Varian Optional Manual Injection Valve for a 940-LC Installation Instructions

The manual preparative injector kit P/N 97-100002-00 should contain the following parts and quantities listed below:

Item #	Description	Quantity
1	Assy cable ribbon	1
2	Nut flangeless 10-32 x (PEEK)	1
3	Ferrule flangeless 1/1	1
4	Ferrule, 1/16 tube, Rh (MI Valve)	5
5	Nut, 10-32 x 1/16, SS, (MI Valve)	5
6	Ferrule, SS, 1/16 tube (Autosampler)	4
7	Tube PTFE 0.8mm ID x 1	1.5
8	Tube, Autosampler(SP)	1
9	Tube, Valve 6 port (MIV)	1
10	Tube, Tee (PP) - Valve	1
11	Tube, Purge valve(SP)-	1
12	Assy Loop Filler Port	2
13	Sample loop, 5 mL SS,	1
14	Assembly Manual Injector Panel	1
15	Assembly Column Clamp Bracket	1

Procedure: The following procedure outlines the installation procedure for preparative manual injector onto a 940-LC liquid chromatograph instrument. Installation of the preparative manual injector requires a change to the 940-LC configuration to activate this injector in the software. Once activated the preparative manual injector allows the user to perform preparative scale manual injections into preparative columns.

Hardware Upgrade:

1. Before beginning the installation make sure that you can access the back of the instrument and ensure that the 940-LC instrument has the power turned off.

2. Unplug the power cable from the instrument and remove the back grating panel at the back of the instrument by removing the two screws at the top.

3. Begin the installation by removing both of the 940-LC instrument doors by pushing the doors upwards (Figure 1). You need to make sure that the door is closed before trying to remove it.

Publication number 8510250900 (Issue 01) December 2008

VARIAN

If you meet some resistance than make sure that the door frame clears the hinge (you may need to pry it slightly towards you (Figure 2).

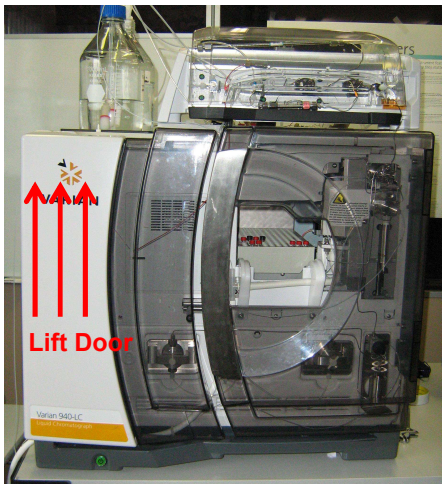

Figure 1: Removing the Door

Figure 2: Door Catch on Door Hinge

4. Once the doors have been successfully removed, your instrument should look like the one in *Figure 3*.

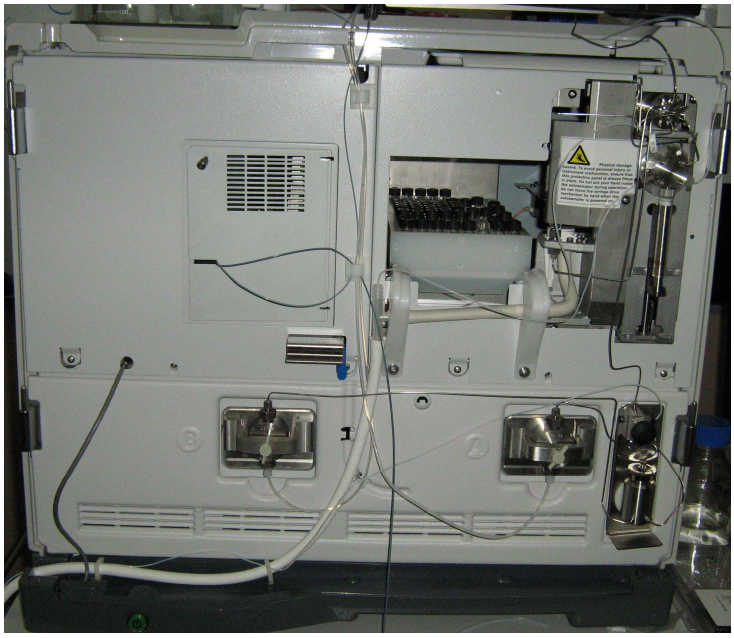

Figure 3: 940-LC instrument with external doors removed

5. The preparative manual injector will be installed on the top left hand quadrant of the 940-LC instrument (*Figure 4*).

