Dispenser | Dispensers

VITLAB®
Dispenser TA²

Gebrauchsanweisung
Operating Manual

Vor dem ersten Gebrauch das Gerät gründlich spülen oder die ersten Dosierungen verwerfen.

Before using the instrument for the first time, ensure it is rinsed carefully or discard the first few samples dispensed.

Sicherheitssymbole

Safety symbols

Symbol auf Gerät Symbol on Device	DE	EN
	Allgemeines Warnzeichen	General warning sign
	Gebrauchsanleitung beachten	Observe the operating manual
	Augenschutz benutzen	Use eye protection
	Handschutz benutzen	Use hand protection
	Schutzkleidung benutzen	Use protective clothing

Contents

1. Safety Instructions

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 instrument to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

⚠ Please read the following carefully!

1. Every user must read and understand this operating manual before operation.
2. Follow general instructions for hazard prevention and safety instructions; e.g., wear protective clothing, eye protection and gloves.
3. Observe all specifications provided by reagent manufacturers.
4. When dispensing inflammable media, make sure to avoid the buildup of static charge, e.g., do not dispense into plastic vessels; do not wipe instruments with a dry cloth.
5. Use the instrument only for dispensing liquids, with strict regard to the defined limitations of use and operating limitations. Observe operating exclusions (see page 29)! If in doubt, contact the manufacturer or supplier.
6. Always perform work in a manner that does not endanger yourself or other people. When dispensing, the discharge tube must always point away from you or any other person. Avoid splashes. Only use suitable vessels.
7. Never press down the piston when the discharge tube closure is attached.
8. Never remove the discharge tube while the dispensing cylinder is filled.
9. Reagents can accumulate in the screw cap of the discharge tube. Thus, it should be cleaned regularly.
10. To prevent tipping, use a bottle stand – particularly with small bottles and when using the flexible discharge tubing.
11. Never carry the mounted instrument by the cylinder sleeve or the valve block. Breakage or loosening of the cylinder may lead to personal injury from chemicals (see page 33, Fig. 4).
12. Never use force on the instrument. Use smooth gentle movements to operate the piston upwards and downwards.
13. Use only original manufacturer's accessories and spare parts. Do not attempt to make any technical alterations. Do not dismantle the instrument any further than described in the operating manual!
14. Always check the instrument for visible damage before use. If there is a sign of a potential malfunction (e.g., piston difficult to move, sticking valves or leakage), immediately stop dispensing. Consult the 'Troubleshooting' section of this manual (see page 48), and contact the manufacturer if needed. In case of discolorations, check if any material fatigue is present. If there is any doubt, replace components.
15. Always tighten the safety ring between the valve block and dosing cylinder by hand. Do not use any tools.
16. The instrument should not be autoclaved.

2. Functions and Limitations of Use

The bottle-top dispenser VITLAB® Dispenser TA² is designed for dispensing liquids directly from the reservoir bottle. The instruments are optionally equipped with recirculation valve.
When the instrument is properly handled, dispensed liquid will only come into contact with the following chemically resistant materials: various fluoroplastics (ETFE, FEP, PFA, PCTFE, PTFE), Al_2O_3 sapphire and platinum-iridium or tantalum, depending on the design (see label on the dispensing tube and recirculation valve).

Limitations of Use

This instrument is designed for dispensing liquids, observing the following physical limits:

- use temperature from +15 °C to +40 °C (from 59 °F to 104 °F) of instrument and reagent
- vapor pressure up to max. 600 mbar. Aspirate slowly above 300 mbar, in order to prevent the liquid from boiling.
- kinematic viscosity up to 500 mm^2/s (dynamic viscosity [mPas] = kinematic viscosity [mm^2/s] x density [g/cm^3])
- Density: up to 3.8 g/cm^3

Operating Limitations

Liquids, which form deposits may accelerate wear on the piston seal, and make the piston difficult to move or may cause jamming (e.g., crystallizing solutions or concentrated alkaline solutions). If the piston becomes difficult to move, the instrument should be cleaned immediately (see page 41).

The VITLAB® Dispenser TA² is designed for general laboratory applications and complies with the relevant standards, e.g. DIN EN ISO 8655. Compatibility of the instrument for a specific application (e.g., trace material analysis, food sector etc.) must be checked by the user. Approvals for specific applications, e.g. for production and administration of food, pharmaceuticals and cosmetics are not available.

Operating Exclusions

VITLAB® Dispenser TA² must never be used with:

- liquids attacking Al_2O_3 sapphire or fluoroplastics like ETFE, FEP, PFA, PCTFA and PTFE (e.g., dissolved sodium azide*)
- liquids which are decomposed catalytically by platinum-iridium (e.g., H_2O_2) or tantalum. Take notice of the valve spring material of the instrument version in use.
- organic solvents
- trifluoroacetic acid
- explosive liquids (e.g., carbon disulfide)
- suspensions (e.g., of charcoal) as solid particles may clog or damage the instrument

Storage Conditions

Store the instrument and accessories only in cleaned condition in a cool and dry place.
Storage temperature: from -20 °C to +50 °C (from -4 °F to 122 °F).

* Dissolved sodium azide permitted up to a concentration of max. 0.1%.

