



# **Agilent 218 Purification System - 10 and 25 mL/min**

## **Installation of the Capillary Kit**

### **Introduction**

This technical note shows you how to install the Stainless Steel Capillary Kit (218 Purification System - 10 and 25 mL/min (G9300-67030)) for the binary pump configuration with two Agilent 218 Solvent Delivery Modules.

This 218 system 10 – 25 mL/min capillary kit uses tubing with 0.020 in (0.51 mm) ID and 1/16 in (1.59 mm) OD.

The tubing is pre-cut and bent to fit between components when placed on the mast in the correct location. Follow the directions in this note carefully when assembling and installing the mast kit, injection valve, prime/purge valve and 3-way pump head prime valves.



## Delivery Checklist

Make sure all parts and materials have been delivered with the capillary kit. Please report missing or damaged parts to your local Agilent Technologies sales and service office.

The following items are supplied with the kit (218 Purification System - 10 and 25 mL/min (G9300-67030)):

| p/n              | Description                                                           |
|------------------|-----------------------------------------------------------------------|
| 3710064300       | Tubing, pump head to pressure module, 1/16 in x 0.02 in i.d.          |
| 3710064400       | Tubing, pump head to mixer, 1/16 in x 0.02 in i.d.                    |
| 3710064500       | Tubing, mixer to pressure module, 1/16 in x 0.02 in i.d.              |
| 3710064600       | Tubing, mixer to purge valve, 1/16 in x 0.02 in i.d.                  |
| 3710064700       | Tubing, purge valve to manual injection valve, 1/16 in x 0.02 in i.d. |
| R002525041 (5x)  | 1/4-28 Fitting, 1/16 in OD tube                                       |
| R002525003 (5x)  | Ferrule, 1/16 in OD                                                   |
| PL0100-3601 (2x) | Valco Nut, 1/16 inch, 5 EA                                            |
| PL0100-3602 (2x) | Valco Ferrule, 1/16 inch, 5 EA                                        |
| R007010062       | Bushing, extra long                                                   |
| 1610141800 (3x)  | Nut, 10-32 x 1/16, SS, Rheodyne 7010-00                               |
| 1610141600 (3x)  | Ferrule, 1/16 Tube, Rheodyne 7010-010                                 |
| 9910128300       | Flow cell replacement fittings                                        |
| 1510219900 (5x)  | NUT SHORT 1/16 FLANGELESS NATURAL TFZL                                |
| 1610113400 (5x)  | FERRULE 1/16 FLANGELESS NATURAL TFZL                                  |
| 5067-4213 (3x)   | Capillary ST, 0.5 mm x 700 mm, none/none                              |
| 5067-4215        | Capillary ST, 0.5 mm x 500 mm, none                                   |

## Installing the Mast Kit

Install the following components together with the mast kit (ProStar and PrepStar Mast Kit (393557491)):

- Manual injection valve
- Prime/purge valve
- 3-way pump head prime valve (if included with the pump head that was purchased)

# Assembling the Manual Injection Valve and Bracket

|                |               |
|----------------|---------------|
| Tools required | Description   |
|                | Hex key, 2 mm |

|                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><div>1</div><div>Unpack the injection valve and attached black cable.</div></div> <div><div>Selection valve</div><div>Dust Cover with needle port inside</div><div>Selection valve grub screw</div></div>                         | <div><div>2</div><div>Remove the red dust cover and gently pull out the needle port from the valve.</div></div>                                                                                                                                   |
| <div><div>3</div><div>Remove the selection handle from the valve by loosening the two grub screws securing it to the injection valve body using the provided 2 mm hex key.</div></div> <div><div>Flat side of metal post</div></div> | <div><div>4</div><div>Remove the two screws and injection valve bracket from the accessories bag that came with the injection valve.</div></div> <div><div>5</div><div>Attach the bracket to the injection valve with the two screws.</div></div> |

## Installing the Mast Kit

### Assembling the Manual Injection Valve and Bracket

- 6** Replace the selection handle and tighten the two grub screws securing the handle using the 2 mm hex key. The grub screws should be flush with the flat side of the metal post.

