Liquid Handling · Easy Handling!

BRAND

Transferpette® S

F I R S T C L A S S · B R A N D

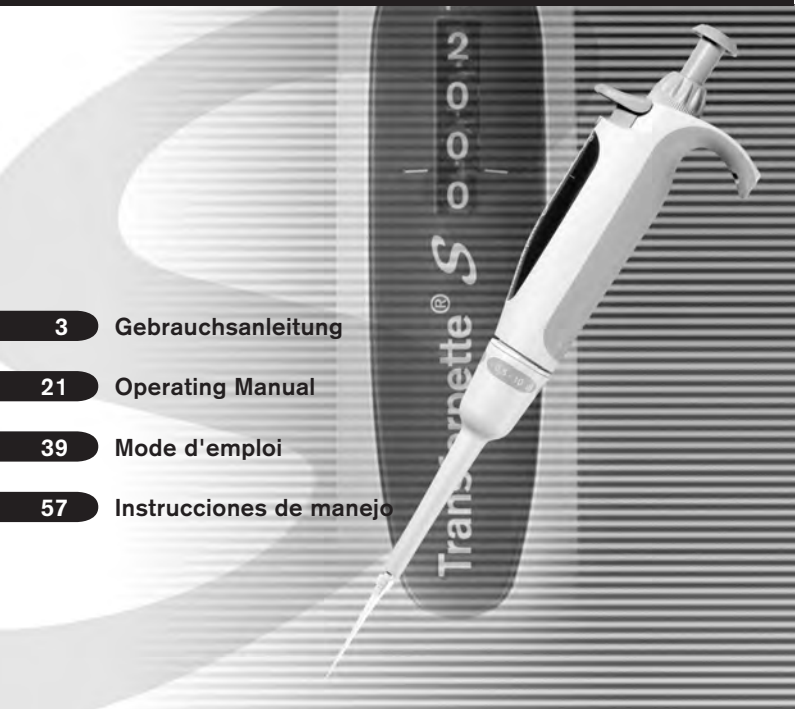


Table of Contents

Safety Instructions

Please read the following carefully!

This instrument may sometimes be used with hazardous materials, operations, and equipment. It is beyond the scope of this manual to address all of the potential safety risks associated with its use in such applications. It is the responsibility of the user of this pipette to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1. Follow general instructions for hazard prevention and safety instructions; e.g., wear protective clothing, eye protection and gloves.
2. Observe all safety precautions provided by reagent manufacturers.
3. Read this operating manual carefully.
4. Do not use the device outside of its defined operating limits. If in doubt, contact the manufacturer or supplier.
5. Always work in a way which endangers neither the user nor any other person. When emptying the tip, the sample must never spray or splatter into the surrounding area. Discharge into suitable collecting vessel.
6. Use only original manufacturer's accessories and spare parts. Do not modify the instrument in any way, other than as specifically described by the manufacturer.
7. Operate only with tip attached. When working with aggressive media, do not touch the tip orifice.

Limitations of use

The user has to ensure the compatibility of the instrument with the intended application.

This instrument cannot be used:

- for liquids incompatible with polypropylene
- for liquids of a very high vapor pressure

Viscous and highly adhesive liquids may impair volumetric accuracy. Volumetric accuracy may also be impaired when pipetting liquids that differ from ambient temperature by more than ± 1 °C/± 1.8 °F. Permissible operating range: 15-40 °C/59-104 °F.

Operating and Control Elements

Air-displacement pipette for pipetting aqueous solutions of medium density and low to medium viscosity.

(Fig. shows Transferpette® *S*, Digital adjustable)

Note:

Optimum analysis results can only be obtained with quality tips.
We recommend PLASTIBRAND® pipette tips.

- 5 ml and 10 ml instruments should only be used with the PE filter installed (see page 30).
- Pipette tips are disposables items!

1. Fitting the tip

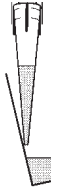
Use the correct tip according to the volume range or the color code. Ensure that the tip is securely seated.

