

Agilent 1290 Infinity III Ultra Low Dispersion Kit

Technical Note

This note describes how to install the Agilent 1290 Infinity III Ultra Low Dispersion Kit (5067-5963) and 1290 Infinity III Bio Ultra Low Dispersion Kit (5004-0007).

Contents

Introduction	1
Delivery Checklist	2
Installation	3
Install the High Pressure Needle Seat Assembly	3
Install the Heat Exchanger Assembly	6
Connect the Column	8

Introduction

The 1290 Infinity III LC has a large power range (2 mL/min at 1300 bar and 5 mL/min at 800 bar) and low system dispersion and is therefore designed for a broad application range with 2.1 mm to 4.6 mm inner diameter columns. The 1290 Infinity III Ultra Low Dispersion Kit (5067-5963) and 1290 Infinity III Bio Ultra Low Dispersion Kit (5004-0007) allow a further reduction of the extra column volume* of the 1290 Infinity III LC and 1290 Infinity III Bio LC Systems by using capillaries with a low internal diameter of 0.075 mm.

This kit is recommended for following applications:

- isocratic separations on 2.1 mm inner diameter columns, especially with early eluting peaks
- gradient separations on 2.1 mm inner diameter columns, especially if the peaks of interest are eluting very early in the isocratic part of the gradient, applications on 1 mm inner diameter columns will also benefit from the lower extra column volume.

Since small diameter capillaries in this kit will significantly increase the backpressure[†] of the system at high flow rates, it is recommended to use the kit only for the applications mentioned above.

The 1290 Infinity III Ultra Low Dispersion Kit (5067-5963) is designed for the use with an Agilent 1290 Infinity III LC System and the 1290 Infinity III Bio Ultra Low Dispersion Kit (5004-0007) is designed to for the use with an Agilent 1290 Infinity III Bio LC System

* The volume between the effective injection point and the effective detection point, excluding the part of the column containing the stationary phase is called extra column volume. This volume contributes to the band broadening and should be significantly smaller than the volume of the eluted peak. The use of smaller columns (short length, narrow diameter and smaller/more efficient particles) results in smaller peak volumes, which then also require a smaller extra column volume in order to avoid a loss of efficiency.

† for example +165 bar with water at 1 mL/min flow rate



Delivery Checklist

5067-5963

p/n	Description
5500-1208	Capillary ST 0.075 mm x 250 mm ULD-Kit Column outlet to flow cell (use Quick Turn Fitting for column connection)
5500-1207	Capillary ST 0.075 mm x 500 mm ULD-Kit Multisampler to heat exchanger
G4267-87020	High Pressure Seat Assembly 0.075 mm (PEEK)
G7116-60021	Quick Connect Heat Exchanger Ultra Low Dispersion
5067-6602	QC/QT Assy ST 0.075 mm x 105 mm Heat exchanger to column

In case of a required replacement of one of the capillaries from this kit please use the following part numbers for re-order:

p/n	Description
5067-5966	InfinityLab Quick Turn Fitting
5500-1205	Capillary ST 0.075 mm x 500 mm, long socket Capillary for use with Quick Turn Fitting
5500-1206	Capillary ST 0.075 mm x 250 mm, long socket Capillary for use with Quick Turn Fitting
5067-5965	InfinityLab Quick Connect LC fitting Quick Connect Fitting without capillary
5500-1174	InfinityLab Capillary ST 0.075 mm x 105 mm Capillary for use with Quick Connect Fitting
5043-0924	Front Ferrule for Quick Connect/Turn Fitting Replacement Part for Quick Turn & Quick Connect Fitting

5004-0007

p/n	Description
5500-1591	Quick Turn Capillary MP35N 0.075 mm x 250 mm Column outlet to flow cell (use Quick Turn Fitting for column connection)
5500-1592	Quick Turn Capillary MP35N 0.075 mm x 500 mm Multisampler to heat exchanger
G7137-60075	High Pressure Seat Bio ULD
G7116-60091	Quick Connect Heat Exchanger 1290 Bio ULD
5500-1474	Quick Connect Capillary MP35N 0.075 mm x 105 mm
5067-5965	InfinityLab Quick Connect LC fitting
5067-5966	InfinityLab Quick Turn Fitting

Installation

Install the High Pressure Needle Seat Assembly

Tools required	p/n	Description
	8710-0510	Open-end wrench 1/4 — 5/16 inch Flat head screwdriver

Parts required	#	p/n	Description
	1	G4267-87020	High Pressure Seat Assembly 0.075 mm (PEEK)
OR	1	G7137-60075	High Pressure Seat Bio ULD

- Preparations**
- Finish any pending acquisition job.
 - Stop the flow at the pump and remove the solvent lines from the eluent bottles to avoid spilling solvent.
 - Close the shutoff valves at the pump if available.