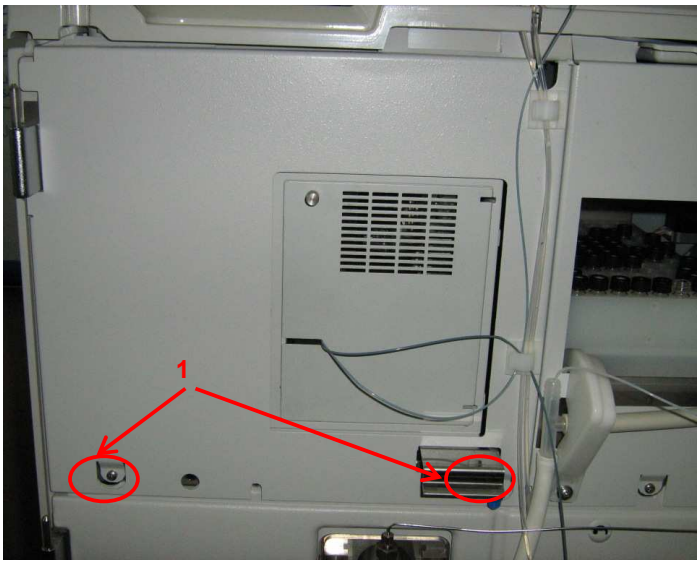

Figure 4: Top left hand panel of a 940-Series HPLC

6. Remove the two screws circled (**1**) in *Figure 4*. These are the only screws that attach this panel to the instrument. A close up of the screw holes with the screws removed is shown in *Figure 5*.

Figure 5: The front panel screws removed.

7. Remove the door of the absorbance detector and remove all of the attached plumbing that may restrict you from removing the top left hand quadrant panel. *Figure 6* below shows the absorbance detector door removed. The plumbing into the flow cell has to be removed along with any other plumbing attached to this panel.

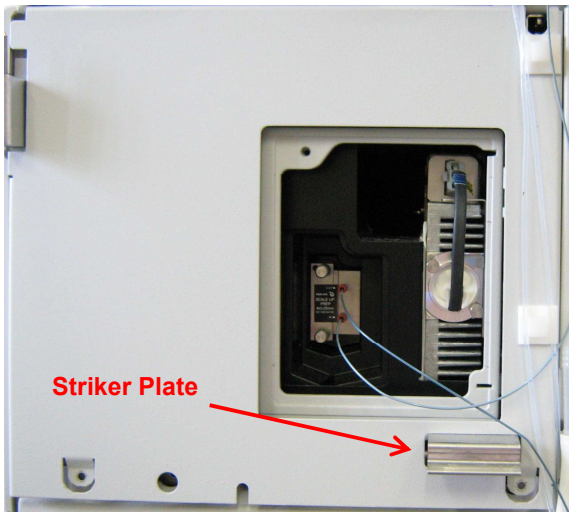

Figure 6: Absorbance Detector door removed

8. Gently lift the bottom of the top left panel over the door latch and gently pull the panel, that is clear of tubing, down. The panel will slide out of the groove that holds it in place at the top. The instrument should now look like the one in *Figure 7*.

Figure 7: The front top left panel removed exposing the absorbance detector.

9. Take the ribbon cable (item1) and pass it through the top of the absorbance detector to the back of the instrument. The ribbon cable is attached to the cable loom clips as shown in *Figure 8*. The cable is run down the right hand side (when looking in from the back of the instrument) of the instrument box and underneath the power unit and to the MIB.