2. Volume setting

a) Push the volume-change brake upward to disengage (UNLOCK).

b) Select the desired volume by rotating the volume-setting wheel. Avoid twisting and abrupt rotating motions during this adjustment.

c) Push the volume-change brake down to re-engage (LOCK). Note: The volume-change brake tightens but does not lock volume-setting wheel.



3. Aspirate sample

a) Press pipetting button to the first stop.

b) Hold the pipette vertically and immerse the tip 2 to 3 mm into the liquid.

c) Let the pipetting button slide back slowly. In order for the liquid to reach its end position, leave the tip immersed for another 1-2 s.

d) Touch the tip against the container wall.

4. Discharge sample

a) Place the pipette tip against the wall of the vessel. Hold the pipette at an angle of 30-45° relative to the container wall.

b) Press the pipetting button slowly to the first stop and hold it down.

For serum and liquids of high viscosity or low surface tension, observe adequate waiting time to improve accuracy.

c) The blow-out stroke empties the tip completely: Press the pipetting button down to the second stop.

d) While doing this, wipe the pipette tip against the wall of the container.

e) Remove the pipette tip from the contain-er wall and let the pipetting button slide back.

5. Ejecting the tip

Hold the pipette shaft over a suitable disposal container and press the tip ejection key to the stop.

Note:

ISO 8655 prescribes rinsing the pipette tip once with the sample liquid prior to the actual pipetting process.

Important!

Don't lay the instrument horizontal when the tip is filled. Liquid may enter and contaminate the instrument.

Checking the Volume

Depending on use, we recommend inspection of the instrument every 3 to 12 months. The cycle can, however, be adjusted to individual requirements.

The gravimetric testing of the pipette volume is performed according to the following steps and is in accordance with DIN EN ISO 8655, Part 6.

1. Set nominal volume

Set volume to the maximum volume indicated on the instrument (see page 24 for procedure.

2. Condition the pipette

Condition the pipette before testing by using a pipette tip to aspirate and discharge the test liquid (distilled H_2O) five times. After this, discard the pipette tip.

3. Carry out the test

a) Attach new pipette tip and prerinse one time with test liquid.

b) Aspirate liquid and pipette it into the weighing vessel.

c) Weigh the pipetted quantity with an analytical balance. (Please follow the operating manual instructions from the balance manufacturer.)

d) Calculate the volume, taking the temperature into account.

e) At least 10 pipettings and weighings in three volume ranges (100%, 50%, 10% of nominal volume) are recommended for statistical analysis.

Calculation (for nominal volume)

x_i = Weighing results
n = Number of weighings

Z = Correction factor (e.g., 1.0029 µl/mg at 20 °C, 1013 hPa)

Mean value $\bar{x} = \frac{\Sigma\ x_i}{n}$

Mean volume $\bar{V} = \bar{x} \cdot Z$

Accuracy*

$$\mathbf{A\%} = \frac{\bar{V} - V_0}{V_0} \cdot 100$$

V_0 = Nominal volume

Coefficient of Variation*

$$\mathbf{CV\%} = \frac{100\ s}{\bar{V}}$$

Standard Deviation

$$\mathbf{s} = Z \cdot \sqrt{\frac{\Sigma\ (x_i - \bar{x})^2}{n - 1}}$$

*) = Calculation of accuracy (A%) and variation coefficient (CV%): A% and CV% are calculated according to the formulas for statistical control.

Note:

Testing instructions (SOPs) and a demo version of the EASYCAL™ 4.0 calibration software are available for download at www.brand.de.

Accuracy Table

Transferpette® *S*, Digital adjustable

Volume range µl	Volume step µl	A* ≤ ± %	CV* ≤ %	Increment µl	Type of tip µl
0.1 - 1	1	2	1.2	0.001	20
	0.5	4	2.4		nano-cap™
	0.1	20	12		
0.5 - 10	10	1	0.5	0.01	20
	5	1.6	1		
	1	7	4		
2 - 20	20	0.8	0.4	0.02	200
	10	1.2	0.7		
	2	5	2		
10 - 100	100	0.6	0.2	0.1	200
	50	0.8	0.4		
	10	3	1		
20 - 200	200	0.6	0.2	0.2	200
	100	0.8	0.3		
	20	3	0.6		
100 - 1000	1000	0.6	0.2	1	1000
	500	0.8	0.3		
	100	3	0.6		
500 - 5000	5000	0.6	0.2	5	5000
	2500	0.8	0.3		
	500	3	0.6		
1000 - 10000	10000	0.6	0.2	10	10000
	5000	0.8	0.3		
	1000	3	0.6		

