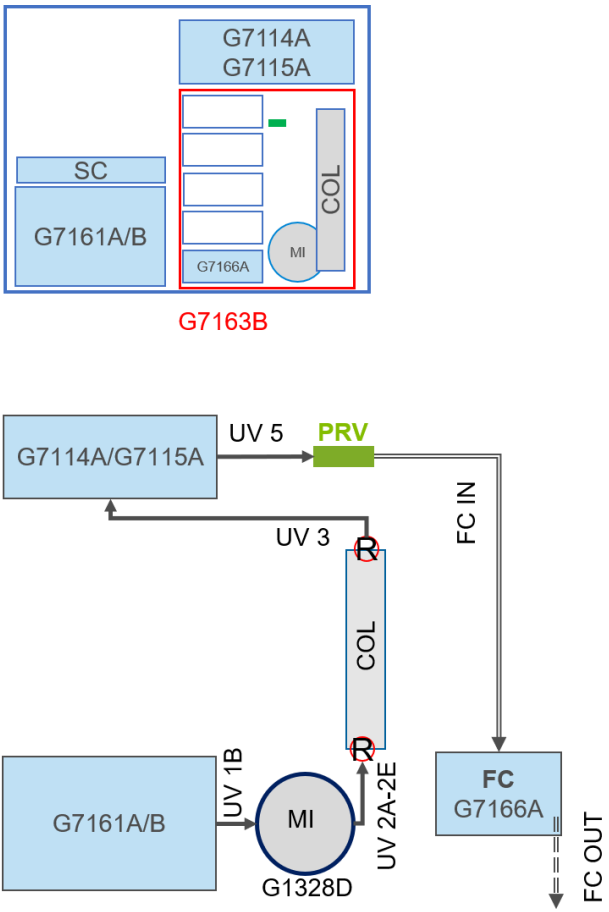


Figure 25 1260 Infinity II Manual Preparative LC System with Preparative Valve-Based Fraction Collector, and Preparative Column Compartment, mandatory stack configuration (top), and schematic flow connections (bottom).

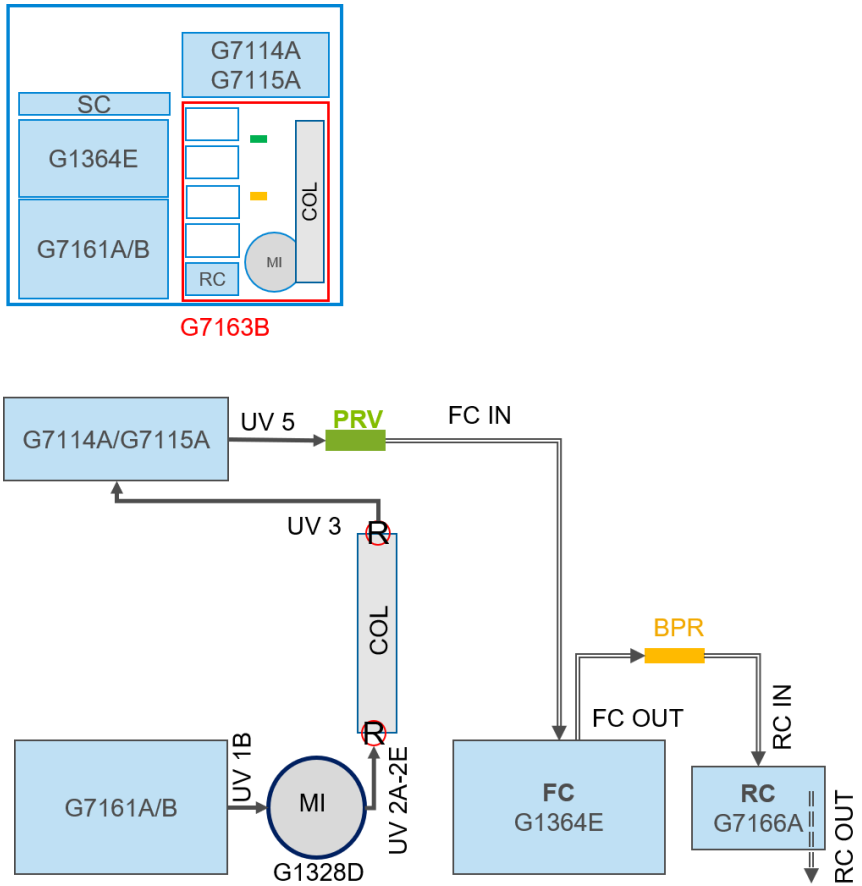


Figure 26 1260 Infinity II Manual Preparative LC System with Preparative Fraction Collector, and Preparative Column Compartment, mandatory stack configuration (top), and schematic flow connections (bottom).