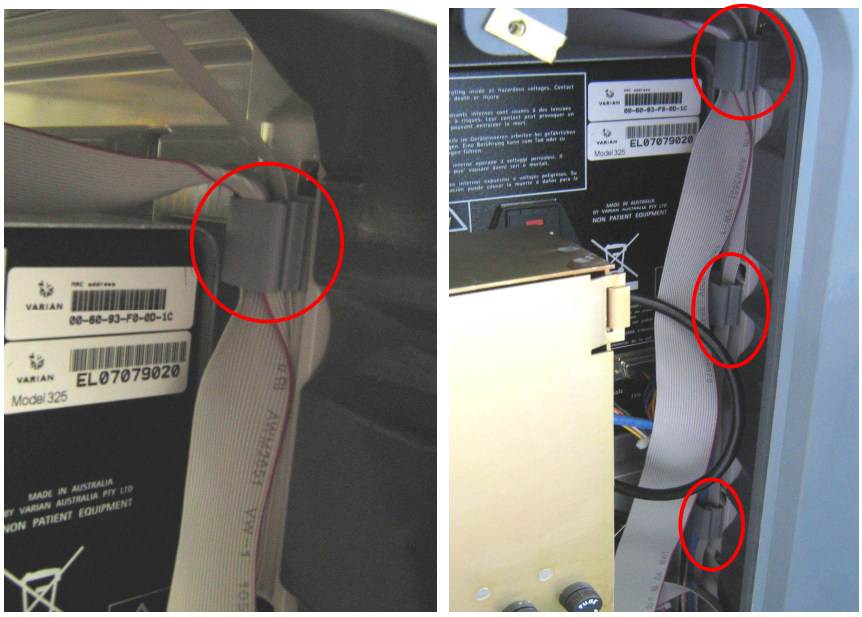

Figure 8: Cable loom clips alongside the instrument

10. The ribbon cable plugs into the 25 pin socket (**2**) on the MIB instrument as shown in *Figure 9*.

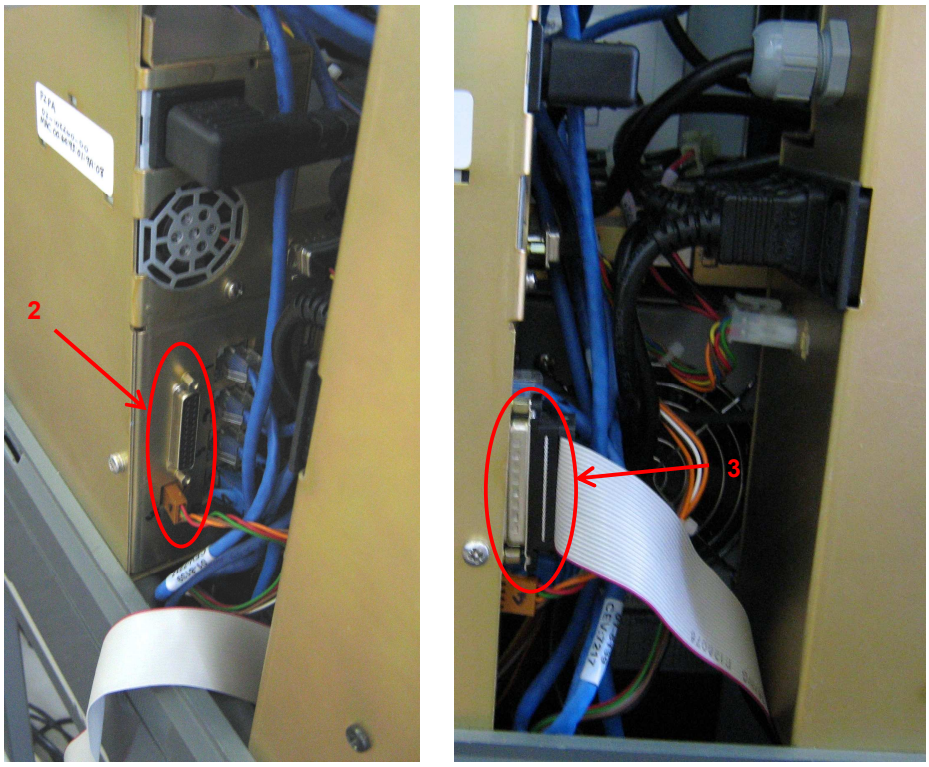

Figure 9: Connecting the ribbon cable to the MIB

11. Once the ribbon cable has been attached to the MIB *Figure 9* (**3**) take the front panel with the 6 port valve and wiring already assembled to it and plug the other end of the ribbon cable loom into the 25 pin connector (**4**) shown in *Figure 10*.

