

epServices  
for premium performance

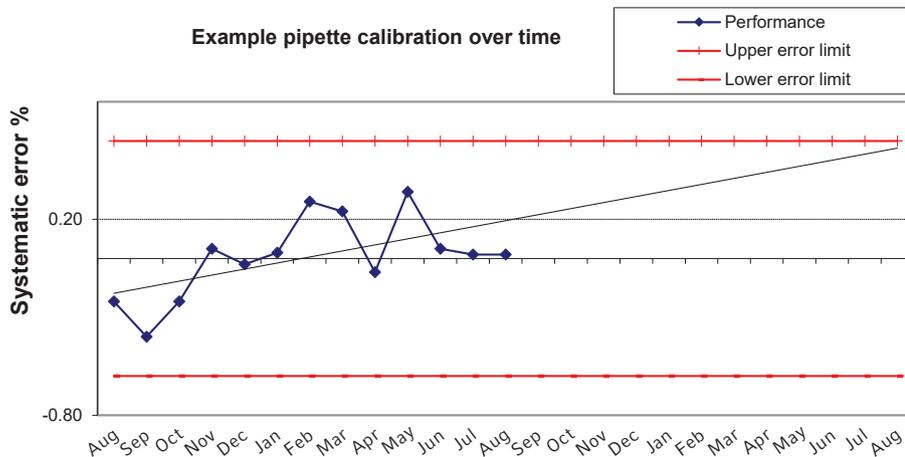


# Calibration Done Right

The foundation of reliable results

# Are Your Results Reliable?

## Calibration Drift Over Time



Your pipettes are high precision instruments much like a race car. And like a race car, they require regular maintenance and checks to stay in peak performance. Furthermore, when your pipettes are not in peak performance, your experimental results can come into question.

As shown in the graph above, the example pipette is calibrating within the error limit month to month over the year long testing period. However, wear and tear is causing this example pipette's calibration to trend towards the upper limit and will eventually fall out of calibration, potentially causing questionable results. Regular maintenance and calibration checks will help identify potential issues and keep your pipette working in peak condition.

### ISO 8655

ISO 8655 lays out the standard criteria by which a pipette should be calibrated and what error limits should be used at each volume. These criteria should be used as a minimum when calibrating a pipette. ISO 8655 criteria includes measurements at 3 volumes, 10 measurements at each volume, and controls for room environment.

### Manufacturer Standard

In addition to ISO 8655 specifications, many manufacturers will make pipettes that work within a tighter set of error limits than required by ISO 8655. It is important to calibrate using manufacturer error limits to ensure the pipette works according to manufacturer specifications.

### ISO 17025

ISO 17025 sets the criteria an accredited lab must follow to ensure their equipment, methods, and personnel can perform a proper pipette calibration. At a minimum, a competent calibration company should be able to perform an ISO 17025 calibration. ISO 17025 criteria include a traceability chain, measurement uncertainty values, and approved quality standards.

# Why Eppendorf Pipette Service?



## Beyond ISO Conformity

We maintain over 5000 pipette manufacturer specifications and conform to the manufacturer standard when their specifications are tighter than ISO 8655 standards.



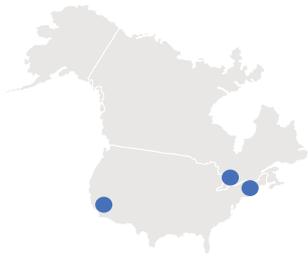
## Highly Trained Service Technicians

Our highly-qualified technicians go through 200 hours of training and must pass rigorous exams to become certified before servicing pipettes.



## Thorough Maintenance

Our calibration services include a thorough check of the pipette internally and externally, ensuring that wearable parts like O-rings are replaced in a timely manner.



## In Field or Service Center

For fastest return times, field service is available in most locations. We also have all services available at service centers on either coast with a 5 day or less turn around time for standard calibration.



## Fully Accredited Service Centers

ISO 17025 accredited calibration processes are available in the field or at the service center. As a liquid handling expert partner, we can help you meet any regulatory need.

