



SOP
0623

Transferpette® multichannel

Standard Operating Procedure

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1. Introduction

The test instruction transfers standards relevant to the test into a practical form. It can therefore be used as a basis for test equipment monitoring according to DIN EN ISO 9001, DIN EN ISO 10012, and DIN EN ISO/IEC 17 025.

Basically, we recommend an inspection every 3...12 months. However, the testing interval may be adjusted to your individual requirements. In the case of high frequency of use or the use of aggressive media, it is advisable to check the instruments more frequently.

The following instruments can be checked using these test instructions:

Instruments	Types	Relevant standards
Transferpette® S -8/-12	8-fold	ISO 8655:2022
Transferpette® -8/-12 electronic	12-fold	
Transferpettor		

For the regular checks according to DIN EN ISO 9001, DIN EN ISO 10 012, and DIN EN ISO/IEC 17 025 as well as the GLP Guidelines, we offer a calibration service (see '*BRAND Calibration Service, p. 20*'). This calibration service saves you time and internal effort, especially if you still have to perform calibrations in addition to ongoing operation.

Legend

In order to simplify the collection of the relevant data, the SOP refers to the respective items in the test report. The following graphics indicate to these positions:

Example:



Position in the test report:






Instrument

In the appendix, you will also find the health clearance form required to send in equipment as well as information about our accredited calibration laboratory and EASYCAL™ 5 calibration software.

2. Preparation

2.1. Instrument type and serial number

1. Determine instrument type and nominal volume. Enter in the test report: 
2. Read off the serial number. The serial number is located on the Housing . Enter in the test report: 
3. Read customers identification, if available. Enter in the test report: 

2.2. Minimum required equipment

You will need:

+ Transferpette®-8 or -12

+ Pipette tips

Use only original parts. Use only suitable tips. The best results are achieved with original BRAND pipette tips.

2.3. Cleaning

Recommendation: calibrate instrument before cleaning (actual value), and clean afterwards if necessary.

Clean the pipette shaft. Make sure there are no media residues. Wipe the outside with a soft cloth!

V-rings or O-rings damaged? Make sure there are no media residues. V-rings or O-rings can be replaced (see instructions for use).

Clean the housing adequately. Minor soiling permissible!

Liquid residues in the instrument? Disassemble and clean the instrument. See instructions for use.

2.4. Visual inspection for damage and leaks

- + Housing: general damage?
- + Pipette shaft tip: scratches on the surface?
- + Ejector unit
- + Piston: scratches or dirt on the surface?
- + Seal: scratches or dirt on the surface?

Enter the result into the test report (2).

Possible errors and the actions that can be taken as a result:

Error	Possible causes	Measures
Pipette tip no longer seals	Scratch on the pipette shaft tip	Procure spare parts; see instructions for use
Instrument is sluggish or leaking	Seal/piston soiled or damaged	Procure spare parts; see instructions for use

2.5. Functional test

1. Attach a new pipette tip.
2. Setting the nominal volume
3. Take up test liquid. Absorption of liquid not possible or very slow: note the information in the following table.
4. Test with BRAND leak tester PLT unit or hold pipette vertically for approx. 10 s and observe whether a drop forms at the pipette tips.
 - If “Error” appears in the display of the PLT unit, note the information in the following table.
 - If a drop forms at the pipette tip: proceed according to the following table.
5. Dispense the test liquid again. Hold the pipette tip against the vessel wall and wipe it off.
6. The pipetting knob must move smoothly and without jerks.
7. Eject tip Enter the result in the test report [3](#).

Possible errors and the actions that can be taken as a result:

(Measures for correcting other errors can be found in the respective operating instructions)

Error	Possible cause	Measures
Suction not possible or very slow	Pipette shaft or pipette shaft tip clogged	Carry out cleaning; see instructions for use
“Error” when testing with PLT unit or droplet forms at pipette tip	<ul style="list-style-type: none"> + Pipette tip not properly attached + Seal or piston defective + V-ring on pipette shaft defective 	<ul style="list-style-type: none"> + Use new pipette tips, and attach them firmly. + Clean or replace the seal or piston; see instructions for use + Replace V-ring; see instructions for use

3. Test instruments and accessories

Test instruments and accessories for Transferpette® with nominal volume $\geq 50 \mu\text{l}$