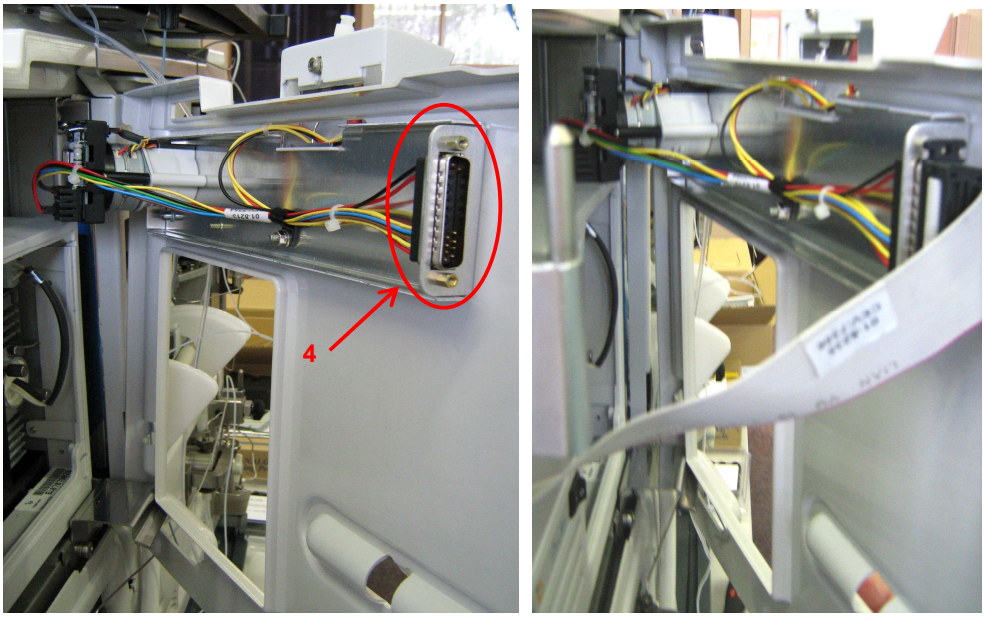

Figure 10: Ribbon cable loom connection into the MIV

12. Once the ribbon cable loom is connected to the instrument insert the panel into the 940-LC instrument by carefully slipping the top part the panel underneath top cover of the box. Carefully slot the panel over the metal strike plate and line the holes at the bottom of the panel up for the screws to be inserted through (**5**). Be sure to pull out the drain pipe from the absorbance detector through the drain hole (**6**) in the bottom left corner of the panel (circled in *Figure 11*).

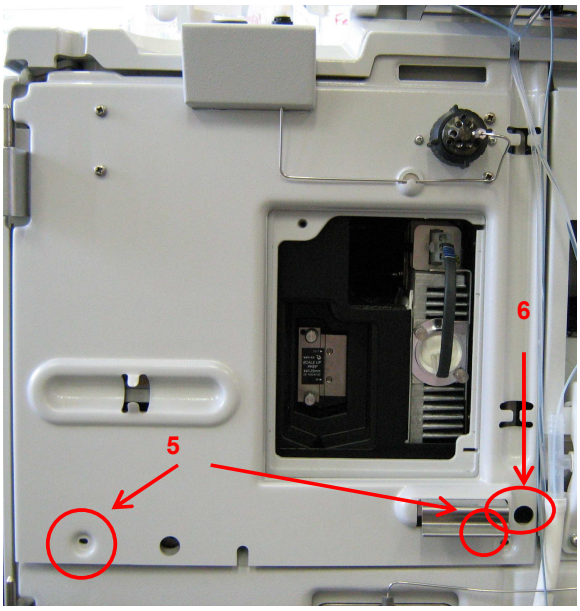

Figure 11: Shows the new manual injector panel fitted. Note the screw holes and the drain pipe exit hole that need to be aligned.

13. Align the screw holes on the panel with the instrument screw holes (circled in *Figure 11*). Screw the panel in using the previously removed screws.

Plumbing the manual injector:

The panel containing the preparative manual injector has now been installed. The injector now needs to be plumbed in the correct configuration.

14. The first item to add to the manual injector is the 5mL loop (P/N 7910057900). Take the loop and the supplied nuts and ferrules. The loop is fixed into positions 1 (**7**) and 4 (**8**) on the injector valve (see *Figure 12*). Attach the nut and ferrule to each end of the tubing. Insert the tubing into the valve and push to the end of the valve hole. Screw the nut into the valve until finger tight and then screw the nut in with a spanner/wrench another half turn to secure the 5ml loop in place.