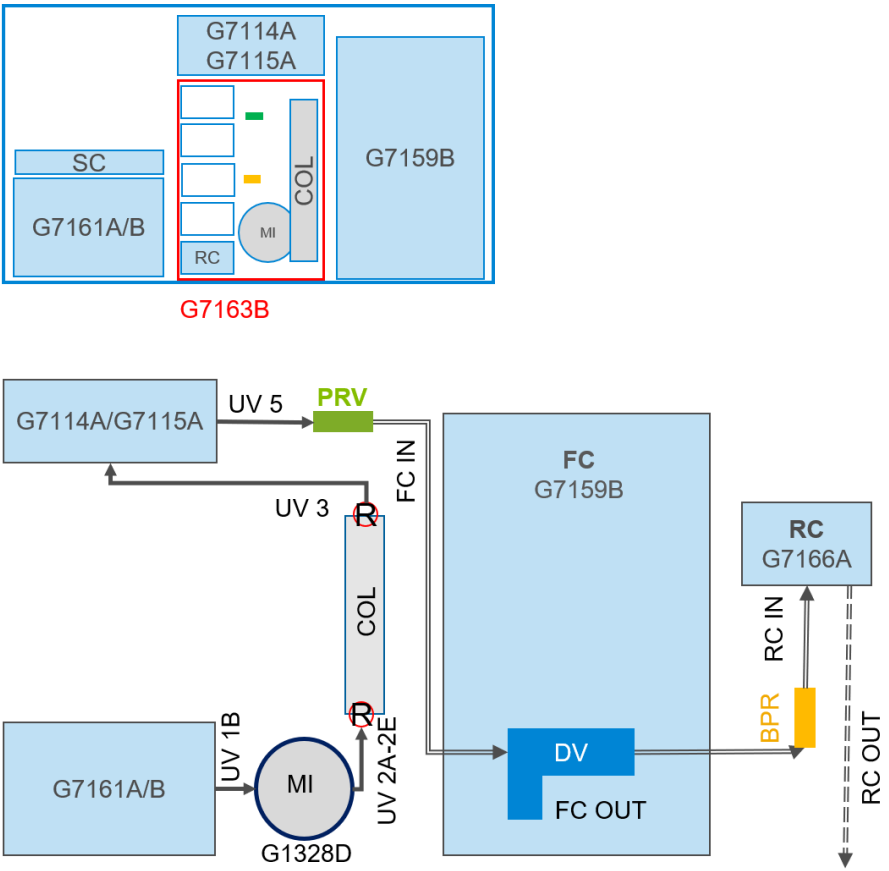


Figure 27 1260 Infinity II Manual Preparative LC System with Preparative Open-Bed Fraction Collector, and Preparative Column Compartment, mandatory stack configuration (top), and schematic flow connections (bottom).

Entry Level Configurations with Delay Coil Organizer (G9324A)

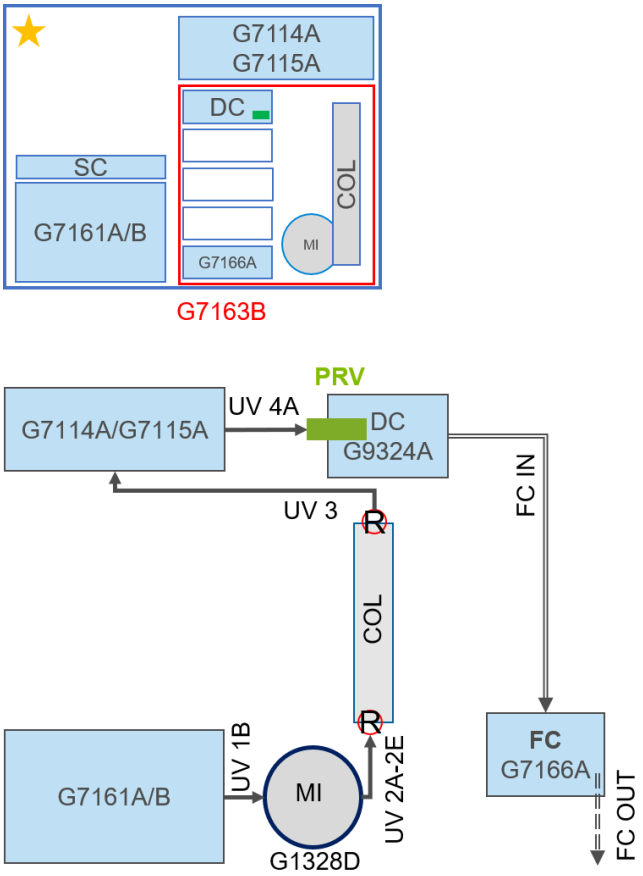
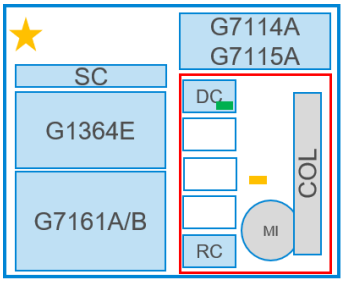


Figure 28 1260 Infinity II Manual Preparative LC System with Preparative Valve-Based Fraction Collector, Preparative Column Compartment, and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).