- + Room: draft-free, low temporal and spatial temperature fluctuations.
- + A recipient vessel filled with deionized or distilled water (e. g. Erlenmeyer flask) (in accordance with ISO 3696, at least quality 3) Adjust the water and ambient temperature by max. 0.5°C . Prevent cooling of the water in the vessel by evaporation.
- + A weighing vessel filled with a small amount of water (e.g., Erlenmeyer flask). Cover at least the bottom, and ensure protection against evaporation if the test volume is $< 100 \mu\text{l}$
- + Thermometer with a max. measuring deviation of $\pm 0.2^\circ\text{C}$.
- + Hygrometer: taking into account the measurement uncertainty of the hygrometer, a relative humidity of 40...60% should be achieved.
- + Place Transferpette® with accessories in the test room for at least 2 h (not packed!) in order to achieve an adjustment of the instruments with the ambient temperature.
- + A balance with the following specifications:

Nominal volume of the instrument to be tested	Resolution of the display	Repeatability and linearity	Standard measurement uncertainty
V	mg	mg	mg
$1 \mu\text{l} < V \leq 10 \mu\text{l}$	0.001	0.002	0.002
$10 \mu\text{l} < V \leq 100 \mu\text{l}$	0.01	0.02	0.02
$100 \mu\text{l} < V \leq 1,000 \mu\text{l}$	0.1	0.2	0.2
$1 \text{ml} < V \leq 10 \text{ml}$	0.1	0.2	0.2

Test instruments and accessories for Transferpette® with nominal volume $\leq 50 \mu\text{l}$

- + Room: draft-free, low temporal and spatial temperature fluctuations.
- + A recipient vessel filled with deionized or distilled water (e. g. Erlenmeyer flask) (in accordance with ISO 3696, at least quality 3) Adjust the water and ambient temperature by max. 0.5°C . Prevent cooling of the water in the vessel by evaporation.
- + Thermometer with a max. measuring deviation of $\pm 0.2^\circ\text{C}$.
- + Hygrometer: taking into account the measurement uncertainty of the hygrometer, a relative humidity of 40...60% should be achieved.
- + Place Transferpette® with accessories in the test room for at least 2 h (not packed!) in order to achieve an adjustment of the instruments with the ambient temperature.
- + Disposable micropipettes intraEND $100 \mu\text{l}$; order No. 7091 44 or pipette holder Order no. 7086 05
- + Micro-weighing vessel Order no. 7084 70
- + A balance with the following specifications

Nominal volume of the instrument to be tested	Resolution of the display	Repeatability and linearity	Standard measurement uncertainty
V	mg	mg	mg
$1 \mu\text{l} < V \leq 10 \mu\text{l}$	0.001	0.002	0.002
$10 \mu\text{l} < V \leq 100 \mu\text{l}$	0.01	0.02	0.02
$100 \mu\text{l} < V \leq 1,000 \mu\text{l}$	0.1	0.2	0.2
$1 \text{ml} < V \leq 10 \text{ml}$	0.1	0.2	0.2

Traceability of test results to the national standard

By using calibrated test equipment (balance and thermometers), the requirement of DIN EN ISO 9001, DIN EN ISO 10 012, and DIN EN ISO/IEC 17 025 for traceability of the test to the national standard is fulfilled. The calibration of the balance can be done by DAkkS calibration, a direct official calibration of the balance, or by calibrating the balance with correspondingly traced weights (corresponding precision). The thermometer can also be calibrated by means of a DAkkS calibration, an official calibration, or by comparison with corresponding traceable thermometers (under defined conditions).

4. Gravimetric testing

The following sections describe how to perform gravimetric testing. If you wish to perform the test, follow the procedure appropriate for your test instrument. As an aid, document their recorded results in the test report. The identifiers (Ex. **1** ... **6**) refer to the respective location in the test report.

