

Agilent InfinityLab LC Series Multiwash Upgrade Kit

Installation Note

In this note we describe how to install the Agilent Infinity III Series Multiwash Upgrade Kit (G4757A) into an Agilent InfinityLab LC Series Multisampler.

General Information

The multiwash upgrade kit is designed for low carryover and can be installed in any Agilent InfinityLab LC Series Multisampler.

With the multiwash upgrade kit you can minimize carryover for critical samples with the following measures:

- Wash the outer needle surface with the choice of three different wash solvents, or
- Back flush the needle seat and the rotor seal with the appropriate solvents.

This integrated feature reduces the carryover to less than 9 ppm.

NOTE

The Multiwash Option is incompatible with multidraw.

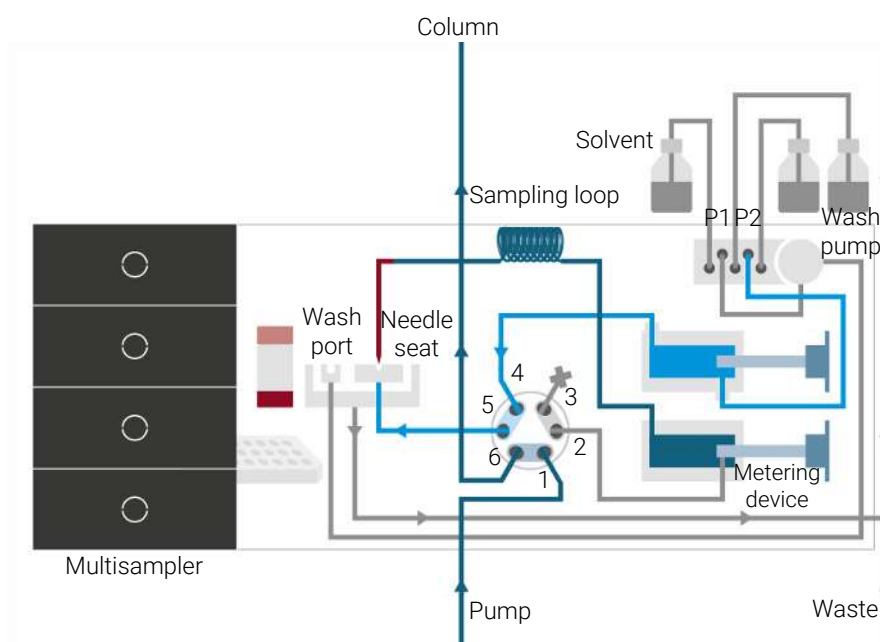


Figure 1: Valve in bypass, needle seat backflush (Multiwash)

