

Installation Instructions for the 940-LC Scale Up Module

The Scale Up Module (SUM) option can be ordered using P/N 97-100008-90.

The 97-100008-90 option consists of the parts shown in the table below

Item #	Description	Quantity
1	Assy Final Scale Up Module (SUM)	1
2	Tube, Valve 6 port (MIV) - Valve 6 (SUM)	1
3	Tube, Flow cell - Scale up Module	1
4	Kit, solvent tubes (Scale-up)	1
5	Ribbon Cable and Plug Loom	1
6	Short SS nut and ferrule	2
7	Long SS nut and ferrule	1
8	PEEK nut and ferrule	1

Procedure:

These instructions will only apply to the installation of the de-bubbler and the Inlet Tubes on the Scale Up Module. For further details on how the plumbing needs to be connected, please refer to the 940-LC Service Manual Chapter 3 "System Plumbing Guide".

Hardware Upgrade:

1. Remove the left front door from the 920-HPLC system by pushing the doors upwards (*Figure 1*). You need to make sure that the door is closed before trying to remove it. If you meet some resistance then make sure that the door frame clears the hinge (you may need to pry it slightly towards you) (*Figure 2*).



Figure 1: Removing door



Figure 2: Door catch

2. Once the doors are removed, set the SUM on top of the 940-LC system. The feet on the bottom of the SUM should fit into the indentations (1) in the top cover of the 940-LC system (*Figure 3*).

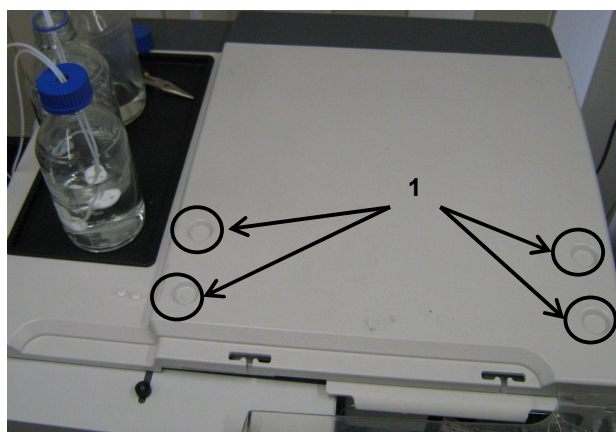


Figure 3: Top of the 940 LC system

3. Once the SUM is on top of the 940-LC system, then proceed to remove the spill tray (this will make it easier to connect the plumbing to the system). The spill tray can be removed by popping the 2 fastening buttons (2) up and then gently lifting the tray out of the tray frame (Figure 4).

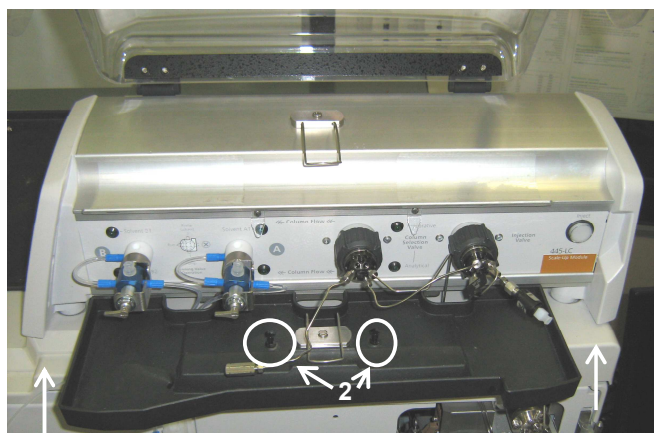


Figure 4: Removing the spill tray from the SUM

4. With the spill tray off, connect the 2 lines (3) containing the de-bubbler that are coming from the SUM (3) to the pumps (Figure 5)



Figure 5: Connecting the debubbler line to the pumps

5. Make sure that the de-bubbler is oriented in the proper direction and that the ridge (4) is closest to the top of the instrument (Figure 6)

