



Competence in Labware

Liquid-Handling range



Reliability from developme



Tradition

VITLAB has over 100 years of tradition. The company VITRI GmbH & Co. KG was established in 1908 in Mühlthal, and the laboratory division was spun off in 1989 as VITLAB. Today, VITLAB is one of the leading manufacturers of liquid handling instruments and performance plastic laboratory products for one-time or long-term use. We develop and manufacture these laboratory products at our own production facility.



Certified quality

Independent inspections and routine internal audits guarantee the effectiveness of VITLAB's quality management system throughout the entire company, from development to shipment. As a result, the phrase 'Made by VITLAB' has become synonymous with quality.



Almost all our products are **made in Germany**. Supplemental procedures such as tempering and volume testing are conducted in our own facilities, which guarantees the highest possible product quality and measurement accuracy. Our continuous improvement paradigm supports our goal of 0% failure.

nt to service

The VITLAB Quality Management System has been continuously certified since January 1994, currently according to DIN EN ISO 9001:2008. Active stewardship of the environment is an equally strong pillar of our business philosophy. VITLAB has been certified according to DIN EN ISO 14001 since May, 1999.

Competent customer service

Due to its intensive partnerships with distributors in over 70 countries, VITLAB can offer sound on-site advice, individual support, and quick answers to your questions. Our qualified product training sessions provide comprehensive technical and application-oriented information on using our products. Should problems arise, our expert repair service keeps down-time as short as possible.

VITLAB products can be ordered from specialist dealers worldwide. Our authorised sales partners can be found on the internet at:

www.vitlab.com

Or contact us directly.



Your contact Customer Service

Our Customer Service staff is at your service to provide you with competent advice and answers to all your queries and questions concerning offers, orders and deliveries. Our Product Management and Sales Team are at your disposal – also “on site” – with any technical information or assistance that you might require for your application.

VITLAB GmbH, Customer Service

tel: +49 6026 9 77 99-0

fax: +49 6026 9 77 99-30

e-mail: info@vitlab.com

web: www.vitlab.com

For your Information

Please understand that technical specifications, catalogue numbers and designs may change after this catalogue is published. The illustrations used are for representation only, and the details may vary from the description. All measurements, with the exception of exact tolerances, should be understood as approximate values. Please keep in mind that the actual testing and measuring results can be influenced by a variety of factors that are beyond our control. Therefore, you should carefully check the transferability of the data applying it to a particular application.

The packaging units (PU) correspond to the minimum order quantities. All up-to-date information is also available on the internet at www.vitlab.com.

VITLAB  [®], VITLAB[®],
maneus[®], pipeo[®], VITsafe[™]
are brands of VITLAB GmbH.

Table of contents



Bottle-top burettes

VITLAB® continuous E/RS

Accessories

Starting on page 8



Bottle-top dispensers

VITLAB® genius, VITLAB® simplex

VITLAB® piccolo

VITLAB® TA

Accessories

Starting on page 12



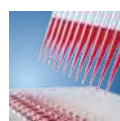
Micropipettes

VITLAB® micropipette

VITLAB® micropipette -8/-12

Accessories

Starting on page 26



Pipette tips

Starting on page 32



Pipette controllers

VITLAB pipeo®

VITLAB maneus®

Accessories

Starting on page 37



General information

Starting on page 42

Our aim is to provide you with a clear and comprehensive presentation of all relevant product information. For quick reference, we use the following symbols:



CC, conformity-attested products according to DIN ISO, with certificate



Food-safe products according to EC Directive No. 10/2011



Products that can be autoclaved at 121 °C (2 bar) according to DIN EN 285. Note restrictions!



CE mark according to EU Guideline 2004/108/EC, 93/68/EEC; 73/23/EEC, and 93/68/EEC



CE-IVD mark according to EU Guideline 98/79/EC

Ultimate liquid handling precision

Simple and safe

Liquid handling represents a large portion of routine laboratory work. The devices you use must allow you to carry out your work easily and safely and, above all, to provide the precision you expect. VITLAB specializes in devices for titration and precise volumetric dispensing for a wide range of applications. But we do not ignore your convenience: VITLAB's liquid handling devices are easy to take apart, thanks to their modular construction, and are very simple to clean. All parts are replaceable, to ensure long-term use, cost-effective maintenance, and minimal downtime.

Our conformity certification confirms that accuracy and precision exceed the German standard DIN EN ISO 8655. For each liquid handling device, the VITLAB certificate documents:

- accuracy (A%)
- coefficient of variation (CV%)
- device type
- serial number

This product data is stored at VITLAB and may be accessed by request. This assures long term traceability of test results for VITLAB instruments.

If you need additional information, please call us.

Perfection in Liquid Handling

R A P I D A N D A C C U R A T E T I T R A T I O N



VITLAB 
Competence in Labware



VITLAB® continuous E/RS



The VITLAB® continuous bottle-top burette (Figure 1) enables continuous titration, which leads to rapid, convenient, and accurate results. The angled display shows 4-position titration volume in large, easily read numbers (Figure 2), which simplifies operation. Turning the two hand wheels supplies the titration medium in a **continuous and pulse-free** manner via the patented double-piston pump (EP 801 982) (Figure 3). Filling procedures are not necessary. This innovative technology increases safety; its compact design and low centre of gravity reduce risk of overturning, especially with smaller bottles. The height and length of the discharge tube can be adjusted, making it possible to work safely with both short and tall bottles. The patented recirculation system (EP 542 241) (Figure 4) **prevents the loss of valuable reagent** and reduces the risk of splashes. With its simple-to-use calibration function, VITLAB® continuous fulfils the corresponding requirements for test equipment monitoring without instrument downtime. Margins of error are under those specified in the DIN EN ISO 8655-3 standard, even for partial volumes. VITLAB® continuous is certified compliant with DIN 12600.

Included in delivery:

VITLAB® continuous E/RS, with GL 45 connecting threads and GL 32, GL 38 and S 40 (buttress thread) size PP thread adapters, telescopic filling tube (200 - 350 mm), telescopic discharge tube (140 - 220 mm), two 1.5 V microbatteries (LR 03/AAA), instruction manual, and quality certificate.

Type	Volume/rot.** ml	A* ≤ ± %	CV* ≤ %	PU	Cat. No.
E	2.5	0.2 at 25 ml	0.1 at 25 ml	1	1620506
RS	5.0	0.2 at 50 ml	0.1 at 50 ml	1	1620507

*Accuracy and coefficient of variation according to DIN EN ISO 8655-3

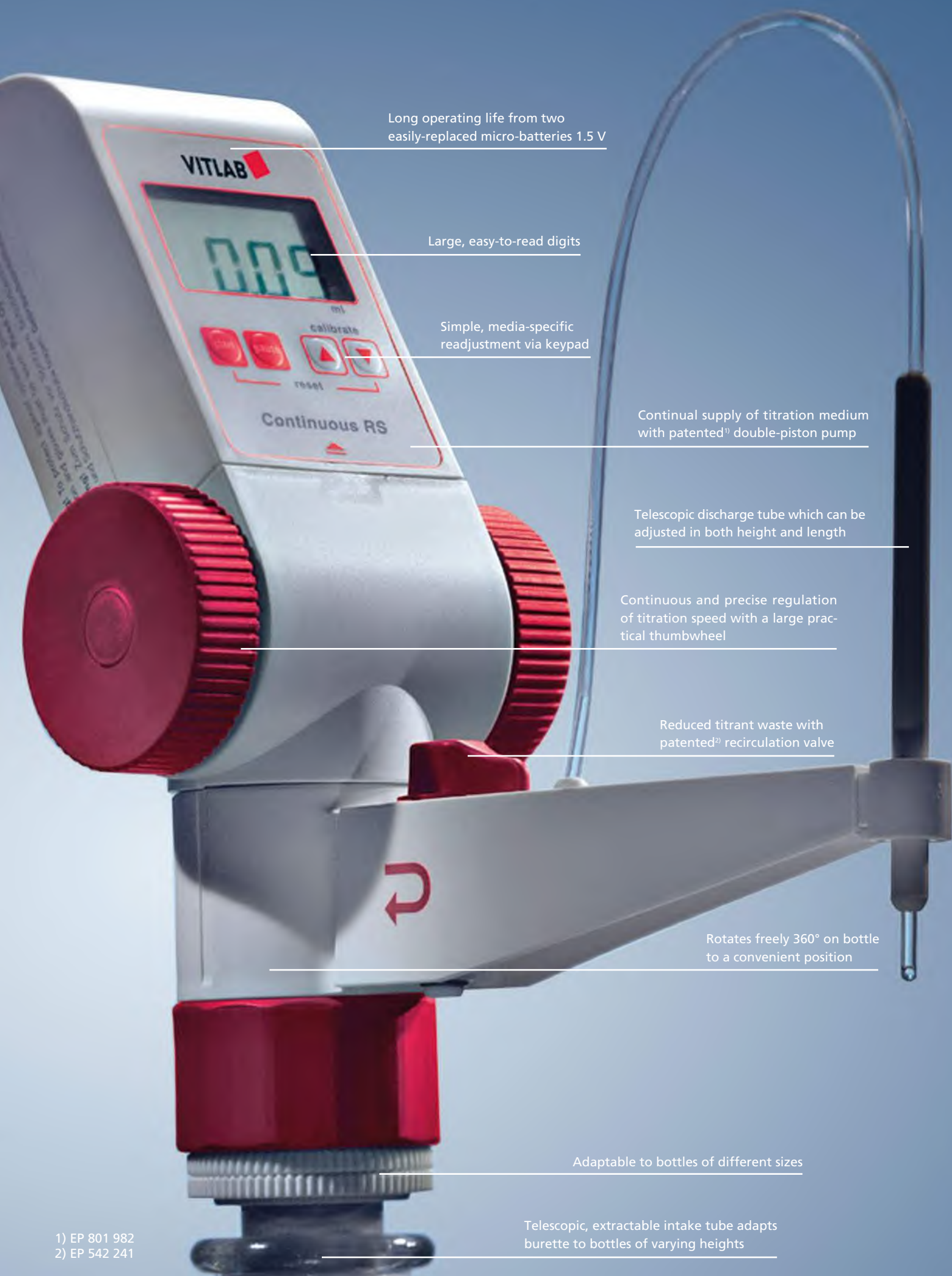
**Volume dispensed per rotation of the hand wheel