General Information

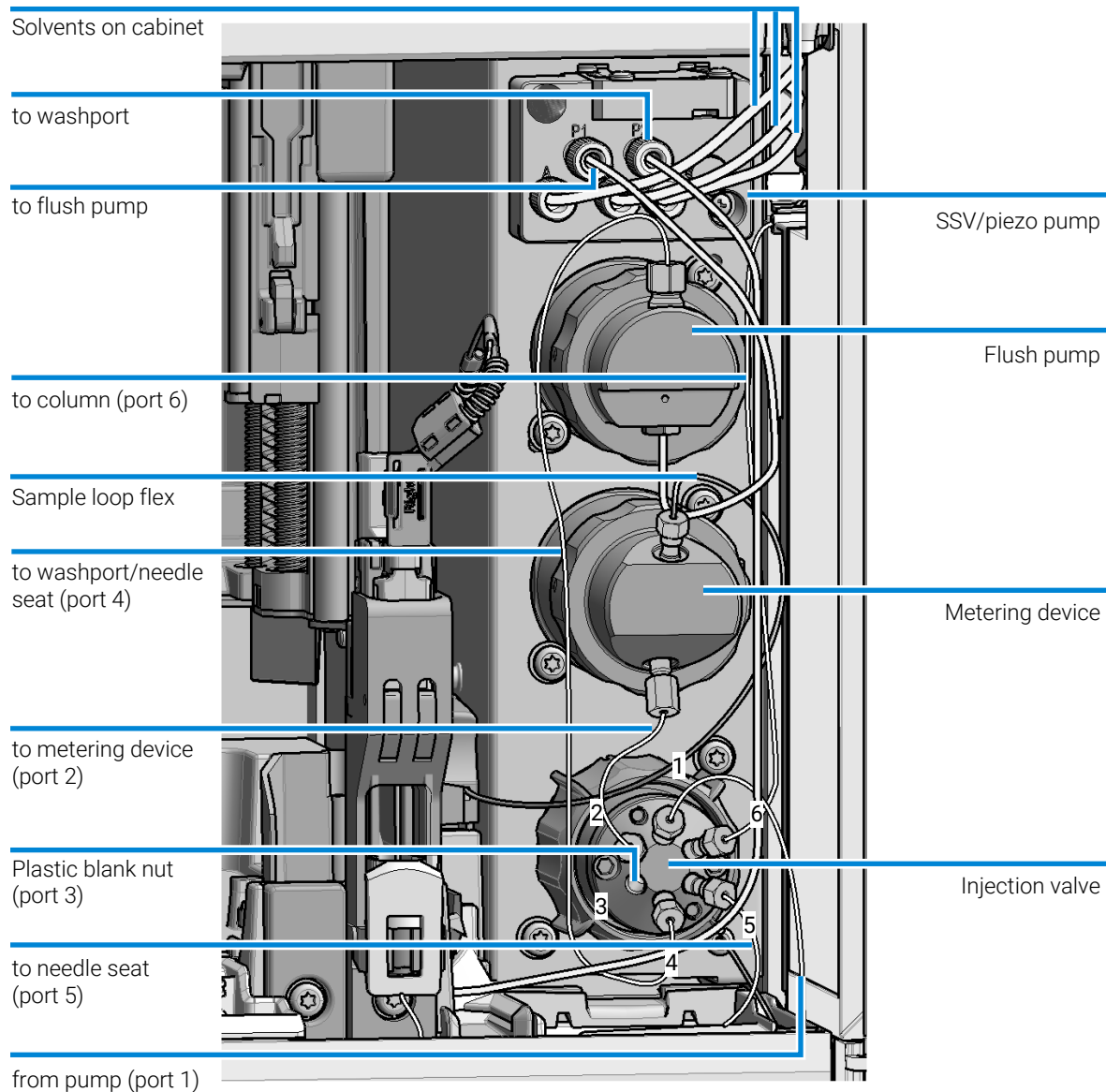
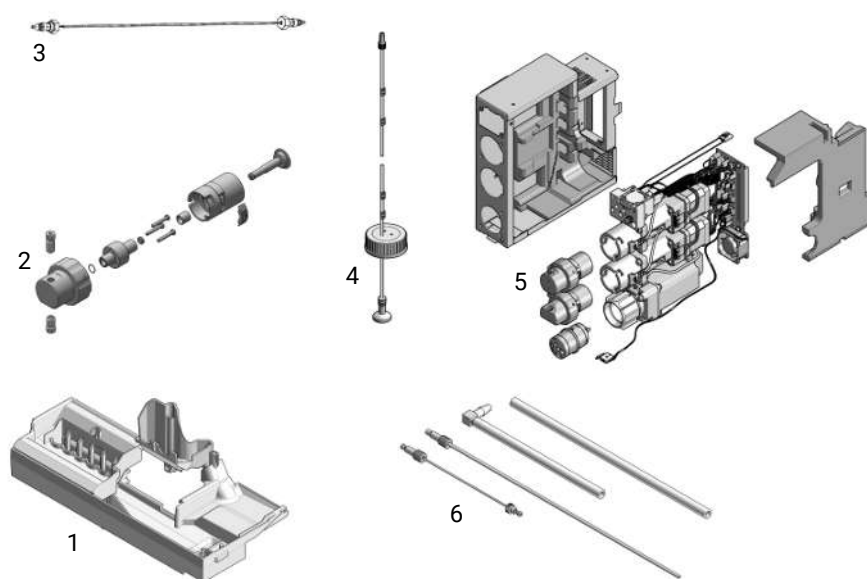


Figure 2: Capillary connections (Multiwash)

Delivery Checklist

Delivery Checklist



G7167-68712 (Multiwash upgrade kit) contains:

#	Qty.	p/n	Description
1	1	G4267-68708	Drain Management Kit
2	1	G4267-60049	Flush head, 500 µL
3	1	5500-1167	Capillary ST 0.17 mm x 250 mm SL-SL
4	2	G4220-60007	Bottle Head Assembly
5	1	G4267-60008	Hydraulic Box (Multiwash) this is an internal partnumber and not orderable
6	1	G4267-60081	Tubing-Kit-Sampler-Multi-Wash

Installing the Multiwash Infinity III Upgrade Kit

The installation of the upgrade kit requires the following procedures:

- [Remove the Hydraulic Box](#) on page 4,
- [Install the Hydraulic Box](#) on page 8, and
- [Configuration of the Multiwash Option](#) on page 11.