3. Recommended Application Range

Select valves with platinum-iridium or tantalum valve springs, based on the intended application.
The instrument can be used for the following dispensing media:

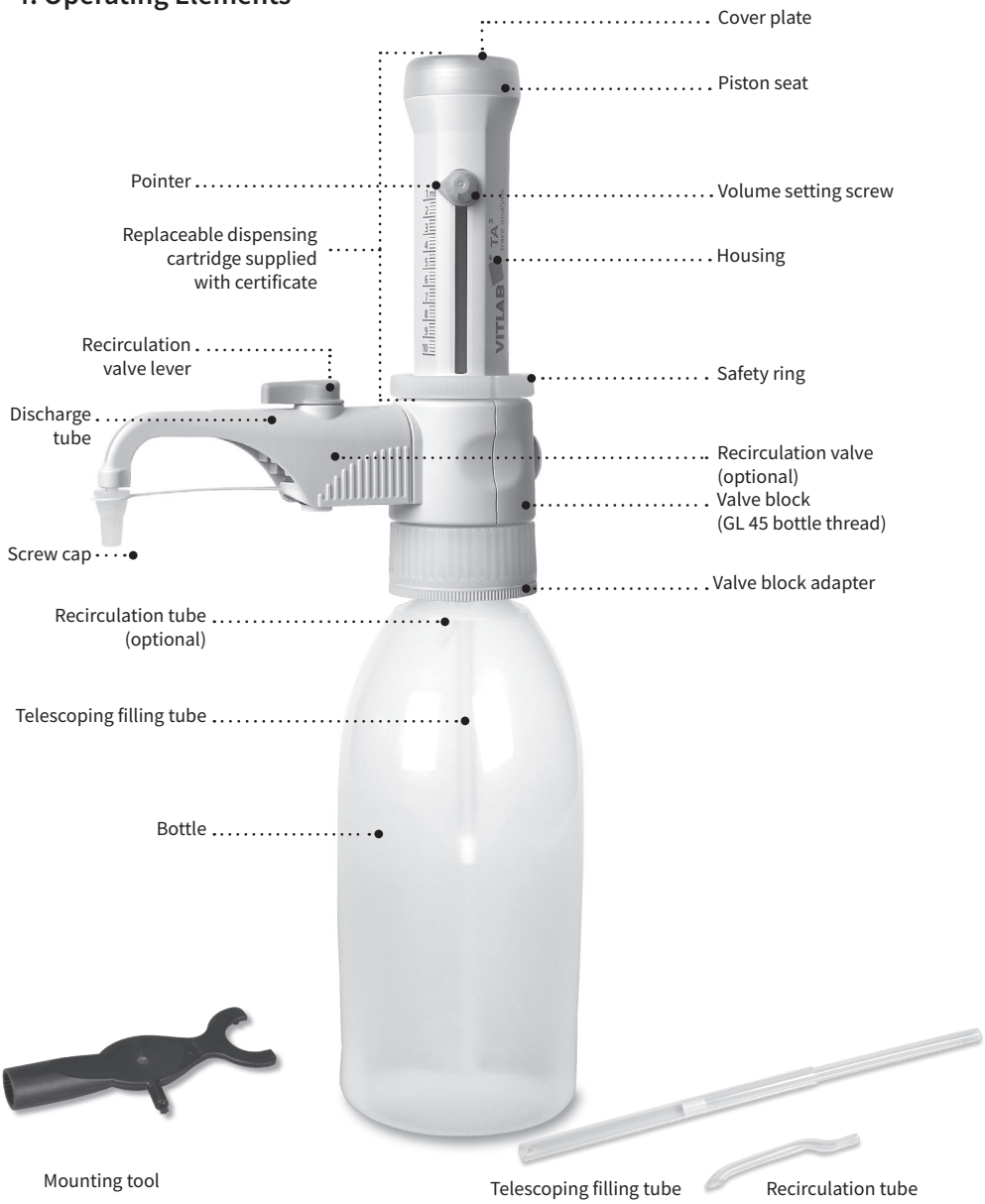
Dispensing medium	Valve springs: Pt-Ir	Valve springs: Ta
Acetic acid	+	+
Ammonia solution	+	+
Bromine	+	+
Hydrochloric acid	+	+
Hydrofluoric acid*	+	-
Hydrogen peroxide	-	+
Nitric acid	+	+
Perchloric acid	+	+
Phosphoric acid	+	+
Sodium hydroxide, 30 %	+	-
Sulfuric acid	+	+
Water	+	+

+ suitable - not suitable

*** Note:**
Hydrofluoric acid reacts slightly with sapphire resulting in mildly elevated aluminum values. To reduce these values we recommend discarding 3-5 dispensings of 2 ml each before performing the analysis.
Compounds containing fluorine, such as NaF, attack tantalum.

The above recommendations reflect testing completed prior to publication. Always follow instructions in the operating manual of the instrument as well as the reagent manufacturer‘s specifications. In addition to these chemicals, a variety of organic and inorganic saline solutions (e.g., biological buffers), biological detergents and media for cell culture can be dispensed. Please call us if you need information on chemicals that are not named in the list. Status as of: 0216/2

4. Operating Elements



Attention:
The safety ring between the valve block and the dispensing cartridge must always be firmly tightened.