WARNING

Risk of injury by uncovered needle

An uncovered needle is a risk of harm to the operator.

Do not open the safety lock of the needle assembly

Be careful working at the z-robot.

Wear safety goggles, when removing the needle assembly.

NOTE

Do not mix capillaries dedicated for different systems.

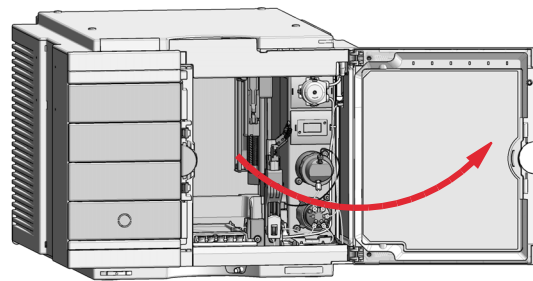
- ULD capillaries suitable for 1290 Infinity III LC system are marked by black sleeves.
- Bio ULD capillaries suitable for 1290 Infinity III Bio LC system are marked by black sleeves with an orange stripe.

1 In the Local Controller select **More > Maintenance > MLS > Maintenance** and send the module to the **Service Position**.

OR

In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen **Maintenance Positions > Change Needle Seat**, click **Start** and wait until the needle assembly is in maintenance position.

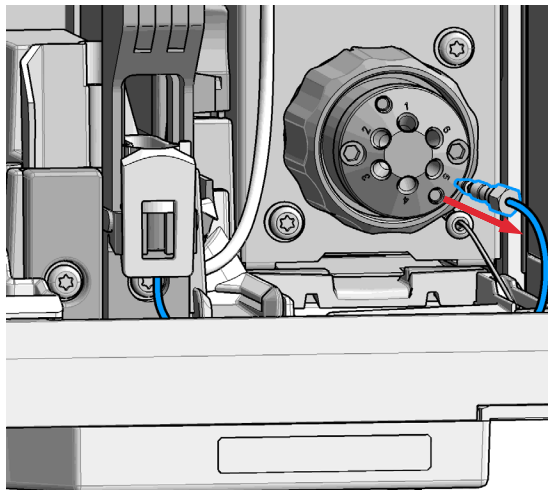
2 Open the front door.



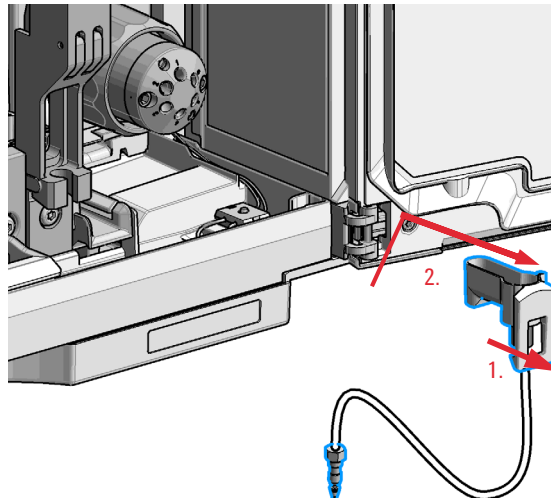
Installation

Install the High Pressure Needle Seat Assembly

3 Disconnect the seat capillary from the Injection valve.



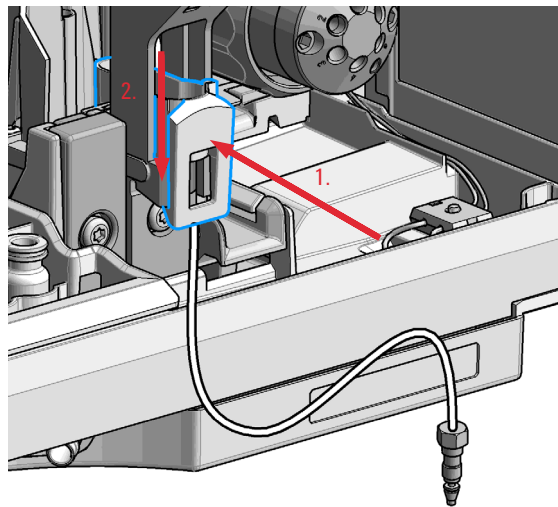
4 Slightly pull (1.) the front clip which holds the needle seat in position. Then carefully lift up (2.) the complete leak tube needle assembly from the holder.