Remove the Hydraulic Box

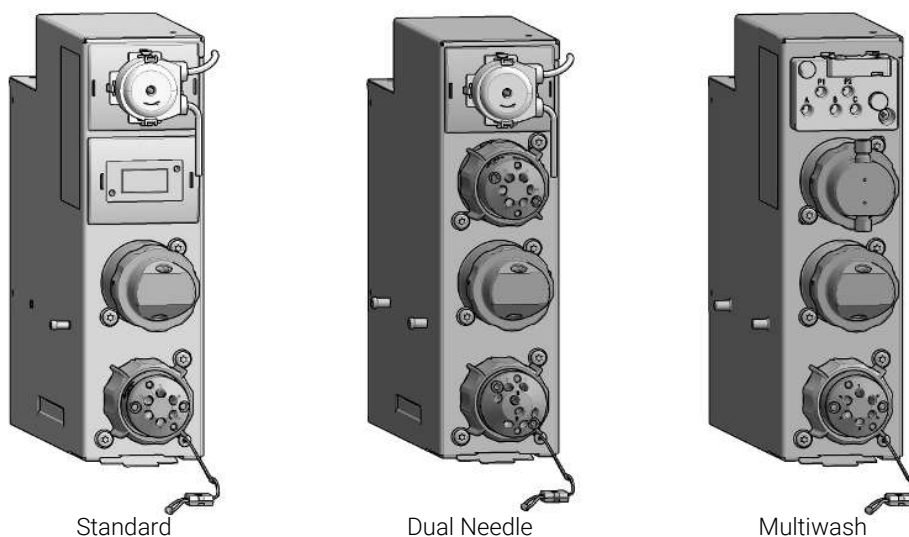



Figure 3: Variants of the hydraulic box

Tools required	Qty.	p/n	Description
	1		Hexagonal key, 2.5 mm
	1		Hexagonal key, 4 mm
	1	 8710-0510	Open-end wrench 1/4-5/16 inch

NOTE

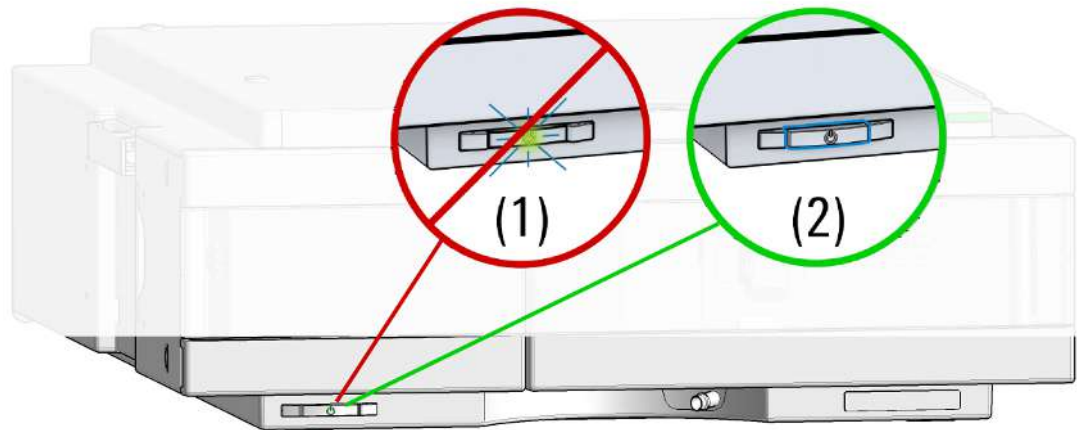
For changing the metering devices in the hydraulic boxes of the multisampler, the sampler must be in the service position.

- 1 In the Instant Pilot start the maintenance mode and select **Change Piston / Change Seal**. Wait until the metering drive is in the rear position.

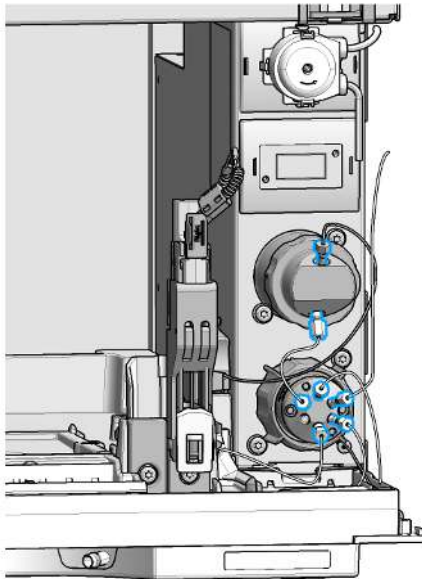
OR: In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen (**Tools**) **Maintenance Positions** > **Change Piston / Change Seal**, click and wait until the needle assembly is in maintenance position.

Installing the Multiwash Infinity III Upgrade Kit

- 2 Switch off the module.