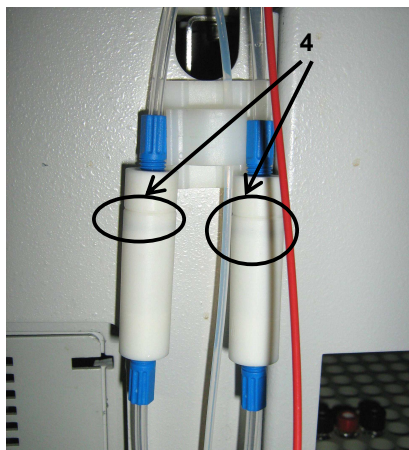


Figure 6: De-bubbler orientation on the tubes connecting to the pumps

6. The end of the 2 lines connected to the de-bubbler and the SUM, should connect into the inlet valves of the pumps (5) as seen in Figure 7.

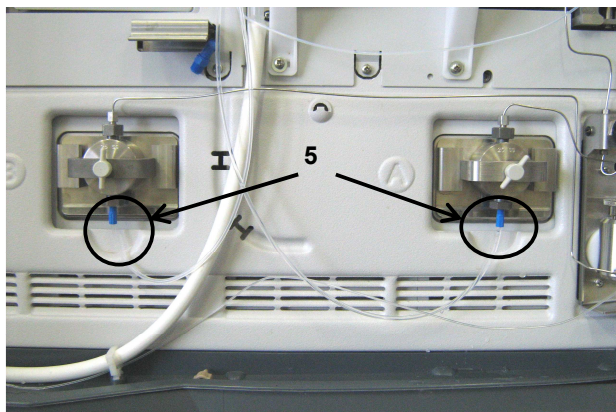


Figure 7: SUM connection to the pump inlet valves

7. Clip the solvent lines behind the clips on the face panel (6) between the pump and the SUM Figure 8. This finishes the de-bubbler installation.

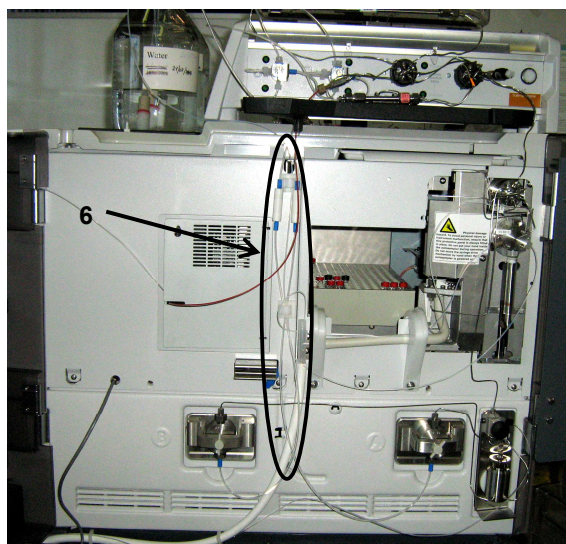


Figure 8: Clips on the front panels of the system

8. Once the SUM has been plumbed to the pumps, select the tube that connects the autosampler to the SUM (Item 2, *Figure 9*) and attach the appropriate ferrules and nut to it