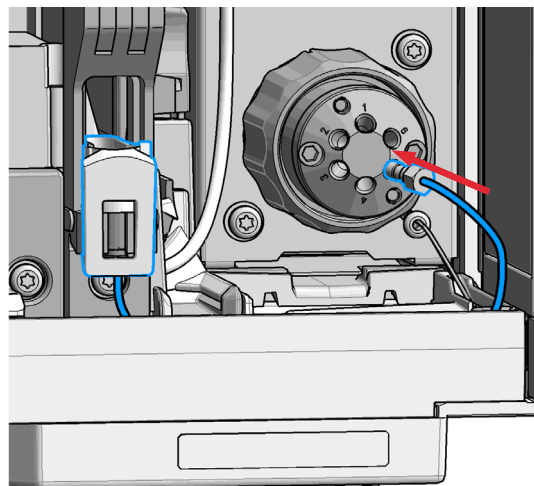
5 Insert the new Needle seat (1.). Press it firmly in position (2.).

NOTE

Verify that the needle seat clip is locked in the needle park station.



6 Reconnect the seat capillary to the injection valve.

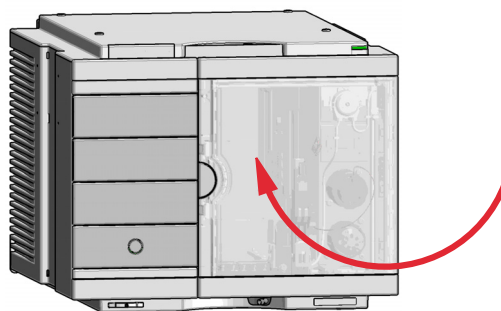


7 In the Local Controller exit the **Service Position**.

OR

In the Agilent Lab Advisor software click **Next** and wait until the needle assembly is in the needle park position. Follow instructions from Lab Advisor to complete the procedure in the software.

8 Close the front door.



9 Perform a **Pressure Test**.

Install the Heat Exchanger Assembly

Tools required	p/n	Description
	5043-0915	Fitting mounting tool
	5023-2502	Hex driver SW-6.35, slitted
	8710-0510	Open-end wrench 1/4 — 5/16 inch

Parts required	p/n	Description
		The following parts are suitable for the 1290 Infinity III LC:
	G7116-60021	Quick Connect Heat Exchanger Ultra Low Dispersion
	5067-6602	QC/QT Assy ST 0.075 mm x 105 mm
	5500-1207	Capillary ST 0.075 mm x 500 mm ULD-Kit
		The following parts are suitable for the 1290 Infinity III Bio
	G7116-60091	LC: Quick Connect Heat Exchanger 1290 Bio ULD
	5500-1474	Quick Connect Capillary MP35N 0.075 mm x 105 mm
	5067-5965	InfinityLab Quick Connect LC fitting
	5067-5966	InfinityLab Quick Turn Fitting
	5500-1592	Quick Turn Capillary MP35N 0.075 mm x 500 mm

CAUTION

Excessive torque applied to the port of the Quick Connect Heat Exchanger can damage it.

Do not apply excessive torque to the heat exchanger port.

Always use a wrench to counter the heat exchanger port while tightening the capillary fitting.

NOTE

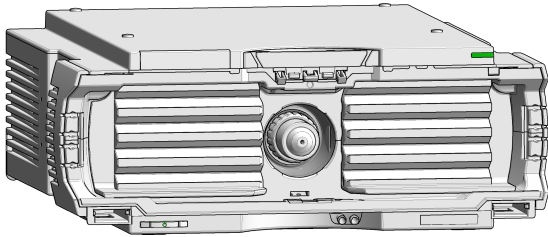
Do not mix capillaries dedicated for different systems.

- ULD capillaries suitable for 1290 Infinity III LC system are marked by black sleeves.
- Bio ULD capillaries suitable for 1290 Infinity III Bio LC system are marked by black sleeves with an orange stripe.

NOTE

Follow the special instructions provided for the Quick Connect and Quick Turn Fittings.