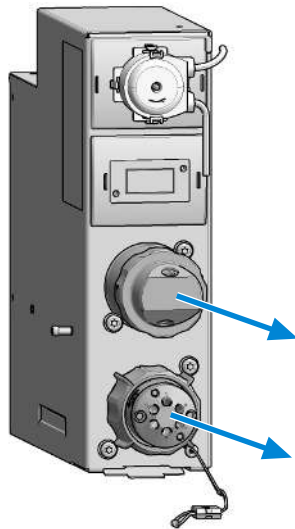


- 3 Remove the capillaries, the tubings, and the leak sensor which are connected to the hydraulic box.

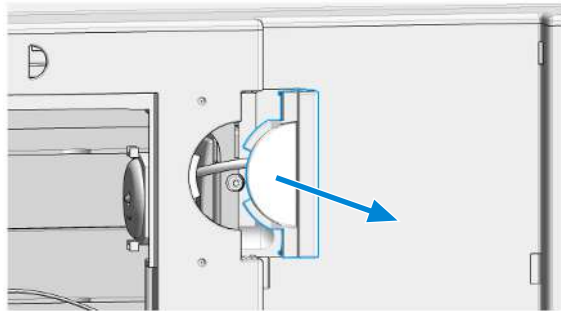


Installing the Multiwash Infinity III Upgrade Kit

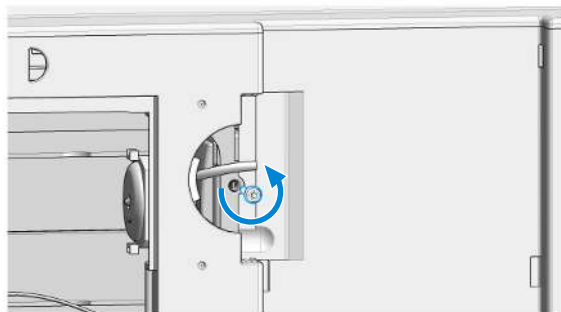
- 4 Remove the injection valve and the analytical head from the standard hydraulic box. For further info check the service manual.



- 5 Remove the tubing holder insert at the right side of the multisampler.

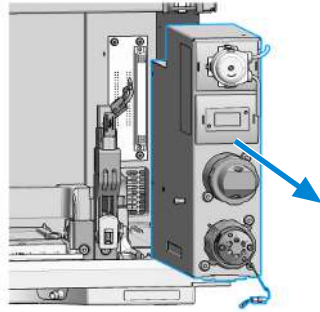


- 6 Remove the transport protection screw.



Installing the Multiwash Infinity III Upgrade Kit

- 7 Lift the clip and pull the standard hydraulic box out of the mainframe.



Installing the Multiwash Infinity III Upgrade Kit

Install the Hydraulic Box

- 1 Check which version of the drain management kit is currently installed in the sampler, especially the wash port (see figure below).
 - If the old version with metal connector is installed, upgrade the complete drain management kit. For further information, check the service manual.
 - If the new one is installed, no further change is necessary, proceed to the next step.

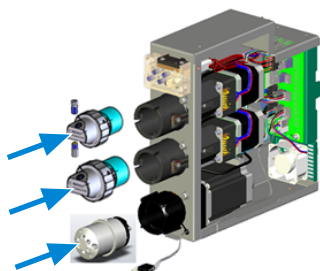


old



new

- 2 Install the flush head.
- 3 Install the injection valve and the analytical head from the standard hydraulic box into the multiwash hydraulic box.



Installing the Multiwash Infinity III Upgrade Kit

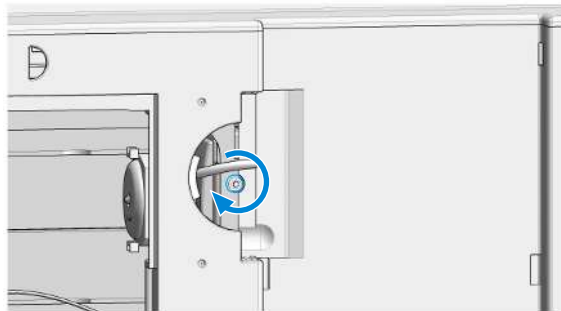
- Slide in the whole new multiwash hydraulic box.



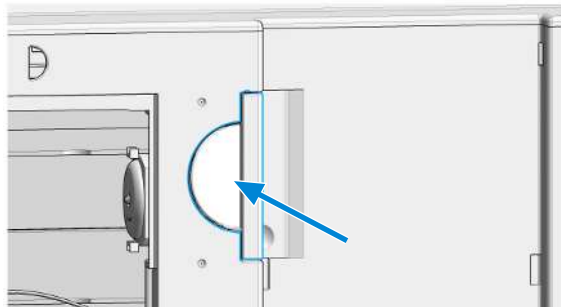
NOTE

The hydraulic box must be installed correctly. Push from the front against the hydraulic box and check if the lever is locked in place.

- Install the transport protection screw.



- Install the tubing holder insert.