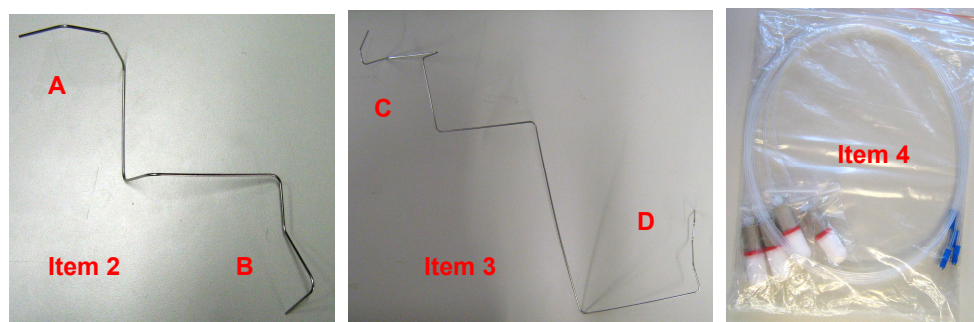


Figure 9: SUM Option Tubing

There should be 4 ferrules and nuts included with the SUM option. 2 short SS nuts and ferrules, 1 long SS nut and ferrule and 1 PEEK nut and ferrule. Figure 10 shows all three types of nuts and the ferrules that go with them.



Figure 10: Included nuts and ferrules with the SUM option

9. The **B** side (*Figure 9*) of the tubing (Item 2) should have the Autosampler nut and ferrule (*Figure 10*) connected to it while the **A** side has one of the 2 SUM nuts and ferrules connected to it. Once the nuts and ferrules have been connected properly to the tubing (for the ferrule orientation check the directionality in *Figure 10*), the tubing can be connected from the SUM column selection valve position 6 (7) to the injection valve of the autosampler position 2 (8) *Figure 11*.

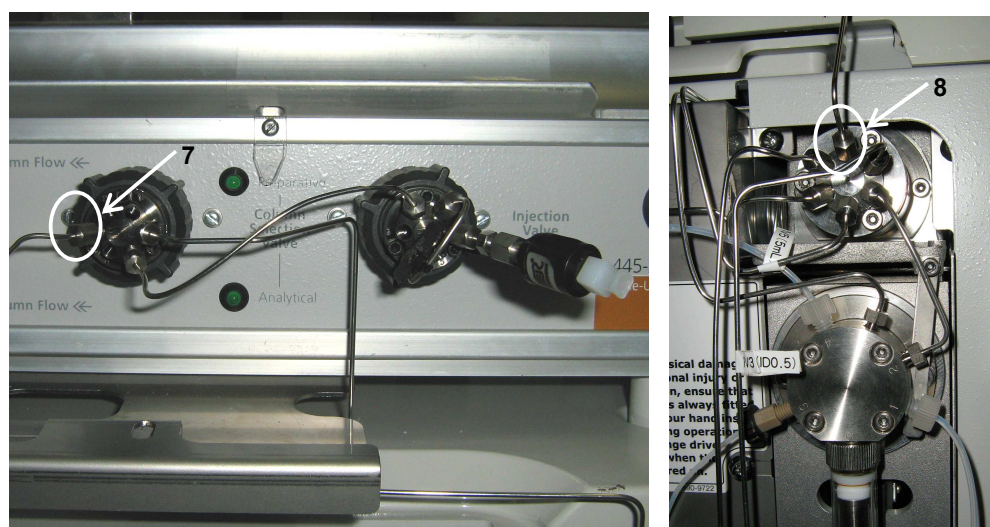


Figure 11: Connecting the tubing between the autosampler and the SUM

10. Next select the remaining SS tube and connect the SS nut and ferrule to side **C**. The remaining PEEK nut needs to be attached to side **D** of the tubing. Take special care to orient the ferrule according to the pictures in Figure 10.
11. Once the fittings have been attached, thread the SS tubing with the SS fitting through the opening **(9)** in the spill tray holder of the SUM and connect it to column selection valve position 3 **(10)**.