4.1. For mechanical and electronic Transferpette® with nominal volume > 50 µl

1. Set 10 or 20% of the nominal volume.
2. Determine the temperature of the deionized water. Enter the result in the test report **4**.
3. Place the weighing vessel (containing a small amount of deionized water) on the balance and tare the balance.
4. Attach a new pipette tip. Perform conditioning: Take up and dispense test liquid five times. Conditioning increases the precision of the test.
5. Take up the test liquid from the receiving vessel.
 - Press the pipetting button of the mechanical Transferpette® to the first stop (not applicable for the Transferpette® electronic).
 - For 100...1,000 µl instruments, immerse the pipette tip 2...4 mm vertically into the sample; for 5 ml and 10 ml instruments, 3...6 mm.
 - For the mechanical Transferpette®, let the pipetting button slide back slowly and evenly. For the electronic Transferpette®, press the pipetting button to take up liquid.
 - Keep the tip in the test liquid for approx. 1 s; for 5 ml and 10 ml instruments, approx. 3 s.
6. Remove the weighing vessel from the balance.
 - not applicable if special pipette calibration balance is used.
7. Dispense the sample into the weighing vessel.
 - Place the pipette tip at an angle of 30...45° to the vessel wall.
 - For the mechanical Transferpette®, press the pipetting button at a steady speed to the first stop, and hold it down. For the electronic Transferpette®, press and hold the pipetting key.
 - Completely empty the pipette tip by pressing all the way down (occurs automatically with the electronic Transferpette®).
 - Wipe the pipette tip on the vessel wall over a length of about 10 mm.
 - Allow the pipetting button of the mechanical Transferpette® to slide back evenly. Release the pipetting button of the electronic Transferpette®.
8. Place the weighing vessel on the balance, and note the weight value.
 - Enter the result in the test report **5**.
9. Re-tare the balance.

10. Perform points e) through h) 10 times.
 - Enter the result in the test report **5**.
11. Then pipette analogously at 50% and 100% of the nominal volume.
12. In each case, start at d).
 - Only for variable and electronic instruments.
 - Enter the result in the test report **5**.
 - This results in 30 weight values (variable and electronic instrument) or 10 weight values (fixed instrument).

4.2. For mechanical and electronic Transferpette® with nominal volume $\leq 50 \mu\text{l}$

Comment:

For pipettes with a nominal volume $\leq 50 \mu\text{l}$, the tolerance limits are usually smaller than $0.5 \mu\text{l}$. This low tolerance limit means that the evaporation of water during the test has a relatively high influence on the measurement result. For this reason, a test method that largely prevents evaporation must be used for pipettes $\leq 50 \mu\text{l}$. If a special pipette calibration balance with an "evaporation trap" is used, carry out the procedure as in 4.1 BRAND has developed a new test method especially for this purpose. The weighing vessel used is a disposable micropipette or a micro-weighing vessel; these allow almost no evaporation.

1. Set 10 or 20% of the nominal volume.
2. Determine the temperature of the deionized water. Enter the result in the test report **4**.
3. Attach a new pipette tip. Perform conditioning: Take up and dispense test liquid five times. Conditioning increases the precision of the test.
4. Clamp the disposable micropipette to the pipette holder, place it on the balance, and tare the balance or the micro-weighing vessel.
5. Take up the test liquid from the receiving vessel.
 - Press the pipetting button of the mechanical Transferpette® to the first stop (not applicable for the Transferpette® electronic).
 - Immerse the pipette tip 2...3 mm into the sample.
 - For the mechanical Transferpette®, let the pipetting button slide back slowly and evenly. For the electronic Transferpette®, press the pipetting button to take up liquid.
 - Keep the tip in the test liquid for approx. 1 s
6. Remove the disposable micropipette or micro-weighing vessel from the balance
 - The pipette holder facilitates handling.
7. Dispense the sample into the weighing vessel. Dispense the sample into the disposable micropipette or micro-weighing vessel.

- Attach the disposable micropipette as far as possible to the pipette tip or insert the pipette tip into the cone of the micro-weighing vessel.
 - Press and hold the pipetting button on the mechanical Transferpette® at a steady speed until the first stop; press and hold the pipetting button on the electronic Transferpette®.
 - Completely empty the pipette tip by pressing all the way down (occurs automatically with the electronic Transferpette®). An air bubble forms in the disposable micropipette.
 - Remove the disposable micropipette or micro-weighing vessel from the pipette tip while pressing all the way down.
 - Allow the pipetting button of the mechanical Transferpette® to slide back evenly. Release the pipetting button of the electronic Transferpette®.
8. Place the disposable micropipette or micro-weighing vessel on the balance; note the weight value.
- Enter the result in the test report **5**.
9. Re-tare the balance.
10. Perform points e) through h) 10 times.
- Enter the result in the test report **5**.
11. Then pipette analogously at 50% and 100% of the nominal volume.
12. In each case, start at d).
- Only for variable and electronic instruments.
 - Enter the result in the test report **5**.
 - This results in 30 weight values (variable and electronic instrument) or 10 weight values (fixed instrument).