Installing the Multiwash Infinity III Upgrade Kit

- 7 Reinstall the capillaries, the tubing and the leak sensor which are connected to the hydraulic box.

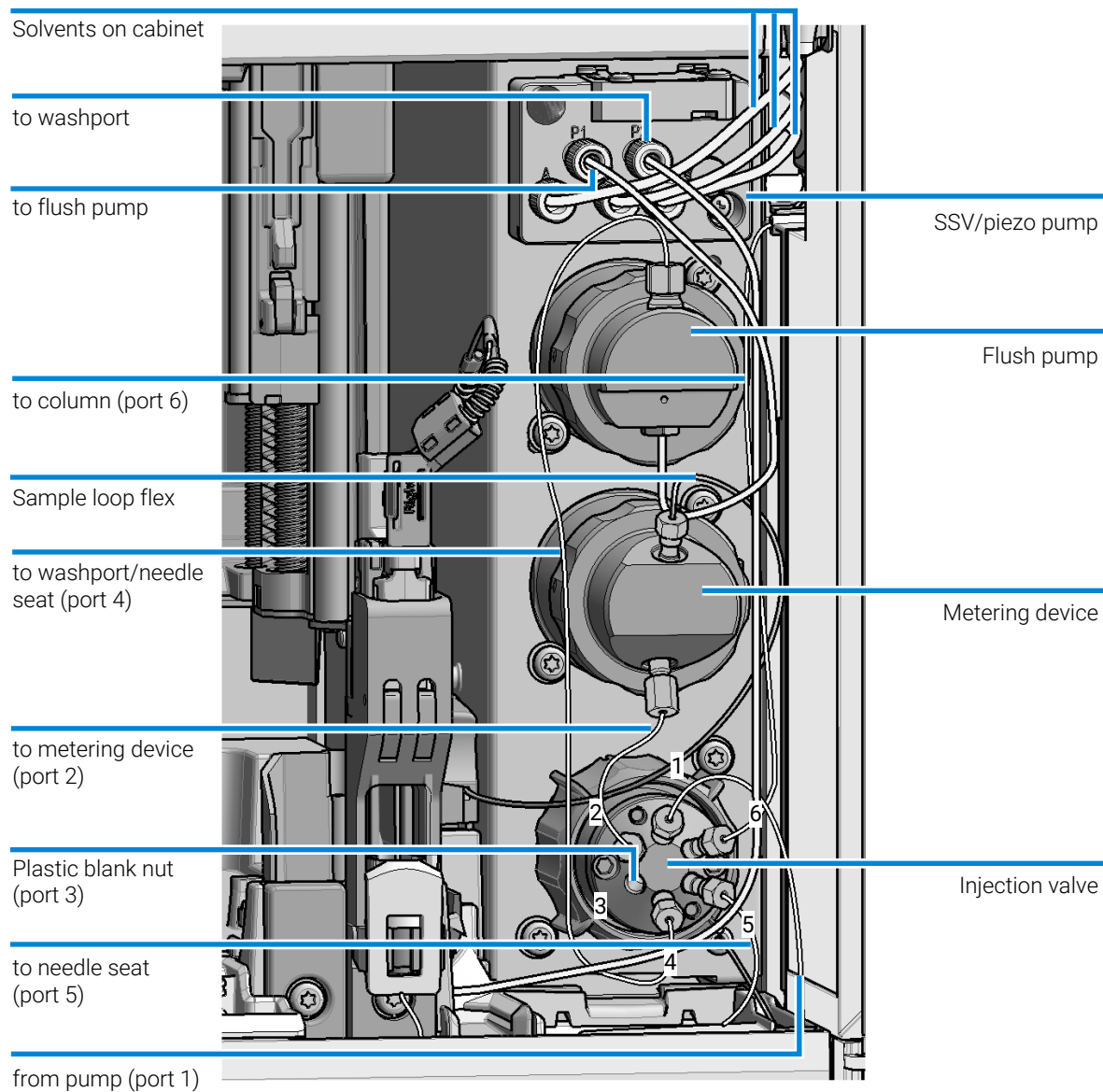
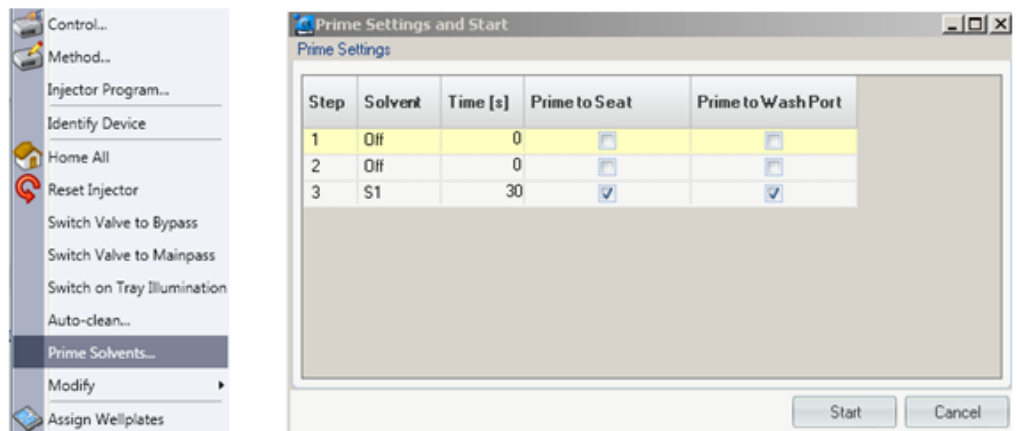


