

PRODUCT CATALOG

CERTUS FLEX AUTOMATIC DIGITAL DISPENSER

**HIGH-END LIQUID DISPENSER
FOR EASY HANDLING AND FLEXIBLE APPLICATIONS**

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1 Terminology

Abbreviation	Description
Delrin®	Polyoxymethylene/polyformaldehyde
ETFE	Ethylene tetrafluorethylene
PEEK	Polyether ether ketone
PA	Polyamide
PFA	Perfluoroalkoxy alkane
PP	Polypropylene
PS	Polystyrene
PTFE	Polytetrafluoroethylene
Tefzel®	ETFE fluoropolymer resin
UNF	Unified Fine Thread Series - American fine thread
FPM	Fluoropolymerelastomer (FKM/FPM)
FFKM	Perfluoroelastomer (FFKM)
FFPM	Perfluoroelastomer (FFPM)
DMSO	Dimethylsulfoxid

2 Purpose of this catalogue

This catalogue provides a description of the product range of the CERTUS FLEX Automatic Digital Dispenser. It is not intended to provide instructions for the correct and safe usage of your instrument and its components. Please refer to the user manual or contact your authorised distributor for operation instructions. In the case of doubt or technical questions, please contact your distributor.

3 Technical progress

Fritz Gyger AG reserves the right to implement technical modifications of the hardware and software of the CERTUS FLEX Automatic Digital Dispenser and all components and parts within the course of technical progress and as a result of an effort towards continuous improvement.

4 Warranty and disclaimers

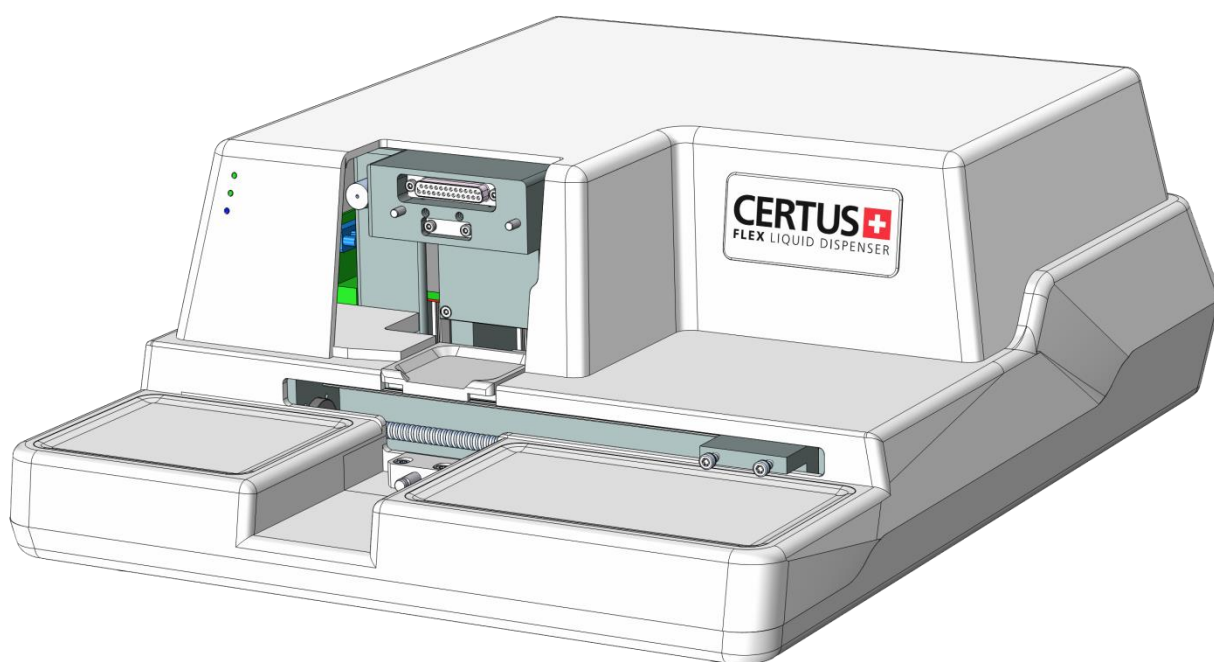
The CERTUS FLEX Automatic Digital Dispenser, plus all parts and accessories listed in this catalogue are supplied with a 12-month warranty from the date of delivery to you, the customer.

Whilst we take great care in the manufacturing and pre-shipment inspection of the CERTUS FLEX Automatic Digital Dispenser and its accessories, it is your responsibility to use the instrument within its defined scope to obtain optimal liquid dispensing results.

5 How to configure your CERTUS FLEX Dispenser

The CERTUS FLEX Automatic Digital Dispenser has a modular format to allow maximum flexibility in its configuration to suit your specific laboratory needs. Select your requirements from the following basic components.

5.1 CERTUS FLEX Basic Unit



The CERTUS FLEX basic unit contains the hardware for dispensing: mechanics, motors, electronics, pressure control and all connections and interfaces; all contained in an eye-catching shell.

The Windows-based software for the control of your CERTUS FLEX is included. This software needs to be installed on your PC which you use in connection with your CERTUS FLEX Automatic Digital Dispenser.

5.2 Valve Head

The valve head determines the (maximum) number of channels available for dispensing fluids. There are two variations of valve heads:

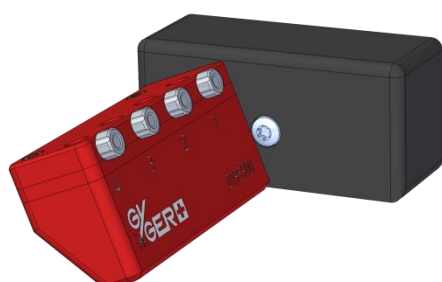
- Valve head FLEX 5 – up to five channels, Part-# 21280
- Valve head FLEX 8 – up to eight channels, Part-# 21285
- Valve head FLEX 4x22° – up to four channels, for angled dispensing, Part-# 23483
- Valve head FLEX 8x22° – up to eight channels, for angled dispensing, Part-# 23895



FLEX 5



FLEX 8

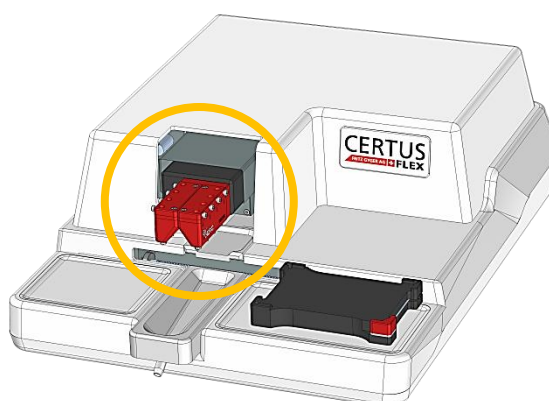
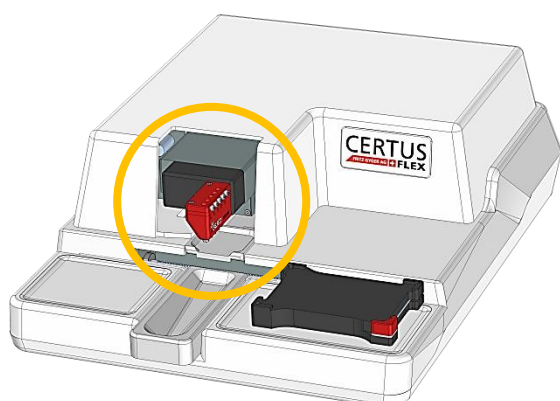


FLEX 4x22°



FLEX 8x22°

The valve heads are supplied without valves and without inlet adapters. Ensure that you select the best suitable valves and correct inlet adapters for your desired configuration and application(s). When you purchase bottle kits or syringe kits, the matching inlet adapters are included in these.



Since September 2014 new versions (Series 2) of the FLEX 5 and FLEX 8 valve heads are supplied as standard valve heads. The new Series 2 valve heads are useful to help reduce handling errors – particularly when fluids or tubing need to be changed frequently.

For the Series 1 valve heads (shipped as standard until August 2014), you must use Series 1 compatible inlet adapters or ask for an upgrade quote.