5. Evaluation of gravimetric test results

The weight values obtained during the gravimetric test are only the mass values of the dispensed volume. In order to obtain the actual volume, an adjustment calculation must be carried out. The following calculations must be carried out:

Step	Calculation	Remark
1.	Mean weight: (Example for 10 weight values) $\bar{x} = \frac{x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7 + x_8 + x_9 + x_{10}}{10}$	
2.	Mean volume: $\bar{V} = \bar{x} * z$	Factor Z (see Table 1). Enter the result in the test report 6a .
3.	Standard deviation: $s = Z * \sqrt{\frac{\sum(x_i - \bar{x})^2}{n - 1}}$	Factor Z (see Table 1). Enter the result in the test report 6b .
4.	Accuracy: $A\% = \frac{\bar{V} - V_0}{V_0} * 100$	Enter the result in the test report 6c .
5.	Coefficient of variation: $CV\% = \frac{100 s}{\bar{V}}$	Enter the result in the test report 6d .
	Actual/nominal value comparison: For error limits, see 'Manufacturer error limits for multichannel pipettes, p. 13' and 'ISO error limits for multichannel pipettes, p. 14' and the following accuracy tables for the respective instrument, or define your own error limits.	Enter the result in the test report 6e .
	Result:	Enter the result in the test report 6g .

If the calculated values (A% and CV%) are less than or equal to the error limits, the instrument is in good working order.

If the calculated values are greater than the error limits:

- + Check that all instructions have been carried out correctly.
- + Follow the instructions in the "Troubleshooting" section of the instructions for use.
- + Adjust the Transferpette®-8/-12, Transferpette®-8/-12 electronic, or Transferpette® S -8/-12 according to the instructions for use.

If these measures do not lead to success, we recommend that you use the BRAND calibration service (see 'BRAND Calibration Service, p. 20').

We recommend using software to help perform the calculation and evaluation. For this purpose, BRAND offers the EASY-CAL™ calibration software (see [here](#)). This convenient software runs on Windows and speeds up the calculation considerably.

5.1. Possible volume error

Possible volume errors and the actions that can be taken:

Error	Possible causes	Measures
Volume too small	Pipette tip not properly attached	Use new pipette tips, and attach them firmly
	Seals or piston defective	Clean or replace the seal or piston; see instructions for use
	V-ring or O-ring defective	Exchange V-ring or O-ring
	Pipette shaft tips no longer screwed on tightly	Retighten pipette shaft tips
Volume too large	Pipetting button pressed too far	Pay close attention to the first stop
Other influencing variables	Instrument incorrectly adjusted	Readjust instrument
	Temperature calibration of instrument, ambient, and water temperature not completed	Perform temperature adjustment

5.2. Temperature and factor Z

Extract from DIN EN ISO 8655

Table refers to 1,013 hPa.

In the validity range from 950 hPa to 1040 hPa.

Temperature: ° C	Factor Z ml/g		Temperature: ° C	Factor Z ml/g
15	1.0020		23	1.0035
15.5	1.0020		23.5	1.0036
16	1.0021		24	1.0038
16.5	1.0022		24.5	1.0039
17	1.0023		25	1.0040
17.5	1.0024		25.5	1.0041
18	1.0025		26	1.0043
18.5	1.0026		26.5	1.0044
19	1.0027		27	1.0045
19.5	1.0028		27.5	1.0047
20	1.0029		28	1.0048
20.5	1.0030		28.5	1.0050
21	1.0031		29	1.0051
21.5	1.0032		29.5	1.0052
22	1.0033		30	1.0054
22.5	1.0034			

5.3. Manufacturer error limits for multichannel pipettes

Transferpette® S -8/-12

Volume range [µl]	Partial volume [µl]	A* ≤ ±	CV* ≤ %	Sub steps [µl]	Recommended tip type [µl]
0.5...10	10	1.6	1.0	0.01	0.5...20
	5	2	2		
	1	8	6		
5...50	50	0.8	0.4	0.05	2...200
	25	1.4	0.8		
	5	6	3		
10...100	100	0.8	0.3	0.1	2...200
	50	1.4	0.6		
	10	4	2		
20...200	200	0.8	0.3	0.2	2...200
	100	1.4	0.6		
	20	4	1.5		
30...300	300	0.6	0.3	0.5	5...300
	150	1.2	0.6		
	30	3	1.5		

