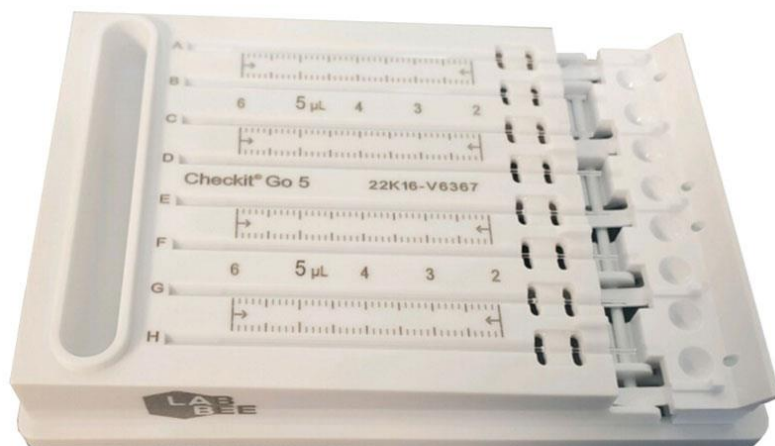




LABBEE Checkit[®] Go Capillary Technology

Instant Evaluation for Liquid Handlers and Pipettes





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Introduction

Pipette Accuracy

Most laboratories calibrate their pipettes annually. Regular use, mishandling, or accidental drop can lead to inaccuracies in the volume dispensed by pipettes. It is therefore, equally important to validate the accuracy of the liquid handler robot or manual pipettes between calibrations. A pipetting error of 5% may not be a cause for concern while loading protein samples for western blot, but it can lead to hard-to-interpret data in an experiment that relies on the accuracy of pipetting like qRT-PCR.

LabBee Checkit® Go enables validation of pipettes

If a pipette is calibrated, why should it be validated?

Calibration vs. Validation

Calibration has two objectives:

1. To check the accuracy of a device to the value of a standard.
2. To repair the device if it out of calibration.

Validation, on the other hand, verifies that the instrument used is dispensing correct volumes. It does not include the repair of the device, if it is no longer accurate, but notifies the user for the need of an unexpected calibration.

Pipettes are recommended to be calibrated annually to maintain their performance to avoid incohesive data generation and wastage of resources. Between calibrations pipettes should be validated in order to be confident with the pipetting accuracy especially before setting up sensitive and large experiments. How often one should check for the accuracy depends on how frequently the pipettes are used.

The two most common ways to check manual or robotic pipette's accuracy are gravimetric and colorimetric/photometric methods.

The gravimetric method measures pipette accuracy by weighing water dispensed by the pipette. This is an indirect measurement, whereby one converts the measured weight to



volume. This requires a highly controlled environment (air pressure, relative humidity, temperature, and vibrations) and a high precision balance as the environmental conditions along with a highly skilled technician are vital for accurate and high quality pipette validation by gravimetric method. This is not an impossible task to perform, but it is tedious and requires extreme care and experience for accuracy and reliability.

The colorimetric method eliminated the need for rigorous environmental controls, but it is also an indirect measurement. Here, an unknown volume of dye is pipetted into a known volume of diluent and the resulting dye concentration is measured using a photometer. The readings from the photometer is then used to back-calculate the dye volume. This method requires highly standardized consumables including the dye which must be carefully manufactured and calibrated to produce results of high accuracy.

Both of these methods are susceptible to errors due to surface tension or viscosity differences between the liquids in the experimental samples and the liquids used in the calibration (distilled water or concentrated dye).

In the past decades, kits have been introduced to streamline various biological tasks to control variations, to minimize biohazard exposure and to save time (e.g., DNA/RNA isolation kits).

So, why not streamline the routine task of validating pipette accuracy, you ask?

Asking questions is the first way to begin change

-Kubra Sait



LABBEE has the solution!

LabBee Checkit® Go for Automated Liquid handlers + multi-channel pipettes

LabBee Checkit® Go Technology

Checkit is a microfluidic device set with precisely-cut glass microtubes and functions based in capillary action. Capillary flow occurs when the dispensed liquid spontaneously enters the microchannels in Checkit.

The precise geometry of the microchannels in LabBee Checkit® Go and the capillary action of the dispensed liquids result in accurate and repeatable volumetric measurements of water-based solutions, even with different viscosities

The LabBee Checkit® Go is engineered to instantly check the pipetting accuracy of **liquid handlers or multichannel pipettes**. It is a one-time, easy to use, disposable cartridge. The LabBee Checkit® Go cartridges have the same size format as well plates and therefore are compatible with all the liquid handlers that operate with 96-well plates. In addition, the LabBee Checkit® Go cartridges are also designed to check the accuracy of all manual multichannel pipettes including electronic pipettes.