For the Series 2 valve heads (shipped as standard from September 2014), you must use Series 2 compatible inlet adapters. Series 1 inlet adapters are not compatible with Series 2 valve heads and vice versa.

If you have a set of valve configurations that you frequently use, you may find it easier and more time-efficient to purchase multiple valve heads and configure them accordingly.


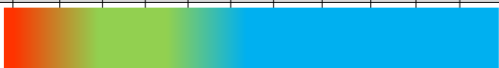

5.3 Micro Valves SMLD 300GC / GCR

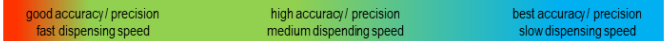
The SMLD 300G micro valves are the core technology of the CERTUS FLEX Automatic Digital Dispensers. Select the appropriate micro valve type according to the properties of the fluids to be dispensed, your intended assay and single dose volume(s) and the well plate format you intend to use.



The following standard Gyger SMLD 300GC / GCR micro valves cover most life science applications and are usually available with a delivery time of two weeks.

Certus Valve Types and Dispensing range SMLD 300GC / GCR

Recommended Well Plate Formats	10 nl	50 nl	100 nl	200 nl	500 nl	1 µl	2 µl	5 µl	10 µl	50 µl	100 µl	500 µl	1 ml	2 ml	5 ml	Volume Range Valve Type	Recommended Pressure of Dispense	Recommended Fluids...	
96 384 1536																Ø 0.10 / 0.03 mm GC: 21765 (filter) GCR: 24647 (filter)	0.3 bar	aqueous, buffer, organics, DMSO, detergents, small molecules, etc	"small" valves
96 384 1536																Ø 0.15 / 0.03 mm GC: 21766 (filter); 21767 GCR: 24648 (filter); 24649	0.3 bar	aqueous, buffer, organics, DMSO, detergents, small molecules, etc	
96 384 1536																Ø 0.15 / 0.06 mm GC: 21768; 24419 (filter) GCR: 24650; 24656 (filter)	0.3 bar	aqueous, buffer, organics, DMSO, detergents, small molecules, etc	
96 384 1536																Ø 0.20 / 0.10 mm GC: 21769; 23686 (filter) GCR: 24651; 24655 (filter)	0.3 bar	aqueous, buffer, organics, DMSO, detergents, small molecules, cells, proteins	"mid-size" valve
96 384 (1536)																Ø 0.30 / 0.10 mm GC: 21770 (filter); 21771 GCR: 24652 (filter); 24653	0.2 bar	aqueous, buffer, organics, DMSO, detergents, small molecules, cells, proteins, beads, viscous	"large" valves
96 384																Ø 0.45 / 0.15 mm GC: 21772 GCR: 24654	0.2 bar	aqueous, buffer, organics, DMSO, detergents, small molecules, cells, proteins, beads, viscous	



Valves with filter should only be used for “clear” fluids. For fluids containing solids or precipitates, pre-filtration or centrifugation and using micro valves without filter is recommended. Micro valves without filter should also be used for dispensing proteins, very large molecules or cells as well as for substances which tend to coagulate.

As a rule of thumb valves with small nozzle diameters are better suited for “clear” fluids whereas valves with larger nozzle diameters are better for dispensing fluids containing substances that tend to coagulate or precipitate or for very large molecules, cells or (HTS compatible) beads. When dispensing the latter, care must be taken to avoid sedimentation.

Valves with small nozzle diameter and small valve travel are more accurate and precise in low dispensing volumes below ca. 500 nl than valves with large nozzle diameter and large valve travel. Valves with larger valve travel allow larger molecules or substances to pass through than valves with smaller valve travel. “Small” valves take longer to dispense a given volume than “large” valves. A longer valve travel creates more wear and tear on the valve mechanism than a shorter valve travel – thus you can expect a longer life from valves with shorter valve travel.

Besides selecting the best suitable valve for your fluid, the valve must also be matching your well plate format. Valves which work well and fast for 96 or 384 well plates may e.g. not be suitable for 1536 well plates. It is e.g. not possible to accommodate a fluid jet ejected from a 0.30 mm or 0.45 mm nozzle diameter in a 1536 well. On the other hand, it may make not much sense (and may take unnecessary long time) to dispense large volumes into large wells with too small nozzle diameters.

Whatever may be your dispensing volumes: The SMLD micro valves open and close just once for every “shot”. This means that with a most “economic” number of opening/closing cycles the SMLD micro valves facilitate a large quantity of experiments or assays.

The SMLD micro valves offer superb accuracy and precision, if used and calibrated properly. It is very important to always remember that, when working with the CERTUS FLEX, you do not dispense with just valves, but with a complete system. This implies that the – indispensable – correct calibration never means the calibration of just “isolated” valves, but of valves incorporated into a comprehensive and complex system including all its physical components and framework conditions.

Always flush and clean the micro valves properly after use. After dispensing acidic, sticky or crystallising substances, the micro valves must be thoroughly flushed immediately after use. The micro valves may be fully immersed in cleaning liquids or may be sonicated.

Gyger SMLD 300GC / 300GCR Introduction




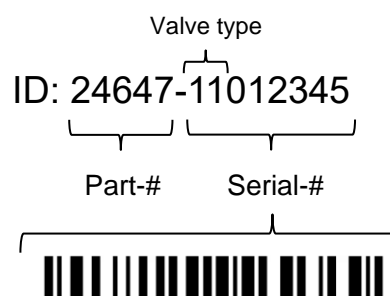
GC – GCR Comparison chart

Category	Description	SMLD 300GC	SMLD 300GCR
Wetted Materials	1.4404 (A316L)	✓	✓
	1.4301 (A301)	✓	
	1.4310 (A304)	✓	
	1.4113 IM / 1.4105 IL (A430F)	✓	
	1.4523 (A444FR)		✓
	2.4819 (Hastelloy C-276)		✓
	PEEK	✓	✓
	Ruby / Sapphire	✓	✓
Construction	Improved filter design		✓

Labelling

There are 4 marks on the valve tube:

Explanation	Example
Branding	GYGER SMLD 300GC / GYGER SMLD 300GCR
Nozzle bore / valve travel	Ø 0.30 / 0.10
Part No. / serial No.	ID: 24647-11012345
Serial No as barcode	

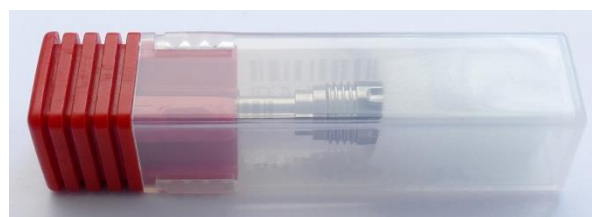


Defined run-in condition

SMLD 300GC / GCR is run-in with isopropanol (10000 to 30000 strokes depending on the valve type)
After run-in the valve is flushed again with air.

Packaging

Each SMLD 300GC / GCR is packaged in a tiny plastic box which protects the valve and is easy to handle.
The label on the box contains all crucial information. The same barcode as you can find it on the valve tube (serial No.) is placed on the label too.

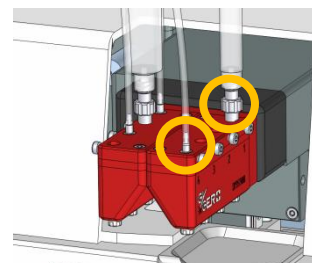
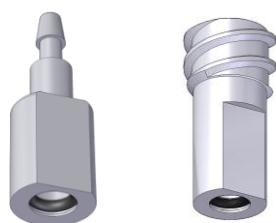


Minimum requirement CERTUS CONTROL PC software

In order to use the full potential of the CERTUS CONTROL PC software (correct valve selection and calibrations) CERTUS CONTROL PC software version 2.0.12 or higher is required.

5.4 Inlet Adapters, Fluid Uptake and Tubing

Dependent on the mode of fluid uptake (via bottles by tubing or via syringes by Luer-Lock), different types of inlet adapters are available to facilitate optimal fluid delivery to the valves.



If you purchase bottle kits or syringe kits, the required inlet adapters are included in these.