*A = Accuracy, CV = Coefficient of Variation

Transferpette® -8/-12 electronic

Volume range [µl]	Partial volume [µl]	A* ≤ ± %	CV* ≤ %	Substeps [µl]	Recommended tip type [µl]
0.5 - 10	10	1.2	0.8	0.01	0.5 - 20
	5	2.0	1.5		
	1	8.0	4.0		
1 - 20	20	1.0	0.5	0.02	0.5 - 20
	10	2.0	1.0		
	2	8.0	3.0		
5 - 100	100	0.8	0.25	0.1	2 - 200
	50	1.6	0.4		
	10	4.0	1.5		
10 - 200	200	0.8	0.25	0.2	2 - 200
	100	1.4	0.4		
	20	4.0	1.3		
15 - 300	300	0.6	0.25	0.5	5 - 300
	150	1.2	0.4		
	30	3.0	1.2		
50 - 1250	1250	1	0.25	1.0	50 - 1250
	625	1.2	0.4		
	125	5	1.2		

*A = Accuracy, CV = Coefficient of Variation

5.4. ISO error limits for multichannel pipettes

Nominal volume	μl	1	2	5	10	20	50	100	200	500
A ≤ ±	%	10	8	5	2.4	2.0	2.0	1.6	1.6	1.6
CV ≤	%	10	4	3	1.6	1.0	0.8	0.6	0.6	0.6

5.5. Error limits to be defined by the user

For calibration, the applicable error limits must be defined by the user. Different methods can be applied to accomplish this:

If the application requires it and the optimized test conditions exist for measurement, the error limits specified in the '*Manufacturer error limits for multichannel pipettes, p. 13*' can also be expected in the case of used, intact volumetric instruments.

In accordance with the German Calibration Law, however, it is also admissible to apply operational limits. The operational limits equate to double the calibration error limits. This means that the values of the manufacturer's error limits', *p. 13*' must be doubled. Users may also define their own individual error limits related to their particular application, which their calibrated (adjusted) measuring instrument should adhere to.

This procedure meets the requirements of DIN EN ISO 9001, DIN EN ISO 10 012, and DIN EN ISO/IEC 17 025.

6. Test report for volumetric instruments

1

Instrument

- Transferpette® S -8/-12
- Transferpette® -8/-12 electronic
- Transferpettor

Type

- 8-fold
- 12-fold
- other type

Nominal volume:

Serial number:

Customer's marking:

2

Damage

Nominal volume:

Serial number:

Customer's marking:

3

Operating defects

 Type of damage Damage remedied none Type of functional defect Functional defect eliminated

4

Environment

Water temperature:

Balance:

Thermometer:

Relative humidity: (at least 35%):

Continued on next page

Correction factor Z:

5 Weight values of the gravimetric test

Test volume 10% μl

Target volume (mg) A(%) (Target) CV(%) Target

Weighing values:		Channel no:											
		1	2	3	4	5	6	7	8	9	10	11	12
X ₁	(mg)												
X ₂	(mg)												
X ₃	(mg)												
X ₄	(mg)												
X ₅	(mg)												
X ₆	(mg)												
X ₇	(mg)												
X ₈	(mg)												
X ₉	(mg)												
X ₁₀	(mg)												
X mean	(mg)												
V mean	(μl)												
A(%)	Actual												
CV%	Actual												
A(%)	Target												
CV%	Target												
Result	A												
Result	CV												

Test volume 50% μl

Target volume (mg) A(%) (Target) CV(%) Target

Weighing values:		Channel no:											
		1	2	3	4	5	6	7	8	9	10	11	12
X ₁	(mg)												
X ₂	(mg)												
X ₃	(mg)												
X ₄	(mg)												
X ₅	(mg)												

Weighing values:		Channel no:											
		1	2	3	4	5	6	7	8	9	10	11	12
X ₆	(mg)												
X ₇	(mg)												
X ₈	(mg)												
X ₉	(mg)												
X ₁₀	(mg)												
X mean	(mg)												
V mean	(μl)												
A(%)	Actual												
CV%	Actual												
A(%)	Target												
CV%	Target												
Result	A												
Result	CV												