5. First Steps

5.1 Is everything in the package?

Confirm that your package includes:
Bottle-top dispenser VITLAB® Dispenser TA², telescoping filling tube, discharge tube or discharge tube with recirculation valve, recirculation tube (included only in recirculation valve models), mounting tool, three bottle adapters, a performance certificate and this operating manual.

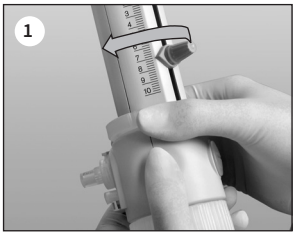
Nominal volume, ml	Adapters for bottle thread	Filling tube Length, mm
10	GL 28/ S 28 (ETFE), GL 32 (ETFE), S 40 (PTFE)	125-240

5.2 Assembly

Warning:
Wear protective clothing, eye protection and gloves! Follow all safety instructions and observe limitations of use and operating limitations (page 28-30).

1. Check safety ring

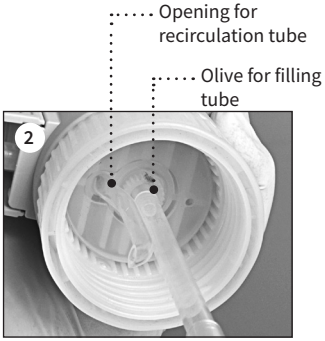
Make sure that the safety ring is firmly tightened (Fig. 1).



Note:
The discharge valve and discharge tubes are labeled with the spring material. The label 'Pt-Ir' or 'Ta' must match for each device. The spring material is selected based on the application ('Recommended application'; see table on page 30).
Before use in trace analysis, the instrument must be thoroughly cleaned first. See 'Cleaning for trace analysis' (see page 42).

2. Mounting the filling tube/ recirculation tube

Adjust the length of the telescoping filling tube to the bottle height and attach it. Center and attach the filling tube carefully to avoid damaging the nozzle. If a discharge tube with a recirculation valve is used, the optional recirculation tube must also be installed. Insert it with the opening pointing outward (Fig. 2).



3. Mounting and aligning the instru-ment on a bottle

Screw the instrument (GL 45 thread) onto the reagent bottle and then align the discharge tube with the bottle label by turning the valve block (Fig. 3). To prevent tipping, use a bottle stand (see page 47) – particularly with small bottles and when using the flexible discharge tubing.

Note:
For bottles with other thread sizes, select a suitable adapter. The adapters supplied with the instrument are made of ETFE and PTFE.

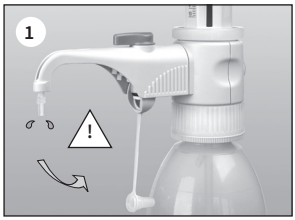
4. Transporting the instrument

Incorrect handling can, among other things, lead to breakage of the bottleneck, safety ring or the bottle adapter.
When mounted to a reagent bottle, always carry the instrument as shown in the figure (Fig. 4)!

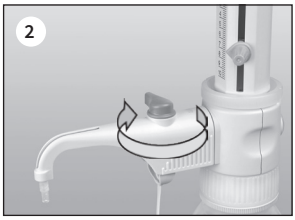
Warning:
Always wear protective gloves when touching the instrument or the bottle, especially when using dangerous liquids (e.g. HF).

6. Priming

Warning!
Wear protective clothing, eye protection and gloves! Never press down the piston when the screw cap is screwed on! Avoid splashing the reagent! Liquid may accumulate in the screw cap. To avoid splashes dispense slowly. Follow all safety instructions and observe limitations of use and operating limitations (page 28-29).

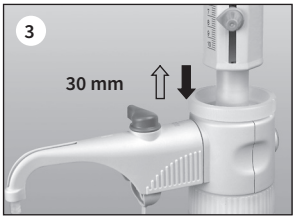


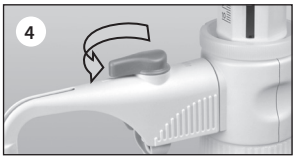
Note:
Before using the instrument for the first time, ensure it is rinsed carefully and discard the first few samples dispensed. Dose slowly in order to prevent splashes.
Depending on application requirements, cleaning for trace analysis should be carried out (page 42).

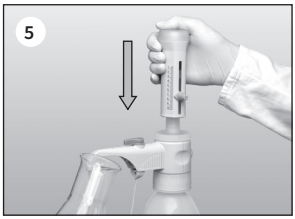


6.1 Instruments with recirculation valve:

1. Open the screw cap of the dispensing tube (Fig. 1). For safety, hold the discharge tube orifice on the inner wall of a suitable receiving vessel.
2. Set valve to 'Recirculate' (Fig. 2).
3. For priming gently pull up the piston approx. 30 mm and push it down rapidly until the lower stop. Repeat this procedure at least 5 times (Fig. 3).
4. Turn valve to 'Dispense' (Fig. 4).
5. To avoid splashes when priming hold the discharge tube on the inner wall of a suitable receiving vessel and dispense liquid to prime the discharge tube until it is bubble-free. Wipe away any remaining drops from the discharge tube (Fig. 5).