For the valve heads, the following inlet adapters are available:

- for fluid uptake via tubing with an inner diameter of 1.6 mm: Part-# 21677
- for fluid uptake from directly attached syringes with a Luer-Lock: Part-# 24858 (21676)

Please note that since the beginning of 2015 all regular bottle and syringe kits are **ONLY** supplied with Series 2 inlet adapters, tubing and fittings.

All bottle and syringe kits contain tubing with an inner diameter of 1.6 mm only. We strongly recommend not to use tubing – particularly for the fluid uptake – of less than 1.6 mm inner diameter. If you wish to keep your “dead volumes” as low as possible, we recommend the use of syringe kits.

Upon special request also an inlet adapter (Part-# 21703) can be provided for fluid uptake via tubing from bottles with an inner diameter of 0.75mm. This tubing respectively inlet adapter, however, is only suitable for restricted applications with low dispensing volumes.

The inlet adapters within each series are interchangeable (on the valve head) according to the selected mode of fluid uptake. However, Series 1 and Series 2 are **NOT** compatible.

To ensure a tight connection between the inlet adapter and the valve, the inlet adapter must be fitted with an O-ring. All inlet adapters are shipped with an O-ring inserted. We recommend that you always keep an adequate stock of spare O-rings.

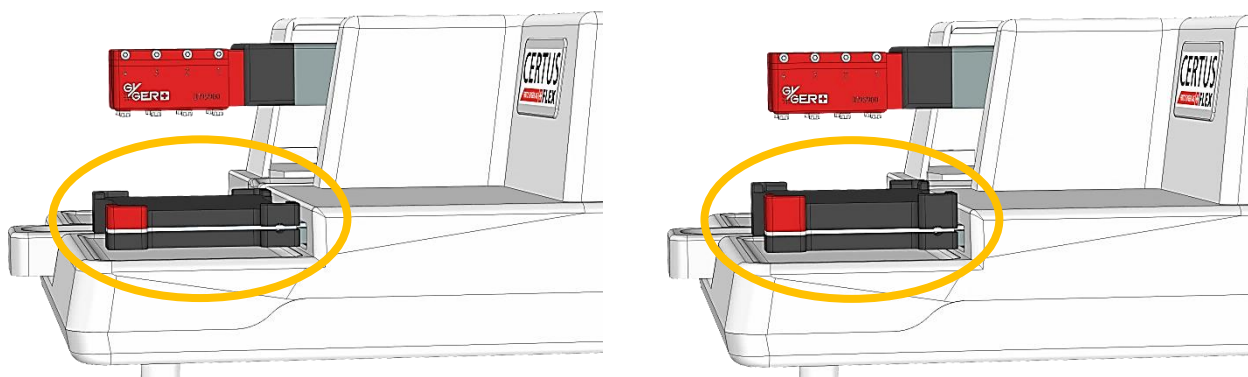
Since March 2015 all inlet adapters are fitted with O-rings made of FFKM/FFPM (Part-# 18636) which are safe for use with DMSO and other aggressive substances in high concentrations.

The bottle and syringe kits also contain all fittings for a safe connection of the components.

5.5 Well plate Holder

The well plate holder is available in two variations:

- well plate holder – low; for manual operation, Part-# 19946
- well plate holder – high; for automation, Part-# 21192



If you intend to integrate your CERTUS FLEX Automatic Digital Dispenser with laboratory automation, we recommend using the high well plate holder to make it easier for robotic access.

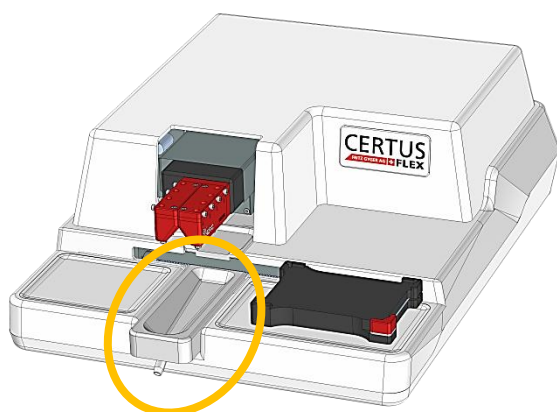
The low well plate holder has an effective clearance on the z-axis of 50 mm (i.e. you can use SBS footprint well plates or tubes in racks with a **maximum height of 49 mm**). The high well plate holder has an effective clearance on the z-axis of 45 mm (**maximum plate height of 44 mm**).

The DWP version has a clearance of 68 to 73 mm, depending on the plate holder height.

5.6 Waste Tray

The waste tray with a drain can be connected to a waste container (e.g. a bottle or a bin) under the lab bench, using the included silicon tube (1.2 m).

- with a drain, Part-# 21140



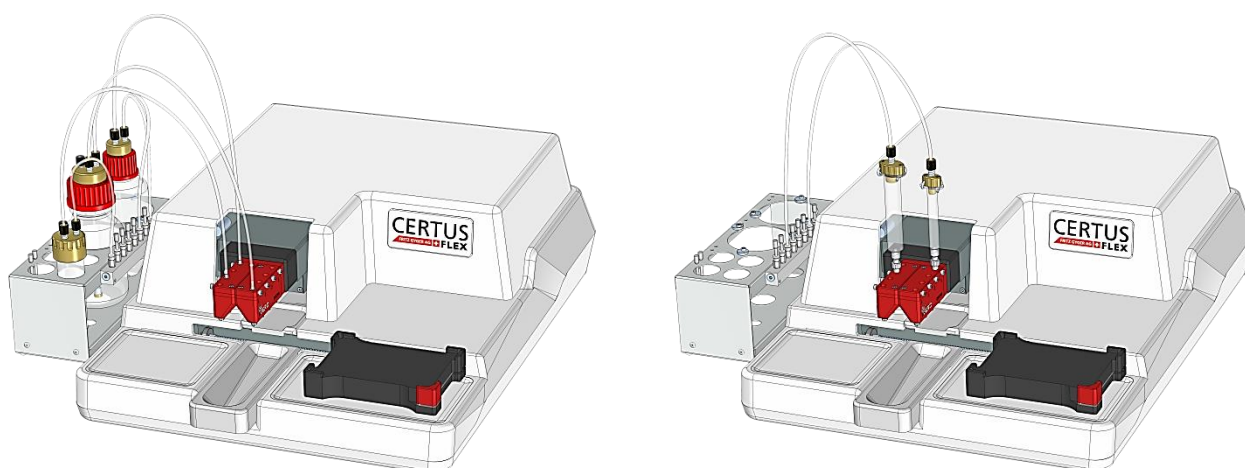
5.7 Power Cable

Ensure that you order your CERTUS FLEX Automatic Digital Dispenser with the correct power cable for your country.

5.8 Accessories

Other accessories, for example bottle or syringe kits, bottle holders, compressed air manifold and components for the individual configuration of fluid uptake or compressed air supply are listed and described in this product catalogue.

The following diagrams show typical configurations of the CERTUS FLEX Automatic Digital Dispenser with bottle and syringe kits for fluid uptake:



It is, of course, easily possible to combine the fluid uptake from bottles and from syringes within one configuration.

If you use ONLY syringe kits for fluid uptake (and you are sure that you will not need any bottle kits), you can replace the bottle holder (with integrated compressed air manifold) by a “stand alone” compressed air manifold (Part-# 21268).

If you plan to integrate your CERTUS FLEX Automatic Digital Dispenser into laboratory automation, we recommend our SiLA interface and will be happy to provide you with specific advice.