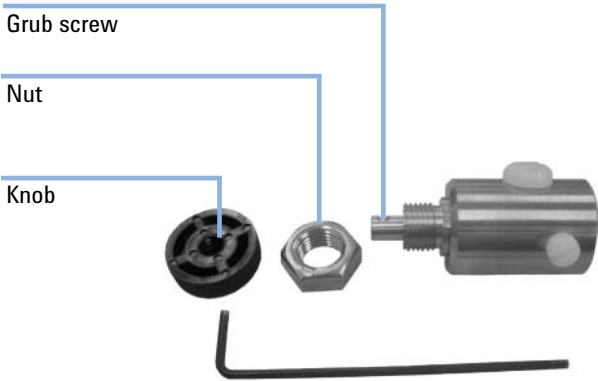


Needle  
port

- 7** Replace the needle port in the valve.

## Assembling the Prime/Purge Valve and Bracket

| Tools required | Description   |
|----------------|---------------|
|                | Hex key, 2 mm |

|                                                                                                                                                                   |                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1</b> Unpack the stainless steel purge valve and purge valve bracket.</p>  | <p><b>2</b> Remove the knob and nut from the purge valve. The knob is held in place with a grub screw which is loosened using a 2 mm hex key.</p>  |
| <p><b>3</b> Secure the valve to the valve bracket using the nut.</p>           | <p><b>4</b> Replace the knob on the valve and tighten the grub screw using the provided 2 mm hex key.</p>                                        |

## Assembling the 3-way Pump Head Prime Valve

### Tools required

#### Description

Hex key, 2 mm

### CAUTION

Overtightening the fittings may cause damage to the fittings.

→ Do not over-tighten the fittings.

→ Finger-tighten the nut only and use only the provided hex key to tighten the selection knob.

**1** Unpack the stainless steel 3-way valve and bracket.



**2** Using the 2 mm hex key, loosen the grub screw and slide off the selection knob.

Ridged washer

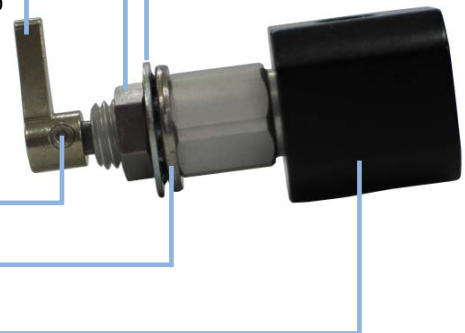
Nut

Selection knob

Grub screw

Flat washer

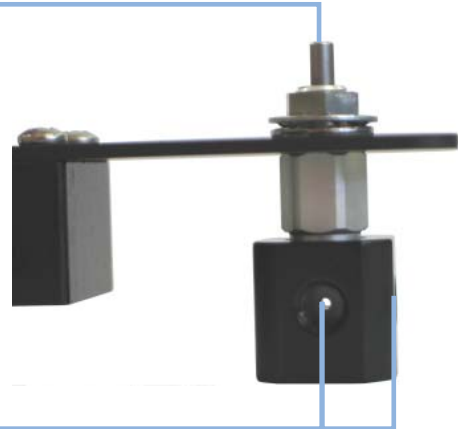
Valve body



**3** Unscrew the nut and then remove the two washers from the 3-way valve.

**4** Attach the bracket so that the three holes on the 3-way valve face away from the thumbscrew.

Flat side of  
metal post



Holes in 3-way  
valve body

**5** Place the flat washer and then ridged washer on the 3-way valve. Screw the nut on to secure the two washers.

**6** Slide the selection knob onto the 3-way valve.

**NOTE**

The engraved lines on the top of the selection knob should point to the holes in the black body of the 3-way valve. The grub screw should be flush with the flat side of the metal post on the 3-way valve.



**Next Steps:**

**7** Secure the selection knob to the 3-way valve using only the provided 2 mm hex key. Do not over-tighten.

**8** Repeat this procedure for the second 3-way pump purge valve.

## Installing the Mast

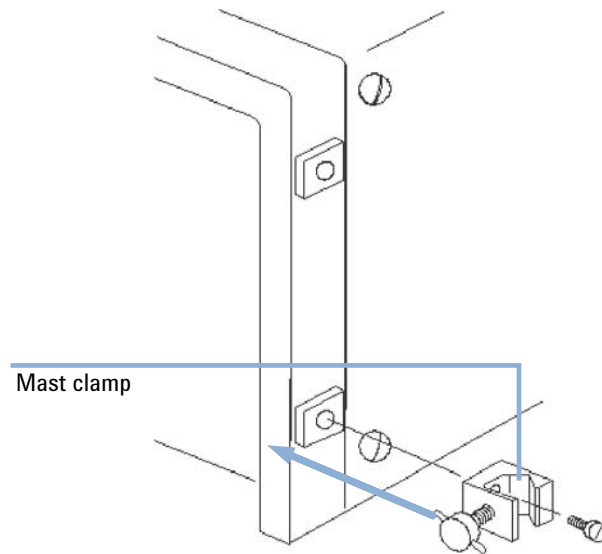
### Prerequisites

Make sure the manual injection valve, prime/purge valve and 3-way pump head prime valve have a bracket attached before installing them onto the mast. See the corresponding procedures in this note for more information about the installation of the brackets for each valve.

