

# Troemner Calibration Services – Pipette



*Precision & Balance Matched Only By Nature.*



Troemner's Pipette Calibration Laboratory was the first NVLAP accredited laboratory for pipettes in the United States. Troemner offers a complete calibration and repair service for most brands of pipettes, repeaters and burettes from 0.1  $\mu$ l up to 100 ml.

## **Facility and Environment**

Troemner's state-of-the-art Pipette Calibration Laboratory meets or exceeds the requirements listed in internationally recognized standards. This laboratory was carefully designed and constructed

to reduce the effects of vibrations and to strictly control and monitor the environment. Temperature in the laboratory is measured to  $\pm$  0.01 degree C and controlled to within 0.2 degree C, with no more than a 0.2 degree C change per hour. Humidity is measured to  $\pm$  2% with no more than a 5% change per hour. Barometric pressure is measured to 0.01 mm Hg.

## **Equipment**

Troemner has invested in the most advanced instrumentation including gravimetric and spectrophotometric equipment for calibrations of pipettes. Gravimetric pipette calibrations are performed using six high precision balances and mass comparators; some with resolution as low as 1  $\mu$ g. Troemner also uses humidity traps and other methods to assure accurate gravimetric calibrations. Due to the direct relationship between weight and volume, the Troemner reputation for weighing accuracy is fully utilized in the pipette calibration process to achieve low measurement uncertainties. Spectrophotometric calibrations are performed using photospectrometry, whereby refractive index is proportional to volume. Both techniques assure that only the highest standards are met for complete reliability of pipette calibrations.

## **Staff**

Troemner's staff of metrologists and technicians possesses a high level of expertise in performing superior pipette calibrations, adjustments and repairs. Troemner's metrology staff and calibration technicians also have training from several pipette manufacturers.

## **Processes**

Troemner's pipette calibrations are comprehensive and include details such as making sure that every channel of a multi-channel pipette is fully tested and calibrated. Troemner performs vacuum and leak tests, cleans every pipette, greases the piston, and inspects seals and "O" rings to assure performance accuracy after the calibration. Calibration procedures also include full service and parts availability for all types and brands of pipettes. Free repair estimates are provided.

## **Pipette Calibration Certificates**

Troemner's NVLAP Pipette Calibration Certificates are designed to meet stringent regulatory and audit requirements including all ISO (including ISO/IEC 17025), FDA, GMP, GLP, DOD, NCCLS, CLIA, ANSI/NCSS Z540-1, and nuclear requirements. The NIST-administered National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 105013-0) approves all procedures for this detailed certificate. To review document details please visit our Pipette Calibration Section at [www.troemner.com](http://www.troemner.com).

## Troemner Calibration Services – Pipette



### Pipette Calibration Services Include:

- Calibration of pipettes, repeaters and burettes
- Traceability to NIST
- NVLAP Accredited – 0.1 µl to 5 ml, Laboratory capability 0.1 µl to 100 ml.
- Low measurement uncertainty:  $\pm 0.027 \mu\text{l}$  to  $\pm 5.98 \mu\text{l}$
- Every channel of a multi-channel pipette is fully tested and calibrated
- Thorough evaluation of pipette performance
- Visual vacuum leak test
- Full service and parts availability for all types and brands of pipettes
- Free repair estimates
- Gravimetric and spectrophotometric calibration procedures
- Fast turnaround time

Troemner offers three standard pipette calibration services. We can also customize calibrations to meet your particular requirements. Below is a comparison of the various standard services available from Troemner:

**TROEMNER PIPETTES UNCERTAINTY TABLE  
NVLAP CODE 105013-0**

Test Volume in µl	Gravimetric Method Best Uncertainty ( $\pm$ ) in µl	Spectrophotometric method Best Uncertainty ( $\pm$ ) in µl
0.1	0.027	0.031
0.2	0.025	0.026
0.5	0.025	0.050
1.0	0.025	0.078
2.5	0.020	0.119
5.0	0.089	0.251
10.0	0.128	0.339
25.0	0.14	0.39
50.0	0.30	1.87
100.0	0.34	2.60
500.0	0.78	13.12
1000.0	1.38	16.76
2500.0	5.25	23.08
5000.0	5.98	-

### PIPETTE CALIBRATION SERVICES

	Level 1	Level 2	Level 3
NVLAP accredited	•	•	•
turnaround time	72 hours	72 hours	72 hours
"As found" data	10-10-10 using 3 volumes for each channel	4-4-4 using 3 volumes for each channel	4-4-4 using 3 volumes for each channel
"As left" data	10-10-10 using 3 volumes for each channel	4-4-4 using 3 volumes for each channel	N/A
Thorough pipette cleaning	•	•	
Adjustments as required	•	•	
Seals replaced as needed (other parts extra)	•	•	