

# PLT unit

## Pipette Leak Testing Unit



Functional testing of  
your air-displacement  
pipettes in seconds

Automatic documentation  
of test results with  
the PLTconnect software

More security  
while pipetting



**BRAND. For lab. For life.**



# PLT unit Pipette Leak Testing Unit

The most frequent cause of inaccuracy in air-displacement pipettes is leakage. This arises from damage either to the seals, pistons, or tip cones. Often not detectable by the naked eye, leaks lead to significant volume errors. The BRAND® pipette leak tester (PLT unit) for air-displacement pipettes finds even the smallest leaks within seconds.

- Limit values for the commercially available single- and multichannel pipettes in the volume range 1 µl to 10 ml are pre-programmed.
- Testing with and without tips
- Test results in seconds
- Patented
- PLTconnect Software for the documentation of the test results

According to monitoring of measuring instruments, air-displacement pipettes must be checked at regular intervals and the results must be compared with the ISO 8655-2 error limits. However, a calibration certificate only reflects the results at the time of testing. The time between these calibrations is crucial, since leaks can occur at any time.

Well over 80% of pipettes sent in for repair have leaks and are outside their volume tolerances, even if they don't drip.

While the PLT unit cannot replace regular gravimetric testing, daily pipette checks can provide a safeguard during the periods between calibrations. Even the smallest leaks are detected! Process reliability for the pipettes is thus significantly improved.

## Leak rates and their detection

The leak rate is a measure of the quantity of material that flows through a leak per time unit. For air-displacement pipettes the PLT unit determines the rate through a differential pressure measurement, i.e., after creating a negative pressure, the pressure rise over a given time is measured.

### ■ Complex determinations

The leak rate is determined by considering complex physical relationships. Calculation of the limit values resident in the PLT must include factors such as the dead volume of the pipette/tip system, flow cross-section of the pipette tip, pressure rise per time unit, pipette volume and type, etc.

### ■ The pV value

The pV value is the product of the pressure and the volume of a certain quantity of a gas at the prevailing temperature. This is a measure of the quantity of material or the mass of the gas.

### ■ The leak rate $Q_L$

The leak rate  $Q_L$  is the ratio of the pV value and the period of time during which the gas flows through a path cross-section.

### ■ The volume loss

For the pipette test, hPa ml/s is a suitable unit for the leak rate. A leak rate of e.g., 1 hPa ml/s at an air pressure of 1000 hPa means a volume loss of about 1 µl/s.



## Testing with and without tip

To check the overall pipette system, the test is conducted with mounted, unused tip.

When a leak has been identified, the test can be repeated without a tip to determine whether the leak arises from the tip cone/tip coupling region.



## Dynamic or static test?

The **dynamic test** can rapidly determine whether a defective piston (contamination, scratches, etc.) has caused a leak. The pipette button must be pushed down numerous times during the measurement period. The associated piston movement allows a defective piston to be recognized.

In the **static test**, the pipette button is not pressed during the test procedure, i.e. the piston doesn't move. This will only determine a leak in a general way, without attributing it to a particular component.

## Limit values

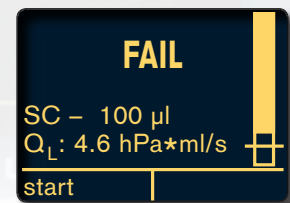
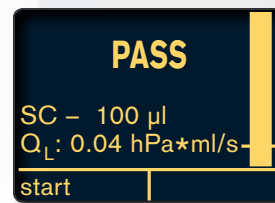
The limit values referenced during testing represent a warning limit, from which significantly lower volume values can also be determined gravimetrically. This is one quarter of the volume tolerances, according to ISO 8655-2.

The limit value for the leak volume of a given pipette allows the leak rate to be calculated. These calculations, which are based on over 35 years of experience in the development and production of pipettes, include the dead volume and the intake characteristics, among other things.

If the pipette is mechanically defect-free, clean, and the test is carried out properly with the BRAND PLT unit, then the instrument is within the ISO 8655-2 tolerances.

The marks in the vertical progress bars in the display represent the resident limit values for the leak rate  $Q_L$ .

With the correlation table in the PLT operating manual, the missing volume can be approximately determined from the leak rate. The level of the progress bar in the display indicates whether the pipette is leak-tight, and whether it lies within the tolerance limits or leaks.

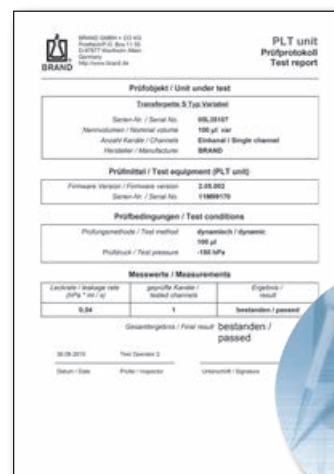


## PLTconnect software **NEW!**

The PLTconnect software gives you the additional security of knowing all your test results are documented at all times. PLTconnect transmits test results for each pipette automatically and securely through the USB port on the PC, storing them there in a database or as a test certificate. This means you always have access to test results for your pipettes, and can print out certificates as needed.



Back of the instrument with AC adapter socket and USB port



# Ordering Information

## PLT unit (Pipette Leak Testing Unit)

Including one 1-channel pipette adapter\* each for testing single-channel air-displacement pipettes with tip (mounted) and without tip, 2 plugs, 3 replacement PE filters for the pipette adapters, universal AC adapter, quality certificate and operating manual. Pack of 1.

Cat. No. 7039 70

\* 4-channel pipette adapter optional



## 1-channel pipette adapter

for testing of single-channel air-displacement pipettes with tip mounted, including 1 plug. Pack of 1.

Cat. No. 7039 75



## 4-channel pipette adapter

for testing of multichannel air-displacement pipettes with and without tips, including 4 plugs. Pack of 1.

Cat. No. 7039 77



for testing of single-channel air-displacement pipettes without tip, including 1 plug. Pack of 1.

Cat. No. 7039 76



## Filters

PE, for pipette adapter. Pack of 10.

Cat. No. 7039 78



## Universal AC adapter

Input: AC 100 V - 240 V, 50/60 Hz  
Output: DC 6,5 V, 800 mA  
Pack of 1.

Cat. No. 7039 79



## PLTconnect software

For the documentation of examinations. Pack of 1.

Cat. No. 7039 80



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