Figure 4: Capillary connections (Multiwash)

- 8 Switch on the instrument.

Installing the Multiwash Infinity III Upgrade Kit

- Prime the tubing with appropriate wash solvent and run **Prime to Seat** and **prime to Wash port** for at least 30 s.



- Perform a **Pressure Test** in LabAdvisor.

Configuration of the Multiwash Option

The following options for the configuration of the Multiwash Option are available:

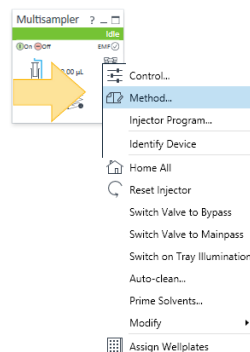
- [Configure Multiwash in OpenLab CDS C.01.06 and above](#) on page 11
- [Configure Multiwash in Control Module \(G4208A\)](#) on page 14

Configure Multiwash in OpenLab CDS C.01.06 and above

The multiwash mode is automatically enabled and the multiwash icon is shown in the graphical user interface.

Preparations

- For the OpenLab CDS LC driver A.02.11 or higher is required.
- 1 Right click on the dashboard and select **Method**.



Installing the Multiwash Infinity III Upgrade Kit

2 Select Multi-wash.

Method of G7167B (this.is.mt.Serial.Number)

Multisampler (G7167B)

Injection
Injection volume: 5.00 μ L

Needle Wash

Stoptime
As Pump/No Limit 1.00 min Off 1.00 min

Advanced
Injection Path Cleaning

Standard Wash
Mode: Flush Port
Time: 3 s
Location:
Repeat: 3

Multi-wash

Step	Solvent	Time [s]	Seat Back Flush	Needle Wash	Comment
1	Off		<input type="checkbox"/>	<input type="checkbox"/>	
2	S2	30	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2-Propanol
3	S3	18	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ACN
Start Cond.	S1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

OK Apply Cancel

Installing the Multiwash Infinity III Upgrade Kit

3 Specify the duration of your solvent S1, S2, and S3 in the **Multi-wash** table.

The screenshot shows the 'Multisampler (G7167B)' software interface. On the left, there are settings for 'Injection' (5.00 µL), 'Needle Wash' (Multi Wash), and 'Stoptime/Posttime' (1.00 min). A yellow arrow points from these settings towards the 'Multi-wash' table on the right. The 'Multi-wash' table is as follows:

Step	Solvent	Time [s]	Seat Back Flush	Needle Wash	Comment
1	Off		<input type="checkbox"/>	<input type="checkbox"/>	
2	S2	30	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2-Propanol
3	S3	18	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ACN
Start Cond.	S1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

NOTE

It takes approximately 30 s to fully exchange one solvent for another in the flush port, and 18 s in the seat. Also, it is recommended to use the autoclean function (right-click the dashboard and select **Auto-clean**) to flush the multisampler regularly with all installed solvents.

NOTE

If **Seat Back Flush** and **Needle Wash** are both activated at the same time, they must use the same solvent.

NOTE

It is recommended to always activate **Start Cond.** as the last step of the washing procedure. The flow path is then filled with the appropriate starting solvent conditions for the next sample.

NOTE

It is not recommended to use buffers and solvents with high salt content as the last step of the washing procedure. This might cause formation of salt crystals on the needle seat.

NOTE

Due to the flow path of the Multiwash hydraulic box (see [Figure 1](#) on page 1), when the metering device moves to home position before an injection, a droplet of clean mobile phase will come out from the needle tip and might fall into the seat. This is an expected behavior, independent of the **Injection Path Cleaning** settings, and does not indicate leakage.

To avoid salt build-up on the needle and the seat when using buffers and solvents with high salt content as mobile phase, follow these recommendations:

- Purge the Multisampler daily with water for 15 min.
- Visually inspect the needle and seat.