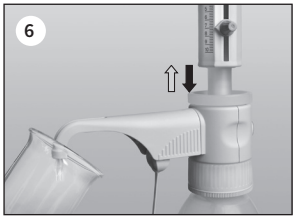






6.2 Instruments without recirculation valve:

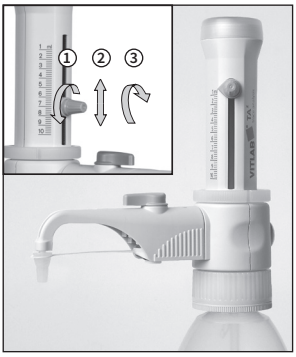
1. Open the screw cap of the discharge tube (see 'Instrument with recirculation valve', Fig. 1).
   To avoid splashes, hold discharge tube orifice on the inner wall of a suitable receiving vessel.
2. For priming pull up the piston approx. 30 mm and push it down rapidly until the lower stop.
   Repeat this procedure approximately 5 times until the discharge tube is bubble-free (Fig. 6).



7. Dispensing

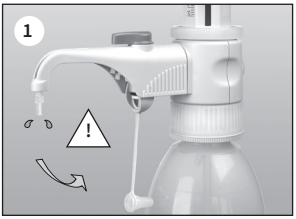
7.1. Setting the volume

Loosen the volume selector thumb screw three-fourths turn (1), set the pointer to the desired volume (2) and then retighten the volume thumb screw (3).

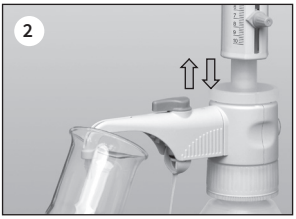


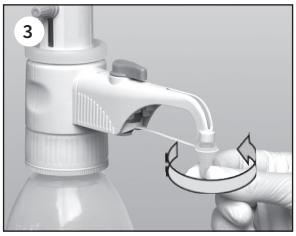
7.2. Dispensing

Warning!
Wear protective clothing, eye protection and gloves! Never press down the piston when the screw cap is screwed on! Avoid splashing the reagent! Liquid may accumulate in the screw cap. To avoid splashes dispense slowly. Follow all safety instructions and observe limitations of use and operating limitations (page 28-29).



a) Remove screw cap from the discharge tube (Fig. 1).
b) When using instruments equipped with the recirculation valve, turn the valve to 'Dispense'.
c) Hold the discharge tube orifice on the inner wall of a suitable receiving vessel.
d) Gently lift the piston until the upper stop and then depress piston slowly and steadily with minimal force until the lower stop (Fig. 2).
e) Wipe off the discharge tube against the inner wall of the receiving vessel.
f) Reattach screw cap to discharge tube (Fig. 3).





Caution:
After use, always leave the piston in the down position (parking position). Only when cleaning for trace analysis should the instrument be left in the filled state, i.e. with the piston at the upper stop.

Warning!
The instrument must be clearly labeled when leaving the cylinder in a filled state.

8. Accessories

The following optional original accessories are available for the bottle-top dispenser VITLAB® Dispenser TA²:

8.1 Flexible discharge tube

For serial dispensing, except for HF, the flexible discharge tube can be used ('Accessories', page 45). The specified accuracy and coefficient of variation of the instrument are only obtained for volumes > 2 ml and by gently approaching the upper and lower stops.
The coil of the tubing can be stretched to a length of the 800 mm max. Before use ensure, that the entire coil lies in regular loops and is not twisted.

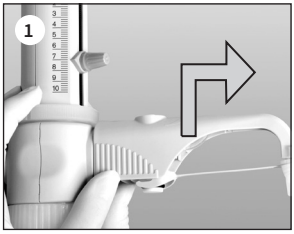
1. If the VITLAB® Dispenser TA² was already in use, the instrument must be cleaned before mounting the flexible discharge tube (page 45).
2. Instruments with a recirculating valve should be set to 'Recirculate', and the valve lever pulled upwards to remove it.
3. Slide the discharge tube housing all the way up. Then pull discharge tube forward with gentle up and down motions (Fig. 1).
4. Push the flexible discharge tube holder from the bottom of the valve block (Fig. 2) and tighten it. For this, VITLAB® Dispenser TA² must not be mounted on the bottle. Install the receiver tube.
5. Press the cock plug of the recirculation valve downwards.
6. Slide the flexible discharge tube housing into the valve block up to the stop (Fig. 3).
7. Slide the discharge tube housing all the way down (Fig. 4).
8. Attach the valve lever and press it in firmly.

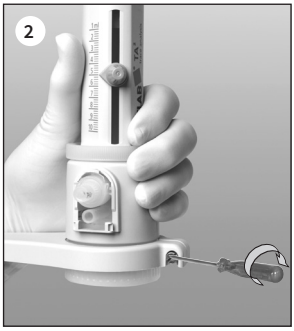
Note:
Always follow the instructions for valve marking on page 32!

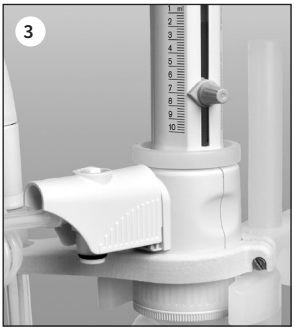
Use a bottle stand ('Accessories', page 47).

Warning!
The flexible discharge tubing must not be used with HF (hydrofluoric acid).