### NOTE

Perform the procedure only if a mast kit is not already installed.

- 1 Remove the mast, brackets and two pan-head screws from the Mast Kit Assembly.
- 2 Attach a mast clamp to the fitting at the lower front corner of the bottom 218 pump and on the top front corner of the top pump, see [Figure 1](#) on page 8.



**Figure 1** Mast clamp installation

- 3 Secure the stainless-steel mast within the clamps so the lower end of the mast is level with the bench.

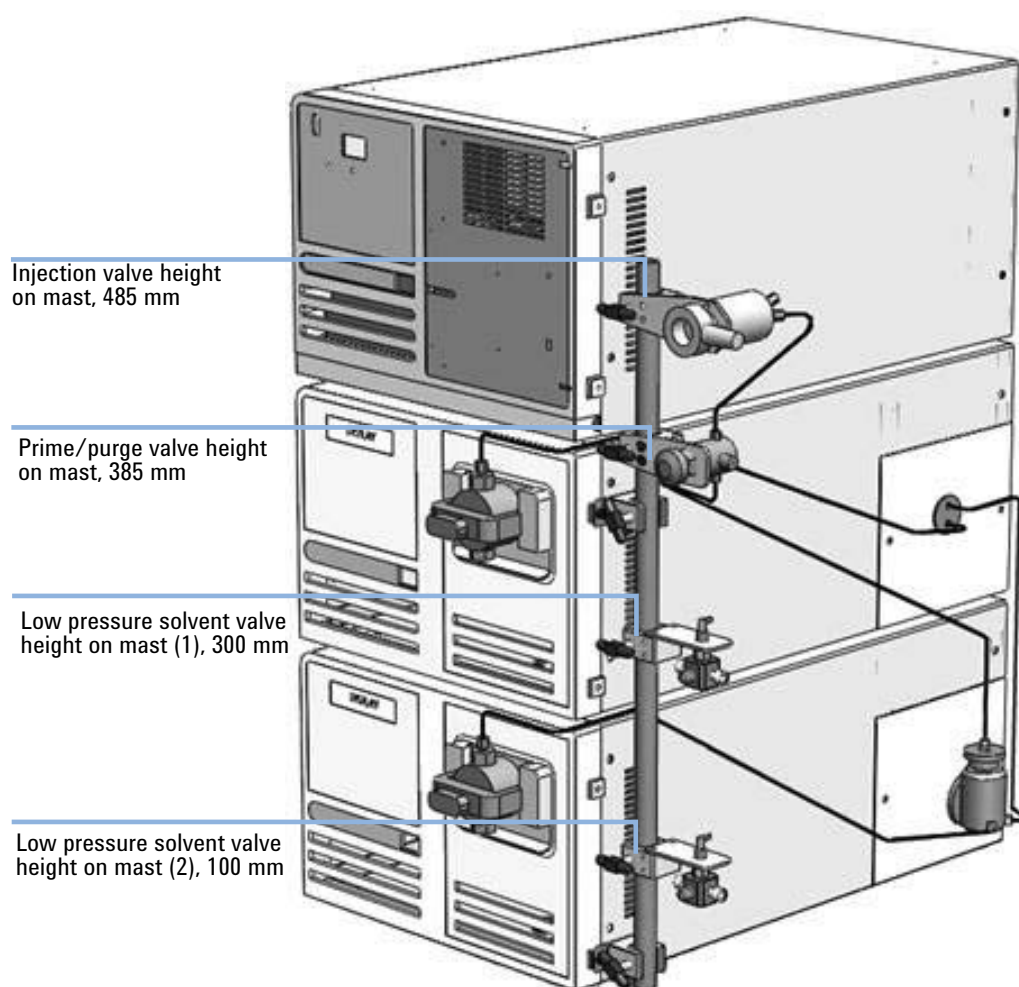
- 4 Attach each valve to the mast in the heights described in [Table 1](#) on page 9 and shown on [Figure 2](#) on page 9.