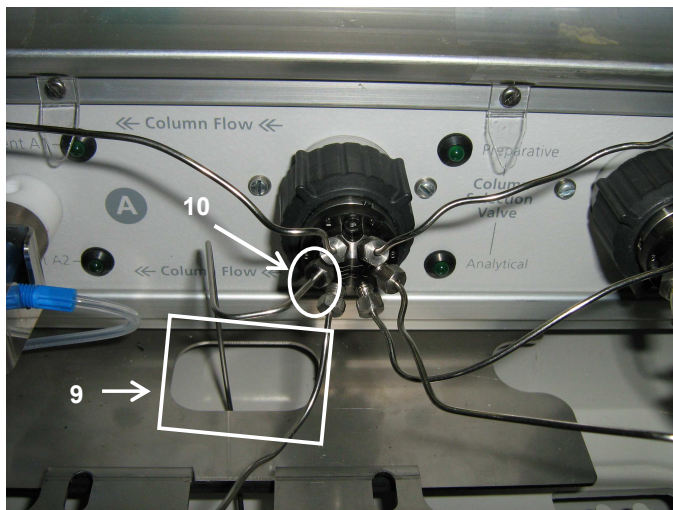


Figure 12: Connected tubing between the SUM and Detector

12. Run the SS tubing along the front of the instrument tucked behind the de-bubbler lines (inserted in steps 5-7 above) *Figure 13*. Connect the PEEK nut and ferrule to the inlet **(11)** port of the flow cell (*Figure 13*).



Figure 13: Connecting to the Detector from the SUM

13. Once the line connected to the outlet port of the flow cell has been re-attached, carefully fit the door back on to the detector, ensuring that both the inlet line and the outlet line are threaded through the slit **(12)** in the door (*Figure 14*).

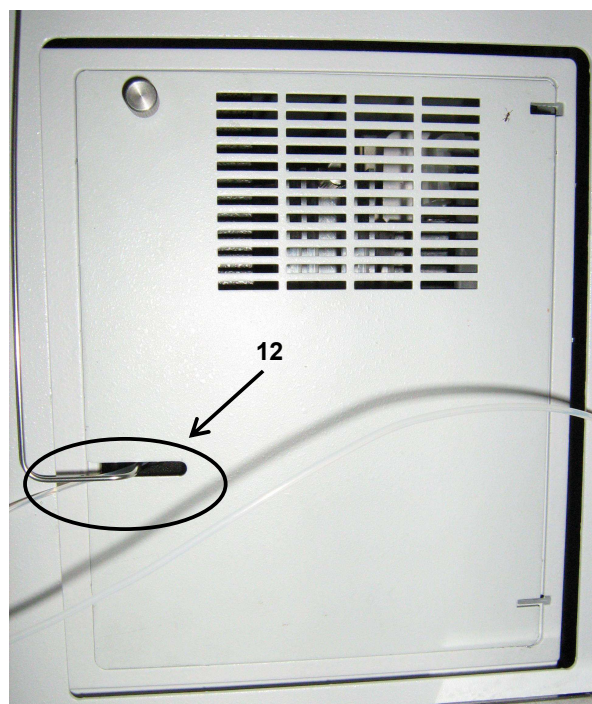


Figure 14: Threading the tubes through the slit in the Detector door

14. Unpack the solvent bottle lines Item 4 *Figure 9*, and make sure that you run the new lines through the side of the SUM frame. You will need to run the line connecting to the top of the valve through the top of the slot (13) in the SUM, and the one connecting to the bottom of the valve through the bottom of the slot (14) in *Figure 15*.

