Quick Start Guide to  
ILD4000

INTRODUCTION

The In-Line Degasser is designed to optimize dispense quality of low volumes by removing bubbles from the reagent. Low volume dispensing is an extremely demanding process, involving optimization of dispense methods, overall process design, environment, substrate and reagent design. Degassing of solutions is one extremely important component to ensuring robustness of dispensing in manufacturing and R&D environment, particularly at volumes below 20nl. The expression of bubbles at any point in the system can result in missed dispenses, incorrect volume dispenses, balling of fluid at the dispenser tip and satellite drops on the product, all of which ultimately lead to increased dispense CV and/or loss of product.

The degassing method used in a dispensing system such as that describe herein must meet several important criteria:

1. The ability to lower dissolved gas levels to negligible levels in bulk dispensed or backing fluids.
2. The ability to maintain negligible levels of dissolved gases over the duration of a manufacturing run while not disturbing the dynamics of the dispensing process.
3. The ability to handle high volumes of fluids.

BioDot has developed a degassing system and method which fulfills these requirements and results in improved performance of the BioDot dispensing system at the edge of its typical dispensing envelope.

REQUIREMENTS FOR SETUP

You will need an allen wrench set, a small adjustable wrench, a Phillips head screwdriver, and a razor blade. You will also need a power source.
INSTRUCTIONS FOR UNPACKING

Your In-Line Degasser will arrive in a small/medium-sized box within which you will find the unit, bottles, tubing, and a power cord.

1. Unpacking your system:
   a. Remove all parts from the box.
   b. Set them on a surface near the system to which the Degasser will be attached.

SETTING UP YOUR SYSTEM

Before attaching your In-Line Degasser to your system, you will need to first disconnect the source bottles/vials from your. Once this is done, proceed with the following:

1. Place the source bottles/vials behind the In-Line Degasser (ILD).
2. Screw the loose end of the tubing from each source bottle/vial into the appropriate numbered pump on the top of the ILD.
3. Locate the tubing that came with your ILD.
4. Screw one end of this tubing in to the front of the ILD.
5. Screw the other end of each tubing in to the appropriate pump (by matching the pump number located on the front of the pump with the pump numbers on the front of the ILD).
6. Turn the ILD on.

OPERATING YOUR SYSTEM

1. All fluid reservoirs need to be thoroughly cleaned prior to installation.
2. The larger, center reservoir is filled with absolute ethanol.

3. The smaller reservoirs are filled with backing fluid.

4. The left inlet of each 3 way valves on syringe pump is connected with tubing equipped with a brown nut and a blue ferrule to the open fitting of the front panel of the In Line vacuum Degasser. The pump number must match the number of the fitting on the front panel of the In Line Vacuum Degasser.

5. On the top panel of the degasser box, there are 2 x 4 ports, labeled “wash” and “source”. All ports labeled “wash” are connected to center bottle (larger one) filled with EtOH, each port labeled “source” is connected to one bottle filled with backing fluid (water, PBS, depending on application).

6. Once each syringe pump is connected to one fitting on the Front Panel of the In Line Vacuum Degasser, switch all knobs on the front panel to “Purge”.

7. At the beginning of the day, connect your fluid path all together (including BioJetPlus microsolenoid valve and white ceramic tip) and move the dispensing head above the Waste reservoir.

8. Open the Axsys Software, under TOOLS, connect the computer to the dispensing unit by opening “connection” and clicking OK.

9. Open the Tools Menu, open Manual Mode and open the tab Syringe speed. Set the syringe speed to 10,60,1000 for “actions to empty or fill the syringe” and to 10, 60, 1000 for actions to aspirate and dispense. Hit apply for each modifications.

10. Under the prime tab, enter 5 cycles and hit apply. This will flush each fluid path with ethanol.

11. Perform a vent step to release any overpressure from the fluid lines. To do this, go under the “dispense” tab in Manual mode, select “aspirate” and type in 0uL inside the aspirate volume window and 2000 inside the “delay” window, then hit apply.

12. Switch all knobs onto the front panel of the In-Line vacuum degasser to “Dispense”.

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13. Turn on the In-Line Vacuum Degasser. PWR means the POWER is on. STAT means the vacuum pump is ramping up to its working level. VAC indicates that the vacuum pump has reached its working level.

14. Inside manual mode on the Axsys software open the tab Syringe speed. Set the syringe speed to 10, 30, 1000 for “actions to empty or fill the syringe” and to 10, 60, 1000 for actions to aspirate and dispense. Hit apply for each modifications.

15. Under the prime tab, enter 5 cycles and hit apply. This will flush the backing fluid(s) through each fluid lines.

16. Perform a vent step to release any overpressure from the fluid lines.

17. Switch all knobs onto the front panel of the In-Line vacuum degasser to “Purge”.

18. Under the prime tab, enter 5 cycles and hit apply. The ethanol will push out of each fluid lines any air bubble trapped inside the switch valves.

19. Perform a vent step to release any overpressure from the fluid lines.

20. Switch all knobs onto the front panel of the In-Line vacuum degasser to “Dispense”.

21. Under the prime tab, enter 10 cycles and hit apply. This will thoroughly flush the backing fluid(s) through each fluid lines.

22. Perform a vent step to release any overpressure from the fluid lines.

FOR MORE INFORMATION

This Quick-Start Guide should get you started using your ILD4000. It is not intended to be comprehensive, however. It is therefore recommended that you review your User Manual for complete information on setup, operation, and maintenance of your system. If you encounter a problem that is not addressed by your User Manual or if you are missing any component of your order, please contact us at (949) 440-3685 or email us at support@biodot.com.