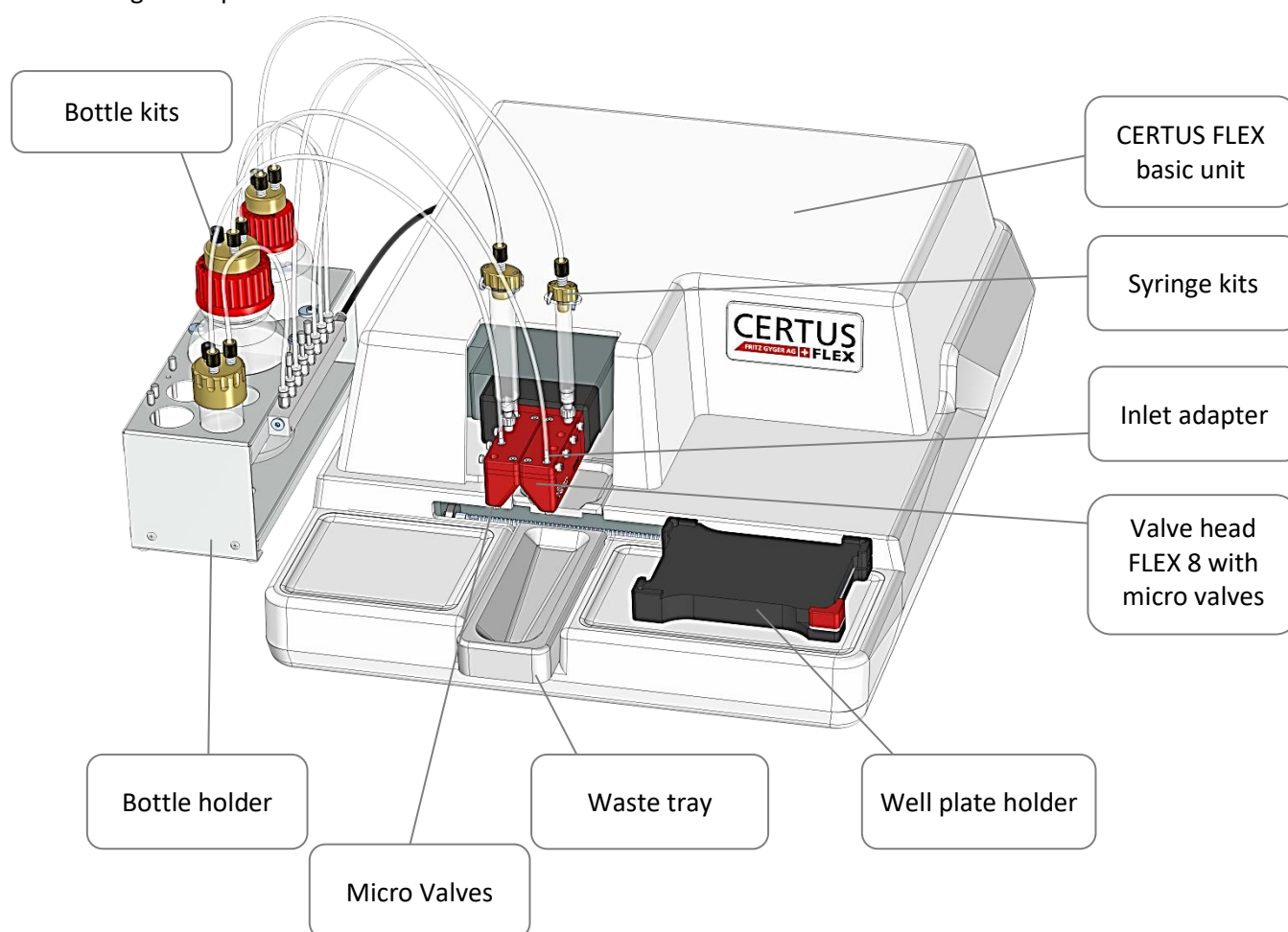
For more comprehensive software or programming requirements to integrate your CERTUS FLEX Digital Dispenser into laboratory automation we collaborate with our partner, UK Robotics.

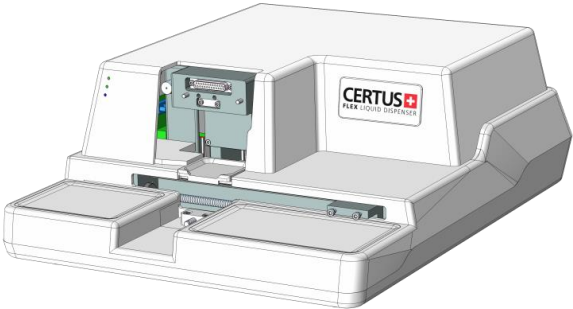
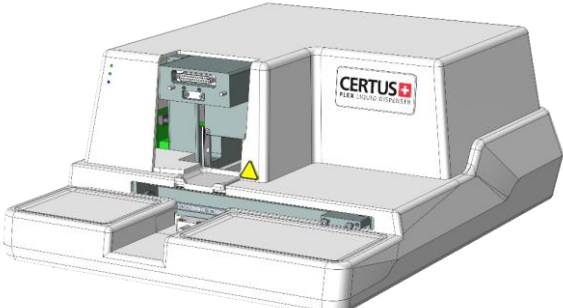
5.9 Essential Configuration Elements of the CERTUS FLEX Automatic Digital Dispenser





For a reasonably versatile configuration of the CERTUS FLEX Automatic Digital Dispenser the following components are recommended:

- CERTUS FLEX Basic Unit
- Valve Head – FLEX 5 or FLEX 8
- SMLD 300G Micro Valves – according to your dispensing requirements
- Well plate Holder – for either manual or robotic insertion of well plates
- Waste Tray – without or with drain, according to your requirements
- Bottle Kits – 250 ml with glass bottle, 50 ml or 250 ml with conical plastic bottle (centrifuge tube), according to your requirements
- Syringe Kits – 3 ml, 5 ml, 10 ml or 60 ml with disposable syringes, according to your requirements
- Bottle Holder – type 2-4-0 (for 2 bottles 250 ml and 4 bottles 50 ml) or type 4-4-0 (for 4 bottles 250 ml and 4 bottles 50 ml), alternatively (if you only use syringe kits): stand-alone compressed air manifold
- reasonable stock of spare O-rings and some extra inlet adapters, fittings and tubing material

The image below indicates the essential components for the configuration of your CERTUS FLEX Automatic Digital Dispenser:

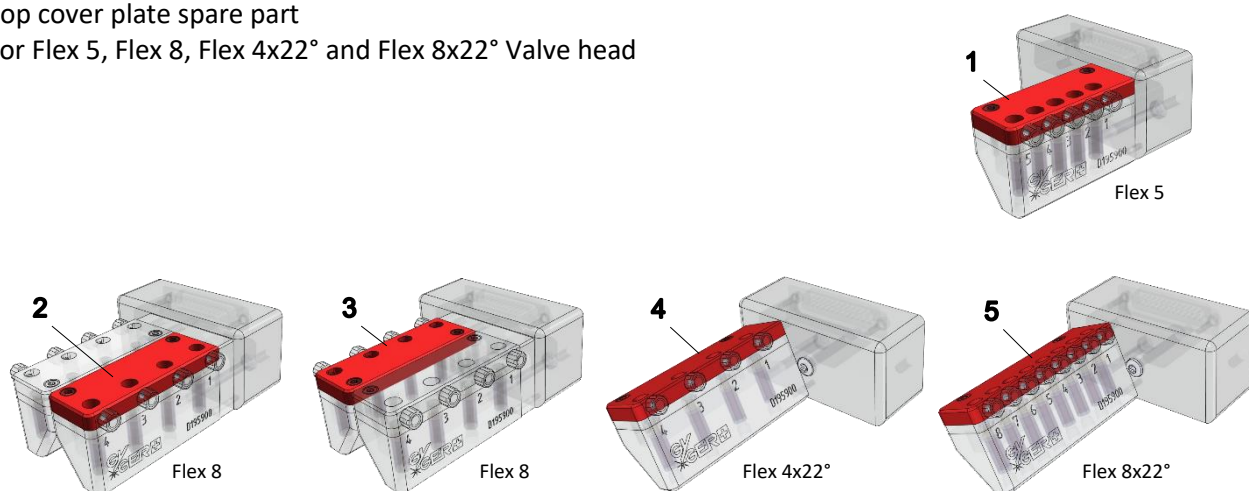


6 Basic configuration of your CERTUS FLEX Automatic Digital Dispenser	
Item name and description	Item number and image
6.1 CERTUS FLEX	
Automatic Digital Dispenser; Basic unit	Part-# 20423
<ul style="list-style-type: none"> · Up to eight independent channels · Continuously adjustable pressure from 0.06 – 1.0 bar · 96, 384, 1536, 3456 default well plate formats · Contactless dispensing · Windows-based CERTUS control software (computer not included) · 90 – 264V AC, 50/60Hz · Compressed air input 1.7 – 2 bar, minimum 6 l/min <ul style="list-style-type: none"> · Country specific power cables must be ordered separate. <p>For 3 – 44 mm or 3 - 49 mm plate height</p>	
6.2 CERTUS FLEX DWP	
Automatic Digital Dispenser; Basic unit high version	Part-# 24298
<ul style="list-style-type: none"> · Up to eight independent channels · Continuously adjustable pressure from 0.06 – 1.0 bar · 96, 384, 1536, 3456 default well plate formats · specially for very deep well plate · Contactless dispensing · Windows-based CERTUS control software (computer not included) · 90 – 264V AC, 50/60Hz · Compressed air input 1.7 – 2 bar, minimum 6 l/min <ul style="list-style-type: none"> · Country specific power cables must be ordered separate. <p>For 19 – 73 mm or 14 – 68 mm plate height</p>	

