

# Using of the Well Plate Autosampler with the Analytical SFC System

## Technical Note

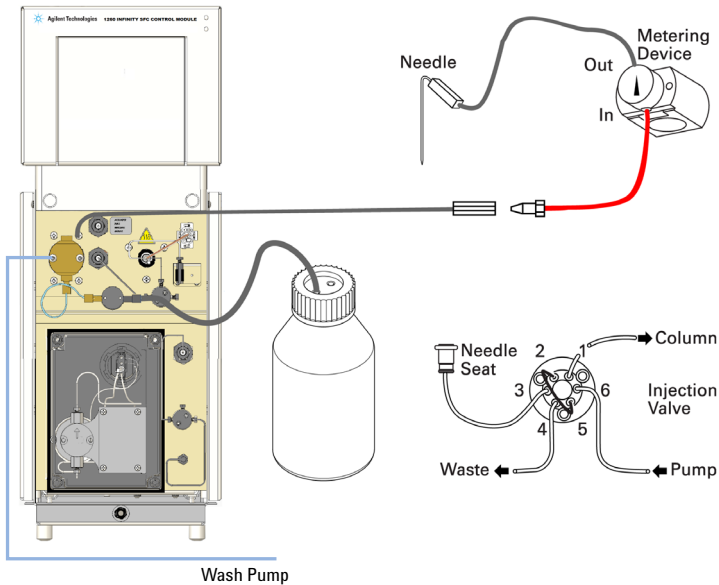
### Introduction

The Agilent 1260 Infinity Analytical Supercritical Fluid Chromatography (SFC) System can be used with a G1367E Well Plate Autosampler instead of the G4303A Vial Sampler. This note describes the necessary changes in hardware and method to do so.



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# Changing the Hardware

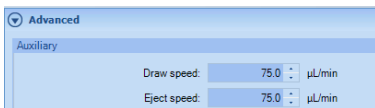


**Figure 1** Autosampler Fluidic connections

- 1 Replace the standard 2-groove rotor seal by a 3-groove rotor seal (p/n 0101-1409).
- 2 Attach the fixed volume sample loop (for example 5  $\mu\text{L}$  (p/n 0101-1248) to port 2 and 5 of the injection valve.
- 3 Install external contacts board into autosampler.
- 4 Verify, that the needle assembly 1290/1260 Infinity LC autosampler (p/n G4226-87201) and the needle seat, PEEK 600 bar, with seat capillary 0.12 mm id x 100 mm, 0.8 mm od (p/n G1367-87012) is installed.

# Changing the Software

- 1 Set the default **Draw speed** and **Eject speed** to 75  $\mu\text{L}/\text{min}$ .



- To minimize sample carry over, a 0.1 min flush of needle, seat and valve grooves should be set in the timetable of the autosampler by **Switch contact B to closed** for that period of time.

Time	Function	Parameter
0	Change Contacts	Switch contact B to closed
0.1	Change Contacts	Switch contact B to open

## Pursuing Full Loop Injections

- To pursue full loop injections with the G1367E autosampler, add an injector program as shown below to the method and select **Use Injector Program**.

**Table 1** Optimized injector program for full-loop injections (loop sizes 1 to 20 $\mu$ L)

Step	Function	Parameter
1	External contact	Close external contact B
2	Wait	Wait 0.05 min
3	Draw	Draw 10 $\mu$ L from seat with 100 $\mu$ L/min
4	Wait	Wait 0.05 min
5	External contact	Open external contact B
6	Draw	Draw 8 $\mu$ L from sample with default speed using default offset
7	Repeat	Repeat 3 time(s)
8	Draw	Draw default volume from sample with default speed using default offset
9	End Repeat	End Repeat
10	Wait	Wait 0.04 min
11	Repeat	Repeat 3 time(s)
12	Eject	Eject default volume to seat with default speed using default offset
13	End Repeat	End Repeat

This injector program will draw 3 times the default sample volume plus additional 8  $\mu$ L. The default volume should be set to the sample loop volume, **but not less than 1.5  $\mu$ L**. It can be defined in the method or set with priority in the sequence. A loop of 0.8  $\mu$ L can be achieved by installing a 0.12 mm id x 70 mm steel capillary (p/n G1316-87303), a 0.17 mm id x 90 mm steel capillary (p/n G1316-87300) works as a 2  $\mu$ L loop.

Area reproducibility for full loop filling typically is below 2 % RSD, usually around 0.2 to 0.5 %.

# Pursuing Partial Loop Injections with 5 $\mu\text{L}$ Fixed Loop

1 To pursue partial loop injections with 5  $\mu\text{L}$  fixed loop (p/n 0101-1248) with the G1367E autosampler, add an injector program as shown below to the method and select **Use Injector Program**.

**Table 2** Optimized injector program for partial-loop injections (loop size 5 $\mu\text{L}$ )

Step	Function	Parameter
1	External contact	Close external contact B
2	Wait	Wait 0.05 min
3	Draw	Draw 10 $\mu\text{L}$ from seat with 100 $\mu\text{L}/\text{min}$
4	Wait	Wait 0.05 min
5	External contact	Open external contact B
6	Draw	Draw 0.5 $\mu\text{L}$ from air with default speed using default offset
7	Draw	Draw default volume from sample with default speed using default offset
8	Wait	Wait 0.04 min
9	Draw	Draw 3.5 $\mu\text{L}$ from air default speed using default offset
10	Eject	Eject 6.2 $\mu\text{L}$ to seat with default speed using default offset
11	Eject	Eject default volume to seat with default speed using default offset

The default volume, which is the injection volume, should be set between 1 and 3  $\mu\text{L}$ . While this injector program is optimized for loops of 5  $\mu\text{L}$  volume, it still works fine for other loops with 2.4  $\mu\text{L}$  (for example steel capillary 0.17 mm id x 105 mm), up to 10  $\mu\text{L}$  volume. Peak area versus injected volume is linear for injection volume between 20 % and 70 % of the loop volume.

Area reproducibility for partial loop filling typically is below 8 % RSD, usually around 2 to 4 %.



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