Test volume μl
 Target volume (mg) A(%) (Target) CV(%) Target

Weighing values:		Channel no:											
		1	2	3	4	5	6	7	8	9	10	11	12
X ₁	(mg)												
X ₂	(mg)												
X ₃	(mg)												
X ₄	(mg)												
X ₅	(mg)												
X ₆	(mg)												
X ₇	(mg)												
X ₈	(mg)												
X ₉	(mg)												
X ₁₀	(mg)												
X mean	(mg)												
V mean	(μl)												
A(%)	Actual												
CV%	Actual												
A(%)	Target												
CV%	Target												
Result	A												
Result	CV												

The test was carried out according to DIN EN ISO 8655 and DIN EN ISO 4787.

Date: Signature:

7. Appendix

7.1. Abbreviations, units, and notations

The following abbreviations are used in this or other test instructions:

Symbol	A < B: A is less than B A ≤ B: A is less than or equal to B
Ranges	Example: 980...1,000 hPa Prevents sign confusion (i.e., en dash as minus sign) Example: 20 µl < V < 100 µl The volume V is between 20 µl and 100 µl (V is larger than 20 µl and smaller than 100 µl).
Materials	PFP: perfluorinated pentacene PMP: polymethylpentene PFA: perfluoroalkoxy polymer Boro 3.3: borosilicate glass AR-GLAS®: A soda-lime glass from SCHOTT AG, 55122 Mainz, Germany PUR: polyurethane
W1	Tare weight of the weighing vessel
W2	Weight of the weighing vessel filled with the medium to be weighed.
A	Correctness
CV	Coefficient of variation:
V	Volume
s	Second
l	Liter
ml	Milliliter(s)
µl	Microliters
g	Gram(s)
mg	Milligrams(s)

7.2. Declaration on the Absence of Health Hazards

Please enclose with the instrument or send as an e-mail to service@brand.de.

BRAND GMBH + CO KG

Otto-Schott-Str. 25

97877 Wertheim

service@brand.de

F +49 9342 808 91290

We are required by law to protect our employees against hazards caused by contaminated instruments. We therefore ask for your understanding that we do not perform calibrations | Repairs can be carried out only if we have received this declaration completely filled in and signed.

ATTENTION: If you are a customer outside of Germany, please contact our local service partner in your country. Please send in instruments from outside Germany only after being requested to do so. Unsolicited instruments cannot be processed.

To the instrument shipment from [] | To delivery slip number []

The undersigned hereby declares:

- + That the instruments have been carefully cleaned and decontaminated before shipment.
- + That the instruments pose no danger through bacteriological, viral, chemical, and/or radioactive contamination.

Applications:

[]

Media used:

- Acids
- Bases
- Solvents
- Serum, blood

Other: []

Decontamination measures:

[]

Company / laboratory (official stamp)

[]

Name:

[]

Pos.

[]

Date / legally binding signature:

Tel. / fax / e-mail

7.3. BRAND Calibration Service

BRAND offers a complete service that includes calibration and adjustment of BRAND and third-party instruments as well as any necessary maintenance and repair of BRAND instruments. This saves time and money, with the added benefit of testing by an independent laboratory. Find more information and the order form for the repair and calibration service on brand.de.

7.3.1. Range of instruments

1. Piston-operated pipettes (single- and multi-channel)
2. Bottle-top dispensers
3. Bottle-top burettes
4. Repetitive pipettes

7.3.2. Testing in accordance with DIN EN ISO 8655

A team of qualified staff, working in temperature and humidity controlled rooms and using state-of-the-art balances and calibration software, calibrates Liquid Handling instruments, regardless of their make, in accordance with DIN EN ISO 8655.

Variable volume instruments such as the HandyStep®Touch, HandyStep®Touch S, HandyStep® electronic, Transferpette®, Transferpette®S, Transferpette®electronic, Transferpette®-8/-12, Transferpette®-8/-12 electronic, Transferpette®S-8/-12, Transferpettor, Dispensette®, digital burettes, or Titrette® are checked at nominal volume, 50% of the nominal volume, and at 10% or 20% of the nominal volume.

To document the results, a detailed test report that fully complies with all relevant regulations is compiled.