6.3 Valve head	
Flex 5	Part-# 21280
<ul style="list-style-type: none"> · For up to five fluid channels · For up to five micro valves · Without valves · Without inlet adapters 	
Flex 8	Part-# 21285
<ul style="list-style-type: none"> · For up to eight fluid channels · For up to eight micro valves · Without valves · Without inlet adapters 	
Flex 4x22°	Part-# 23483
<ul style="list-style-type: none"> · 4 channels, 22° angled dispensing head · For up to four fluid channels · For up to four micro valves · For angled dispensing only · Without valves · Without inlet adapters 	
Flex 8x22°	Part-# 23895
<ul style="list-style-type: none"> · 8 channels, 22° angled dispensing head · For up to eight fluid channels · For up to eight micro valves · For angled dispensing only · Without valves · Without inlet adapters 	
<ul style="list-style-type: none"> · All valve head are only to be used with the inlet adapters: <ul style="list-style-type: none"> · Part-# 21703 (for tubing with inner diameter 0.75 mm) · Part-# 21677 (for tubing with inner diameter 1.6 mm) · Part-# 24858 (Luer-Lock) 	

Top cover plate

- Top cover plate spare part
- For Flex 5, Flex 8, Flex 4x22° and Flex 8x22° Valve head



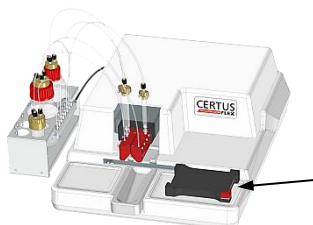
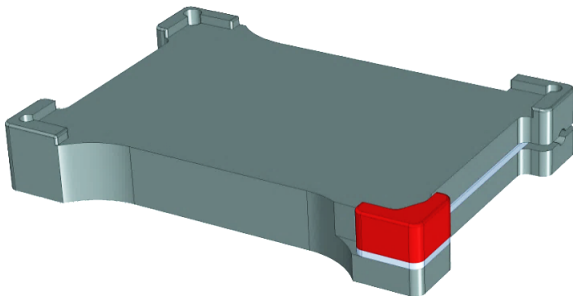
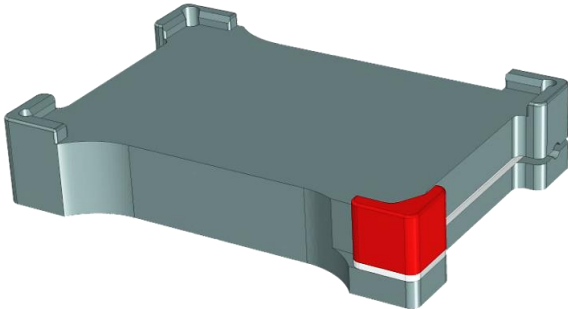
Description	Part-#
1) Top cover plate for Flex 5	21283
2) Top cover plate for Flex 8 right	21287
3) Top cover plate for Flex 8 left	21290
4) Top cover plate for Flex 4x22°	23488
5) Top cover plate for Flex 8x22°	23901

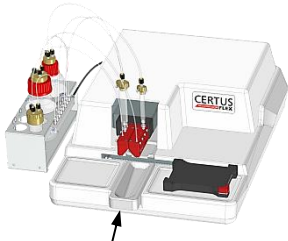
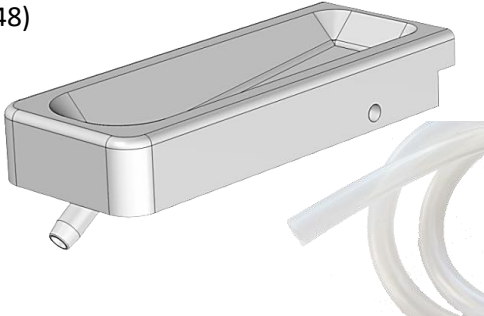
Screw

- Thumb Screw M3x5
- For Flex 5, Flex 8 and Flex 4x22°
- To fasten the inlet adapters



Description	Part-#	Order Part-#
1) T10 screw M3x5	21300	22199 = 10 pcs.
2) Thumb screw M3x5	23489	23516 = 5 pcs.

6.4 Well plate holder	
Low – manual operation	Part-# 19946
<ul style="list-style-type: none"> · Designed for the manual insertion of well plates · Maximum well plate height <ul style="list-style-type: none"> - normal base unit = 49 mm - DWP base unit = 73 mm  	
High – integration/automation	Part-# 21192
<ul style="list-style-type: none"> · Optimised for integration of the CERTUS FLEX into an automated laboratory environment · Allows improved insertion and removal of well plates by a robot · Chamfered corner guides · Maximum well plate height <ul style="list-style-type: none"> - normal base unit = 44 mm - DWP base unit = 68 mm 	

6.5 Waste tray	
With drain	Part-# 21140
<ul style="list-style-type: none"> · Waste tray with drain · Can be connected to a waste bottle or bin via tubing (Part-# 24448) · Easily removed for cleaning  	

6.6 Micro valves SMLD 300GC

- 1 micro valve required per fluid channel
- Choose appropriate valves dependent on your dispensing applications from the following list.
- The micro valves are made of stainless steels stainless steels 1.4404 (A316L), 1.4301 (A301), 1.4310 (A304), 1.4113 IM / 1.4105 IL (A430F) as well as PEEK, sapphire and ruby.
- the valves can be autoclaved / ultra-sonic



Micro valve	Nozzle Ø	Travel	Filter	Part-#
SMLD 300GC	0.10 mm	0.03 mm	37 µm	21765
SMLD 300GC	0.15 mm	0.03 mm	37 µm	21766
SMLD 300GC	0.15 mm	0.03 mm	no	21767
SMLD 300GC	0.15 mm	0.06 mm	37 µm	24419
SMLD 300GC	0.15 mm	0.06 mm	no	21768
SMLD 300GC	0.20 mm	0.10 mm	37 µm	23686
SMLD 300GC	0.20 mm	0.10 mm	no	21769
SMLD 300GC	0.30 mm	0.10 mm	37 µm	21770
SMLD 300GC	0.30 mm	0.10 mm	no	21771
SMLD 300GC	0.45 mm	0.15 mm	no	21772

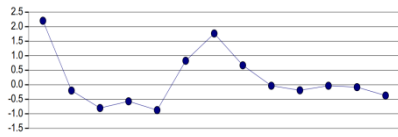

6.7 Micro valves SMLD 300GCR

The proven valve line SMLD 300GC was further developed and optimized resulting in the SMLD 300GCR, which offers crucial benefits in regards of corrosion and the handling of aggressive medias, compared to SMLD 300GC, but remains fully compatible in size and function for all CERTUS family products.

