

## **Pressure Verification Procedure for STarSystem Sheath Delivery System**

The following bulletin is provided for informational purposes only. Applied Cytometry Systems (ACS) offer this information freely as additional information to any information provided by Luminex. ACS, Luminex and their partners, distributors or affiliates accept no liability or claims for damages caused, or arising from, the use or misuse of this information.

### **Background**

The installation of some Sheath Delivery (SD) systems has caused occasional system lockup problems when the SD system starts to self-prime (fill) just before a new request to move to next well and sample the contents.

This verification procedure for the SD installation will help eliminate one potential cause of the problem. The procedure provides information additional to the SD installation instructions provided with the Luminex SD system.

### **Verification Procedure:**

1) Prior to installing the sheath delivery device, run up the system using the sheath and waste bottles and initiate a Prime cycle\* using the system software to pressurize the fluidics system. When the sheath pressure has reached a steady state, note both the steady state air and sheath pressures and write them down (preferably in the SD installation documents which should be appended to the system manual).

**Note:** The LX Detector is empirically setup from the factory with a nominal running sheath pressure which has been adjusted to provide a constant sheath fluid flow rate. As a result, slightly different sheath and air pressures will be observed across a range of cytometers.

2) Now connect the sheath delivery device following the procedure outlined in the Appendix Luminex Sheath Delivery System PN 89-30000-00-015, Rev. E. Next initiate another cytometer system Prime cycle, and while in progress, initiate an SD Prime (fill) by pressing the square black Prime button on the front panel of the SD unit (fig 1). You should hear the SD fill pump start and you should see fresh sheath fluid entering the SD reservoir visible through the sight glass on the SD front panel.

**Note:** If the SD is already full and an SD Prime cycle will not start, disconnect the blue sheath connector from the LX100 side panel and release sheath fluid into a waste receptacle until the sheath level drops to about half way down the SD sight glass (press and hold the self closing valve at the end of the blue sheath connector). Re-connect the sheath line to the LX100 and repeat Paragraph 2) again.



**Figure 1**

3) While the SD is re-filling, observe the sheath pressure increase; note the maximum value that is achieved. After the SD system has finished its Prime cycle, the system pressure should regulate slowly back to the steady state pressure observed in paragraph 1).

If the **sheath** pressure change during the SD prime cycle increases by more than 0.25 PSI, perform the following procedure:

4) Use a screwdriver to rotate the cytometer pressure regulator (see fig 2) fully clockwise (this usually takes three to six full rotations).

5) Initiate an cytometer Prime cycle to pressurize the system. While the system Prime cycle is in operation, adjust the pressure regulator on the SD unit until the nominal air and sheath pressures

observed in Paragraph 1) are achieved. Repeat procedure detailed in Paragraph 2) and 3) once more to verify the maximum sheath pressure change is below 0.25 PSI during an SD Prime (fill) cycle.



**Figure 2**

**Note:** The LX100 system has a firmware monitored pressure delta threshold value of 5% of the steady state value (around 0.3 PSI). This is the reason that the pressure change during an SD prime must be kept below 0.25 PSI. If an observed increase of more than 5% is observed, the firmware prevents the probe down action when requested but still reports "command completed" to the requesting LXR library software function.

If at any point the system is operated via the sheath bottle with the SD device disconnected, the pressure regulator on the Luminex 100 will need to be reset (turned back counterclockwise) so that the sheath pressure post-prime reads the value recorded in step 1 above.