The VITLAB® continuous E/RS bottle-top burette can be used for the following titrants up to a concentration of 1 mol/L:

Acetic acid	Potassium dichromate solution
Ammonium iron (II) sulphate solution	Potassium hydroxide
Ammonium thiocyanate solution	Potassium iodate solution
Barium chloride solution	Potassium permanganate solution
Bromide bromate solution	Potassium thiocyanate solution
Cerium (IV) sulphate solution	Silver nitrate solution
EDTA solution	Sodium arsenite solution
Hydrochloric acid	Sodium carbonate solution
Iodine solution	Sodium chloride solution
Iron (II) sulphate solution	Sodium hydroxide
Nitric acid	Sodium nitrite solution
Oxalic acid solution	Sodium thiosulphate solution
Perchloric acid	Sulphuric acid
Potassium bromate solution	Tetra-n-butylammonium hydroxide solution
Potassium bromide / bromate solution	Zinc sulphate solution

The recommendations in this table have been carefully tested and reflect the most current information available. Always follow the instruction manual for the instrument as well as the reagent manufacturer's specifications. Should you require information on chemicals not listed, please do not hesitate to contact us. As at 03/12.





Long operating life from two easily-replaced micro-batteries 1.5 V

Large, easy-to-read digits

Simple, media-specific readjustment via keypad

Continual supply of titration medium with patented¹⁾ double-piston pump

Telescopic discharge tube which can be adjusted in both height and length

Continuous and precise regulation of titration speed with a large practical thumbwheel

Reduced titrant waste with patented²⁾ recirculation valve

Rotates freely 360° on bottle to a convenient position

Adaptable to bottles of different sizes

Telescopic, extractable intake tube adapts burette to bottles of varying heights

1) EP 801 982
2) EP 542 241



Adapter for VITLAB® continuous E/RS

For secure screwing of the burettes onto reagent bottles with an NS neck, GL screw threading or an S buttress thread.

Description	External thread	Bottle neck threads	PU	Cat. No.
NS-adapter, PP	GL 32	NS 19/26	1	1670066
NS-adapter, PP	GL 32	NS 24/29	1	1670067
NS-adapter, PP	GL 32	NS 29/32	1	1670068
Thread adapter, PP	GL 32	GL 28	1	1670155
Thread adapter, PP	GL 38	GL 32	1	1670085
Thread adapter, PP	GL 45	GL 32	1	1670180
Thread adapter, PP	GL 45	GL 38	1	1670110
Thread adapter, PP	GL 45	S 40	1	1670120
Thread adapter, ETFE	GL 32	GL 28	1	1670080
Thread adapter, PTFE	GL 38	GL 32	1	1670095
Thread adapter, ETFE	GL 45	GL 32	1	1670100
Thread adapter, ETFE	GL 45	GL 38	1	1670115
Thread adapter, PTFE	GL 45	S 40	1	1670125



Drying tube for VITLAB® continuous E/RS

PP, transparent, unfilled. Can be connected directly to the burette.

Description	PU	Cat. No.
Drying tube, PP, unfilled	1	1671095



Telescopic filling tube for VITLAB® continuous E/RS

For the filling of titration medium from bottles of different heights.

Description	Length mm	PU	Cat. No.
Telescoping filling tube, FEP, ETFE, PTFE	200 - 350	1	1671085



Threaded bottles for VITLAB® continuous E/RS

Threaded brown glass (soda lime glass) bottles with an ethylene acrylate coating.

Volume ml	Thread GL	Shape	PU	Cat. No.
1000	45	square	1	1671500
2500	45	round	1	1671510

Perfection in Liquid Handling

HIGHEST RELIABILITY IN DISPENSING



VITLAB 
Competence in Labware

VITLAB® Dispenser line: genius, simplex, and TA

VITLAB bottle-top dispensers are available for a broad spectrum of applications in the dispensing of exact volumes. VITLAB® genius and simplex can be used for practically any task, while VITLAB® TA dispensers have been specially developed for use in trace analysis and with highly concentrated media. As they are produced from materials with extremely high chemical resistance, VITLAB® bottle-top dispensers are very robust and reliable.



	VITLAB® genius/simplex	VITLAB® TA
Applications	Salt solutions, acids, bases, and many organic solvents	Specially for use in trace analysis for dispensing high-purity and highly concentrated acids and alkalis, as well as hydrogen peroxide, bromine and HF
Components in contact with media	Borosilicate glass, FEP, ETFE, PFA, PTFE, platinum-iridium, PVDF (screw cap)	Various fluoroplastics (e.g., ETFE, FEP, PFA, PTFE), Al ₂ O ₃ -sapphire, platinum-iridium or tantalum (depending on the model)
Operating limits	Temperature: +15 °C to +40 °C Steam pressure: max. 500 mbar Viscosity: max. 500 mm ² /s Density: max. 2.2 g/cm ³	Temperature: +15 °C to +40 °C Steam pressure: max. 600 mbar Viscosity: max. 500 mm ² /s Density: max. 3.8 g/cm ³

* Dynamic viscosity [mPas] = kinematic viscosity [mm²/s] x density [g/cm³]

General guide for dispenser selection (for the classification of dispenser media, see page 15).

Salt solutions	Acids and bases	Solvents	High-purity and highly concentrated acids and bases	Hydrofluoric acid (HF), bromine, hydrogen peroxide
VITLAB® genius/simplex				
			VITLAB® TA	

VITLAB® genius & simplex



Drawing quantities of liquids from large supply bottles is a daily routine in the lab. This manual task must be carried out quickly, accurately, reproducibly, simply and safely.

VITLAB® genius and simplex bottle-top dispensers are a family of instruments with proven precision that offer many advantages in routine liquid-handling operations. VITLAB® genius and simplex instruments can be used in practically any operation and are suitable for **organic and inorganic solutions**. The materials that come in contact with media (PTFE, PFA, FEP, borosilicate glass and platinum-iridium) are resistant to most acids, bases, and solvents.

VITLAB® genius and simplex are equipped with a positive displacement piston and a fluoro-plastic (PFA) sealing lip on the cylinder wall. The latter acts like a windscreen wiper **to prevent crystal build-up on the cylinder wall** from readily crystallisable media. The glass cylinder is also coated with a plastic material that reduces the risk of splashes should breakage occur. The telescopic filling tube can be adjusted smoothly to different bottle heights.

VITLAB® genius is also equipped with our patented recirculation valve (EP 542 241) that reduces reagent loss when ventilated. The simple-to-use calibration function of the VITLAB® genius helps to meet all of the requirements of testing-apparatus monitoring, with the minimum of downtime.

VITLAB® genius and simplex are completely autoclavable at 121 °C (2 bar) according to DIN EN 285, and are certified compliant with DIN 12600.

Included in delivery:

VITLAB® genius or VITLAB® simplex with 3 threaded adapters made from PP.
Nominal volumes of 2.5 - 10 ml (screw coupling GL 32) with adapters GL 28, S 40 and GL 45.
Nominal volumes of 25 - 100 ml (screw coupling GL 45) with adapters GL 32, GL 38 and S 40.
Telescopic filling tube (200 - 350 mm), mounting tool, instruction manual, and quality certificate stating all test values.

Volume ml	Graduation ml	A* ≤ ± %	CV* ≤ %	PU	VITLAB® simplex Cat. No.	VITLAB® genius Cat. No.
VITLAB® simplex/genius						
0.25 - 2.5	0.05	0.6	0.1	1	1601503	1605503
0.5 - 5.0	0.10	0.5	0.1	1	1601504	1605504
1.0 - 10.0	0.20	0.5	0.1	1	1601505	1605505
2.5 - 25.0	0.50	0.5	0.1	1	1601506	1605506
5.0 - 50.0	1.00	0.5	0.1	1	1601507	1605507
10.0 - 100.0	2.00	0.5	0.1	1	1601508	1605508
VITLAB® simplex fix						
1.0	-	0.6	0.1	1	1602502	
5.0	-	0.5	0.1	1	1602504	
10.0	-	0.5	0.1	1	1602505	
* Accuracy and coefficient of variation according to DIN EN ISO 8655-5						

Bottle-top dispensers

Recommended usage ranges for VITLAB® genius and VITLAB® simplex:

Medium	Medium	Medium
O Acetaldehyde	O Acetic acid	O Urea
O Acetone	O Chloronaphthalene	I Hydrochloric acid, 37%
O Acetonitrile	I Chromic acid	O Lactic acid
O Acetylacetone	I Chromic-sulphuric acid	I Magnesium chloride
O Acrylic acid	I Copper sulphate	I Mercury chloride
O Acrylonitrile	O Cresol	O Methanol
O Adipic acid	O Cumene (isopropylbenzene)	O Methoxybenzene
O Allyl alcohol	O Cyclohexanone	O Methyl butyl ether
I Aluminium chloride	O Decane	O Methyl formate
O Amino acids	O 1-Decanol	O Methyl propyl ketone
I Ammonia solution	O Di(ethylene glycol)	O Mineral oil (motor oil)
I Ammonium chloride	O Dibenzyl ether	O Monochloroacetic acid, 50%
I Ammonium fluoride	O Dichlorobenzene	I Nitric acid, 60%
I Ammonium hydroxide	O Dichloroethane	O Nitrobenzene
I Ammonium sulphate	O Dichloromethane	O Octane
O Amyl acetate	O Diethanolamine	O Oleic acid
O Amyl alcohol (pentanol)	O Diethyl ether	O Oxalic acid
O Amyl chloride (chloropentane)	O Diethylamine	I Perchloric acid
O Aniline	O 1,2 Diethylbenzene	O Petroleum
I Barium chloride	O Dimethyl sulphoxide (DMSO)	O Phenol
O Benzaldehyde	O Dimethylaniline	O Phenylethanol
O Benzene	O Dimethylformamide (DMF)	O Phenylhydrazine
O Benzoyl chloride	O 1,4 Dioxane	I Phosphoric acid, 85%
O Benzyl alcohol	O Diphenyl ether	I Phosphoric acid, 85% + sulphuric acid, 98%, 1:1
O Benzyl chloride	O Ethanol	O Piperidine
O Benzylamine	O Ethanolamine	O Propanol
I Boric acid	O Ethyl acetate	O Propionic acid
O Bromobenzene	O Formaldehyde	O Propylene glycol (propanediol)
O Bromonaphthalene	O Formamide	O Propylene oxide
O Butanediol	O Glacial acetic acid	O Pyridine
O 1-Butanol	O Glycerine	O Salicylaldehyde
O n-Butyl acetate	O Glycol (ethylene glycol)	O Salicylic acid
O Butyl methyl ether	O Glycolic acid, 50%	O Silver acetate
O Butylamine	O Heating oil (Diesel oil)	I Silver nitrate
O Butyric acid	O Hexane	O Sodium acetate
I Calcium carbonate	O Hexanoic acid	I Sodium chloride
I Calcium chloride	O Hexanol	I Sodium dichromate
I Calcium hydroxide	I Hydroiodic acid	I Sodium fluoride
I Calcium hypochlorite	I Iodine / potassium iodide solution	I Sodium hydroxide, 30%
O Chloroacetaldehyde	O Isoamyl alcohol	I Sodium hypochlorite
O Chloroacetic acid	O Isobutanol	I Sulphuric acid, 98%
O Chloroacetone	O Isopropanol (2-propanol)	O Tartaric acid
O Chlorobenzene	O Isopropyl ether	O Tetramethylammonium hydroxide
O Chlorobutane	O Methyl ethyl ketone	O Toluene
O Formic acid	I Potassium chloride	O Turpentine
O Gasoline	I Potassium dichromate	O Xylene
O Methyl benzoate	I Potassium hydroxide	I Zinc chloride
O Pyruvic acid	I Potassium permanganate	I Zinc sulphate

The above data have been carefully checked and reflect the current state of knowledge. Always follow the instructions for use that accompany the instrument as well as the reagent manufacturer's instruction manual. In addition to the chemicals listed above, solutions of a wide variety of organic or inorganic salts (e.g., biological buffers), biological detergents, and cell culture media can be dispensed. Should you require information on chemicals not listed, please do not hesitate to contact us. Last updated: 03/12.

I Inorganic media

O Organic media



Bottles for VITLAB® genius and simplex

Reagent bottles made of Polypropylene. Transparent.

With screw cap made of PP.

Good chemical resistance, ideal for long-term storage of liquids.

Autoclavable at 121 °C (2 bar) according to DIN EN 285.

Food-safe products according to EC Directive No. 10/2011.

Volume ml	Thread GL	Height mm	Ø mm	PU	Cat. No.
500	25	165	87	10	100589
500	45	172	87	10	101789
1000	32	202	108	10	100689
1000	45	197	105	10	102089
2000	32	245	131	6	100789
2000	45	241	131	6	102189



Threaded brown glass (soda lime glass) bottles with an ethylene acrylate coating for increased safety, and a screw cap. The plastic coating significantly reduces hazardous glass splintering during breakage. The maximum working temperature for coated bottles is 80 °C. To preserve the coating, do not clean at temperatures exceeding 60 °C.

Volume	Form	Bottle neck threads GL	PU	Cat. No.
100	round	GL 28	1	1671505
100	square	GL 32	1	1671506
250	square	GL 32	1	1671515
500	square	GL 32	1	1671520
1000	square	GL 45	1	1671500
2500	round	GL 45	1	1671510



Plastic stand for VITLAB® dispensers

For secure anchoring, made entirely of polypropylene for contamination-free operation (no metal).

Suitable for VITLAB® dispensers with screw coupling GL 45.

Stand rod: 300 mm; base: 220 x 160 mm; weight: 1,130 g.

Description	PU	Cat. No.
Plastic stand	1	1671116

Bottle-top dispensers

Drying tube for VITLAB® genius and simplex

PP, transparent, unfilled. Can be connected directly to the dispenser.

Description	PU	Cat. No.
Drying tube, PP, unfilled	1	1671095



Discharge tube for VITLAB® genius and simplex

Including collection tube with joist, dosing needle with flexible discharge tube (80 cm, PTFE) and handle and assembly instructions.

Description	PU	Cat. No.
Discharge tube for simplex / genius 2.5, 5 and 10 ml	1	1650086
Discharge tube for simplex / genius 25, 50 and 100 ml	1	1650111



Adapter for VITLAB® genius and simplex

For securely screwing the dispenser onto the reagent bottles with an NS neck, GL screw threading or an S buttress thread.

Description	External thread	Bottle neck threads	PU	Cat. No.
NS-adapter, PP	GL 32	NS 19/26	1	1670066
NS-adapter, PP	GL 32	NS 24/29	1	1670067
NS-adapter, PP	GL 32	NS 29/32	1	1670068
Thread adapter, PP	GL 32	GL 25	1	1670150
Thread adapter, PP	GL 32	GL 28	1	1670155
Thread adapter, PP	GL 32	GL 38	1	1670165
Thread adapter, PP	GL 32	GL 45	1	1670175
Thread adapter, PP	GL 32	S 40	1	1670170
Thread adapter, PP	GL 38	GL 32	1	1670085
Thread adapter, PP	GL 45	GL 32	1	1670180
Thread adapter, PP	GL 45	GL 38	1	1670110
Thread adapter, PP	GL 45	S 40	1	1670120





Filling tubes for VITLAB® genius and simplex

Description	Length mm	PU	Cat. No.
Telescoping filling tube, FEP, ETFE, PTFE, for all sizes	200 - 350	1	1671085
Filling tube, FEP, for simplex/genius 2.5, 5 and 10 ml	220	1	1650020
Filling tube, FEP, for simplex/genius 2.5, 5 and 10 ml	335	1	1650025
Filling tube, FEP, for simplex/genius 25, 50 and 100 ml	250	1	1650030
Filling tube, FEP, for simplex/genius 25, 50 and 100 ml	335	1	1650035



Discharge tube for VITLAB® genius and simplex

Discharge tube made of FEP.

Including discharge tube securing nut (PP) and discharge tube closing cap (PVDF).

Size ml	PU	VITLAB® simplex Cat. No.	VITLAB® genius Cat. No.
2.5 / 5 / 10	1	1650080	1650085
25 / 50 / 100	1	1650100	1650110

Bottle-top dispensers

Discharge valve for VITLAB® genius

Combined discharge and recirculation valve for dispenser VITLAB® genius made of PTFE, PFA, borosilicate glass 3.3 and platinum-iridium.

Size ml	PU	Cat. No.
2.5 / 5 / 10	1	1655075
25 / 50 / 100	1	1655080



Discharge valve for VITLAB® simplex

Discharge valve for VITLAB® simplex made of PFA, borosilicate glass 3.3 and platinum-iridium.

Size ml	PU	Cat. No.
2.5 / 5 / 10	1	1655095
25 / 50 / 100	1	1655100





VITLAB® TA



The VITLAB® TA dispenser is the dosing device of choice to meet the demanding purity standards required in trace analysis. The high quality parts that come exclusively in contact with the medium and the specially developed and proven cleaning process to be done before use results in **a reduced release of trace metal ions to the low ppb range, or, depending on the application, even the ppt range**. The parts that are in contact with media are made of various fluoroplastics (e.g. ETFE, FEP, PFA, PTFE), Al₂O₃-sapphire, platinum-iridium or tantalum (depending on model).

Thanks to the excellent chemical resistance of the materials used, the new dispenser can also be deployed with **highly concentrated acids and bases**, such as perchloric, sulphuric and nitric acid. Depending on the application, there is a choice of two different valve spring systems: the VITLAB® TA with tantalum spring is recommended for dosing of hydrogen peroxide (H₂O₂). For applications using sodium hydroxide (up to a max. concentration of 30%) or hydrogen fluoride (HF) the platinum-iridium spring is recommended. In order to minimize the loss of valuable reagents or sample solutions, VITLAB offers the dispenser with the optional recirculation valve.

Included in delivery:

VITLAB® TA dispenser (screw thread GL 45) with adjustable variable volumes, certified compliant to DIN 12600, with quality certificate, telescopic filling tube, mounting tool, GL 28/S 28 (ETFE), GL 32 (ETFE), and S 40 (PTFE) bottle adapters, and instruction manual. Optionally with or without recirculation valve.

Volume ml	Valve spring	Recircu- lation	Graduation ml	A* ≤ ± %	CV* ≤ %	PU	Cat. No.
1.0 - 10.0	Pt-Ir	no	0.2	0.5	0.1	1	1607515
1.0 - 10.0	Pt-Ir	yes	0.2	0.5	0.1	1	1607525
1.0 - 10.0	Ta	no	0.2	0.5	0.1	1	1607535
1.0 - 10.0	Ta	yes	0.2	0.5	0.1	1	1607545

Error tolerance conforming to DIN EN ISO 8655-5, related to the nominal (maximum) volume marked on the device where the device, environment and distilled H₂O are at the same temperature (20 °C). Checks are done in accordance with DIN EN ISO 8655-6 with the device filled to capacity and with uniform and jolt-free dosing. Certified as conforming to DIN 12 600.

Recommended dispensing media for VITLAB® TA

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

+ suitable / - unsuitable

*) Note: Hydrofluoric acid reacts slightly with sapphire resulting in slightly increased aluminium levels. To reduce these values we recommend discarding 3-5 dosings of 2 ml each before performing analysis.