The BRAND Calibration Service provides:

1. Calibration of Liquid Handling instruments, regardless of their make
2. Detailed calibration certificate
3. Return of instrument within a few working days
4. Cost-efficient implementation

7.4. Accredited calibration laboratory D-K-18572-01-00 by BRAND

Precise measurement results are essential in all areas – both for internal quality assurance and to meet various standard requirements.

BRAND has been accredited since 1998 – first by the DKD (German Calibration Service) and since 2013 by the DAkkS (German Accreditation Body) as a calibration laboratory for volumetric instruments in accordance with DIN EN ISO/IEC 17025.



Thanks to these many years of experience in the calibration of volumetric instruments as well as liquid handling instruments, customers also find BRAND a trustworthy service provider for test equipment monitoring

Standards (e.g., DIN EN ISO 9001 and DIN EN ISO/IEC 17 025) require that measured values are metrologically traceable to international units. Proof of this is provided by calibration certificates issued by accredited laboratories (often also called DAkkS or DKD calibration certificates).

With the calibration certificate in accordance with DIN EN ISO/IEC 17025, our customers receive a calibration that is internationally recognized as metrologically traceable in many countries. This is possible thanks to the membership of DAkkS in the EA (European Cooperation for Accreditation) and ILAC (International Laboratory Accreditation Cooperation).

Calibration certificate according to DIN EN ISO/IEC 17025

Kalibrierschein / Calibration certificate

erstellt durch das Kalibrierlaboratorium
issued by the calibration laboratory

BRAND GMBH + CO KG | Otto-Schott-Str. 25 | 97877 Wertheim | Germany

akkreditiert nach DIN EN ISO/IEC 17025:2018
German translation of ISO/IEC 17025:2017

Mitglied im / Member of
Deutschen Kalibrierdienst **DKD**

BRAND GMBH + CO KG

**Kalibrierzeichen
Calibration mark**

Objekt Object	Koblenstoffpipette Carbon pipette	Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).
Hersteller Manufacturer	BRAND GMBH + CO KG	Die DAKKS ist Unterzeichner der multilateralen Übereinstimmung der Europäischen Co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine.
Typ Type	Transferpipette 8 Variabel 100 - 1000 µl Transferpipette 8 Adjustable volume 100 - 1000 µl	Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.
Fabrikations-Nr. Serial number	23287543	The calibration certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI).
Kundenname Customer's name	Fa. Muster GMBH + CO KG Reisenstraße 42 47110 Münsterhausen Deutschland	The DAKKS is signatory to the multilateral agreement of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates.
Auftraggeber Customer	Fa. Muster GMBH + CO KG Reisenstraße 42 47110 Münsterhausen Deutschland	The user is obliged to have the object recalibrated at separate intervals.
Auftragsnummer Order No.		
Anzahl der Seiten des Kalibrierscheins Number of pages of the certificate	4	
Datum der Kalibrierung Date of calibration	2023-02-10	

Dieser Kalibrierschein darf nur vollständig und unverändert weitervertrieben werden. Auszüge oder Änderungen bedürfen der Genehmigung durch die Deutsche Akkreditierungsstelle GmbH. In auch das ausstellende Kalibrierlaboratorium, Kalibrierung ohne Unterschrift haben keine Gültigkeit.
This calibration certificate may not be reproduced other than in full except with the permission of both the Deutsche Akkreditierungsstelle GmbH and the issuing laboratory. Calibration certificates without signature are not valid.

Datum der Ausstellung
Date of issue

Freigabe des Kalibrierscheins durch
Approval of the certificate of calibration by

2023-02-10 Dr. Jennifer Rome

www.brand.de | calibration@brand.de 1 / 4

BRAND accreditation certificate

DAkkS
Deutsche
Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH

Befähigung gemäß § 6 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung

Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Kalibrierlaboratorium
**BRAND GMBH + CO KG
Otto-Schott-Str. 25, 97877 Wertheim**
die Kompetenz nach DIN EN ISO/IEC 17025:2018 besitzt, Kalibrierungen in folgenden Bereichen durchzuführen:
**Chemische und medizinische Messgrößen
Chemische Analysen und Referenzmaterialien
- Flüssigkeitsvolumen**

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 15.03.2022 mit der Akkreditierungsnummer D-K-18572-01. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 6 Seiten.