Transferpette® *S*, Fixed volume

Volume range µl	A* ≤ ± %	CV* ≤ %	Type of tip µl
10	1	0.5	20
20	0.8	0.4	200
25	0.8	0.4	200
50	0.8	0.4	200
100	0.6	0.2	200
200	0.6	0.2	200
500	0.6	0.2	1000
1000	0.6	0.2	1000

Final test values related to the nominal capacity (maximum volume) indicated on the instrument, obtained when instrument and distilled water are equilibrated at ambient temperature (20 °C/68 °F) and with smooth operation. According to DIN EN ISO 8655.

* A = Accuracy, CV = Coefficient of Variation

Adjustment – Easy Calibration

The instrument is permanently adjusted for aqueous solutions.
If the pipette operation is clearly inaccurate, or if the instrument must be adjusted for solutions of different densities and viscosities or specially-shaped pipette tips, adjustments can be made using the Easy Calibration Technique.

1. Check the volume, determine actual value (see page 26).
2. Remove the label window and the label. Push the hook forward, raise it slightly and then pull it back.
3. Using a paperclip or a pipette tip, remove the protective film (this protective film can be discarded).
4. Push the red adjustment slider completely back, raise the volume-setting wheel (decoupling) and release the adjustment slider.
5. Set the adjustment value:
   – Transferpette® *S*, Digital-adjustable Type: with the volume-setting wheel in the UNLOCK position, set to the previously determined actual value.
   – Transferpette® *S*, Fixed Type: set the volume by rotating in the +/- direction. A volume check is recommended after every adjustment.
6. Push the adjustment slider completely back again, push the volume-setting wheel downwards and release the adjustment slider. Re-insert the label and the label window.

Note:

The change to the factory settings is indicated by the red adjustment slider now visible in the label window.

Autoclaving

The Transferpette® *S* is completely autoclavable at 2 bar (30 psi) (121 °C / 250 °F) and 20 min. exposure time (t_e) according to DIN.

1. Eject the pipette tip.
2. Autoclave the complete pipette without any further disassembling.
3. Allow the Transferpette® *S* to completely cool and dry.

Note:

The effectiveness of the autoclaving must be verified by the user. Maximum reliability is obtained with vacuum sterilization. We recommend the use of sterilization bags.

Attention:

Prior to autoclaving, the volume adjustment must be set on an available numbered volume (e.g., 11.25 or 11.26 but not between), with the volume change brake set fully unlocked.

If the pipette is autoclaved frequently, the piston should be oiled with the supplied silicone oil in order to preserve smooth movement.

If necessary after sterilization, tighten the connection between the hand grip and the pipette shaft.

5 ml + 10 ml Filter Transferpette® *S*

A hydrophobic PE filter is used as a safeguard against liquid entering the pipette.

Change the filter if it becomes wet or contaminated.

- Use a flat object such as a screwdriver.
- Remove the filter without damaging the tip cone.

Remove the filter before autoclaving!
The instrument can be operated without a filter.

Servicing

Inspect the pipette tip cone for damage.

Inspect the piston and seal for contamination.

Test the instrument's piston seal. To do this, affix a tip, and aspirate a sample. Hold the instrument vertically, with the sample in the tip for approximately 10 s. If a drop forms at the tip orifice, see the troubleshooting guide on page 36.

Disassembly and cleaning

1. Unscrew the pipette shaft (S) from the hand grip.
2. Unscrew the upper part of the ejector (A) from the pipette shaft.
3. Pull the shaft (B, C and D) out of the lower part (E) of the ejector.
4. Unscrew the piston unit (B).

