SciLog®

The Smart Pump Company

Start-up: "Dispensing Organic Solvents with a J.T. Baker CYCLE-TAINER®"

Equipment: You will need the following items to get started:

SciLog P/N	*Description*	*Quantity*
	Source of Compressed Nitrogen (secured to bench or wall)	1 tank
	J.T. Baker CYCLE-TAINER® of Solvent	1 pc
100-349DILU	LabTec MP-320 w/Model 122 Magnetic Gear Head	1 pc
400-539	Gas Regulator, SS Connectors, Valve Kit, Teflon Tubing	1 kit
080-059	Foot Switch (for remote on/off control of LabTec)	1 pc
400-420	Stand and Clamps	1 set
080-095A	Printer Kit (for documenting solvent use.)	1 kit

Hardware Setup:

1. Unpack all the components, visually identify and inspect for damage.

2. At the dispensing station, place the CYCLE-TAINER® on the floor, and secure it and the Nitrogen Tank to the bench or wall for safety reasons. Place the LabTec on the bench with the stand and clamps to its right. Connect and place the Printer and the Foot Switch in convienent locations.

3. Plug in and power up the LabTec and the Printer.

4. Make the connection to the Nitrogen tank as follows:
   a. Install the gas regulator on the tank. Rotating the small handle clockwise closes the small shut-off valve, located between the regulator and the brass check valve. Position the tank and regulator so it can be read.
   b. Connect the ¼" Teflon tubing (gas line) to the brass check valve. The other end of the tubing should **not** be connected to the quick-disconnect at this point. The tubing must be flushed with nitrogen beforehand.
   c. Open the valve on the gas cylinder, the main gauge will read 2000psi or less depending on the status of the tank. Adjust the gas regulator to read 0.5psi (on the 0-5psi guage) by turning the large knob on the regulator clockwise.
   d. Open the small shut-off valve 2-4 turns. Gas will flow and flush any air from the Teflon tubing. While this is being flushed, attach the tubing to the quick-disconnect. **CAUTION:** While making this connection, be sure the quick-disconnect is free standing, and not attached to the CYCLE-TAINER®.
   e. If the CYCLE-TAINER® is pressurized, relieve the pressure with the relief valve until it is near zero. Close the relief valve on the container and attach the gas quick-disconnect to it. The pressure in the container should now be close to 0.5psi.

5. Make the fluid connection as follows:
   a. Connect the liquid quick-disconnect to the CYCLE-TAINER®. The other end of the Teflon tubing is connected to the suction side of the Magnetic gear pump head located on the front of the LabTec.
   b. Connect the remaining section of the Teflon tubing to the discharge side of the pump head. Connect the other end of the tubing to the SS check valve with the dispensing tip if not done so already, and secure it to the burette stand.
   c. Place a container under the dispensing tip, and prime the system to remove the air from the fluid line by pressing the "PRIME" key on the front panel of the LabTec.

Program Editing and Execution:

Five dispense volumes are stored in the LabTec for easy access: 10ml, 50ml, 100ml, 500ml and 1000ml. You will find them listed as EXEC1 through EXEC5 in the Mode Select:VOLUME Menu. If desired, any of the stored volumes can be changed from the front panel. (See Section 3.0 Volume: Edit, pg. B7 & 8 of the LabTec Manual) A single-key re-calibration feature assures high dispensing accuracy and precision. (See Section 5.0, Volume: Use of the Re-Cal key, pg. B12 & 13) For the following example, you will dispense 50 ml.

1. With the LabTec primed and ready to dispense, press the exit key until you reach the "**Mode Select**" screen, and use the "**A**" or "**B**" key to scoll to the **VOLUME** Mode. You will have the following display.

Mode Select		**VOLUME**
Up	**Down**	**Select**
A	**B**	**C**

2. Press "**C**" to Select, and you will see the following:

-VOLUME DISPENSE-		
Exec	**Edit**	**Cal**
A	**B**	**C**

3. Press "**A**" to enter the Execute Screen, and use the "**A**" or "**B**" keys to Scroll to **EXEC 3**.

- EXEC 3 -		
Up	**Down**	**Select**
A	**B**	**C**

4. Press "**C**" to select and the LabTec will show the following display.

VOLUME SET: 100.00ml
Press RUN when Ready

5. Press the "**RUN**" key, or step on the Foot Switch, and the LabTec will dispense 100.00 ml, and show the following screen:

DV=100.00ml	FINISH
CV= 100ml	ID=001

Where **DV**=Dispensed Volume, **CV**=Cumulative Volume, and **ID**=Sample # for the volume dispensed, will increment by one for each occurrence. The display will then alternate between this screen and the one before it. Continue pressing the run key or the foot switch until you have finished the needed number of aliquots.

NOTE: If you purchased the LabTec with your aliquot sizes preprogrammed by SciLog, the calibration has been done for you. There will be a sticker on the unit explaining which Exec (1-5) program has been assigned to the aliquots, and you may proceed directly to dispensing. If a Factory Reset, under Setup: Pump, has been done, and/or the pump shows "PUMP NOT CALIBRATED" when you try to execute a program, a Master Calibration for that program will need to be done. See Section 4.0, Volume: Master Calibration, Edit for instructions on Master Calibration.

Documentation:

The LabTec will output data to a printer or a PC at periodic intervals for archival purposes. The following is an example of that data, and an explanation of the abbreviations used.

LabTec: EXEC 3: VOLUME SET=100.00; COUNT= 1; RATE= 80.0%; DATE_____

ID= 1;	DV= 100.02;	CV= 100;	ST=FINISH;
ID= 2;	DV= 100.00;	CV= 200;	ST=FINISH;
ID= 3;	DV= 100.09;	CV= 300;	ST=FINISH;
ID= 4;	DV= 100.07;	CV= 400;	ST=FINISH;
ID= 5'	DV= 55.00;	CV= 455;	ST= STOP:

ID=Sample #, DV=Dispensed Volume, CV=Cumulative Volume, ST=STATUS
NOTE: The LabTec will print at the end of each dispense, and immediately if the STOP key is pressed during a run.

LabTec Performance:

The following are typical LabTec performance results:

Dispensed Volume	Standard Deviation, SD	Relative Deviation, %	Pump Rate (% of max.)	Slow Factor(1)	Dispense Time Per Aliquot(2)
10.00 ml	+/- 0.02	0.24%	25%	2 ml	1.5 sec.
50.00 ml	+/- 0.11	0.22%	50%	7 ml	4 sec.
100.00 ml	+/- 0.10	0.10%	80%	11 ml	5 sec.
500.00 ml	+/- 0.15	0.15%	100%	12 ml	11 sec.
1000.00 ml	+/- 0.40	0.04%	100%	12 ml	21 sec.

(1) For improved accuracy and precision, the pump slows down at the end of the dispensing cycle. The user-definable Slow Factor is expressed in terms of milliliters (ml).
(2) The above data were generated with a LabTec MP-320 (Magnetic Gear Head, Model 122, Max. Delivery 3200 ml/min.)

SciLog recommends a factory cleaning, testing and recalibration be done to your Smart Pump at least once a year, to maintain the accuracy of the unit and reduce your downtime. SciLog also has loaner units available you can rent if you need to keep production running while SciLog is performing maintenance on your pump. Call us at 800-955-1993 for an RGA and arrange for a loaner if needed. If you have a large number of units, call us, and we can design a preventative maintenance program specifically for your company.