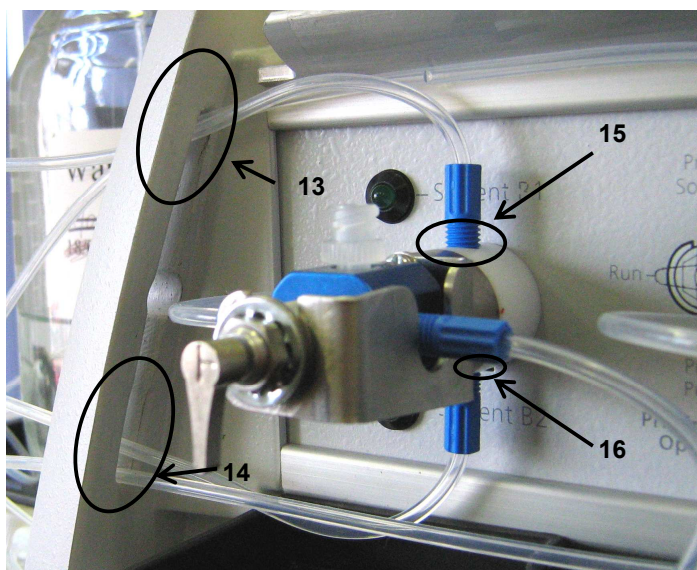


Figure 15: Tubing slot on the SUM

15. Connect solvent B1 to the top (15) of the solvent B selection valve, and connect solvent B2 to the bottom (16) of the solvent B selection valve (*Figure 15*). Repeat the same process for the solvent A selection valve.

16. Reattach the spill tray onto the SUM (Figure 15) threading the lines connecting to the autosampler, detector and the de-bubbler through the cutouts provided (19). Once the tray is on push in the retaining buttons (18) to secure it to the SUM frame (Figure 16).

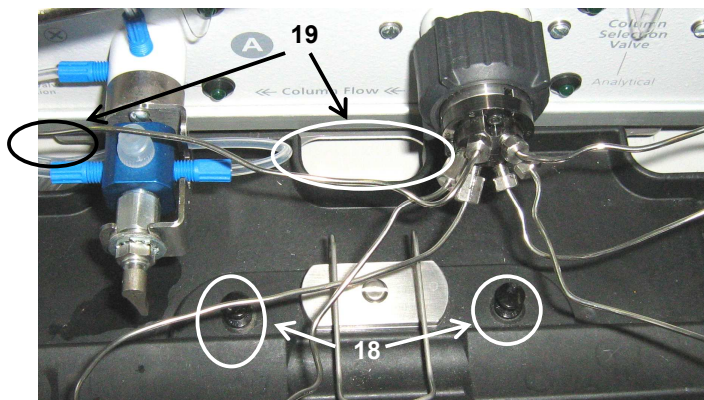


Figure 16: Leak tray holding black fasteners

17. Once all the plumbing has been connected. Connect the ribbon cable from the back of the SUM (20) to the right hand side of the 940 System (21) Figure 17.

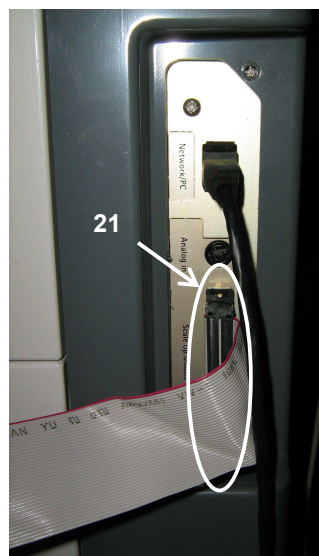
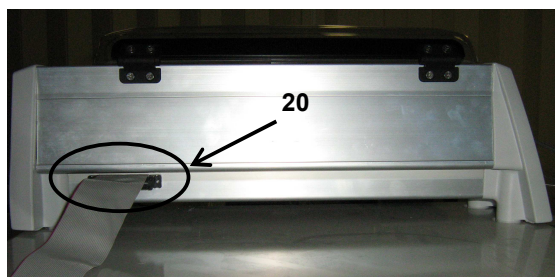


Figure 17: Connecting the ribbon cable between the SUM and the 940 LC

Purging the lines:

1. Attach a syringe (20) to the top of the SUM selection valve B *Figure 18*

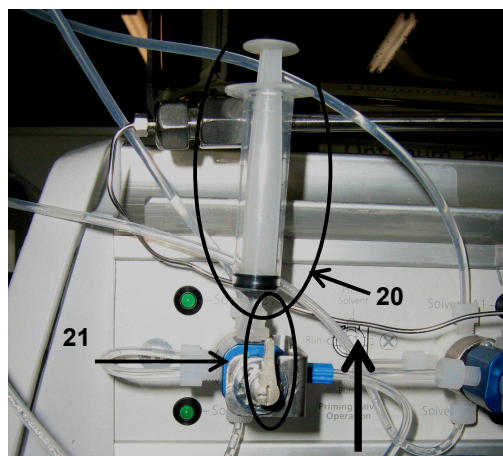


Figure 18: Purging the B valve

2. Turn the valve selection switch until it points straight up (21) *Figure 18*, and pull back the plunger in the syringe to fill it with mobile phase.
3. Once the syringe is full, then turn the valve selection switch to the down position (22) to flush out the line going to the inlet valve of the pump (*Figure 19*). Loosening the tube end by the check valve allows the bubbles to flush out.

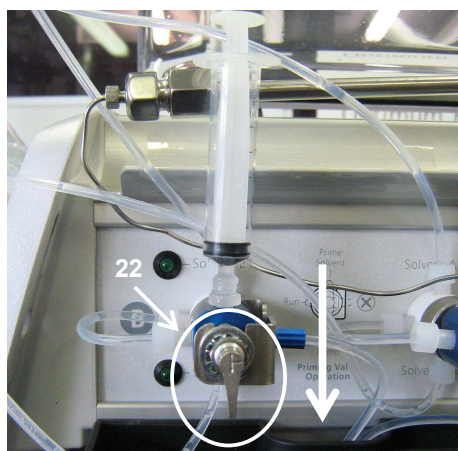


Figure 19: Flushing the pump line

4. Once both lines have been flushed (step 2 and 3) put the valve switch back into the run mode (pointing the left) *Figure 20*.

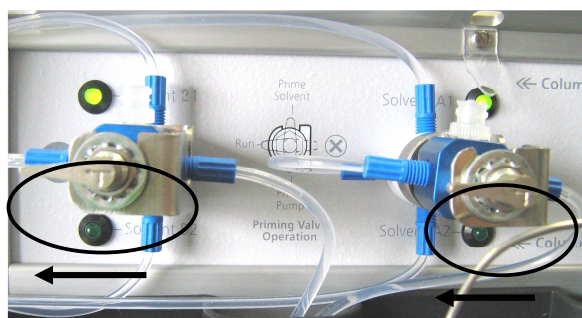


Figure 20: Valve position when in run mode

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).

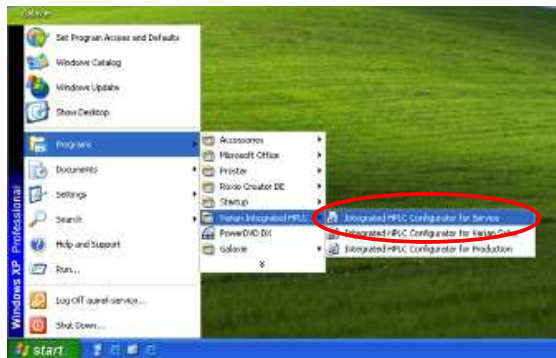


Figure 21: Service Configurator

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).

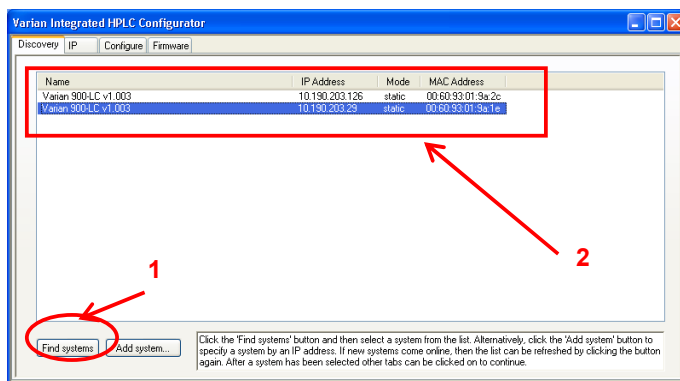


Figure 22: Discovery page of the Service Configurator

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.