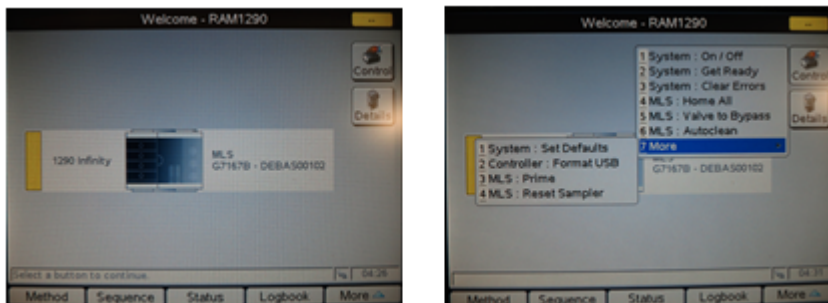
Installing the Multiwash Infinity III Upgrade Kit

Configure Multiwash in Control Module (G4208A)

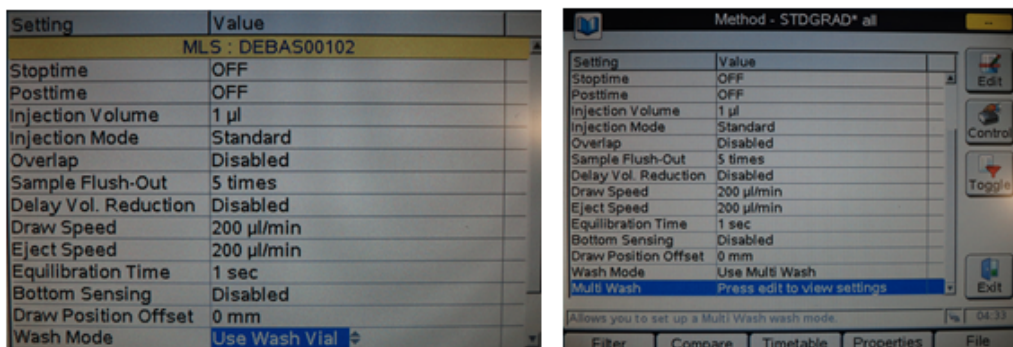
Preparations

- For the Instant Pilot G4208A Firmware B.02.19 or higher is required.

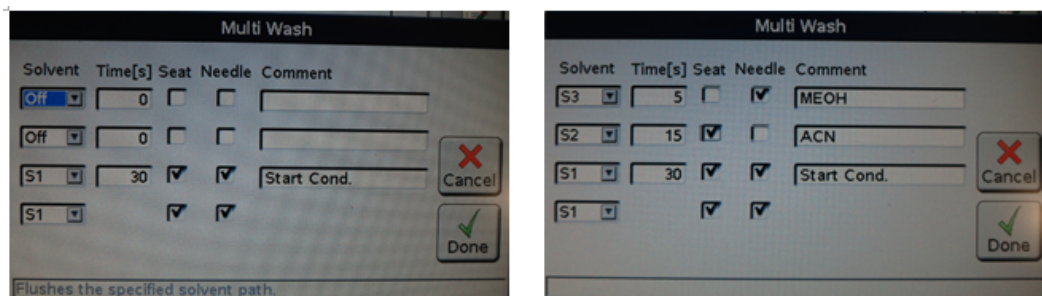
- 1 Press Control and select Prime/Auto clean the tubing with appropriate wash solvent.



- 2 Press Method and select the Multi Wash and configure your wash method.



- 3 Configure your wash method by selecting the appropriate wash solvents.