There should be no visible damage to the discharge tube (e.g. kinks or the like). Each time you are going to use the tubing, examine it carefully! To dispense aggressive liquids, you should take safety measures in addition to the normal precautions. We recommend use of a protective shield. The bottle must be supported using a bottle stand. To help avoid reagent splashing from the tube, always grip the tube firmly by the handle and replace into the holder after use. For cleaning rinse the tube carefully. Do not dismantle!







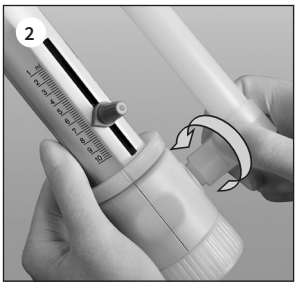
8.2 Drying tube

Use of a drying tube, filled with a suitable absorbent (purchased separately), might be necessary for moisture- and CO_2- sensitive media ('Accessories', page 46).

Assembly

1. Use a coin to unscrew the air vent cap (Fig. 1).
2. Screw the filled drying tube in (Fig. 2).
3. Place the PTFE sealing ring on the bottle thread (Fig. 3) and screw the instrument onto the bottle.

Note:
If necessary, seal the threads of the drying tube, the bottle and/or the bottle adapter with PTFE tape.



8.3 Sealing ring for valve block

For highly volatile media we recommend to seal the connection from valve bloc to bottle with the PTFE sealing ring and PTFE tape (see 'Accessories', page 46).

Assembly

Place the PTFE sealing ring on the bottle thread or the screwed-on adapter (Fig. 3) and screw the instrument onto the bottle.

8.4 Bottle stand

For small bottles, and when using the flexible discharge tube, use a bottle stand to prevent tipping over (see 'Accessories', page 47).

Assembly

Position the mounting plate at the corresponding height, then firmly secure the device in the holder as shown until it clicks audibly. Then lock the holder into place with the screw.

9. Error Limits

Error limits according DIN EN ISO 8655-5 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). Testing takes place according DIN EN ISO 8655-6 with a completely filled instrument and with uniform and smooth dispensing.

Error limits VITLAB® Dispenser TA²

Nominal volume ml	A* ≤ ± %	µl	CV* ≤ %	µl
10	0.5	50	0.1	10

* A = Accuracy, CV = Coefficient of Variation

Partial volume
The percentage values for A and CV are relative to the nominal volume (V_N) and must be converted for partial volumes (V_T).

$$A_T = \frac{V_N}{V_T} \rightarrow A_N$$

e.g.	volume	A* ≤ ± %	µl	CV* ≤ %	µl
V_N	10.0	0.5	50	0.1	10
V_T = 50% N	5.0	1.0	50	0.2	10
V_T = 10% N	1.0	5.0	50	1.0	10

* A = Accuracy, CV = Coefficient of Variation

Note:
The error limits are well within the limits of DIN EN ISO 8655-5. The maximum error limit for a single measurement can be calculated EL = A + 2 CV (for volume 10 ml: 50 µl + 2 x 10 µl = 70 µl).

10. Checking the Volume (Calibration)

Depending on use, we recommend that gravimetric testing of the instrument be carried out every 3-12 months. This time frame should be adjusted to correspond with individual requirements. The complete testing procedure (SOP) can be downloaded at www.vitlab.com. In addition, you can also carry out function checks at shorter intervals, e.g. dispensing the nominal volume into a volumetric test flask.

Gravimetric volume testing according to DIN EN ISO 8655-6 (for measurement conditions, see 'Error Limits', page 38) is performed as follows:

1. **Preparation of the instrument**

   Clean the instrument ('Cleaning', page 41), fill it with distilled H_2O and then prime it carefully.

2. **Check the volume**

   a) 10 dispensing operations with distilled H_2O in
   3 Volume ranges (100 %, 50 %, 10 %) are recommended.

   b) For filling pull up the piston gently until the upper stop of the volume set.

   c) For discharge depress piston slowly and steadily without force until the lower stop.

   d) Wipe off the tip of discharge tube.

   e) Weigh the dispensed quantity on an analytical balance. Please follow the operating manual of the balance manufacturer.

   f) Calculate the dispensed volume. The Z factor takes account of the temperature and air buoyancy.

Calculations for nominal volume V_N

x_i = results of weighings
n = number of weighings
Z = correction factor
(e. g., 1.0029 µl/mg at 20 °C, 1013 hPa)

Mean value

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

Accuracy

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

Mean volume

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

Coefficient of variation

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

Standard deviation

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

11. Adjustment

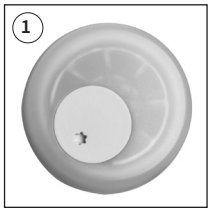
After a long period of use an adjustment of the instrument might be necessary.

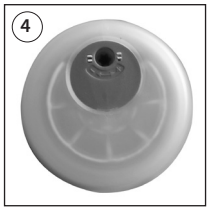
+ Calibrate for example at nominal volume (see page 39).
+ Calculate mean volume (result of weighing) (see page 39).
+ Adjust the instrument (to the calculated mean volume).
+ After adjusting, recalibrate for control.

1. Insert the pin of the mounting tool into the cover plate (Fig. 1), and break it off with a rotating motion (Fig. 2). Discard the adjustment cover.

2. Insert the pin of the mounting tool into the adjustment screw (Fig. 3) and rotate to the left in order to increase the dispensing volume, or rotate to the right to decrease the dispensing volume (e.g. for an actual value of 9.97 ml, rotate approx. 1/2 turn to the left).