   Note: Piston remains connected with piston unit (B)!
5. Remove the seal with spring (C) (this is non-removable on 1 µl and 10 µl Transferpette® *S* models)
6. Clean the parts shown with a mild soap solution or isopropanol and then rinse with distilled water.
7. Allow the parts to dry (max. 120 °C/248 °F).
8. Oil piston with a very thin layer of supplied silicone oil.
9. Assemble the ambient temperature parts in reverse order from above. Piston unit and upper part of the ejector (A, B) should only be hand-tight.

(For illustration purpose only)

Servicing

Inspect the pipette tip cone for damage.

Inspect the piston and O-Ring-seal for contamination.

Test the instrument's piston seal. To do this, affix a tip, and aspirate a sample. Hold the instrument vertically, with the sample in the tip for approximately 10 s. If a drop forms at the tip orifice, see the troubleshooting guide on page 36.

Disassembly and cleaning

1. Remove the entire shaft (S) from the hand grip by rotating at the upper end of the ejector (F) and remove the filter (K) from the bottom part of the shaft (H).
2. Separate the bottom part of the ejector (F') by unscrewing it from the upper part of the ejector (F).
3. Unscrew and dismantle the piston unit (G) with the ejector spring (I) and the bottom part of the shaft (H).
4. Remove the O-Ring-seal from the piston unit and clean it.

   Note: Do not disassemble piston unit (G) any further!

5. Clean piston unit (G) and lower part of pipette shaft (H) with a soap solution or isopropanol and then rinse with distilled water.
6. Allow the parts to dry (max. 120 °C/ 248 °F) and to cool down.
7. Carefully lubricate the inside and outside of the O-ring and mount it on the piston.
8. Assemble the individual components in the reverse order from that described above.

(For illustration purpose only)

Transferpette® *S*, Fixed volume

Capacity	Description	Cat. No.
10 µl	F-10	27047 08
20 µl	F-20	27047 16
25 µl	F-25	27047 20
50 µl	F-50	27047 28
100 µl	F-100	27047 38
200 µl	F-200	27047 44
500 µl	F-500	27047 54
1000 µl	F-1000	27047 62

Transferpette® *S*, Digital adjustable

Capacity	Description	Cat. No.
0.1 - 1 µl	D-1	27047 68
0.5 - 10 µl	D-10	27047 70
2 - 20 µl	D-20	27047 72
10 - 100 µl	D-100	27047 74
20 - 200 µl	D-200	27047 78
100 - 1000 µl	D-1000	27047 80
0.5 - 5 ml	D-5000	27047 82
1 - 10 ml	D-10000	27047 84

Bench-top rack
for 6 Transferpette® *S* pipettes

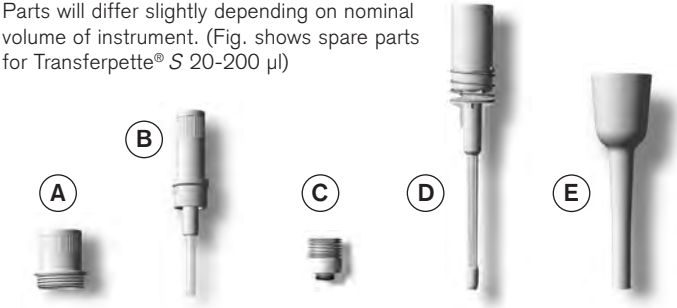
Cat. No. 7048 05

Shelf/rack mount
for 1 Transferpette® *S* pipette

Cat. No. 7048 10

Transferpette® *S* up to 1000 µl

Parts will differ slightly depending on nominal volume of instrument. (Fig. shows spare parts for Transferpette® *S* 20-200 µl)



Upper part of ejector | Piston unit | Seal with spring | Shaft with ejector spring | Lower part of ejector

Transferpette® *S*, Fixed volume

Capacity	A	B	C	D	E
10 µl	7055 10	7046 01	–	7046 21*	7046 38
20 µl	7055 10	7046 02	7046 10	7046 22	7046 39
25 µl	7055 10	7046 08	7046 14	7046 22	7046 40
50 µl	7055 10	7046 03	7046 11	7046 23	7046 41
100 µl	7055 10	7046 03	7046 11	7046 23	7046 42
200 µl	7055 10	7046 04	7046 12	7046 24	7046 43
500 µl	7055 10	7046 05	7046 13	7046 25	7046 44
1000 µl	7055 10	7046 05	7046 13	7046 25	7046 45

* The seal is permanently built into the shaft – it cannot be removed.