- 1 micro valve required per fluid channel
- Choose appropriate valves dependent on your dispensing applications from the following list.
- The micro valves are made of stainless steels 1.4404 (A316L), 1.4523 (A444FR), 2.4819 (Hastelloy C-276) as well as PEEK, sapphire and ruby.
- the valves can be autoclaved / ultra-sonic



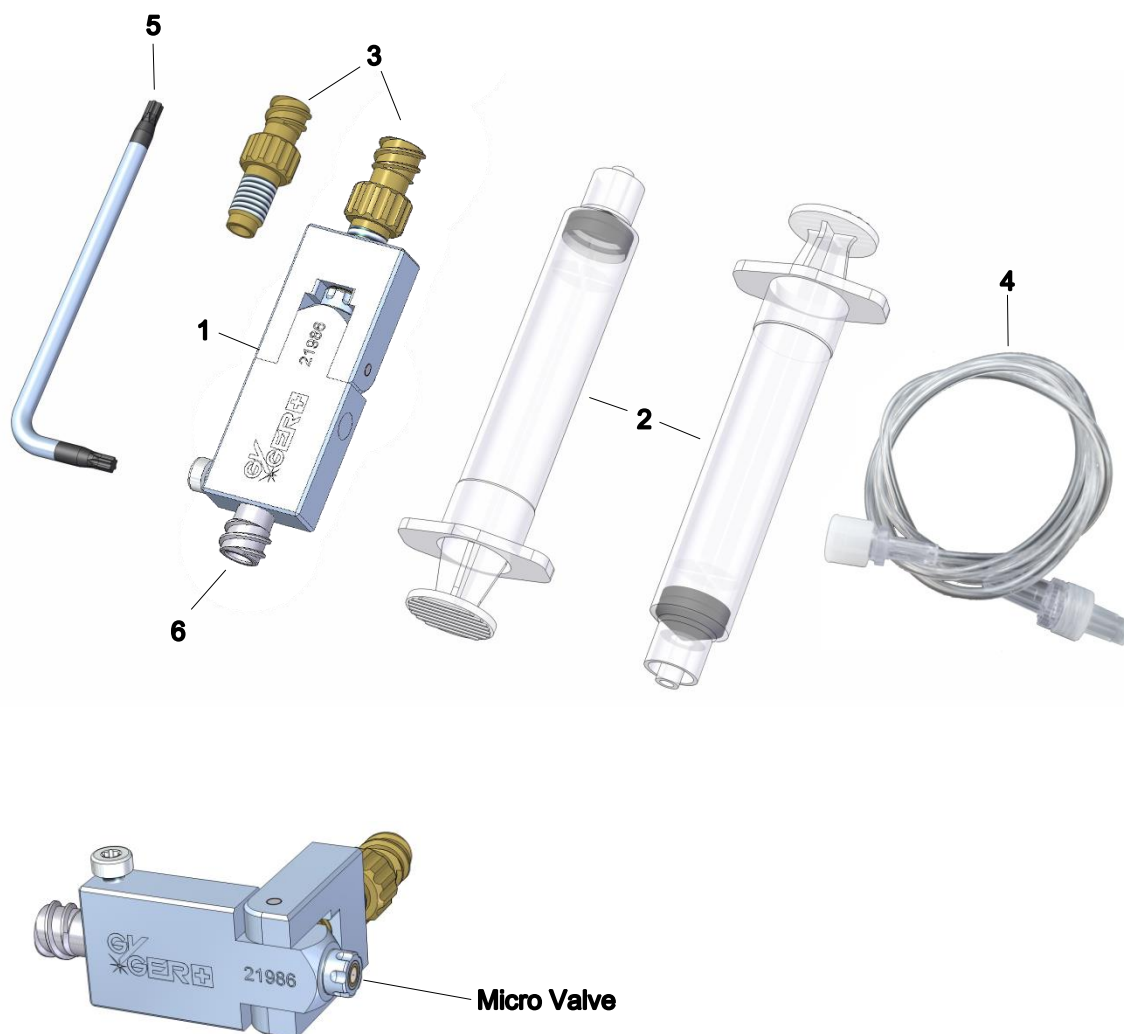
Micro valve	Nozzle Ø	Travel	Filter	Part-#
SMLD 300GCR	0.10 mm	0.03 mm	40 µm	24647
SMLD 300GCR	0.15 mm	0.03 mm	40 µm	24648
SMLD 300GCR	0.15 mm	0.03 mm	no	24649
SMLD 300GCR	0.15 mm	0.06 mm	40 µm	24656
SMLD 300GCR	0.15 mm	0.06 mm	no	24650
SMLD 300GCR	0.20 mm	0.10 mm	40 µm	24655
SMLD 300GCR	0.20 mm	0.10 mm	no	24651
SMLD 300GCR	0.30 mm	0.10 mm	40 µm	24652
SMLD 300GCR	0.30 mm	0.10 mm	no	24653
SMLD 300GCR	0.45 mm	0.15 mm	no	24654

6.8 Calibration	
SMLD 300GC / GCR calibration service	Part-# 22178
<ul style="list-style-type: none"> · The service must be ordered per valve and setup · Each micro valve is calibrated on a CERTUS FLEX test unit using ultrapure water · When ordering please specify the fluid supply (syringe or bottle) and air pressure (0.2 or 0.3 bar) 	
	
6.9 Valve spanner	
Spanner for CERTUS micro valves	Part-# 19236
<ul style="list-style-type: none"> · Dedicated spanner for the fastening / unfastening of micro valves in the valve head 	
	

6.10 Micro Valve Cleaning Kit

Part-# 21986

- The Gyger Micro Valve Cleaning Kit is designed to facilitate the cleaning of contaminated Gyger SMLD 300GC / GCR micro valves.
- Valve Holder made of stainless steel
- Comes in a steel box
- The Micro Valve Cleaning Kit can be autoclaved / ultra-sonically cleaned



Description	Part-#	Qty.	Order Part-#
1) Valve Holder		1	21986 = complete kit
2) Disposable 5 ml syringe	21591	2	21723 = 10 pcs.
3) Outlet Adapter; Luer-Lock; PEEK	21985	2	21985 = 1 pc.
4) Tube with Luer-Lock (1x male, 1x female); PE; 500 mm	22176	1	22176
5) Torx key T10	17925	1	17925
6) Luer-Lock short	24858	1	24858

7 Fluid Supply

7.1 Bottle kits

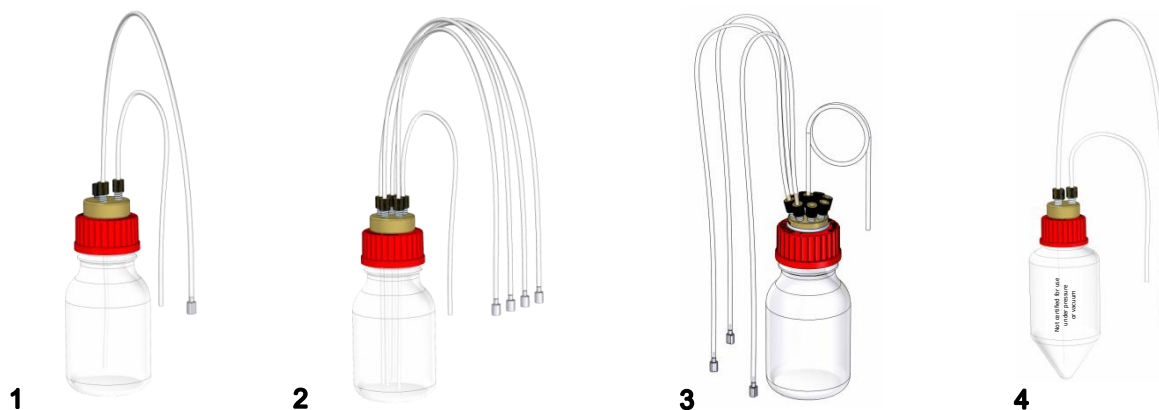
8 Bottle kits are available

- 250 ml; GL 45; 1 in 2 out ("Pressure Plus")
- 250 ml; GL 45; 1 in 4 out ("Pressure Plus")
- 250 ml; GL 45; 1 in 8 out ("Pressure Plus")
- 250 ml Plastic bottle with conical base; 1 in 2 out (not certified for use under pressure or vacuum!)
- 500 ml Plastic bottle with conical base; 1 in 2 out (not certified for use under pressure or vacuum!)
- 500 ml Plastic bottle with conical base; 1 in 4 out (not certified for use under pressure or vacuum!)
- 500 ml Plastic bottle with conical base; 1 in 8 out (not certified for use under pressure or vacuum!)
- 50 ml Plastic bottle with conical base; 1 in 2 out (not certified for use under pressure or vacuum!)