3. The change in the adjustment is indicated by a red disk (Fig. 4).





Adjustment range

Max ± 60 µl
One rotation corresponds to ~ 80 µl.

12. Cleaning

The instrument must be cleaned in the following situations to assure correct operation:

+ before the first use
+ immediately when the piston is difficult to move
+ before changing the reagent
+ prior to long term storage
+ prior to dismantling the instrument
+ prior to changing the valves
+ regularly when using liquids which form deposits (e.g., crystallizing liquids)
+ regularly when liquids accumulate in the screw cap

The instrument should not be autoclaved!

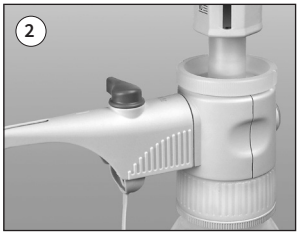
Warning!
Cylinder, valves, telescoping filling tube and discharge tube contain reagent. Point the valves and tube openings away from your body. Wear protective clothing, eye protection and appropriate hand protection.

Standard Cleaning

1. Screw the instrument onto an empty bottle and empty it completely by dispensing (Fig. 1). If the instrument is equipped with a recirculation valve, it must be emptied in both the "dispensing" and 'recirculating' settings.

2. Screw the instrument onto a bottle filled with a suitable cleaning agent (e.g. deionized water) and rinse the instrument several times by completely filling and emptying it.

3. If the instrument is equipped with a recirculation valve, after rinsing the instrument, it must also be rinsed in the 'recirculating' setting (Fig. 2).

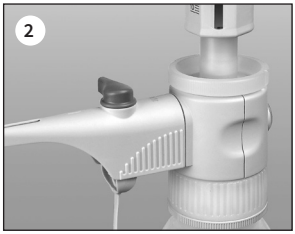


Note:
'Cleaning for trace analysis' see page 42.

13. Cleaning for Trace Analysis

Before use in trace analysis, the instrument must first be thoroughly cleaned. Pure chemicals used for analytical purposes are used for this cleaning procedure. If contamination of the bottle contents must be avoided, use the instrument without the recirculation valve. If the instrument is used with the recirculation valve, it must be cleaned in both dispensing and recirculation modes (Fig. 1 and 2).
Good results have been obtained in practice with the following recommended cleaning procedures. They can be modified according to need.

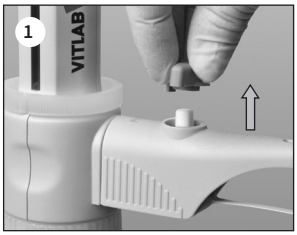
1. Screw the instrument onto a bottle filled with **Acetone**, prime it and then fill it completely.
   Leave the piston at the upper stop and close the dispensing tube with the screw cap.
   After approx. 24 hours contact time, dispense twice, then completely empty the instrument and rinse it five times with pure water.
2. Screw the instrument onto a bottle filled with 2**0% hydrochloric acid,** prime it and then fill it completely. Leave the piston at the upper stop and close the dispensing tube with the screw cap.
3. After approx. 24 hours contact time, dispense twice, and then fill it up again completely.
4. Repeat step 3 twice more.
   After another approx. 24 hours contact time, completely empty the instrument and rinse it five times with pure water.
5. Repeat steps 2 to 4 with **30% nitric acid**.
6. Screw the instrument onto a bottle filled with the desired dispensing medium, prime it, and then fill it completely. Leave the piston at the upper stop and close the dispensing tube with the screw cap.
7. After approx. 24 hours contact time, dispense twice, and then fill it up again completely.
8. Repeat step 7 twice more. After another approx. 24 hours contact time, dispense twice and then leave the piston at the lower stop.

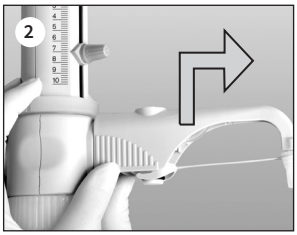


Note:
If the cleaning is not sufficient, repeat the cleaning procedure.

14. Replacement of discharge tube/valves

Warning!
The valve, telescoping filling tube and dispensing tube are full of reagent! For this reason, always perform a standard cleaning before dismantling the instrument. The dispensing unit must not be disassembled! Follow the safety instructions (page 28)!





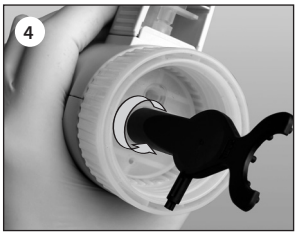
14.1 Replacing the discharge tube

1. Instruments with a recirculating valve should be set to 'Recirculate', and the valve lever pulled upwards to remove (Fig. 1).
2. Slide the discharge tube housing all the way up. Then pull the discharge tube forward with gentle up and down motions (Fig. 2).
3. Hold coupling piece of the new discharge tube and pull housing up. Push housing into the valve block until it meets the stop.
4. Slide the discharge tube housing all the way down.
5. For instruments with a recirculation valve, pull up the valve lever to the 'Recirculate' position, and press it in tightly (Fig. 3).

