

## Calibration of LabTec / CliniTec Methadone Dispenser

### SUMMARY:

The purpose of this procedure is to calibrate the unit for dispensing methadone. (Version 1.38 and up) Note: 10 ml (gm) is equivalent to a 100 mg dose of methadone for most clinics.

Each LabTec/CliniTec unit is factory calibrated prior to shipping utilizing a high-precision balance with a readability of 0.01 grams using distilled water. A performance validation data sheet is enclosed with every unit. This performance validation data sheet summarizes the calibration data for the pump accuracy and reproducibility at 2.00 ml, 5.00 ml 10.00 ml 20.00 ml.

Five measurements are made for each volume setting. The Average Dispensed Volume, the Standard Deviation (SD) as well as the Relative Standard Deviation (RSD) are calculated and included in the Performance Validation data sheet.

To calibrate the unit follow the instructions below:

1. Dispense 10.00 ml aliquot into the container on the balance.
2. If the average aliquot weight is either larger or smaller than 10.00 grams, adjust the silver, knurled Adjustment Ring by turning it clockwise to decrease the pump output. Alternatively, turn the silver, knurled Adjustment Ring counter-clockwise to increase the pump output. Repeat this procedure a few times to get the aliquot size as close as possible to 10.00 ml. Usually, it is possible to get 10.00 +/-0.02 ml or better with a new pump head and a motor.
3. Cal Offset Adjustment: After the calibration at 10.00 ml is complete, dispense three (3) aliquots of 2.00 ml. Calculate the average value for these three aliquots. If the average value is not 2.00 ml +/- 0.03 the Cal Offset should be adjusted (see SETUP: Cal Offset). Decrease the Cal Offset if the calculated average value is below 2.00 ml, increase the Cal Offset if the calculated average value is above 2.00 ml.

For example, if the average value is too large by 10%, then decrease the Cal-Offset by 10%. If the average value is too small by 10%, then increase the Cal-Offset by 10%.

A pump with a new motor and head will have an offset value between 0.25 and 0.27.

4. Once satisfied with precision level at 2.00 ml, repeat the procedure described in #2 above using 20.00 ml aliquots this time. At this point pump should deliver 10% more. Make an adjustment with the Adjustment Ring to get the aliquot size of 20.00 +/-1%. With a new motor and a pump head it is possible to have 20.00+/- 0.3%.

5. Without making any further adjustments, dispense five 5.00 ml aliquots. These aliquot values should be within the +/-1% mentioned earlier. You have now completed the calibration.
6. As a general rule, when an aliquot size has been adjusted by turning the Adjustment ring or changing the Cal Offset value, it may take a couple dispenses to stabilize at the new aliquot setting.

Below is a sample Performance validation data chart with calculated Average, Standard Deviation and Relative Standard Deviation for dispensed aliquots:

Aliquot	20 ml	10 ml	5 ml	2 ml
1.	20.04	10.01	5.00	1.98
2.	20.05	9.99	5.01	1.97
3.	20.05	10.02	4.99	1.97
4.	20.05	10.02	4.98	1.98
5.	20.03	10.01	4.99	1.99
Ave:	20.04	10.01	4.99	1.98
SD:	0.01	0.01	0.01	0.01
RSD:	0.04%	0.12%	0.23%	0.42%

7. This method is used at the factory prior to shipment of the pump. For daily/weekly calibration checks, the initial 10.00 ml calibration described in #1-4 above should be sufficient. For bi-weekly/monthly calibrations, it is recommended to use the full process.
8. Calibration Tools: For volumetric calibration of the pump, the use of an electronic top-loading balance is strongly recommended. Use a convenient container, tare the balance with the container, and then dispense a calibration aliquot (e.g. 10.00 ml). Weigh the container plus aliquot; obtain the weight of the aliquot off the balance. Write down the weight of the aliquot, i.e. 10.05 grams. Repeat the measurement and determine the average aliquot weight.

**Caution:** While we realize the practice is common, SciLog does not recommend use of a graduated cylinder for calibration to avoid the significant accuracy and precision errors inherent in them.

Contact SciLog Technical Support at 1-800-955-1993 if more information is needed, or if you would like assistance over the phone.