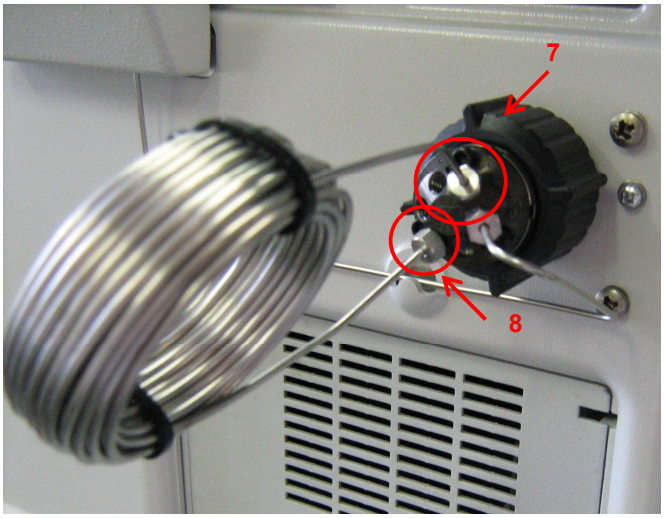

Figure 12: The loop is positioned in positions 1 and 4

15. *Figure 13* shows the preparative manual injector valve. In Position 3 (**9**) of the injector valve add the piece of tubing that connects the 6 port autosampler valve to the preparative manual injector valve (*Item 9*) using the nuts and ferrules supplied (*Item 4*, *Item 5*). The piece of tubing (**10**) used to make the connection is shown in *Figure 13* along with the preparative manual injector.

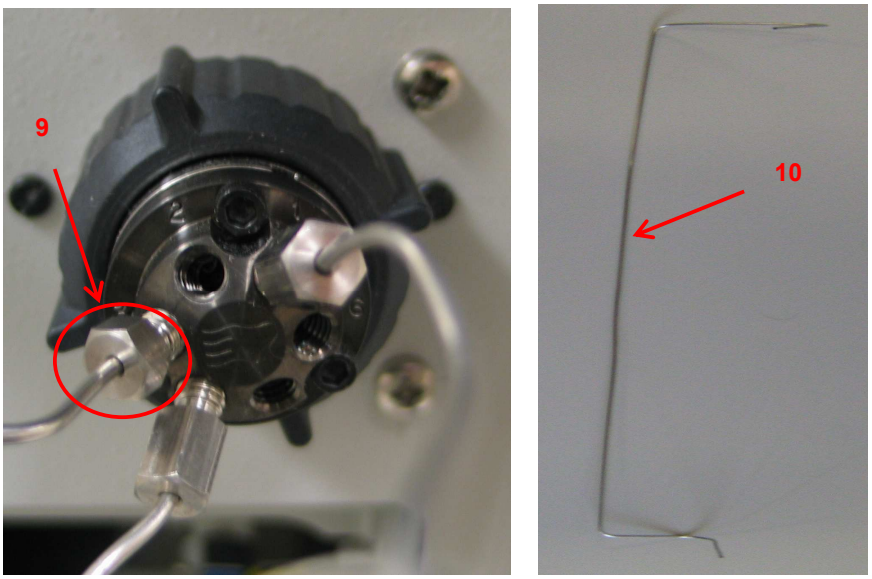

Figure 13: Tube connected to position 3

16. Connect the tubing that is now connected to position 3 of the preparative manual injector valve to position 2 **(11)** in the 6 port autosampler valve as shown in *Figure 14* using the a nut and ferrule (Nut *Item 5* and Ferrule *Item 6*). You will first have to remove the existing tubing in the 6 port valve.

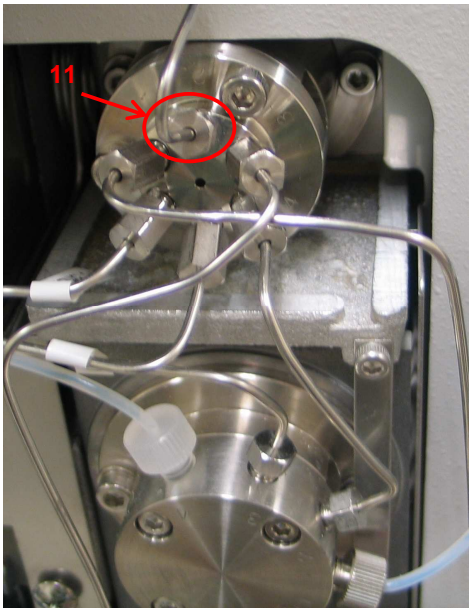

Figure 14: Position 2 of the Autosampler valve

17. Next connect the piece of tubing that connects the preparative manual injection valve position 2 to position 6 on the 6 port column selection valve on the scale up module (SUM). Connect the piece of tubing shown in *Figure 15* (**12**) to position 2 (**11**) of the preparative manual injector valve (*Figure 14*).