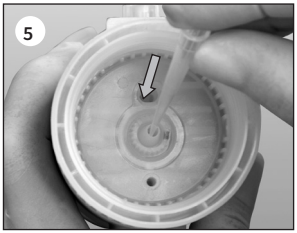
14.2 Replacing valves

Filling valve

1. Pull out the recirculation tube and the telescoping filling tube.
2. Use the mounting tool to unscrew the filling valve (Fig. 4).
3. Screw in the cleaned (e.g., in an ultrasonic bath) or new filling valve first by hand and then tighten it with the mounting tool.

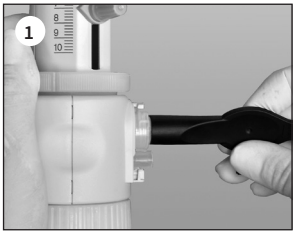


Note:
If the instrument does not fill up, and if some elastic resistance is evident when the piston is pulled upward, then it is possible that the ball valve is merely stuck.
In this case, loosen the ball valve using light pressure, for example, with a 200 µl plastic pipette tip (Fig. 5).



Discharge valve

1. After disassembling the discharge tube (see 'Replacing the discharge tube', page 43), use the mounting tool to unscrew the discharge valve (Fig. 1).
2. Screw in the new discharge valve first by hand, then tighten it securely with the mounting tool (the threads should no longer be visible).



Caution:
Always install the valve provided for the specific instrument types (see 'Ordering data', page 46). For the VITLAB® Dispenser TA² model, an identical filling valve is used, but different discharge valves. To distinguish between them, the discharge valves of the VITLAB® Dispenser TA² are marked 'Pt-Ir' or 'Ta'. Be sure that only the filling valve specified for the VITLAB® Dispenser TA² with marking 'S' (sapphire) is used.

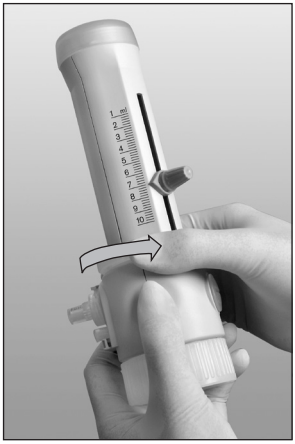
15. Dismantling instrument

Caution:
The valve, telescoping filling tube, dispensing tube, and recirculation valve and recirculation tube if present, are full of reagent! For this reason, always perform a standard cleaning before dismantling the instrument. Follow the safety instructions (page 28)!

Note:
A function test must always be carried out after dismantling.

Replacing the dispensing cartridge

1. Completely unscrew the safety ring of the dispensing cartridge by hand and remove the dispensing cartridge.
2. Screw the new dispensing cartridge into the valve block and tighten the safety ring by hand.
3. Carry out a function check for leaks.



Note:
The dispensing cartridge has been calibrated at the factory. Thus, calibration after replacement can be omitted.
Rinse the instrument thoroughly before use, and discard the first sample dispensed. Avoid splashes.
Depending on the application requirements, cleaning for trace analysis is to be carried out (page 42).
The dispensing unit must not be disassembled!

16. Replacement of discharge tube/valves

VITLAB® Dispenser TA², Analog-adjustable

Capacity ml	Valve spring	Without recirculation valve Cat. No.	With recirculation valve Cat. No.
10	Platinum-iridium	1627515	1627525
10	Tantalum	1627535	1627545

Note:
Items supplied see page 32.

17. Accessories and Spare Parts

Bottle adapters ETFE/PTFE

Outer thread	for bottle thread	Material	Cat. No.
GL 32	GL 25	ETFE	1670072
GL 32	GL 28/ S* 28	ETFE	1670080
GL 32	GL 30	ETFE	1670090
GL 32	GL 45	ETFE	1670105
GL 45	GL 32	ETFE	1670100
GL 45	GL 38	ETFE	1670115
GL 45	S* 40	PTFE	1670125

* Buttress Thread

Discharge tubes

With and without recirculation valve. Nominal volume 10 ml. Screw cap ETFE. Marking of the discharge tubes with 'Pt-Ir' or 'Ta'. Pack of 1.

Valve spring	Lenght mm	Without recirculation valve Cat. No.	With recirculation valve Cat. No.
Platinum-Iridium	105	1678022	1678122
Tantalum	105	1678024	1678124

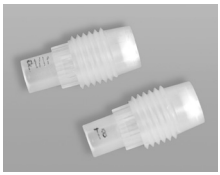
Flexible discharge tubing with recirculation valve

PTFE, coiled, length 800 mm, with safety handle.
Pack of 1. Not suitable for hydrofluoric acid (HF).

Nominal volume ml	Dispensing tube outer-Ø mm	inner-Ø mm	Cat. No.
10	3	2	1678136

VITLAB® Dispenser TA² discharge valve

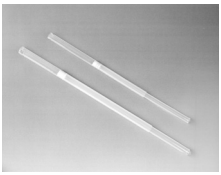
PFA/sapphire. Valve spring: Valve marking 'Pt-Ir' or 'Ta'. Pack of 1.



For nominal volume ml	Valve spring	Cat. No.
10	Platinum-iridium	1676732
10	Tantal	1676733

Telescoping filling tubes

FEP. Adjusts to various bottle heights. Pack of 1.