Calibration mechanism for adjustment within the scope of test equipment monitoring

Fast, precise volume setting with practical screw mechanism

Easy handling using positive displacement plunger with PFA seal to prevent crystallisation

No loss of medium due to recirculation valve (optional)

Extremely low release of trace metal content (in the ppb – ppt range) through use of high-purity contact parts

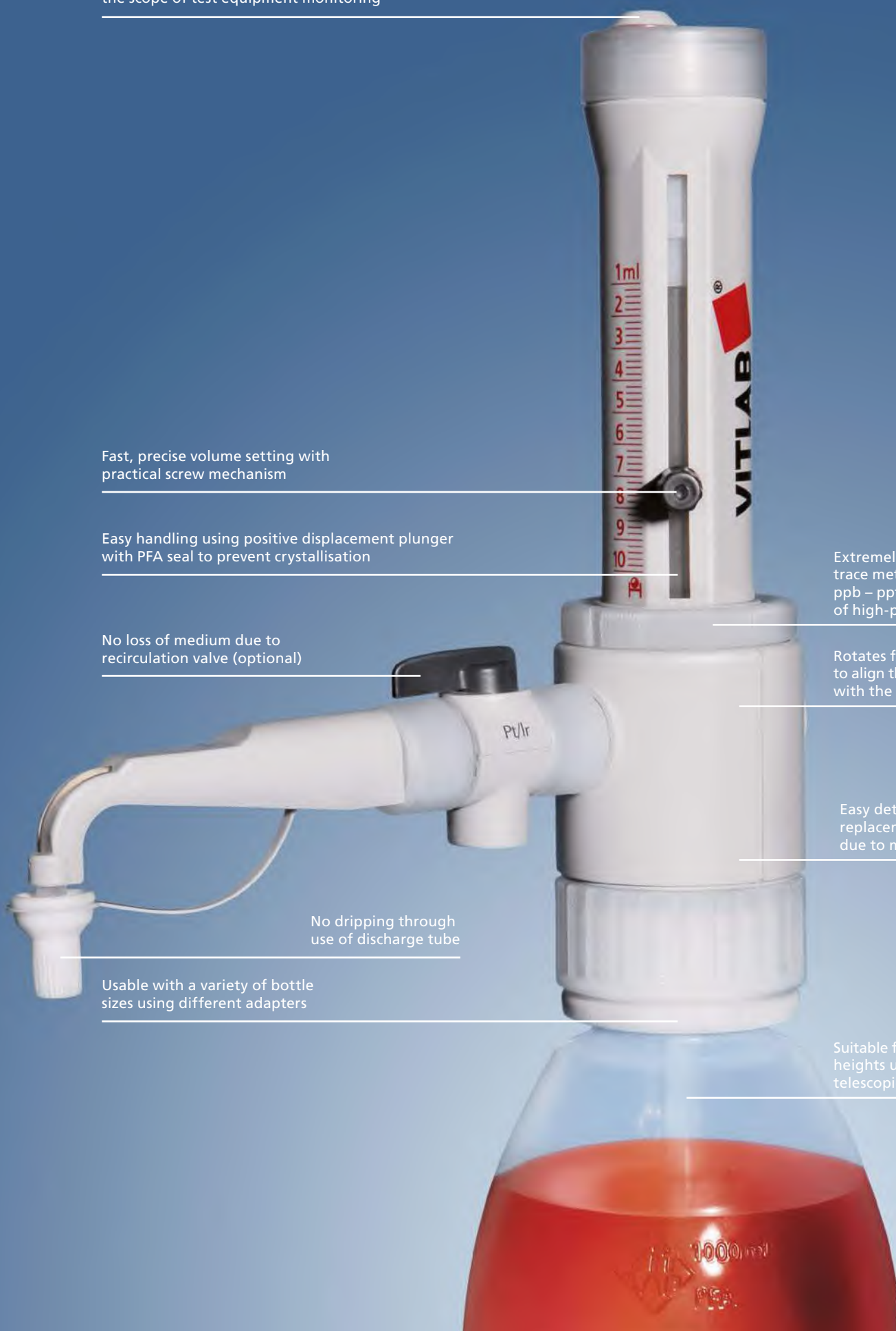
Rotates freely 360° on bottle to align the label of the bottle with the touch panel

Easy detachment and replacement of dosing unit due to modular design

No dripping through use of discharge tube

Usable with a variety of bottle sizes using different adapters

Suitable for a variety of bottle heights using extendable telescopic intake tube





Wide-mouth bottles, PFA



Transparent.

With screw cap made of PFA with buttress threads. Ideal for long-term storage of high-purity oxidants, acids, alkalis, as well as hydrocarbons, trace analysis solvents and standards.

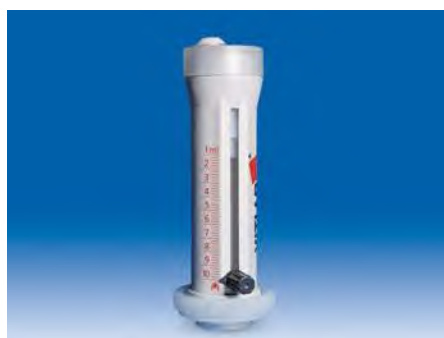
Volume ml	Thread	Height mm	Ø mm	PU	Cat. No.
500	S 40	179	76	1	109597
1000	S 40	217	96	1	109697
2000	S 40	245	130	1	109797



Recirculation valve for VITLAB® TA

Exchangeable, choice between tantalum and platinum-iridium depending on the application.

Valve spring	PU	Cat. No.
Platinum-iridium	1	1671050
Tantalum	1	1671055



Dispensing cartridge for VITLAB® TA

Calibrated, including safety ring, with quality certificate. Nominal volume 10 ml.

Description	PU	Cat. No.
Dispensing cartridge	1	1670700



Plastic stand for VITLAB® TA

For secure anchoring, made entirely of polypropylene for contamination-free operation (no metal). Stand rod: 300 mm; base: 220 x 160 mm; weight: 1,130 g.

Description	PU	Cat. No.
Plastic stand	1	1671116

Bottle-top dispensers

Telescoping filling tube for VITLAB® TA

Individually adjustable lengths.

Description	Length mm	PU	Cat. No.
Telescoping filling tube, FEP, PTFE	70 – 140	1	1671080
Telescoping filling tube, FEP, PTFE	125 – 240	1	1671082
Telescoping filling tube, FEP, PTFE	195 – 350	1	1671083
Telescoping filling tube, FEP, PTFE	250 – 480	1	1671086



Adapter for VITLAB® TA

For securely screwing the dispenser onto reagent bottles with GL screw threading or an S buttress thread.

Description	External thread	Bottle neck threads	PU	Cat. No.
Thread adapter, ETFE	GL 32	GL 25	1	1670072
Thread adapter, ETFE	GL 32	GL 28	1	1670080
Thread adapter, ETFE	GL 32	GL 45	1	1670105
Thread adapter, ETFE	GL 32	S 40	1	1670092
Thread adapter, ETFE	GL 45	GL 32	1	1670100
Thread adapter, ETFE	GL 45	GL 38	1	1670115
Thread adapter, PTFE	GL 45	S 40	1	1670125





VITLAB® piccolo



For dispensing tiny quantities of liquids in all areas of biochemical and medical research.

Even the **smallest quantities can be dispensed directly from the bottle** with the VITLAB® piccolo - a big help, particularly for serial dispensing operations. Special advantage: Disposable tips are unnecessary. This reduces costs.

The ergonomic design makes dispensing effortless and stress-free. The VITLAB® piccolo **can be operated with only one hand**. Use the thumb to depress the volume dispensing button, just as with a pipette, and a reset mechanism refills the volume automatically.

The discharge tube can be rotated over 360° so that it is always optimally situated with respect to the bottle label.

The VITLAB® bottle-top dispensers piccolo 1 and piccolo 2 are used mainly in connection with aqueous and highly diluted agents. Only high-quality materials, such as PTFE, PFA, ETFE, FEP, borosilicate glass, and platinum-iridium come in contact with the media.

VITLAB® piccolo 1 with a fixed volume

VITLAB® piccolo 2 with two fixed volumes

Included in delivery:

VITLAB® piccolo 1 or 2 with GL 28 connecting threads, mounting tool, and instruction manual.

Type	Volume μl	A* ≤ ± %	CV* ≤ %	PU	Cat. No.
piccolo 1	100	3.0	0.4	1	1610501
piccolo 1	200	2.5	0.4	1	1610502
piccolo 1	250	2.0	0.4	1	1610503
piccolo 1	500	1.5	0.3	1	1610504
piccolo 1	1000	1.0	0.2	1	1610506
piccolo 2	100 / 250	2.0	0.4	1	1611503
piccolo 2	500 / 1000	1.0	0.2	1	1611506
piccolo 2	1000 / 2000	1.0	0.2	1	1611508

* Accuracy and coefficient of variation according to DIN EN ISO 8655-5

Other volumes available upon request.



Adapter for VITLAB® piccolo

For securely screwing the dispenser onto reagent bottles with GL screw threading.

Description	External thread	Bottle neck threads	PU	Cat. No.
Thread adapter, PP, piccolo	GL 28	GL 32	1	1670145

Perfection in Liquid Handling

PRECISE AND CONVENIENT PIPETTING



VITLAB 
Competence in Labware



VITLAB® micropipette



The VITLAB® piston-operated pipettes are the ideal manual pipettes for demanding laboratory applications, and have all the features required by users: robust, with ergonomic shape and simple operation, completely autoclavable, highly accurate with simple calibration for long-lasting reliability.

The large, central pipetting button provides a uniform and smooth movement of the piston. For rapid replacement of the tips, the ergonomic eject button is placed easily accessible to the thumb on the front side. The VITLAB® micropipette is easy to use for both right- and left-handers. The 4-digit volume display with integrated zoom function and vertical arrangement of the numbers (top to bottom reading direction) ensures an **optimal readability of the volume** at all times. The desired volume can be set by rotating the volume-setting wheel with ease and precision. The clearly visible colour-coded frame of the volume display allows easy selection of the right pipette tip.