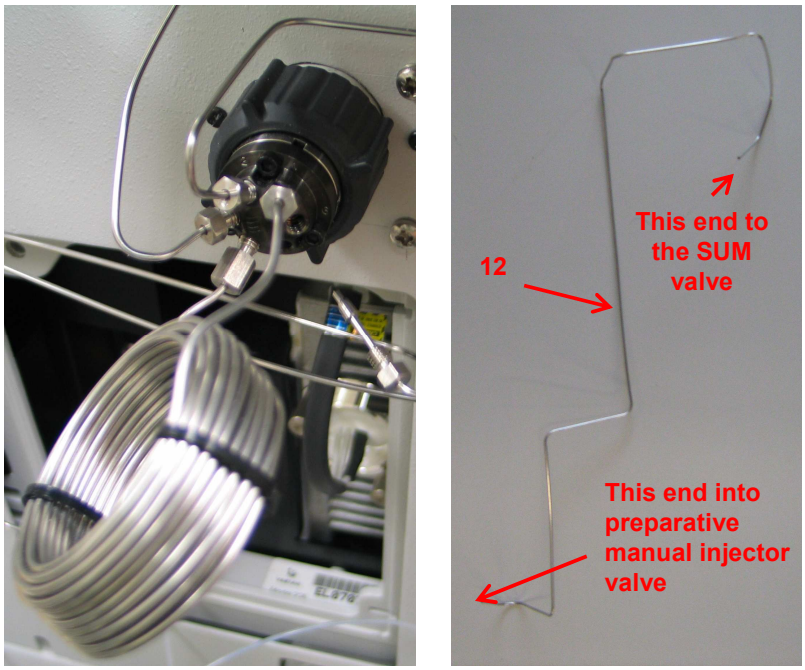

Figure 15: Tubing connecting the preparative manual injector in position 2 is connected to the 6 port valve in the scale up module.

18. You will need to remove any tubing connected to position 6 on the column selection valve on the scale up module. *Figure 16* shows the connection of the tubing from the preparative manual injector valve to position 6 (**13**) on the 6 port column selection valve on the scale up module.

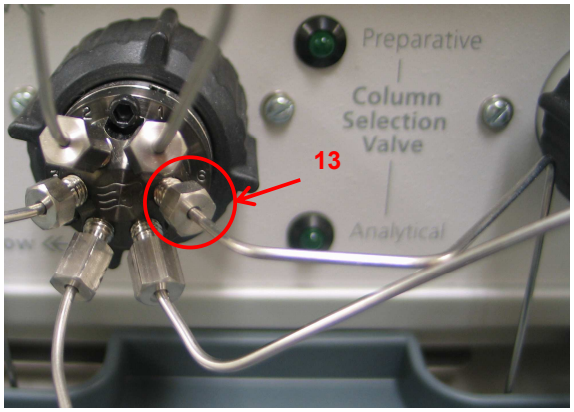

Figure 16: shows the tubing from the prep manual injector valve to position 6 on the column selection valve on the scale up module.

19. Once the solvent flow path tubing has been plumbed from the preparative injector, to the column selection valve, the injection port can be added to the preparative manual injection valve. There are two injection port options.

20. You can leave the default set up, with the tubing (**14**) running from the injection port mounted on the front panel, into the injection valve (*Figure 17*).

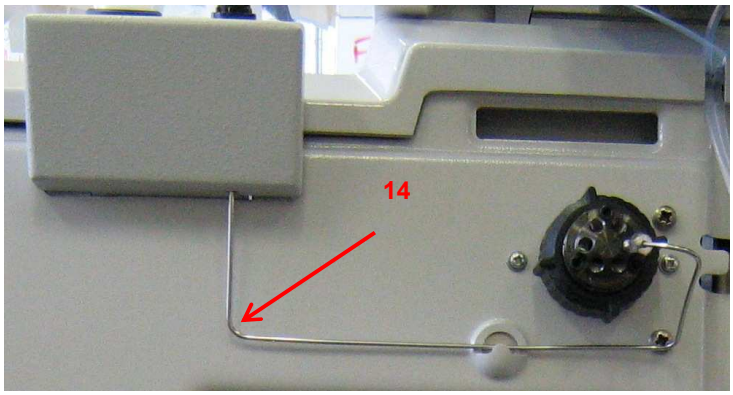

Figure 17: Default tubing connecting the injection port to the injection valve

21. *Figure 18* shows the injection port filler (P/N 3710058200 Tube, Loop Filler (MIV)) attached directly to the preparative manual injection valve in position 6 (**15**). This is the recommended configuration.