All 8 bottle kits have bottle heads with each 1 inlet for compressed air and 1-8 outlets for fluid take. They are supplied with FEP tubing with inner diameter of 1.59 mm and all required fittings, tubing and adapter are included as shown below.

The heads are made of PEEK and can be autoclaved.

The kits are supplied without filters.



1) Bottle kit

250 ml; GL 45; 1 in 2 out "Pressure Plus"; Silicon O-Ring / POM blind plug

Part-# **21584***

250 ml; GL 45; 1 in 2 out "Pressure Plus"; FEP O-Ring / ETFE blind plug

Part-# 25547

2) Bottle kit

250 ml; GL 45; 1 in 4 out "Pressure Plus"; Silicon O-Ring / POM blind plug

Part-# **21794***

250 ml; GL 45; 1 in 4 out "Pressure Plus"; FEP O-Ring / ETFE blind plug

Part-# 25504

3) Bottle kit

250 ml; GL 45; 1 in 8 out "Pressure Plus"; Silicon O-Ring / POM blind plug

Part-# **24137***

250 ml; GL 45; 1 in 8 out "Pressure Plus"; FEP O-Ring / ETFE blind plug

Part-# 25551





4) Bottle kit

250 ml; GL 32; 1 in 2 out
plastic bottle with conical base

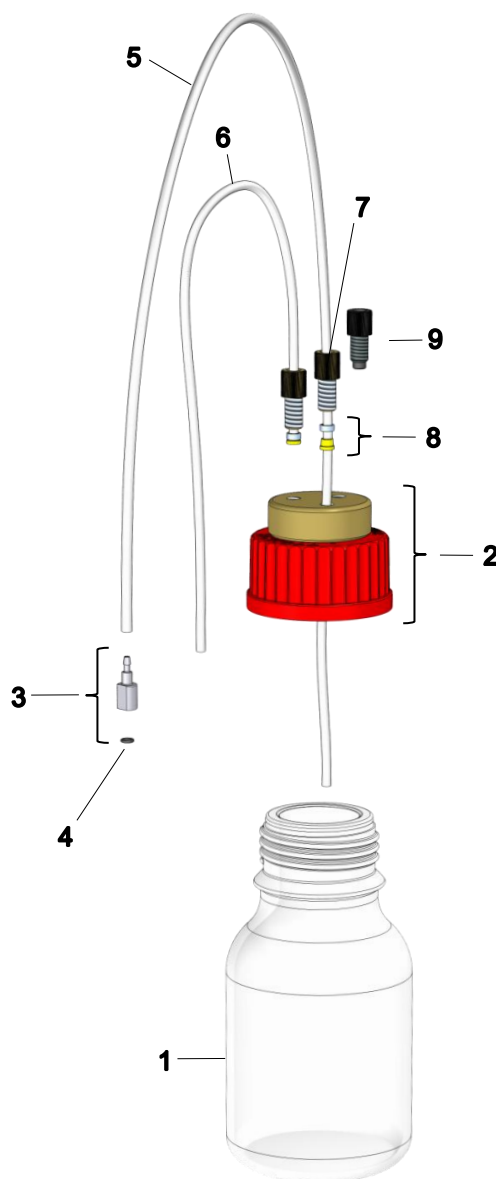
Part-# 21613

not certified for use under pressure or vacuum!

* Discontinued

Bottle kits	
   	
5) Bottle kit	
500 ml; 1 in 2 out plastic bottle with conical base not certified for use under pressure or vacuum!	Part-# 22181
6) Bottle kit	
500 ml; 1 in 4 out plastic bottle with conical base not certified for use under pressure or vacuum!	Part-# 22221
7) Bottle kit	
500 ml; 1 in 8 out plastic bottle with conical base not certified for use under pressure or vacuum!	Part-# 24139
8) Bottle kit	
50 ml; 1 in 2 out; Silicon O-Ring / POM blind plug Plastic bottle (centrifuge tube) with conical base not certified for use under pressure or vacuum!	Part-# 21706*
50 ml; 1 in 2 out; FEP O-Ring / ETFE blind plug Plastic bottle (centrifuge tube) with conical base not certified for use under pressure or vacuum!	Part-# 25502

* Discontinued

Bottle kit
Part-# 21584 * / 25547
250 ml; GL 45; 1 in 2 out, "Pressure Plus"

Additional Options:

Tube kit: Part-# 21707

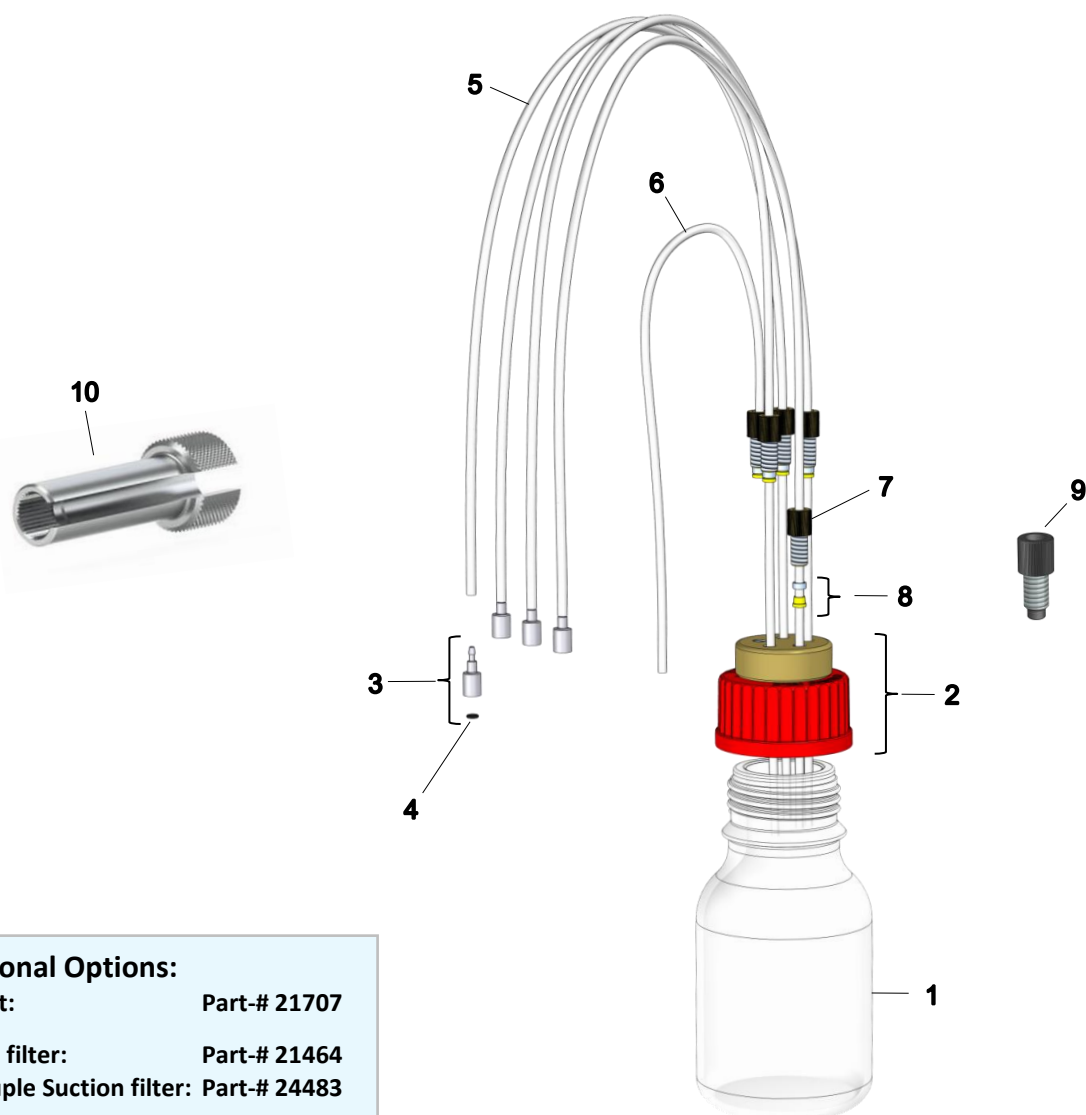
Suction filter: Part-# 21464

Extender Tool: Part-# 21920

Description	Part-#	Qty.	Order Part-#
1) Glass bottle 250 ml "Pressure Plus", GL 45	17859	1	17859
2) Bottle head GL 45, 1 in / 2 out Silicon O-Ring	21514 *	1	21514 *
Bottle head GL 45, 1 in / 2 out FEP O-Ring	25546		25546
3) Inlet adapter with FFKM/FFPM O-Ring	21677	2	21677
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	2	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	2x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	3	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	3	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF; POM (Delrin)	21554	3	21909 = 10 pcs.
Blind plug 1/4-28 UNF; ETFE (Tefzel)	25695		25696 = 10 pcs.