If necessary, e.g. for applications with non-aqueous solutions, the **integrated calibration function allows an adjustment without tools directly in the laboratory**. The corrosion-resistant piston and ejector ensure a long product life.

The micropipette is certified according to DIN 12600, CE-IVD compliant and is completely autoclavable at 121 °C (2 bar) according to DIN EN 285.

Included in delivery: VITLAB® micropipette, quality certificate and instruction manual.

Volume µl	A* ≤ ± %	CV* ≤ %	Tip µl	PU	Cat. No.
0.5 - 10	1.0	0.5	20	1	1641000
2 - 20	0.8	0.4	200	1	1641002
10 - 100	0.6	0.2	200/300	1	1641004
20 - 200	0.6	0.2	200/300	1	1641006
100 - 1000	0.6	0.2	1000	1	1641008
500 - 5000	0.6	0.2	5000	1	1641010
1000 - 10000	0.6	0.2	10000	1	1641012

* Calibrated to deliver „Ex‘. * Accuracy and coefficient of variation based on the nominal volume (= maximum volume) printed on the instrument, if instrument, environment and distilled water are at the same temperature (20 °C), as well as uniform, jerk-free handling. The margins of error are under those specified in DIN EN ISO 8655-2.

Micropipettes

VITLAB® micropipette -8/-12



The VITLAB® micropipettes -8 and -12 are characterized by their especially user-friendly operation while pipetting long series. They have all the features required by users: robust, completely autoclavable and highly accurate, with simple calibration for long lasting reliability, especially for established multichannel pipette applications, such as immunological assays, dilution series, or use with cell cultures in microtiter plates.

By using innovative plastic materials, the VITLAB® multichannel pipettes are **at the same time very robust and light-weight**. To ensure a long operating life, the plastic materials used are corrosion-resistant. The ergonomic finger rest coupled with the low weight contribute to comfortable handling of the pipettes. To provide an optimal and comfortable working position, the manifold can be rotated freely 360° in both directions.

The large, central pipetting button provides uniform and smooth movement of the piston. In addition, the short stroke of 12.5 mm reduces the risk of muscular disorders as a consequence of repeated stress, such as “Repetitive Strain Injury Syndrom” (RSI). The combination of the stepped design of the ejector and special rings made of FKM reduce the effort needed for ejecting the tips and thus provide comfortable operation of the pipette.

The multichannel pipettes are **especially service-friendly** for care and maintenance, as well as for calibration. If necessary, e.g. for applications with non-aqueous solutions, the integrated calibration function allows an adjustment without tools directly in the laboratory. Single shafts and seals can be easily removed, and thus can be directly cleaned or replaced.

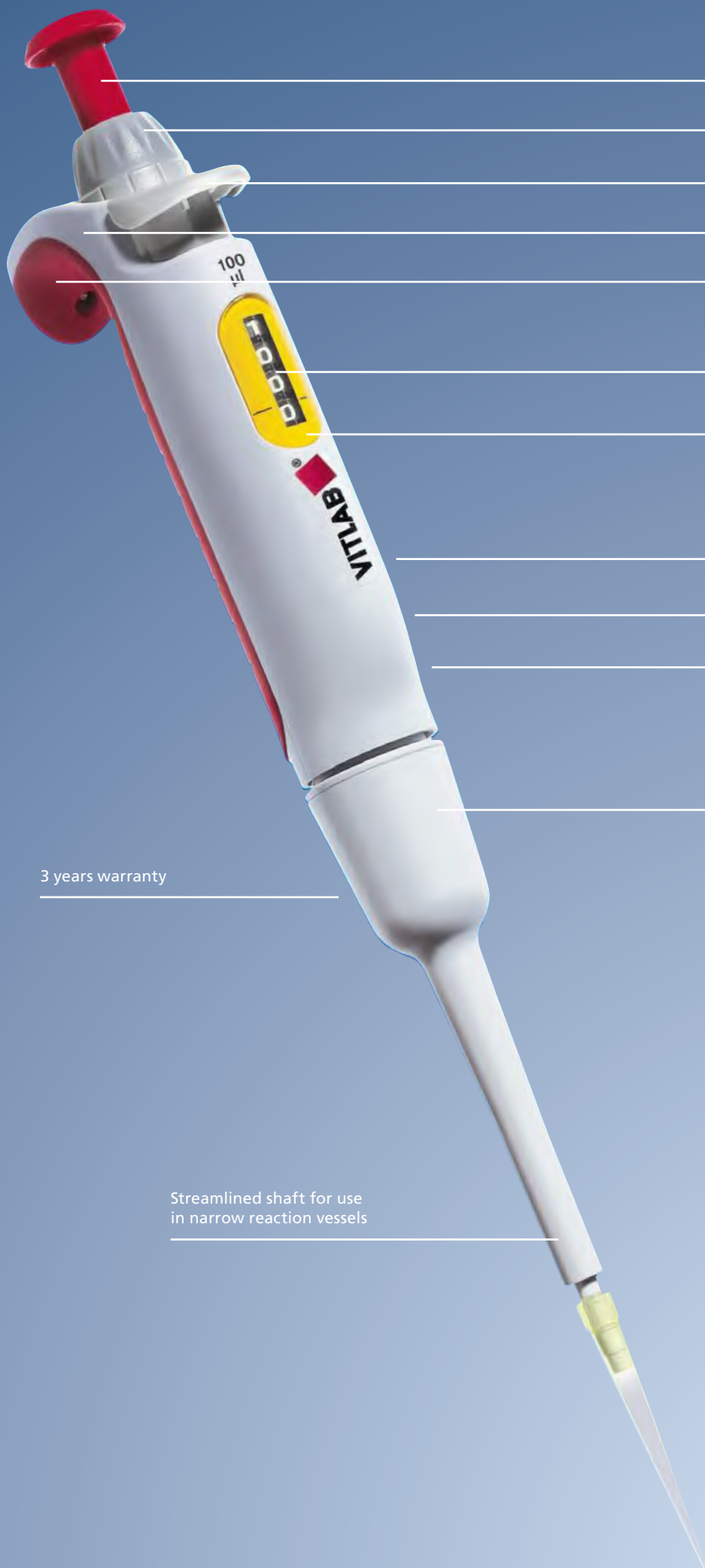
The VITLAB® micropipette -8 and -12 are certified according to DIN 12600, CE-IVD compliant, and are completely autoclavable at 121 °C (2 bar) according to DIN EN 285.

Included in delivery: VITLAB® micropipette -8 or -12, mounting tool for nose cones, silicone grease, 8 or 12 V-rings including instructions and mounting plus demounting tool, quality certificate and instruction manual.

Volume µl	A* ≤ ± %	CV* ≤ %	Tip µl	PU	Cat. No.
micropipette -8					
5 - 50	0.8	0.4	200	1	1608002
10 - 100	0.8	0.3	200/300	1	1608004
20 - 200	0.8	0.3	200/300	1	1608006
30 - 300	0.6	0.3	300	1	1608008
micropipette -12					
5 - 50	0.8	0.4	200	1	1612002
10 - 100	0.8	0.3	200/300	1	1612004
20 - 200	0.8	0.3	200/300	1	1612006
30 - 300	0.6	0.3	300	1	1612008

* Calibrated to deliver „Ex“. * Accuracy and coefficient of variation based on the nominal volume (= maximum volume) printed on the instrument, if instrument, environment and distilled water are at the same temperature (20 °C), as well as uniform, jerk-free handling. The margins of error are under those specified in DIN EN ISO 8655-2.





Central, large pipetting button

Simple volume adjustment

Large, ergonomic ejection button

Integrated calibration function

Ergonomic finger rest

Precise, 4-digit volume display

Color-coded

Lightweight but still robust

Completely autoclavable at 121 °C

CE-marked

Corrosion-resistant piston and ejector

3 years warranty

Streamlined shaft for use
in narrow reaction vessels

for smooth movement of the piston

for left- and right-handers

for rapid replacement of the tips

for easy calibration without the need for tools

that allows comfortable handling

with integrated zoom function for optimal readability

for easy tip selection

through the use of innovative plastic materials

as per DIN EN 285

according to IVD-directive 98/79 EG

for extended durability

Manifold with 360° free rotation in either direction to offer optimal working positions

Especially service-friendly: Single shafts and seals can be easily removed, and thus can be directly cleaned or replaced in the laboratory

The combination of the stepped design of the ejector and special rings made of FKM reduces the effort needed for ejecting the tips





VITLAB® micropipette Starter-Sets

Each VITLAB® Starter Set includes 3 variable VITLAB® micropipettes with different volumes and associated, color-coded tip boxes, as well as 3 rack mounts for appropriate storage of your new VITLAB® micropipettes.

Our micropipettes are certified according to DIN 12600, CE-IVD compliant and are completely autoclavable at 121 °C (2 bar) according to DIN EN 285.

Starter Set "Mini"

Scope of delivery:

- VITLAB® micropipette 0.5 - 10 µl
- VITLAB® micropipette 10 - 100 µl
- VITLAB® micropipette 100 - 1000 µl
- Tip-Box 0.5 - 20 µl
- Tip-Box 2 - 200 µl
- Tip-Box 50 - 1000 µl
- Rack mount (3x)
- Product & application brochure

Cat. No.: 33331

Starter Set "Classic"

Scope of delivery:

- VITLAB® micropipette 2 - 20 µl
- VITLAB® micropipette 20 - 200 µl
- VITLAB® micropipette 100 - 1000 µl
- Tip-Box 2 - 200 µl (2x)
- Tip-Box 50 - 1000 µl
- Rack mount (3x)
- Product & application brochure

Cat. No.: 33332

Starter Set "Maxi"

Scope of delivery:

- VITLAB® micropipette 100 - 1000 µl
- VITLAB® micropipette 500 - 5000 µl
- VITLAB® micropipette 1000 - 10000 µl
- Tip-Box 50 - 1000 µl
- Tip-Box 0.5 - 5 ml
- Tip-Box 1 - 10 ml
- Rack mount (3x)
- Product & application brochure

Cat. No.: 33333

Micropipettes

Accessories for VITLAB® micropipettes

With the practical rack mount and freely rotatable bench-top stand, VITLAB® micropipettes can be stored safely and ready to use.