**Table 1** Valve heights

| Valve                    | Height |
|--------------------------|--------|
| Injection Valve          | 485 mm |
| Purge Valve              | 385 mm |
| 3-way Valve (first one)  | 300 mm |
| 3-way Valve (second one) | 100 mm |

**NOTE**

Valve heights are measured from the top of the bench to the bottom of the valve brackets. Tubing length and bends may vary slightly. Use the heights listed as a starting point and move the valves up or down to accommodate the tubing, if required. Avoid bending the tubing when installing it



**Figure 2** Component locations on the mast

# Installing the Stainless Steel Tubing

## Installing the Tubing

### Tools required

#### Description

Wrench

### Preparations

Install the mast kit on your modular HPLC system, see chapter *Installing the Mast Kit* for more information.

### WARNING

**When opening capillary or tube fittings, solvents may leak out.**

**The handling of toxic and hazardous solvents and reagents can carry health risks.**

→ Observe appropriate safety procedures (for example, wear goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet supplied by the solvent vendor, especially when toxic or hazardous solvents are used.

### CAUTION

Overtightening the fittings may cause damage to the fittings.

→ Do not over-tighten the fittings.

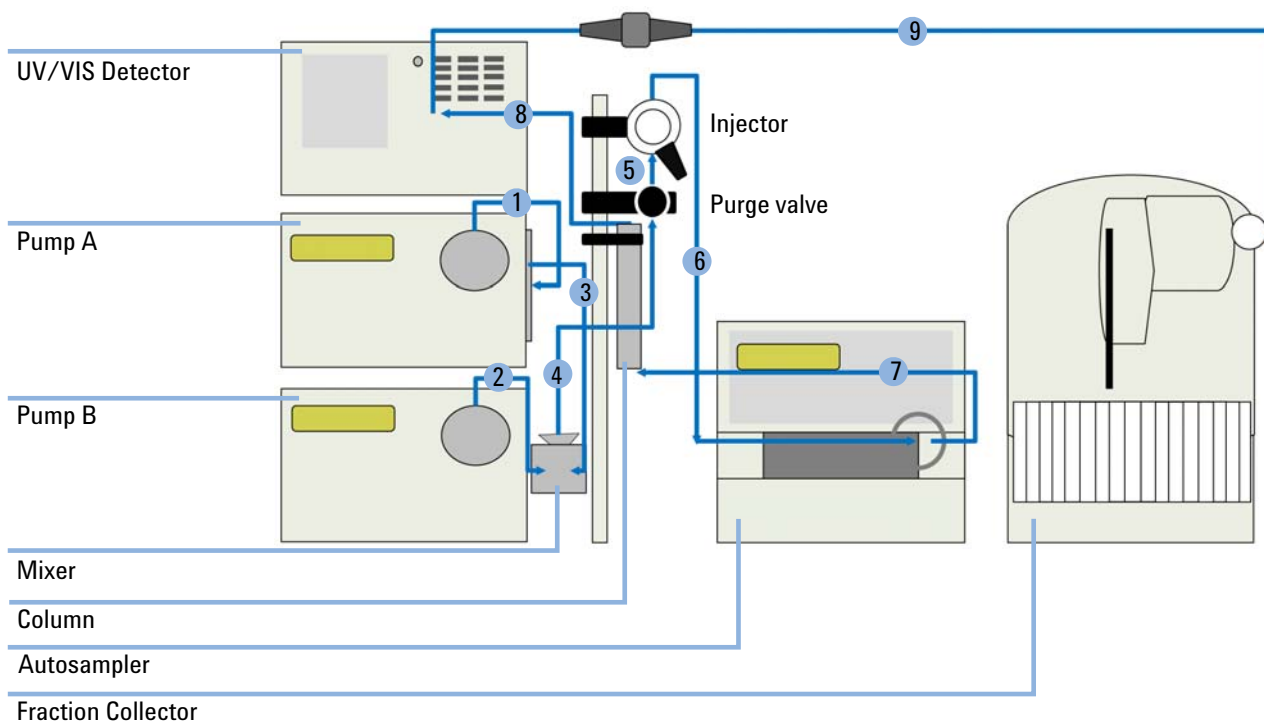
→ Finger-tighten the nut only and use only the provided hex key to tighten the selection knob.