Transferpette® *S*, Digital adjustable

Capacity	A	B	C	D	E
0.1 - 1 µl	7055 10	7046 00	–	7046 20*	7046 30
0.5 - 10 µl	7055 10	7046 01	–	7046 21*	7046 31
2 - 20 µl	7055 10	7046 02	7046 10	7046 22	7046 32
10 - 100 µl	7055 10	7046 03	7046 11	7046 23	7046 33
20 - 200 µl	7055 10	7046 04	7046 12	7046 24	7046 34
100 - 1000 µl	7055 10	7046 05	7046 13	7046 25	7046 35

* 0.1-1 µl / 0.5-10 µl including seal

Transferpette® *S*, 5 ml and 10 ml

Parts will differ slightly depending on nominal volume of instrument.
(Fig. shows spare parts for Transferpette® *S* 5 ml).

Upper part of ejector	Lower part of ejector	Piston unit	Lower part of pipette shaft	Ejector spring

Transferpette® *S*, Digital adjustable

Capacity	F + F'	G	H	I
0.5 - 5 ml	7046 36	7046 06	7032 47	7046 26
1 - 10 ml	7046 37	7046 07	7046 28	7046 26

Additional accessories for Transferpette® *S*

Description	Cat. No.
Filter for Transferpette® *S* 5 ml, pack of 25.	7046 52
Filter for Transferpette® *S* 10 ml, pack of 25.	7046 53
Silicone oil for Transferpette® S up to 1000 µl	7055 02
Silicone oil for Transferpette® S 5 ml/10 ml	7036 77
Label window, pack of 1	7046 50
Blank labels, pack of 5	7046 51

Troubleshooting

Problem	Possible cause	Corrective action
Tip dripping (instrument leaks)	Unsuitable tip	Only use high-quality tips
	Tip not seated tightly	Press tip on firmly
The instrument does not aspirate or aspirates too little; the discharged volume is too low.	Seal contaminated	Clean seal
	The seal or cone is damaged	Replace seal or shaft
	The piston is contaminated or damaged	Clean or replace piston
Aspiration is too slow	Shaft clogged	Clean shaft
	The filter in the 5 ml and 10 ml models is contaminated	Change the filter
Discharged volume is too large	Pipetting button pressed too far into the blow-out position before sample uptake	Operate properly. See 'Pipetting', page 24.
Piston is difficult to move	The piston is contaminated or needs oil	Clean and oil the piston

Repairs

If a problem cannot be fixed by following the troubleshooting guide, or by replacing spare parts, then the instrument must be sent in for repair.

Please note: for the safety of courriers and our employees, and to avoid violation of federal and local laws, only clean instruments free of any chemical, biological or radioactive hazards can be inspected and repaired!

Return for repair

Important! Transporting of hazardous materials without a permit is a violation of federal law.

BrandTech Scientific, Inc. will not accept instruments that are not appropriately cleaned and decontaminated.

Therefore contact BrandTech Scientific, Inc. and obtain return authorization **before** sending your instrument for service.

Return the instrument, with the Return Authorization Number prominently displayed on the outside of the package to the address provided with the Return Authorization Number. Include an exact description of the type of malfunction and the media used.

Warranty

We shall not be liable for the consequences of improper handling, use, servicing or unauthorized repairs of the instrument or the consequences of normal wear and tear especially of wearing parts such as pistons, seals, valves and the breakage of glass as well as the failure to follow the instructions of the operating manual. We are not liable for damage resulting from any actions not described in the operating manual or if non-original parts have been used. For length of warranty period please see our warranty card enclosed with the product.

Disposal

For the disposal of instruments and tips, please observe the disposal regulations valid in your area.

Subject to technical modification without notice.
We will not be held responsible for printing or typographical errors.