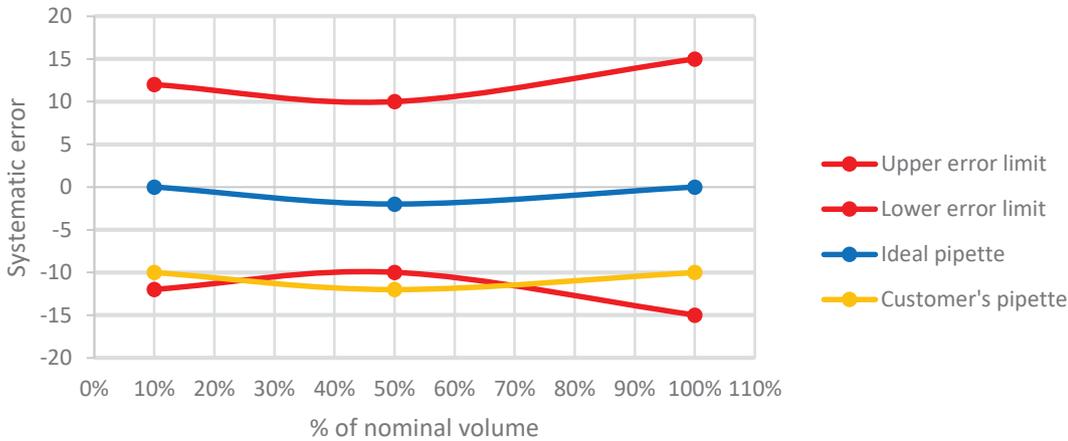


## Over 55 years of Experience

Since we released the first piston stroke pipette in 1961, we continue to manufacture and service pipettes with a passion for improving user results.

# What Else is Important?

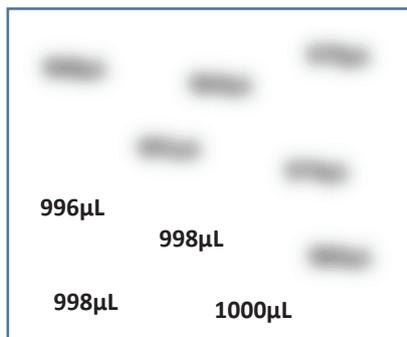
## Calibrating with 3 volumes



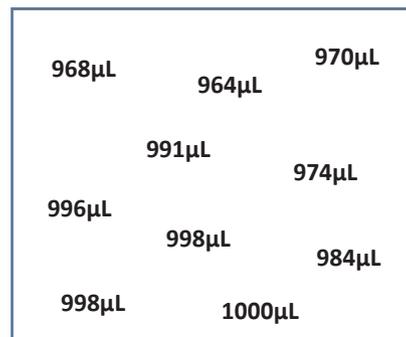
ISO 8655 requires 3 volumes be tested during calibration: 10 %, 50 %, and 100 % of the pipette’s max volume. Since the calibration of a pipette is not linear from minimum to maximum volume, it is possible to have the 10 % and 100 % volumes perform within the error limits while the 50 % volume does not.

The graph above demonstrates this phenomenon with the yellow line representing a sample pipette that is out of tolerance. This user would not know their pipette isn’t functioning properly without testing all 3 volumes.

## 4 measurements or 10 measurements



4 measurements – avg. 997 µL, 0.3 % error



10 measurements – avg. 984 µL, 1.6 % error

The boxes above represent a set of calibration measurements from a 1000 µL pipette. On the left, taking only 4 measurements produces an error of 0.3 %, well within the pipette’s 0.6 % error limit. On the right, taking all 10 measurements produces an error of 1.6 %,

considerably outside the pipette’s 0.6 % limits. By using the ISO 8655 standard 10 measurements, more confidence in the calibration is produced and the results become more statistically accurate.

# What Do You Need to Do?

## Mail In Order Process

### Step 1: Order

- > Complete the online pipette calibration authorization form at <https://epexpress.eppendorf.us/>
- > Submit online and print 2 copies of the completed authorization form

### Step 2: Pack and Ship Pipettes

- > Include 1 copy of authorization form with shipment
- > Properly decontaminate and package equipment

## On-site Order Process

### Step 1: Order

- > Request a quote for service from your local representative
- > Generate a P.O. and submit to customer service or your local sales person
- > A local representative will reach out to schedule services

### Step 2: Prepare for Service Visit

- > Your local technician will contact you to confirm timing and dates
- > Gather pipettes and fill out proper decontamination form found at [www.Eppendorf.com/epServices](http://www.Eppendorf.com/epServices)
- > Set aside 5 feet of bench space in a draft and traffic free area for technician to work

# Frequently asked questions

## How often should you calibrate?

You decide within the scope of your quality standards on the calibration frequency. The frequency of calibration may vary depending on the number of users, the frequency of use of the pipettes, as well as the types of dispensed liquids and accepted tolerances. The renewal of conformity is recommended at least once a year.

## What is a renewal of conformity?

The calibration / renewal of conformity consists of a pipette maintenance and an As-Left calibration strictly adhering to ISO 8655 criteria, ensuring that the pipette meets conformity to ISO 8655 requirements.