### NOTE

The stainless steel tubing is supplied pre-cut and bent to the appropriate size when used with an Agilent pump and mast kit. Use the nuts and ferrules supplied with each component when installing tubing. The two nuts and ferrules provided in this kit are spares.

**1** If you are replacing tubing on an existing system, remove the old tubing first.

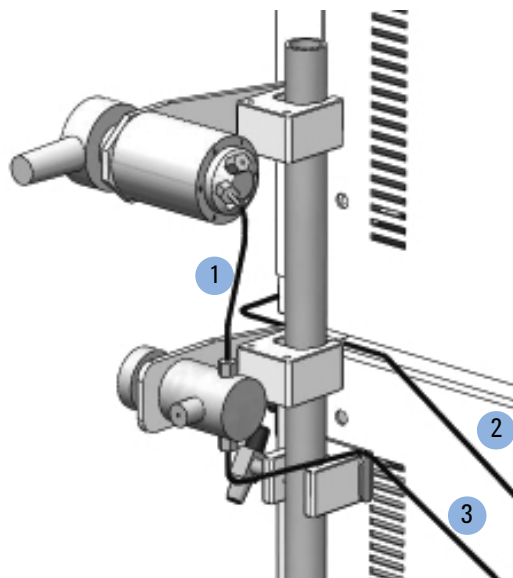
- 2 Carefully route the tubings according to [Figure 3](#) on page 11 and [Figure 4](#) on page 12.



**Figure 3** Installed tubing Kit

**Table 2** Tubing connections

| Tubing #    | Connection                                            | Kit 25 mL heads (0.5 mm) | Fittings                                         |
|-------------|-------------------------------------------------------|--------------------------|--------------------------------------------------|
| 1           | Pump A to pressure module                             | 3710064300               | R002525041, R002525003                           |
| 2           | Pump B to mixer                                       | 3710064400               | R002525041, R002525003, PL0100-3601, PL0100-3602 |
| 3           | Mixer to pressure module                              | 3710064500               | R002525041, R002525003, PL0100-3601, PL0100-3602 |
| 4           | Mixer to purge valve                                  | 3710064600               | R007010062, PL0100-3601, PL0100-3602             |
| 5           | Purge valve to manual injection valve                 | 3710064700               | PL0100-3601, PL0100-3602, 1610141800, 1610141600 |
| 6           | Manual injection valve to autosampler                 | 5067-4215                | 1610141800, 1610141600, PL0100-3601, PL0100-3602 |
| (not shown) | Manual injection valve to column (if no sampler used) | 5067-4213                | 1610141800, 1610141600, PL0100-3601, PL0100-3602 |
| 7           | Autosampler to column                                 | 5067-4213                | PL0100-3601, PL0100-3602                         |
| 8           | Column to detector                                    | 5067-4213                | PL0100-3601, PL0100-3602, 9910128300             |
| 9           | Detector to fraction collector                        | 3710059100               | 9910128300, 1510219900, 1610113400               |

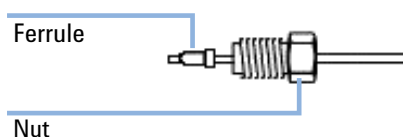


**Figure 4** Expanded rear view of the injection and prime/purge valves

|   |                                                                                     |
|---|-------------------------------------------------------------------------------------|
| 1 | Tubing, purge valve to manual injection valve, 1/ 16 in x 0.02 in i.d. (3710064700) |
| 2 | Tubing, pump head to pressure module, 1/ 16 in x 0.02 in i.d. (3710064300)          |
| 3 | Tubing, mixer to purge valve, 1/ 16 in x 0.02 in i.d. (3710064600)                  |

No additional bending of the tubing should be required.

- 3 Place the nut and then the ferrule on the tubing.



- 4 Place the loosely assembled fittings into the valve ports and make sure the tubing is bottomed out inside the port.

#### NOTE

Ensure the appropriate fittings are used and insert the tubings fully into the correct components before tightening the fittings.

- 5 Tighten the nut finger-tight and afterwards an additional 3/4 of a turn with a wrench.

The manual injection valve is typically set up so that the:

- sample loop connects to ports 1 and 4
- tubing from the purge valve connects to port 2
- tubing to the column connects to port 3
- ports 5 and 6 are waste lines



G9300-90120

Part Number: G9300- 90120

Edition: 12/2013  
Printed in Germany

© Agilent Technologies, Inc 2013

Agilent Technologies, Inc  
Hewlett-Packard-Strasse 8  
76337 Waldbronn  
Germany