G7163B

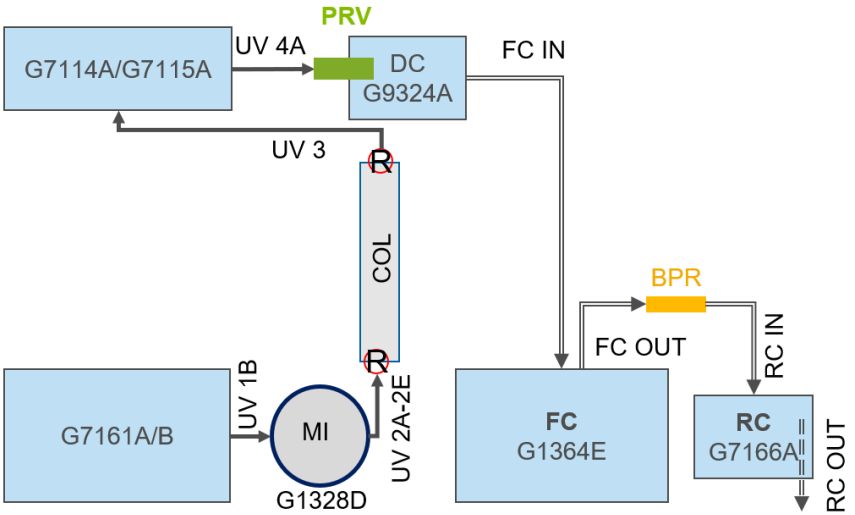


Figure 29 1260 Infinity II Manual Preparative LC System with Preparative Fraction Collector, Preparative Column Compartment, and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

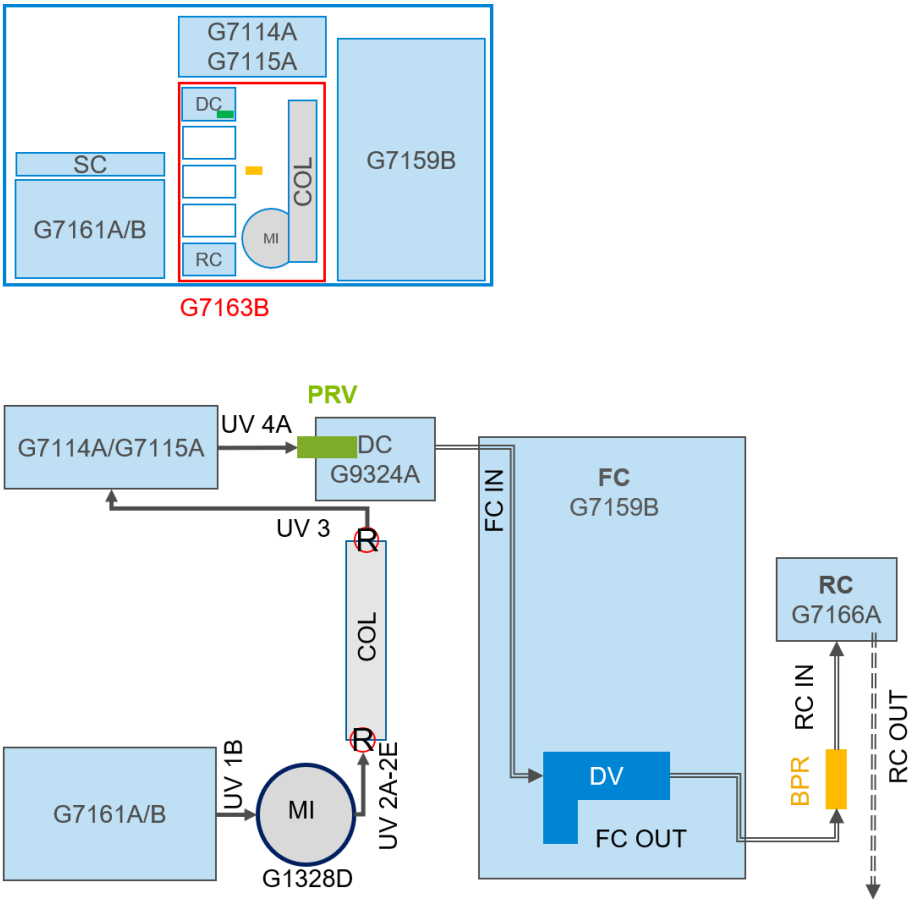


Figure 30 1260 Infinity II Manual Preparative LC System with Preparative Open-Bed Fraction Collector, Preparative Column Compartment, and Delay Coil Organizer, mandatory stack configuration (top), and schematic flow connections (bottom).

G7161-90202

Part Number:
G7161-90202 Rev. B
D0000571 Rev. B
Edition: 10/2019
Printed in Germany

Agilent Technologies, Inc
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76337 Waldbronn, Germany