Nominal volume ml	Outer Ø mm	Length mm	Cat. No.
10	6	70-140	1678210
		125-240	1678212
		195-350	1678214
		250-480	1678216

Dispensing cartridge with safety ring

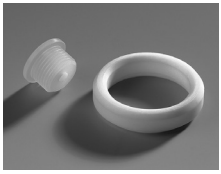
nominal volume 10 ml, calibrated, incl. quality certificate.
Pack of 1.

Cat. No.	1670702

Air vent cap for micro filter with Luer-cone

PP. Air vent cap and PTFE-sealing ring.
Pack of 1 each.

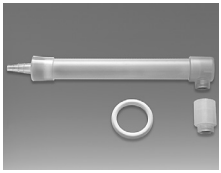
Cat. No.	1671682



Drying tube

Drying tube and seal, without drying agent.
Pack of 1.

Cat. No.	1671090



Sealing ring for valve block

PTFE, for highly volatile reagents.
Pack of 1.

Cat. No.	1671683

Filling valve

PFA/sapphire. Valve marking 'S'.

Pack of 1.

Cat. No.	1676739

Recirculation tube

Pack of 1.

Cat. No.	1676747

Calibrating-, mounting-tool

Pack of 1.

Cat. No.	1676748

Screw cap with fastener

ETFE. Pack of 1.

Cat. No.	1676029

Bottle Stand

PP. Support rod 325 mm, Base plate 220 x 160 mm. Pack of 1.

Cat. No.	1671116

18. Troubleshooting

Problem	Possible cause	Corrective action
Liquid is above the piston	Piston is leaking.	Perform a standard cleaning, replace the piston/ cylinder assembly (see page 41-44).
Piston difficult to move	Formation of crystals, dirty	Stop dispensing immediately. Follow all cleaning instructions (page 41).
Filling not possible	Volume setting screw at the lower stop	Set to required volume (see page 35).
	Filling valve stuck	Clean the filling valve.If the valve is stuck use a 200 µl pipette tip to loosen it (see page 43). If necessary, replace the filling valve.
Dispensing not possible	Discharge valve stuck	Unscrew the discharge valve from the valve block, clean it, use a 200 µl plastic tip to loosen any ball valve that is stuck, replace the discharge valve if necessary (see page 43).
Discharge tube or discharge tube with recirculation valve cannot be mounted sufficiently	Discharge valve is not screwed in deeply enough	Tighten the discharge valve with the mounting tool until it meets the stop so that the threads are no longer visible.
Air bubbles in the instrument	Reagent with high vapor pressure has been drawn in too quickly	Draw in reagent slowly.
	Screw couplings loose	Tighten valve with the mounting tool.
	The instrument has not been primed	Prime the instrument (see page 34).
	Filling tube is loose or damaged	Push the filling tube on firmly. If necessary, cut off approx. 1 cm of tube at the upper end and re-connect it or replace filling tube.
	Valves not firmly connected or damaged	Follow cleaning procedure (see page 41-43). Tighten the valves firmly using the mounting tool.
	Recirculation tube not connected	Connect recirculation tube (see page 32, Fig. 2).
Dispensed volume is too low	Filling tube is loose or damaged	Cleaning procedure (see page 41-42). Push the filling tube on firmly. If necessary, cut off approx. 1 cm of the tube at the upper end and re-connect it or replace filling tube.
	Filling valve is loose, contaminated, or damaged	Cleaning procedure (see page 41-42). Tighten the valves using the mounting tool. If necessary, replace filling valves.
Liquid leaking at the safety ring	Dispensing cartridge is loose, or the piston seal is damaged	Tighten the safety ring, and if necessary replace the dispensing cartridge
Leaking liquid between instrument and bottle	Recirculation tube not connected	Connect recirculation tube (see page 32, Fig. 2).
	Volatile reagent dispensed without sealing ring	Mount sealing ring ('Accessories', page 37).

19. Repairs | Kalibrierservice

19.1. Return for repair

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

- Clean and decontaminate the instrument carefully.
- It is essential always to include an exact description of the type of malfunction and the media used. If information regarding media used is missing, the instrument cannot be repaired.
- Shipment is at the risk and the cost of the sender.
- Complete the “Declaration on Absence of Health Hazards” and send the instrument to the manufacturer or supplier. Ask your supplier or manufacturer for the form. The form can also be downloaded from www.vitlab.com.

19.2. Calibration Service

ISO 9001 and GLP-guidelines require regular examinations of your volumetric instruments. We recommend checking the volume every 3-12 months. The interval depends on the specific requirements on the instrument. For instruments frequently used or in use with aggressive media, the interval should be shorter.
The detailed testing instruction can be downloaded on www.vitlab.com.
VITLAB also offers you the possibility to have your instruments calibrated by the VITLAB Calibration Service.
Just send in the instruments to be calibrated, accompanied by an indication of which kind of calibration you wish. Your instruments will be returned within a few days together with a test report (VITLAB calibration service) or with a DAkkS Calibration Certificate. For further information, please contact your dealer or VITLAB.
The order documents are ready for download under www.vitlab.com.

20. Warranty

We shall not be liable for the consequences of improper handling, use, servicing, operation 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 spare parts or components have been used.

21. Disposal

For the disposal of instruments, please obser ve the relevant national disposal regulations.

Subject to technical modification without notice. Errors excepted.