Description	PU	Cat. No.
Wall mount for 1 pipette	1	1672000
Bench-top stand for 6 singlechannel or 6 multichannel instruments	1	1672002
Filter for pipette, 5 ml	25	1672010
Filter for pipette, 10 ml	25	1672012
Silicone oil for pipettes, up to 1000 µl	1	1672015
Silicone grease for pipettes 5 ml / 10 ml and multichannel pipettes	1	1672016
Fluorostatic grease for multichannel pipettes	1	1670050



Reagent reservoir, non-sterile, PP

121°C

Transparent, with lid to guard against contamination and spilling out of contents during movement. Optimally suited for working with multichannel pipettes. Autoclavable at 121 °C (2 bar) according to DIN EN 285.

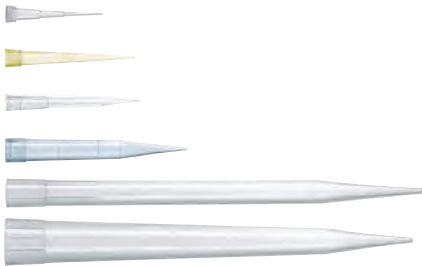
Volume ml	PU	Cat. No.
60	10	319099



Pipette tip selection guide

Which pipette tip will fit my VITLAB® micropipette?

Nominal volume VITLAB® micropipettes							Nominal volume VITLAB® micropipette -8/-12				Tip types	Tip volume
10 µl	20 µl	100 µl	200 µl	1000 µl	5 ml	10 ml	50 µl	100 µl	200 µl	300 µl		
◆											A	0.5 - 20 µl
	◆	◆	◆				◆	◆	◆		B	2 - 200 µl
		◆	◆				◆	◆	◆	◆	C	5 - 300 µl
				◆							D	50 - 1000 µl
					◆						E	0.5 - 5 ml
						◆					F	1 - 10 ml



NEW: Pipette tips free of DNA and RNase

VITLAB® pipette tips are manufactured in a state-of-the-art cleanroom and are automatically palletized and packaged. This ensures a high level of quality, so that all tips up to 1000 µl are **free of DNA (< 40 fg), RNase (< 8.6 fg) endotoxins (< 1 pg) and ATP (< 1 fg)**.

Only pure, high quality polypropylene, that is free of DiHEMA and oleamide, is used for the production of our tips. The tips are **manufactured without addition of plasticizers**. Coloured tips (e.g. yellow and blue, in bags) are, of course, only treated with cadmium-free colour pigments.

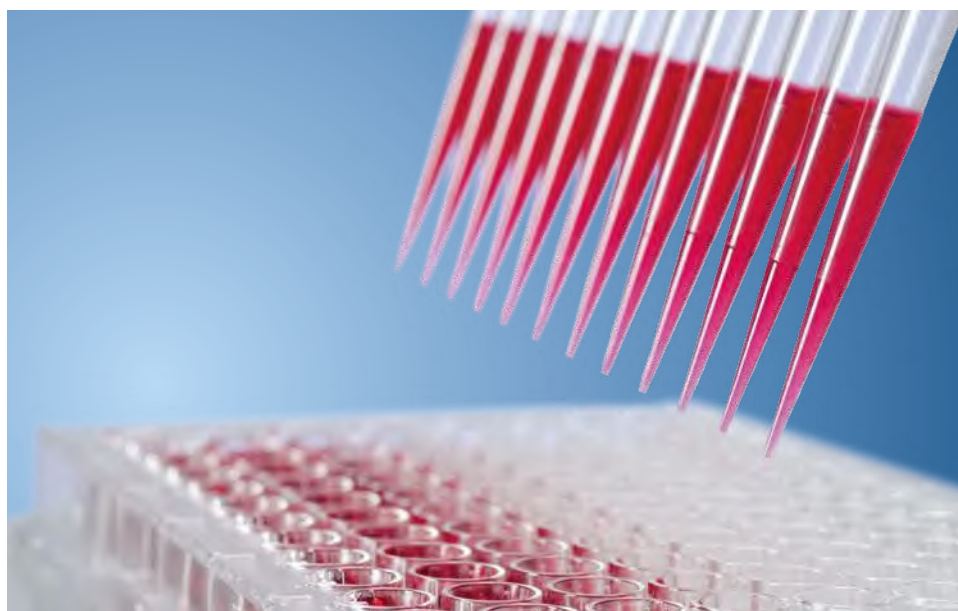
All tips up to 1000 µl are graduated and are autoclavable at 121 °C (2 bar) according to DIN EN 285.

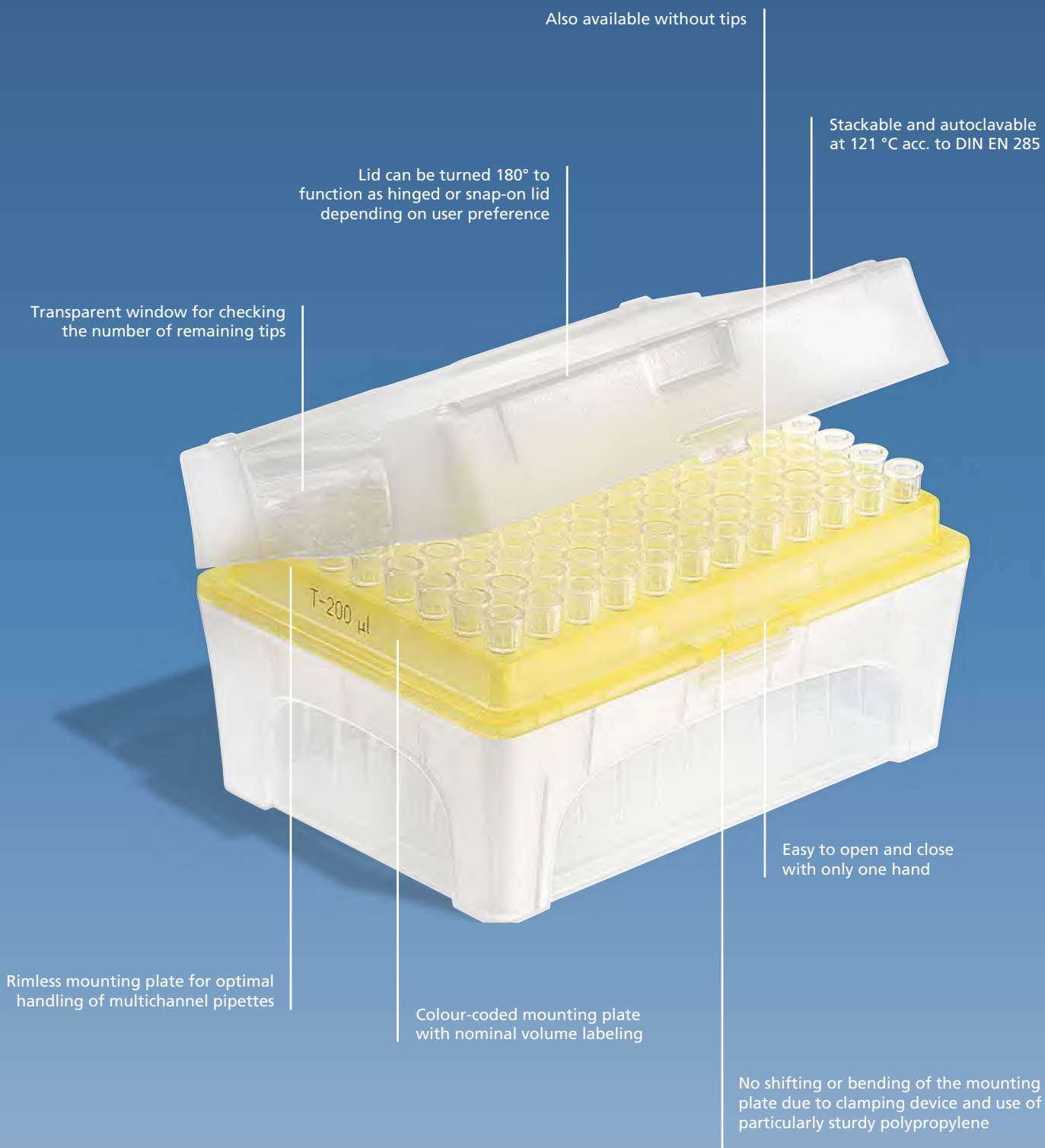
Optimised packaging system

To match the high quality of our pipette tips, the packaging system for the tips was also optimized and is now even more user-friendly. All components are produced in a cleanroom.

The new Tip-Box now has **two opening functions**: standard delivery is with a hinged lid which can be turned 180° and then used as a snap-on lid according to user preference. The box can be easily opened and closed with only one hand. New to the range are empty boxes that can be filled with VITLAB® tips by the user.

Bulk tips are now delivered in **resealable bags** to minimize the risk of contamination in the lab.





High purity

Applications in molecular biology and biochemical analysis require a high level of purity in order not to adulterate results of experiments. Molecules and enzymes such as DNA, RNases and endotoxins are very stable and cannot be completely inactivated or destroyed by sterilization procedures. RNases may even fold back after denaturation. When working with microorganisms and nucleic acids a common difficulty is their ubiquitous occurrence (on hands, in saliva); therefore, for example, it is essential to wear gloves. To avoid contamination with nucleic acids, proteins and microorganisms from human contact,

the production process of our pipette tips is largely automated in a cleanroom.

ATP is a good indicator for the presence or absence of biological contamination. It is a high-energy molecule that is produced by all living cells. Because of their ability to cut DNA or RNA, contamination with DNA, DNases and RNases can, for example, manipulate biomolecular amplification techniques such as PCR. To prevent enzymatic degradation, it is of major importance, that pipette tips are free of RNases.