Benefits of switching to the LabBee Checkit® Go for your routine verification of pipetting accuracy are:

- Ease of use
- Fast and Convenient
- Accurate
- Versatile
- Cost-effective
- Reliable and Proven

EASE OF USE

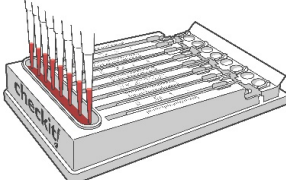
The accuracy of the multichannel pipettes can be measured by the end user in 4 simple steps, without any need for special training.



1. **Fill it** – Fill the pipette tips with the dye (provided).
2. **Dispense it** – Dispense the dye into the LabBee Checkit® Go cartridge.
3. **Flip it** – Flip the well tab with your finger or robot.
4. **Check it** – Read and record the level of the dye in the capillary tube either manually or by using our app.

Instructions for using the LabBee Checkit® Go

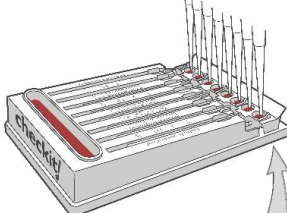
1. Fill it



Draw dye into the pipette or robot's tips.

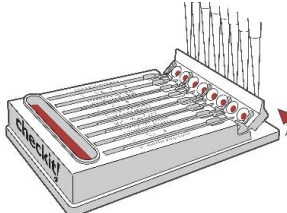
IMPORTANT: It is crucial that the dye is dispensed into the center of each well. Avoid splatter or dispensing air bubbles.

2. Dispense it



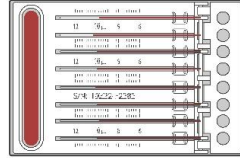
Pipette the dye into the wells.

3. Flip it

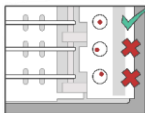


Using light force, flip up the 8-well tab with your finger or pipette tips to fully vertical.

4. Check it



In a few seconds, use the graduations to determine the dispensed volume.



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FAST AND CONVENIENT

To check the accuracy of multichannel pipettes of both manual and robotics liquid handlers, just dispense the set volume into wells simultaneously and flip the wells to measure the accuracy of all eight channels in under 10 seconds. This means that you do not need an expensive, high-precision, calibrated scale to measure the weight of a tiny droplet 8 times! This tedious and time-consuming option is not even feasible with the multichannel pipettes of robotic liquid handlers.

LabBee Checkit® Go can check the accuracy of up to 8-channels of multichannel pipettes simultaneously in just 10 seconds.

ACCURATE

While using a LabBee Checkit® Go, the measurement of the volume of the liquid dispensed is done directly and not by calculating the weight of the water (gravimetric method) or by the color change of a liquid due to the addition of a dye (colorimetric method).



Due to the encasement of the dispensed droplets in glass tubes, the LabBee Checkit® Go minimizes evaporation – a major concern in the gravimetric method.

The LabBee Checkit® Go does not require dispensing small volumes of concentrated dyes, which in itself can introduce errors due to the high viscosity of concentrated dyes – a major drawback in the colorimetric method.

LabBee Checkit® Go DIRECTLY measures the volume of the liquid dispensed and is superior to existing validation methods.

VERSATILE

A typical requirement for a calibration liquid in pipette calibrations is that it is double-distilled and degassed water. As such, a majority of pipettes are originally factory calibrated using water. We all have experienced viscous solutions that behave differently than aqueous solutions during pipetting. As such, any liquid that has a viscosity or surface tension higher or lower than water will impact the volume dispensed (e.g., master mix, samples with glycerol and ethanol, etc.).

So, how do you check the accuracy of the pipettes for solutions whose viscosities are different from water?

The LabBee Checkit® Go capillary technology facilitates measurements of water-based solutions, even with differing viscosities (Table 1). Volumetric measurements are accurate for a wide range of typical liquids.

Optionally, the dye, **available as lyophilized aliquots**, can be used to reconstitute the dye in the exact solution (e.g., master mix) that will be handled by robotic liquid handlers.

Table 1: LabBee Checkit® Go is compatible with solvents and samples of varied viscosity

LabBee Checkit® Go Models	Up to 10% DMSO	Up to 10% Ethanol	Up to 10% Glycerol	100% serum	100% plasma
MSLO-8V5-6	✓	✓	✓	✓	✓
MSLO-8J10-6	✓	✓	✓	✓	✓
MSLO-8K20-6	✓	✓	✓	✓	✓
MSLO-8K20-6	✓	✓	✓	✓	✓

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Contact Us

Reach out to us to order your LabBee Checkit[®] Go and be ready to be amazed!

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