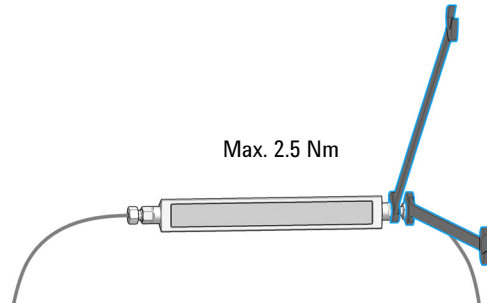
- 1** Choose one of the possible positions for placing the heat exchanger.



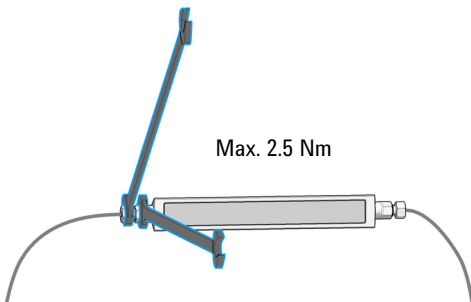
NOTE

Use one of the four central positions if only one column is used.

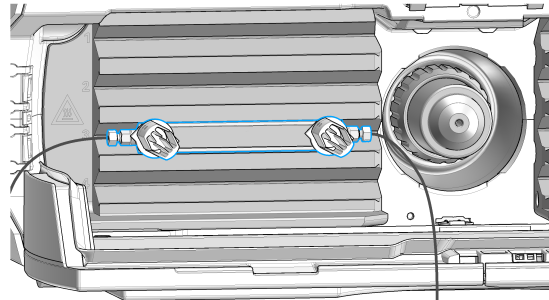
- 2** Connect the sampler outlet capillary 0.075 mm x 500 mm from port 6 of the multisampler injection valve to the inlet port of the heat exchanger.



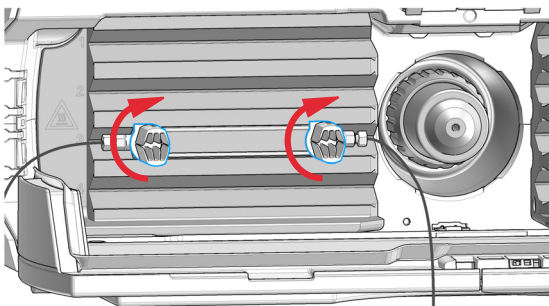
- 3** Connect the column connection capillary 0.075 mm x 105 mm to the outlet of the Quick Connect Heat Exchanger.



- 4** Position the heat exchanger in the groove of the MCT heater block and prepare column holders to fix the heat exchanger.



- 5** Turn column holders to fix the Quick Connect Heat Exchanger in the MCT.



Connect the Column

Tools required	p/n	Description
	5023-0240	Hex driver, ¼", slitted
	8710-0510	Wrench open 1/4 — 5/16 inch
Parts required	p/n	Description
		The following parts are suitable for the 1290 Infinity III LC:
	5067-6602	QC/QT Assy ST 0.075 mm x 105 mm
	5500-1208	Capillary ST 0.075 mm x 250 mm ULD-Kit
		The following parts are suitable for the 1290 Infinity III Bio LC:
	5500-1474	LC: Quick Connect Capillary MP35N 0.075 mm x 105 mm
	5500-1591	Quick Turn Capillary MP35N 0.075 mm x 250 mm
Preparations	QC/QT Assy ST 0.075 mm x 105 mm (5067-6602) or Quick Connect Capillary MP35N 0.075 mm x 105 mm (5500-1474) connected to the heat exchanger, see "Install the Heat Exchanger Assembly" on page 6.	

NOTE

Do not mix capillaries dedicated for different systems.

- ULD capillaries suitable for 1290 Infinity III LC system are marked by black sleeves.
- Bio ULD capillaries suitable for 1290 Infinity III Bio LC system are marked by black sleeves with an orange stripe.

1 Connect capillary 0.075 mm x 105 mm from the heat exchanger to the column.

NOTE

Turn the column on to the Quick Connect Fitting.

2 Install capillary 0.075 mm x 250 mm between the column and the detector flow cell (Quick Turn fitting to the column).

3 Position the column into the column holder clip.

NOTE

After using the system with high salt concentrations, flush it extensively with water to prevent blockages caused by salt crystals. Regular extensive washes with water are mandatory when using ULD capillaries.

The information in this document also applies to Infinity II modules.