Packaging variations

VITLAB® pipette tips remain available in the variations palletized in the Tip-Box and packed in bags. Additionally, empty Tip-Boxes for self-filling are available. Due to the new design and functionality, Tip-Boxes up to 1000 µl are stackable and their format now conforms to the common 96 (8x12) unit format.



NEW: Resealable bags

All tips up to 1000 µl are produced under cleanroom conditions, automatically shrink-wrapped in reclosable bags and packaged in cartons. The article number, volume range and lot number of the tips are printed on every bag.



NEW: Tip-Box (up to 1000 µl)

PP box with functional hinged and snap-on lid. For all volume ranges up to 1000 µl in practical 8x12 format. Stackable and autoclavable at 121 °C according to DIN EN 285.



Tip-Box 5/10 ml

PP box with fitted lid. Filled with 5 ml (28 pcs.) or 10 ml (18 pcs.) tips. The box is autoclavable at 121 °C according to DIN EN 285.

Pipette tips

VITLAB® pipette tips are made from high-quality polypropylene and are autoclavable at 121 °C (2 bar) according to DIN EN 285. The raw material used is free from additives such as DiHEMA (di(2-hydroxyethyl) methyl dodecyl ammonium) and oleamide (9-octadecenamide) that often cause interference, particularly in biological labs. All pipette tips up to 1000 µl in any packaging variation are from now on **free of DNA (< 40 fg), RNase (< 8.6 fg), endotoxins (< 1 pg) and ATP (< 1 fg)**.

The pipette tips are **conformity certified, CE marked according to the IVD guideline 98/79 EC** and optimally suited for VITLAB® micropipettes.

Furthermore, the tips are compatible with most pipette models from BRAND, GILSON®, Thermo Fisher Scientific FINNPIPETTE®, Eppendorf® and sartorius® Biohit®. The 5 ml tip is only tested for VITLAB, BRAND and Thermo Fisher Scientific FINNPIPETTE®. The 10 ml tip is only tested for VITLAB, BRAND, Eppendorf® and GILSON®. Note: Pipette shafts are subject to modification and should be checked before use. The fit depends on the manufacturer, pipette type, serial number, and date of manufacture, among other things.

Pipette tips, 0.5 – 20 µl



PP, non-sterile with graduation at 2 and 10 µl. Length: 46 mm. Slim tip for contact-free pipetting into microtiter plates. Tip-Box with gray mounting plate for easy identification; palletized tips are colourless.

Variation	Packaging	PU	Cat. No.
Bag, Standard	2 bags with 1000 tips	2000	148894
Bag, Maxi	10 bags with 1000 tips	10000	155494
Tip-Box, filled	Box with 96 tips on gray mounting plate	5	149794
Tip-Box, empty	Box with gray mounting plate, without tips	1	155400



Pipette tips, 2 – 200 µl



PP, non-sterile with graduation at 20 and 100 µl. Length: 50 mm. Tip-Box with yellow mounting plate for easy identification; palletized tips are colourless. Tips in bags are coloured yellow.

Variation	Packaging	PU	Cat. No.
Bag, Standard	1 bag with 1000 tips	1000	148994
Bag, Maxi	10 bags with with 1000 tips	10000	155694
Tip-Box, filled	Box with 96 tips on yellow mounting plate	5	149994
Tip-Box, empty	Box with yellow mounting plate, without tips	1	155600



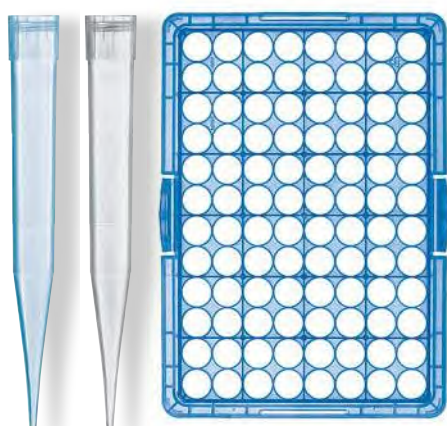


Pipette tips, 5 - 300 µl



PP, non-sterile with graduation at 50, 100 and 300 µl. Length: 53 mm. Also suitable for pipettes with yellow colour-code (see selection guide p. 31). Tip-Box with green mounting plate for easy identification; palletized tips are colorless. Tips in bags are also colorless.

Variation	Packaging	PU	Cat. No.
Bag, Standard	1 bag with 1000 tips	1000	149094
Bags, Maxi	10 bags with 1000 tips	10000	155894
Tip-Box, filled	Box with 96 tips on green mounting plate	5	150094
Tip-Box, empty	Box with green mounting plate, without tips	1	155800



Pipette tips, 50 - 1000 µl



PP, non-sterile with graduation at 250, 500 and 1000 µl. Length: 70 mm. Tip-Box with blue mounting plate; palletized tips are colorless. Tips in bags are coloured blue.

Variation	Packaging	PU	Cat. No.
Bags, Standard	2 bags with 500 tips	1000	149194
Bags, Maxi	10 bags with 500 tips	5000	155994
Tip-Box, filled	Box with 96 tips on blue mounting plate	5	150194
Tip-Box, empty	Box with blue mounting plate, without tips	1	155900



Pipette tips, 0.5 - 5 ml



PP, non-sterile. Length: 160 mm. Diameter: approx. 9.6 mm. Slim shape for pipetting into narrow vessels such as measuring flasks with NS 12/21.

Variation	Packaging	PU	Cat. No.
Bag, Standard	1 bag with 200 tips	200	146294
Tip-Box, filled	Box with 28 tips	1	150294



Pipette tips, 1 -10 ml

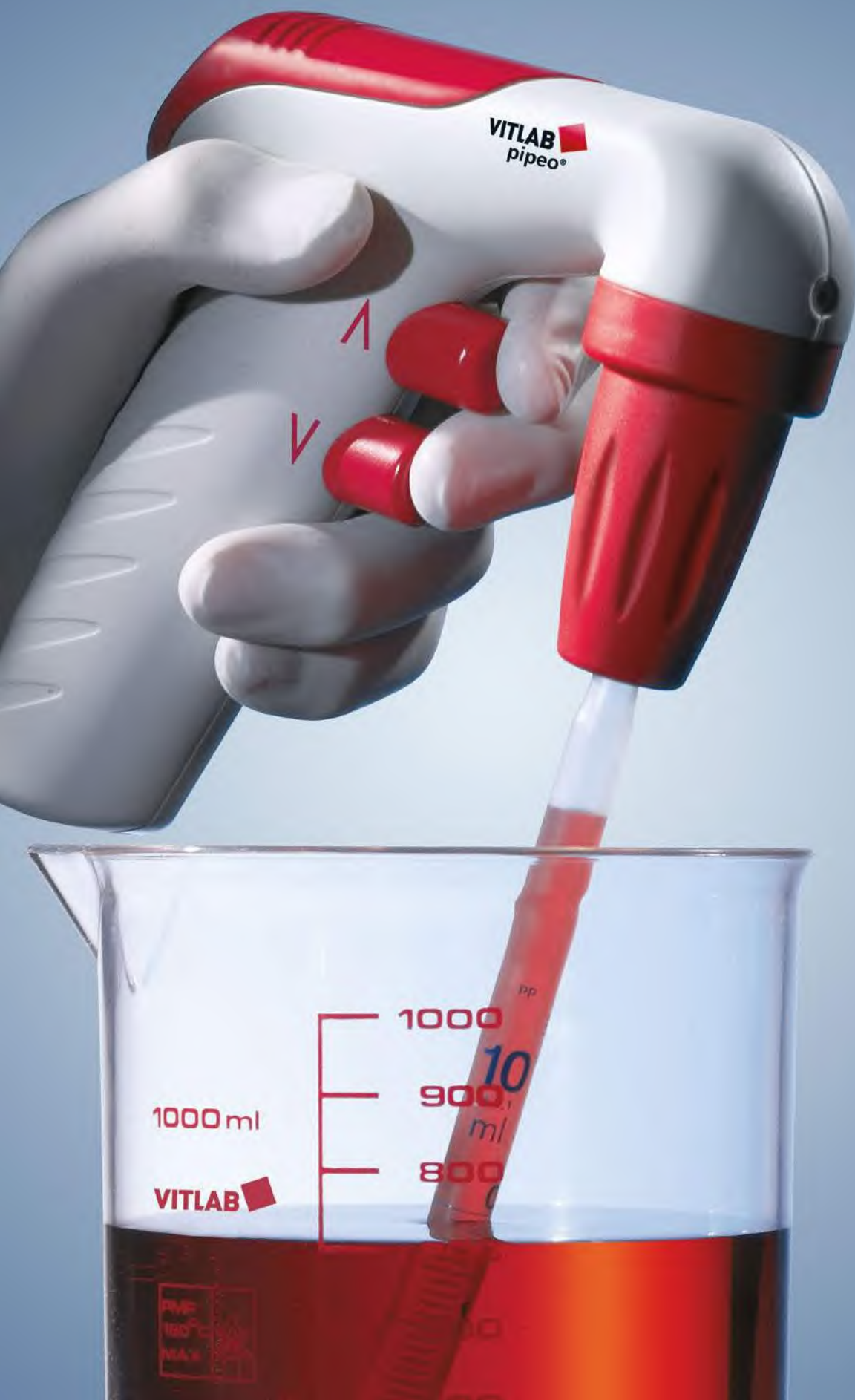


PP, non-sterile. Length: 156.5 mm. Diameter: approx. 15 mm.

Variation	Packaging	PU	Cat. No.
Bag, Standard	2 bags with 100 tips	200	146494
Tip-Box, filled	Box with 18 tips	1	150394

Perfection in Liquid Handling

H I G H E F F I C I E N C Y P I P E T T I N G



VITLAB 
Competence in Labware



VITLAB pipeo®



For all pipettes from 0.1 to 200 ml.