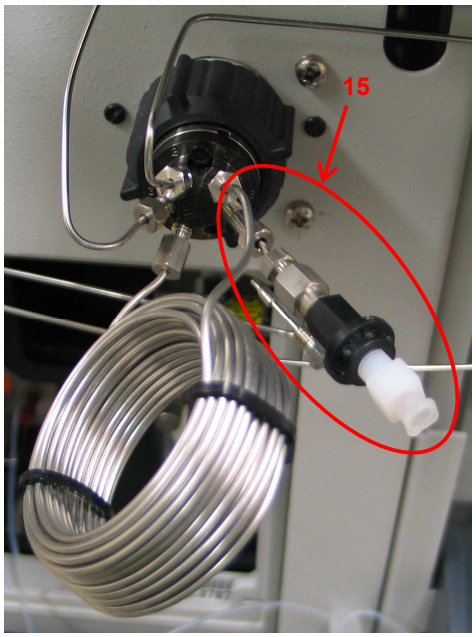

Figure 18: Shows the direct injection port into the valve

22. The last position on the preparative injection port is taken by the injection loop overflow tubing. Use the PTFE tubing, ferrule and the PEEK nut and connect the overflow tubing to position 5 (**16**) on the preparative manual injection port. Thread the loop into the waste tube (**17**) (*Figure 19*)

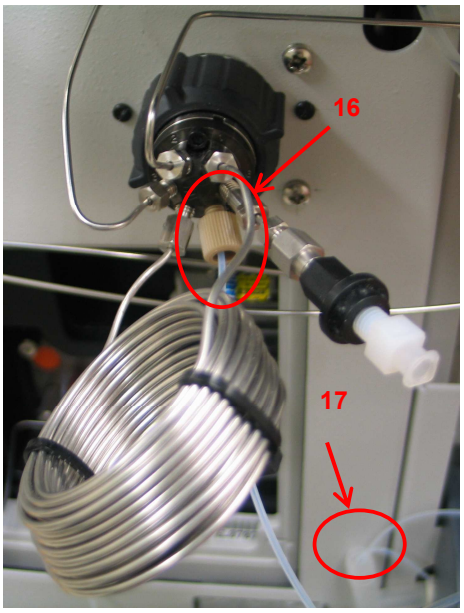

Figure 19: Attaching the loop overflow tubing

23. This completes the installation of the hardware.

Software Upgrade:

The software will need to be reconfigured to add in the manual injection option to the 940-LC instrument.

1. Find the Configurator for Service from the Start Menu/Programs/Varian Integrated HPLC (*Figure 20*).

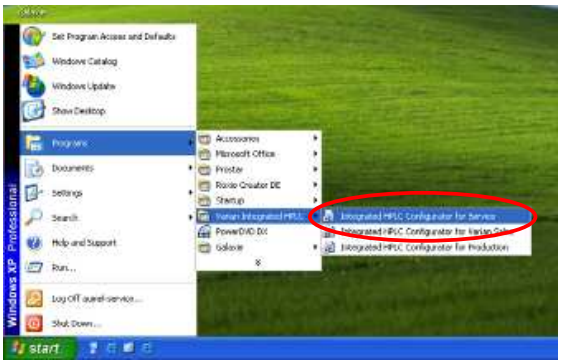

Figure 20: Service Configurator

2. Once the configurator has opened, click on the *Find systems* button (**1**) and wait to see which systems appear. Select the system (**2**) that you want to upgrade (*Figure 21*).

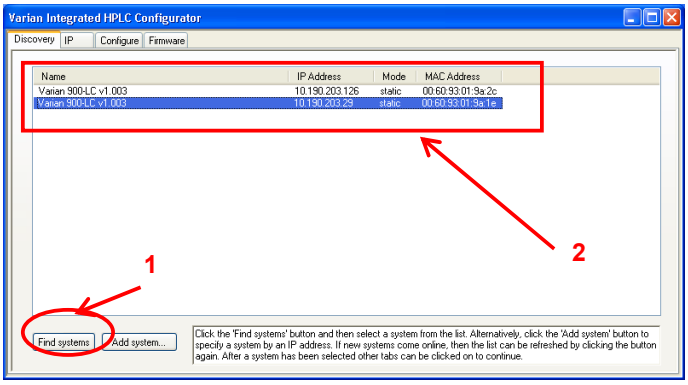

Figure 21: Discovery page of the Service Configurator

3. Once the system has been selected you will be able to choose the *Configure Tab* (**3**). Select the *Update an existing system option* (**4**), and then select next (**5**) as shown in *Figure 22*.