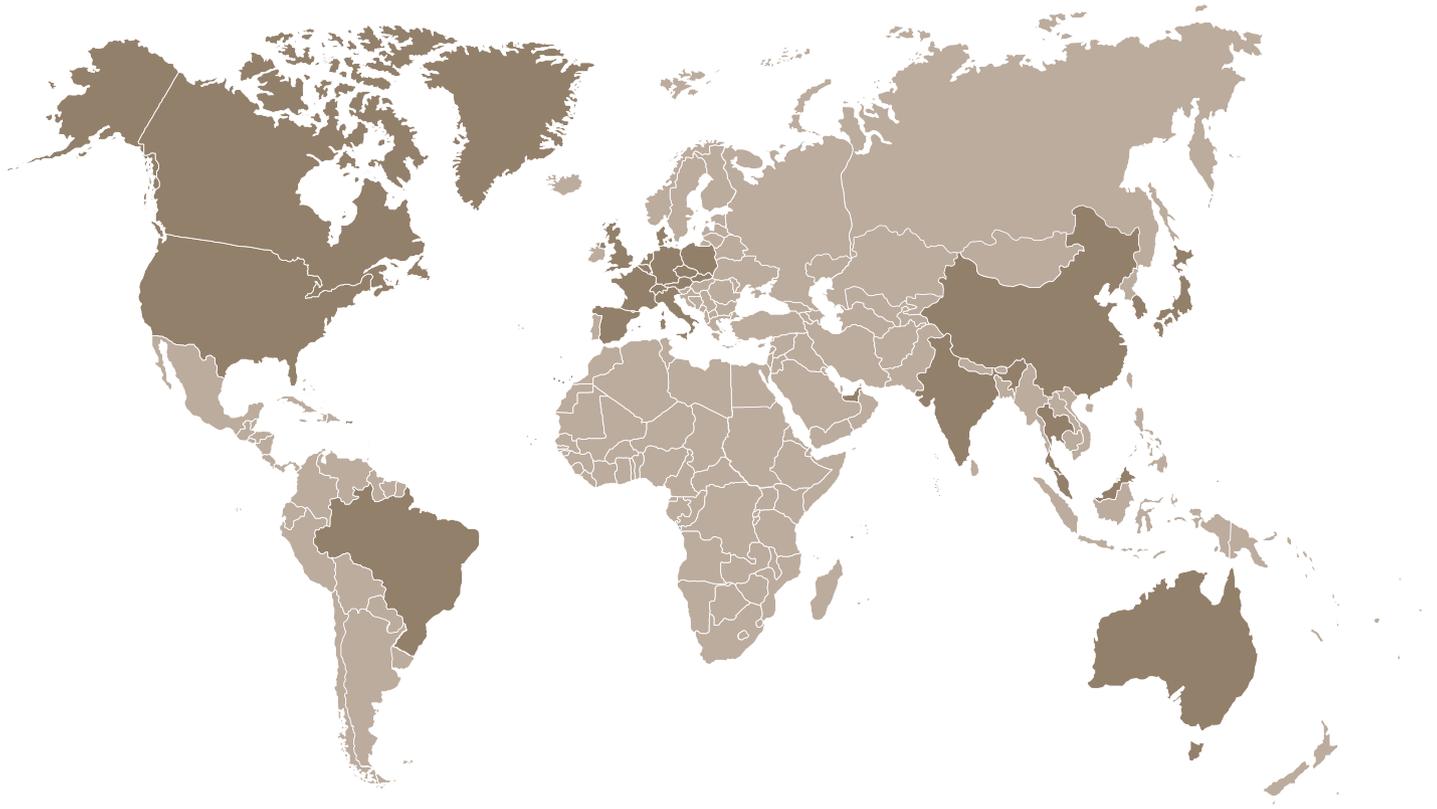
## What is an ISO 17025 calibration certificate?

An ISO 17025 calibration certificate not only contains the data from the calibration protocol, but also contains the measurement uncertainty and logo of the calibration lab's accreditation. The ISO 17025 calibration certificate ensures that traceability to measurement standards is possible.

## What is an As-Found protocol?

The As-Found protocol is performed before the As-Left calibration or renewal of conformity. This protocol shows the pipette's calibration as is and is indicative of the pipette's performance prior to the renewal of conformity.

# Services for Global Organizations



**Eppendorf Service Organization**

**Eppendorf-trained and certified Service Provider**

Eppendorf's pipette service spans the globe through a series of ISO 17025 accredited corporate service centers and Eppendorf trained and authorized service providers.

Standardizing on Eppendorf's pipette service ensures that your pipetting results are consistent and reproducible across any geography.

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