Registrierungsnummer der Urkunde: **D-K18752-01-00**

Berlin, 15.03.2022

J. V. Klaus
Im Auftrag DAKK - Vertrieb - Ing. (FH) Tim Hammoch
Fachbereichleiter

Die Urkunde samt Unterschrift gilt als Stand zum Zeitpunkt des Ausstellungsdatums wieder. Der ertrocknete Stand des Gültigkeitsbereiches der Akkreditierung ist der Datenbank akkreditierter Stellen der Deutschen Akkreditierungsstelle GmbH (DAkkS) zu entnehmen. <https://www.dakks.de/content/download/akkreditierter-stellen>

Bitte beachten Sie die Nutzungsbedingungen.

BRAND performs the calibration of liquid handling equipment in accordance with the gravimetric reference method in compliance with all requirements of DIN EN ISO 8655-6:2022.

For volumetric instruments made of glass or plastic, we work in accordance with DIN EN ISO 4787:2022 or, if necessary, in accordance with accredited in-house procedures.

As a rule, and unless otherwise requested by our customers, our calibration results are assessed for conformity on the basis of the ILAC-G8:03/2009 decision rule. For this purpose, the measurement result is evaluated taking into account the expanded measurement uncertainty with 95% overlap probability in relation to relevant standard or manufacturer tolerances. This provides our customers with good assistance in assessing whether the test equipment meets their own quality requirements.

7.4.1. Volumetric instruments with DAkkS calibration certificates issued by BRAND

BRAND calibrates the following volumetric instruments (new or already in use and regardless of make):

- + **Piston-operated pipettes**, from 0.1 µl to 10 ml
- + **Multi-channel piston-operated pipettes** from 0.1 µl to 300 µl
- + **Piston-operated burettes**, from 5 µl to 200 ml
- + **Dispensers and dilutors** from 5 µl to 200 ml
- + **Glass volumetric instruments**, adjusted to contain (TC, In) from 1 µl to 10,000 ml
- + **Glass volumetric instruments**, adjusted to deliver (TD, Ex) from 100 µl to 100 ml
- + **Plastic volumetric instruments**, adjusted to contain (TC, In) from 1 ml to 2,000 ml
- + **Plastic volumetric instruments**, adjusted to deliver (TC, Ex) from 1 ml to 100 ml
- + **Glass pycnometers**, from 1 cm³ to 100 cm³

7.5. EASYCAL™ Calibration software – test equipment monitoring made easy



The **EASYCAL™ 5** calibration software facilitates the monitoring of liquid handling instruments (piston-stroke instruments such as pipettes, dispensers, burettes, and manual dispensers) as well as volumetric instruments made of glass or plastic according to GLP/GMP and DIN EN ISO 9001. EASYCAL™ 5 can be used not only for BRAND instruments but also for the instruments of all manufacturers.

EASYCAL™ 5 performs all calculations automatically and compares them with the tolerances from the current standards or their individually defined limits. The tolerances of numerous instruments and the interface settings of over 100 test instruments (e.g., balances) are already stored for you.

Choose between a stand-alone version for working on one workstation (recommended for small laboratories where calibration is done by a single person) or a client/server version for parallel, distributed work on multiple workstations (floating licenses are installed on the server).

Functions:

- + Testing of liquid handling instruments and volumetric instruments made of glass and plastic in accordance with ISO 8655, ISO 4787, and others.
- + Open software, suitable for all volumetric instruments – regardless of manufacturer.
- + Extensive library with instrument specifications from well-known manufacturers can be expanded and modified by the user.
- + Scope of testing can be individually defined by the user via test plans. An extensive library of test plans is included to help you get started with EASYCAL™ 5 and minimize data entry time.
- + Instrument management – quickly and easily search and find the owner, test history, and next test date.
- + Continuous control of the current actual state during the test by graphical representations and ad hoc calculation of statistical values.
Reminder function for upcoming tests with automatic notification of the instrument owner via e-mail.
- + Integration of the address data of your customers and suppliers in a business partner database User administration with user roles (e.g., auditor, supervisor, system administrator) and access restriction to EASYCAL functions.
Dual-control principle for the release of critical data such as test plans, calibration orders before certificate printing, and instrument specification.
- + Interface connection via RS232 of measuring instruments such as balances, thermometers, barometers, and hygrometers with automatic transmission of the measured values.
- + In the integrated certificate editor, you can customize the certificates, and test reports supplied to your needs and create the design.