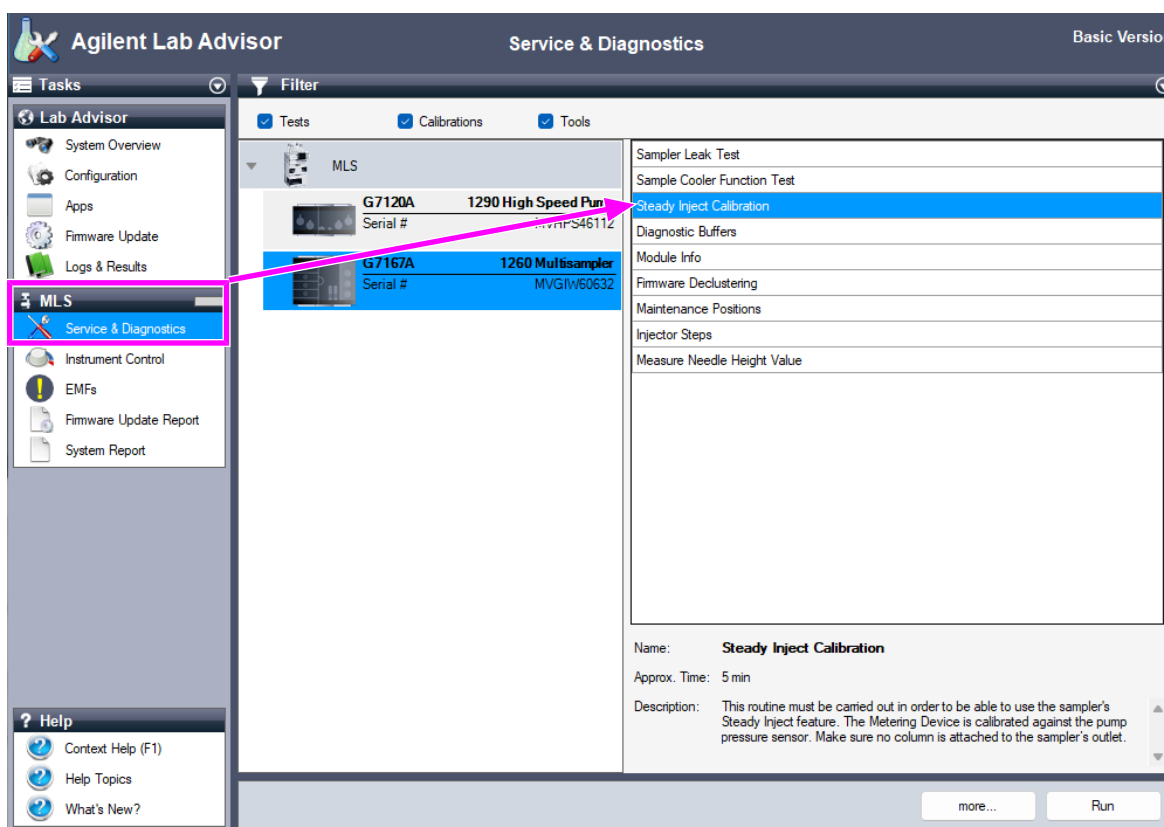
Steady Inject Mode

The **Steady Inject** mode mitigates the impact of pressure fluctuations on chromatographic results by pre-pressurizing the sample loop prior to sample injection.

Preparations

- FW D.07.40 or higher
- Driver 3.8 or higher
- Agilent Lab Advisor 2.21 or higher
- One 1290 Infinity II / III Pump (G7120A, G7104A/C or G7131A/C, G7132A)
- 100 µL metering device installed in the multiwash hydraulic box

- 1 Open Lab Advisor, select **Service & Diagnostics** > **Calibrations** > **Steady Inject Calibration** and follow the provided instructions.



- 2 Go to **Acquisition Method** > **Needle Wash** and activate multi-wash.

Steady Inject Mode

- Under **Advanced**, select the **Steady Inject** check box.

Multisampler (G7167A)

Injection

Injection volume: μL

Needle Wash

1.

Stoptime **Posttime**

As Pump/No Limit Off

min min

Advanced

Sampling Speed

Draw Speed: $\mu\text{L}/\text{min}$

Eject Speed: $\mu\text{L}/\text{min}$

Wait Time After Draw: s

Needle Height Position

Offset: mm

Use Vial/Well Bottom Sensing

High Throughput

Sample Flush-Out Factor:

Injection Valve to Bypass for Delay Volume Reduction

Enable Overlapped Injection

When Sample is Flushed Out

2. After Period of Time

minutes after injection

Steady Inject

Use Steady Inject

Injection Path Cleaning

- On **Injection Path Cleaning > Multi-wash**, activate **Start Cond for seat backflush** as the last step of the washing procedure. This is mandatory to avoid loss of sample when using the **Steady Inject** mode.

Acquisition Method – Untitled

Multisampler (G7167A)

General

Properties

Instrument Setup

Multisampler

Injection

Injection volume: μL

Needle Wash

Stoptime **Posttime**

As Pump/No Limit Off

min min

Advanced

Injection Path Cleaning

Standard Wash

Mode:

Time: s

Location:

Repeat:

Multi-wash

Step	Solvent	Time [s]	Seat Back Flush	Needle Wash	Comment
1	Off		<input type="checkbox"/>	<input type="checkbox"/>	
2	Off		<input type="checkbox"/>	<input type="checkbox"/>	
3	Off		<input type="checkbox"/>	<input type="checkbox"/>	
4	Start Cond. S1		<input checked="" type="checkbox"/>	<input type="checkbox"/>	

3.

NOTE

Using **Overlapped Injection** and **Injector Program / Sample Prep Method** is not possible when using **Steady Inject** mode.

NOTE

Repeat the calibration in LabAdvisor when the pressure sensor at the pump or the metering device drive are exchanged, and when the multisampler firmware is updated.

NOTE

Steady Inject mode is not recommended if system pressure is lower than 200 bar at bypass or if a 40 μL metering device is used.

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

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Edition: 02/2025

Document No: SD-29000208 Rev. E.10