With the VITLAB pipeo® pipette controller, pipette handling is simple and comfortable. The ergonomic handle - **very light weight** at about 190 grams - and excellent balance all contribute to ease of operation. The speed can be adjusted easily, continuously and exactly with one hand using two buttons. A 50 ml pipette can be filled comfortably in less than ten seconds. The liquid release can be done either by gravity delivery when calibrated 'Ex' (to deliver), or in blow out mode using the battery-operated motor.

Pipettes are held securely and tightly in the exchangeable adapter. Liquid vapours are purged directly to protect the instrument.

One full charge of the nickel-metal hydride battery allows 8 hours of non-stop pipetting. The charge level of the recyclable battery is shown by the LED indicator. Defective batteries are easily replaced. To avoid surprises, the LED light changes from green to red two hours before the battery must be recharged. **The VITLAB pipeo® can still be operated while the battery is being recharged.**

Included in delivery:
VITLAB pipeo®, battery charger, battery, one battery compartment cover, two replacement 0.2 µm membrane filters, instruction manual.

Type	PU	Cat. No.
pipeo® with battery charger for the European continent 230 V/50 Hz	1	1631500
pipeo® with battery charger for UK/Ireland 230 V/50 Hz	1	1631510
pipeo® with battery charger for Australia 230 V/50 Hz	1	1631520
pipeo® with battery charger for Japan 100 V/50 Hz	1	1631530
pipeo® with battery charger for USA 120 V/60 Hz	1	1631540





VITLAB maneus®



The VITLAB maneus® pipette controller enables both left- and right-handers to operate all normal bulb and graduated pipettes easily and fatigue-free. Its safe and easy handling allows even inexperienced users **to adjust the meniscus precisely**.

With the new design, unscrewing the adapter enables easy and fast replacement of the hydrophobic membrane filter, which **protects the instrument against fluid penetration**.

The valve system is optimised so that liquids can be drawn up simply, without exerting pressure. The highly sensitive filling and discharge of liquids are controlled gently by the pipetting knob. Thus, the suction element provides rapid filling of the pipette (capacity: 50 ml in less than 10 seconds). The discharge bellows are used for the emptying (blow-out) of the pipette. The specially moulded intake cone ensures secure seating for all normal bulb and graduated pipettes (0.1 to 200 ml).

The VITLAB maneus® is simple to dismantle, easy to clean, and completely autoclavable at 121 °C (2 bar) according to DIN EN 285.

For all normal bulb and graduated pipettes from 0.1 to 200 ml. With replacement 3 µm membrane filter and instruction manual.

Type	PU	Cat. No.
maneus®	1	1630500



Accessories for VITLAB pipeo® & maneus®

For a detailed list of replacement parts, please see the instruction manual for the instrument, or visit our homepage: www.vitlab.com.

Description	PU	Cat. No.
Membrane filter, 0.2 µm, sterile, VITLAB pipeo®	1	1670647
Membrane filter, 0.2 µm, non-sterile, VITLAB pipeo®	10	1670648
Membrane filter, 3 µm, non-sterile, VITLAB pipeo®, VITLAB maneus®	10	1670650
Wall rack, VITLAB pipeo®	1	1670660

Suction bellows for fast
pipette filling (50 ml in
less than 10 seconds)

Button for emptying
blow-out pipettes

The pipetting knob allows
sensitive intake and delivery
of fluids

The perfectly harmonized valve unit
ensures effortless liquid intake

A replaceable hydrophobic
membrane filter protects the
interior from penetrating liquids

Unscrewing the adapter enables
easy cleaning and replacement of
the hydrophobic membrane filter

An especially designed intake
cone allows the use of pipettes
from 0.1 ml to 200 ml



CE mark / CE-IVD Guidelines

IVD Guidelines of the EU

On 7 December, 1998, the EU “Guidelines for In Vitro Diagnostic Devices” (IVD Guidelines) were published in the Official Journal of the European Communities, and thus came into force. The Guidelines were transposed into German National Law on 1 January, 2002, as a corresponding modification of the German Medical Devices Act (MPG). Consequently, in vitro diagnostic devices are considered medical devices.

Definition: Medical devices*

Medical devices are all instruments, apparatus, devices, materials, or other objects including software that are intended by the manufacturer for use in humans:

- for the purpose of detection, prevention, monitoring, treatment, alleviation or compensation of diseases, injuries or disabilities;
- for the purpose of investigation, replacement or modification of the anatomy or of a physiological process;
- for the purpose of control of conception. Pharmacologically or immunologically active agents are excluded, as these are regulated by the German Pharmaceuticals Law.

Definition: In vitro Diagnostic Devices (IVD)*

“In vitro diagnostic devices” are medical devices that are used for in vitro investigations of samples derived from the human body, including donated blood and tissue. Included are reagents, calibration substances or devices, control substances or devices, equipment, instruments, apparatus, systems, or also sample containers, if they are specifically intended by the manufacturer for use in medical tests. “In vitro diagnostic devices” serve mainly to provide information on:

- physiological or pathological conditions;
- congenital anomalies;
- monitoring of therapeutic measures.

CE Mark

With the CE mark on a product, the manufacturer affirms that the product complies with the requirements for products of that type established by the EU Guidelines and, as necessary, has undergone the required testing. The manufacturer applies this mark to the product and additionally produces a Conformity Declaration that certifies the conformity of the product with the cited guidelines and standards.

The medical products supplied by VITLAB are all included in the class of in vitro diagnostic (IVD) devices.

This includes, for example:

- VITLAB® micropipettes
- Pipette tips
- Urine bottles
- Microtubes

* See the definitions according to MPG § 3 (Definition of Terms)

Accuracy

What do “tolerance, accuracy, coefficient of variation, and precision” mean in volumetric measurements?

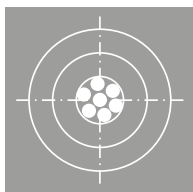
Graphic illustration of precision and accuracy

The dart board simulates the volume range around the centred nominal value, the white dots simulate the different measured values of a specified volume.

Good accuracy: All hits are near the centre, i.e., the nominal value.

Good precision: All hits are close together.

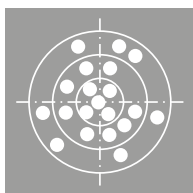
Result: The manufacturing process is well controlled by an accompanying quality assurance program. Minimal systematic deviations and a narrow variance in products. The permissible limits are not exceeded. There are no rejects.



Good accuracy: On average, the hits are evenly distributed around the centre.

Poor precision: No substantial errors, but hits widely scattered.

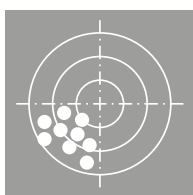
Result: All deviations are “equally probable”. Instruments exceeding the permissible tolerance should be rejected.



Poor accuracy: Although all hits are close together, the centre (nominal value) is still missed.

Good precision: All hits are close together.

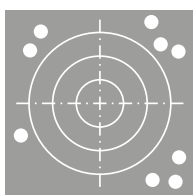
Result: Improperly controlled production, with systematic deviation. Instruments exceeding the permissible tolerance should be rejected.



Poor accuracy: The hits are far removed from the centre.

Poor precision: The hits are widely scattered.

Result: These volumetric instruments are of inferior quality.



Calculation formulae

The accuracy of glass volumetric instruments is commonly defined by “Tolerance Limits”, whereas for liquid handling instruments the statistical terms “Accuracy [%]” and “Coefficient of Variation [%]” have been established.

Tolerance

The term “tolerance” (tol.) in the corresponding standards defines the maximum permissible deviation from the nominal value.

$$\text{Tol.} \geq |V_{\text{meas.}} - V_{\text{nom.}}|$$

Accuracy

Accuracy (A) indicates the closeness of measured mean volume to the nominal value, i.e., systematic measurement deviation. Accuracy is defined as the difference between the measured mean volume ($\bar{V}$) and the nominal value ($V_{\text{nom.}}$), related to the nominal value in percent.

$$A[\%] = \frac{\bar{V} - V_{\text{nom.}}}{V_{\text{nom.}}} \cdot 100$$

Coefficient of Variation

The coefficient of variation (CV) indicates the closeness of values from repeated measurements, i.e., random measurement deviation. The coefficient of variation is defined as standard deviation in percent, related to the mean volume.

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

Partial volumes

(analogous to $CV_{\text{part.}} \%$)

Generally, A and CV are based on the nominal volume ($V_{\text{nom.}}$). These data in percent must be converted to partial volumes ($V_{\text{part.}}$). By contrast, there is no conversion for partial volumes if A and CV are stated in volume units (e.g. ml).

$$A_{\text{part.}}[\%] = \frac{V_{\text{nom.}}}{V_{\text{part.}}} \cdot A_{\text{nom.}} \%$$

Tolerance from A and CV

To a good approximation, the tolerance, e.g. for the nominal volume ($V_{\text{nom.}}$), can be calculated from the accuracy and coefficient of variation.

$$\text{Tol.} \geq \frac{|A\%| + 2CV\%}{100\%} \cdot V_{\text{nom.}}$$

Precision

If the variance in the individual measurement results about the mean volume $\bar{V}$ is given in units of volume, this relates to precision.

Edition 2014

VITLAB GmbH

Linus-Pauling-Str. 1
63762 Grossostheim
Germany
tel: +49 6026 9 77 99-0
fax: +49 6026 9 77 99-30
info@vitlab.com
www.vitlab.com

USt.-IdNr. / VAT REG NO

DE 1116669 59

WEEE-Reg.-Nr. DE 30031601

Banking details

Sparkasse Aschaffenburg
Deutsche Postbank AG
Commerzbank AG
Deutsche Bank AG

IBAN

DE91 7955 0000 0000 0003 15
DE71 5001 0060 0040 0016 06
DE63 7908 0052 0309 9404 00
DE49 5087 0005 0010 5619 00

SWIFT-BIC

BYLA DE M1 ASA
PBNK DE FF
DRES DE FF 790
DEUT DE FF 508