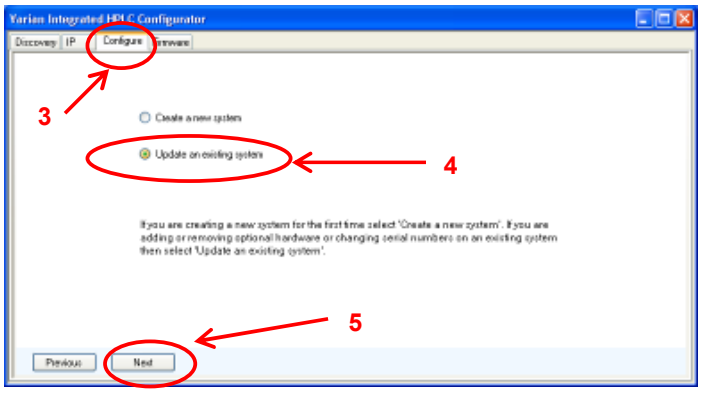

Figure 22: Configure page of the Service Configurator

4. The next screen will show the current configuration of the 940-LC. Click on the manual injector option in the right hand options window (*Figure 23*).

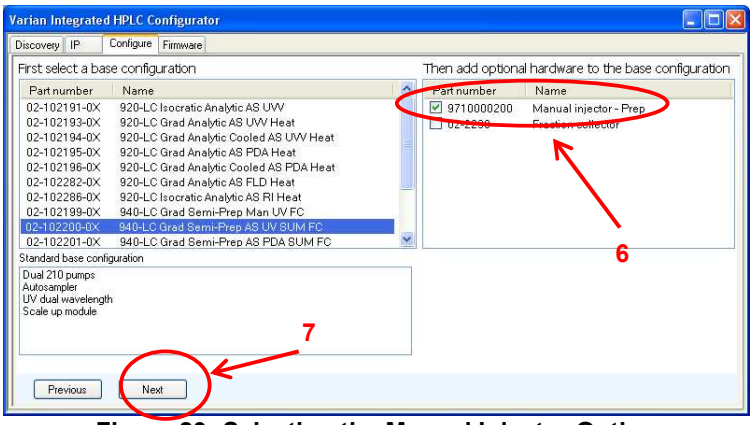

Figure 23: Selecting the Manual Injector Option

5. Click *next* (**7**) after selecting the Manual injector – Prep, and the following window appears (*Figure 24*). The serial numbers should already be shown. Click *Next* (**8**).

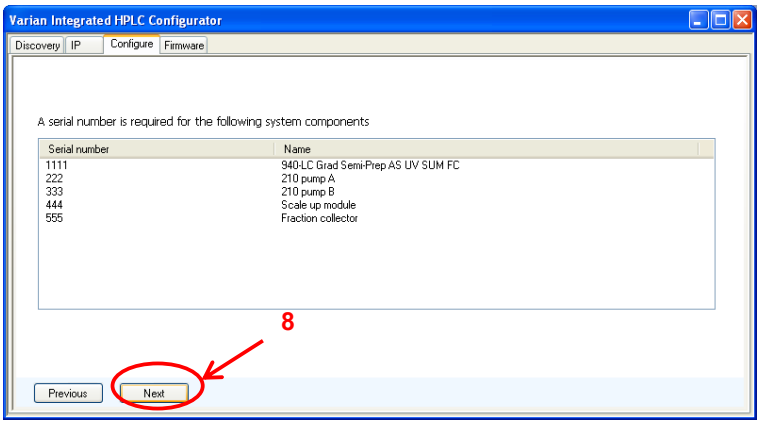

Figure 24: Serial Number page.

6. The final window shown is the Update window. Click *Update* (**9**) and the configuration on the 940-LC is updated (Figure 25).

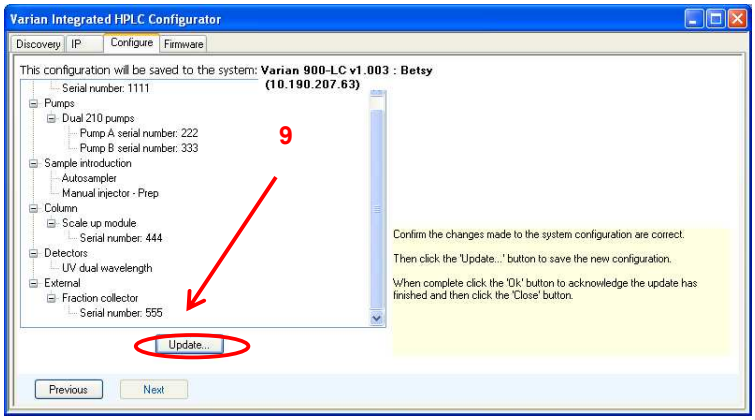

Figure 25: Update screen

7. Reboot the PC and next time that the instrument is connected to the Galaxie software the configuration will be updated.