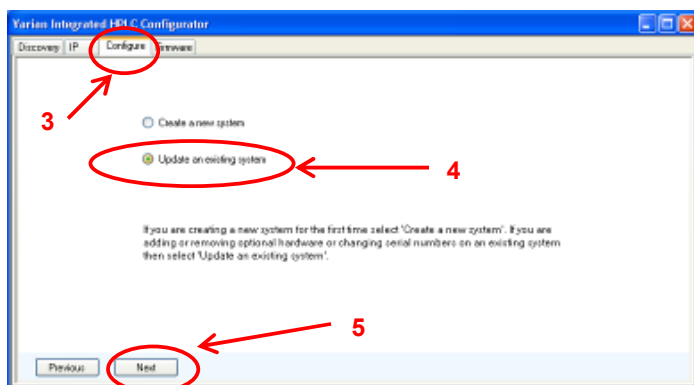


Figure 23: Configure page of the Service Configurator

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

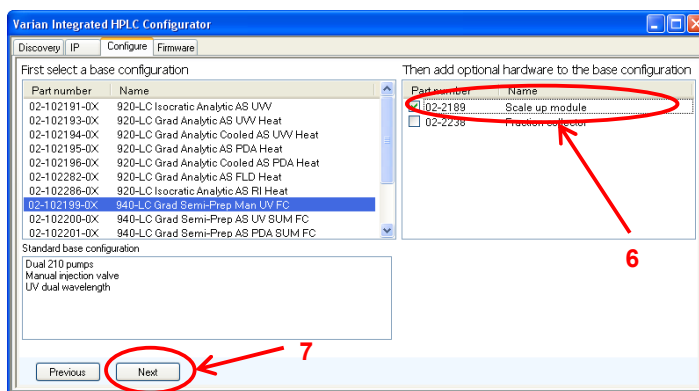


Figure 24: Selecting the Manual Injector Option

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

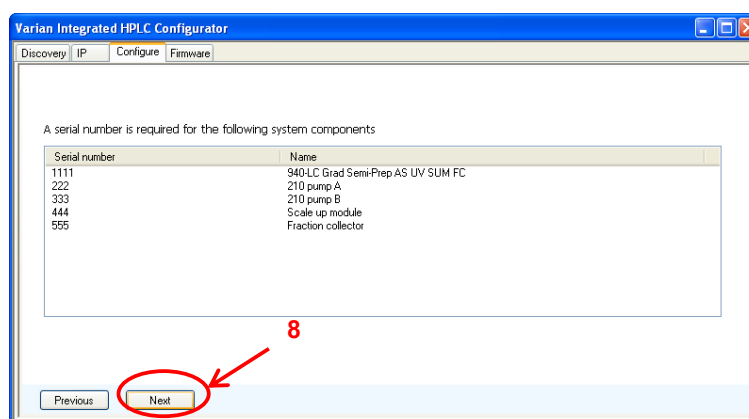


Figure 25: Serial Number page.

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

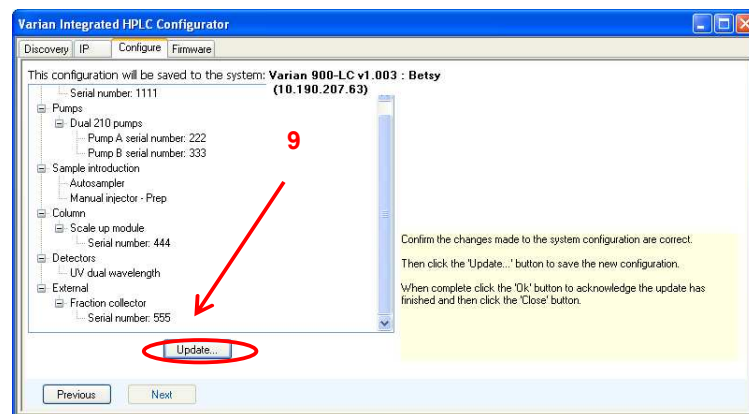


Figure 26: Update screen

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