*discontinued

Bottle kit	Part-# 21794 * / 25504
250 ml; GL 45; 1 in 4 out, "Pressure Plus"	


Additional Options:

Tube kit: Part-# 21707

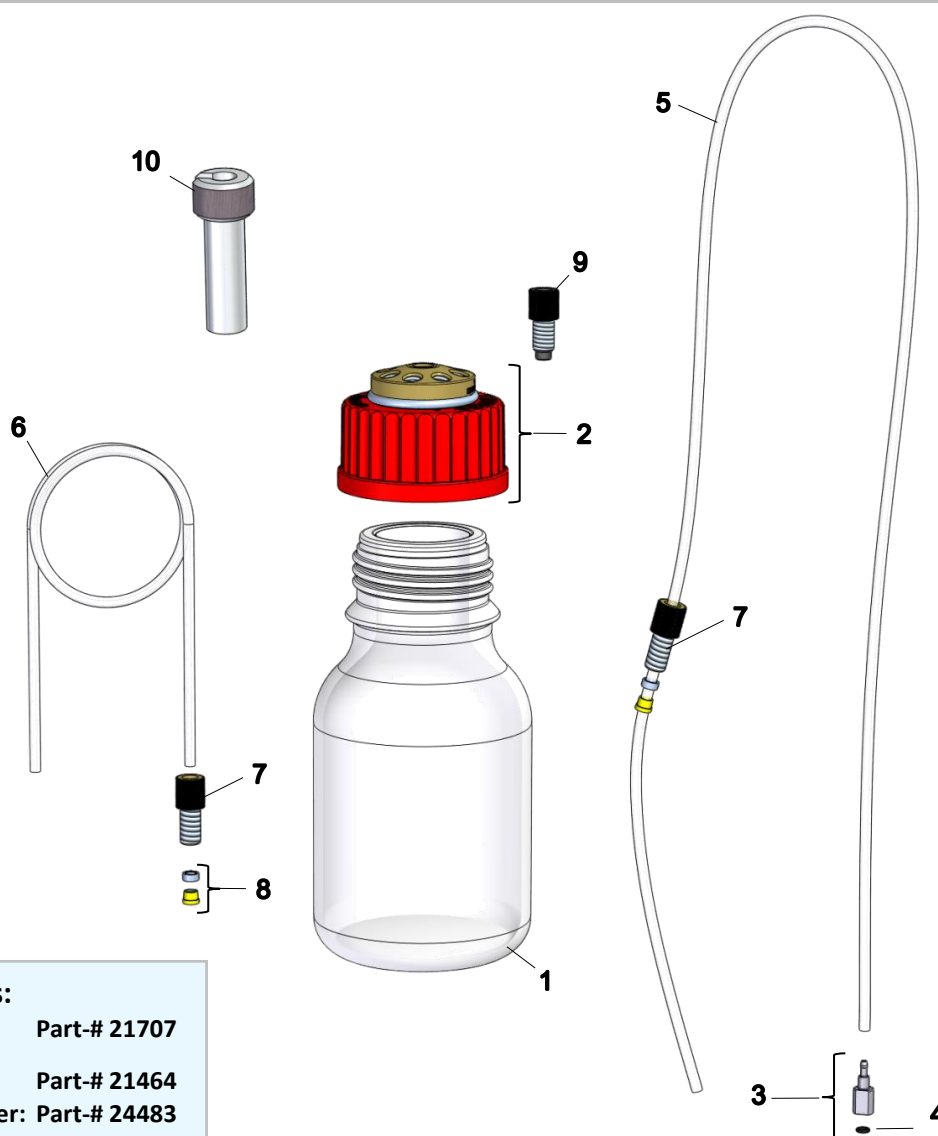
Suction filter: Part-# 21464

Quadruple Suction filter: Part-# 24483

Description	Part-#	Qty.	Order Part-#
1) Glass bottle 250 ml "Pressure Plus", GL 45	17859	1	17859
2) Bottle head GL 45, 1 in / 4 out Silicon O-Ring	21793 *	1	21793 *
Bottle head GL 45, 1 in / 4 out FEP O-Ring	25505		25505
3) Inlet adapter with FFKM/FFPM O-Ring	21677	4	21677 = 1 pc.
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	4	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	4x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	5	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	5	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF; POM (Delrin)	21554	5	21909 = 10 pcs.
Blind plug 1/4-28 UNF; ETFE (Tefzel)	25695		25696 = 10 pcs.
10) Extender Tool	21920	1	21920

*discontinued

Bottle kit	Part-# 24137 * / 25551
250 ml; GL 45; 1 in 8 out, "Pressure Plus"	


Additional Options:

Tube kit: Part-# 21707

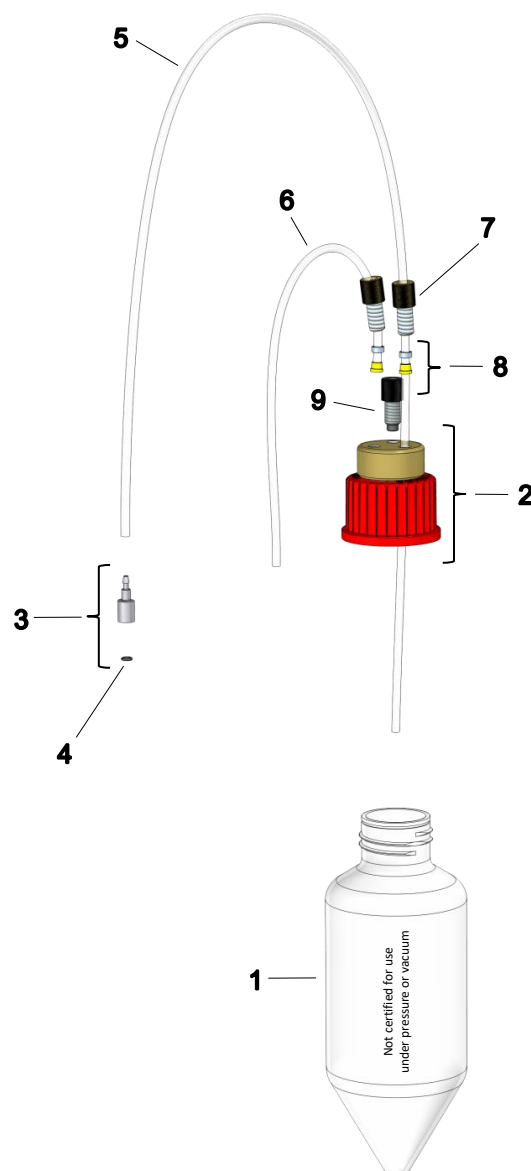
Suction filter: Part-# 21464

Quadruple Suction filter: Part-# 24483

Description	Part-#	Qty.	Order Part-#
1) Glass bottle 250 ml "Pressure Plus", GL 45	17859	1	17859
2) Bottle head GL 45, 1 in / 8 out Silicon O-Ring	24134 *	1	24134 *
Bottle head GL 45, 1 in / 8 out FEP O-Ring	25550		25550
3) Inlet adapter with FFKM/FFPM O-Ring	21677	8	21677 = 1 pc.
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	8	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	8x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	9	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	9	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF; POM (Delrin)	21554	7	21909 = 10 pcs.
Blind plug 1/4-28 UNF; ETFE (Tefzel)	25695		25696 = 10 pcs.
10) Extender Tool	21920	1	21920

*discontinued

Bottle kit	Part-# 21613
250 ml; GL 32; 1 in 2 out, plastic bottle with conical base not certified for use under pressure or vacuum!	

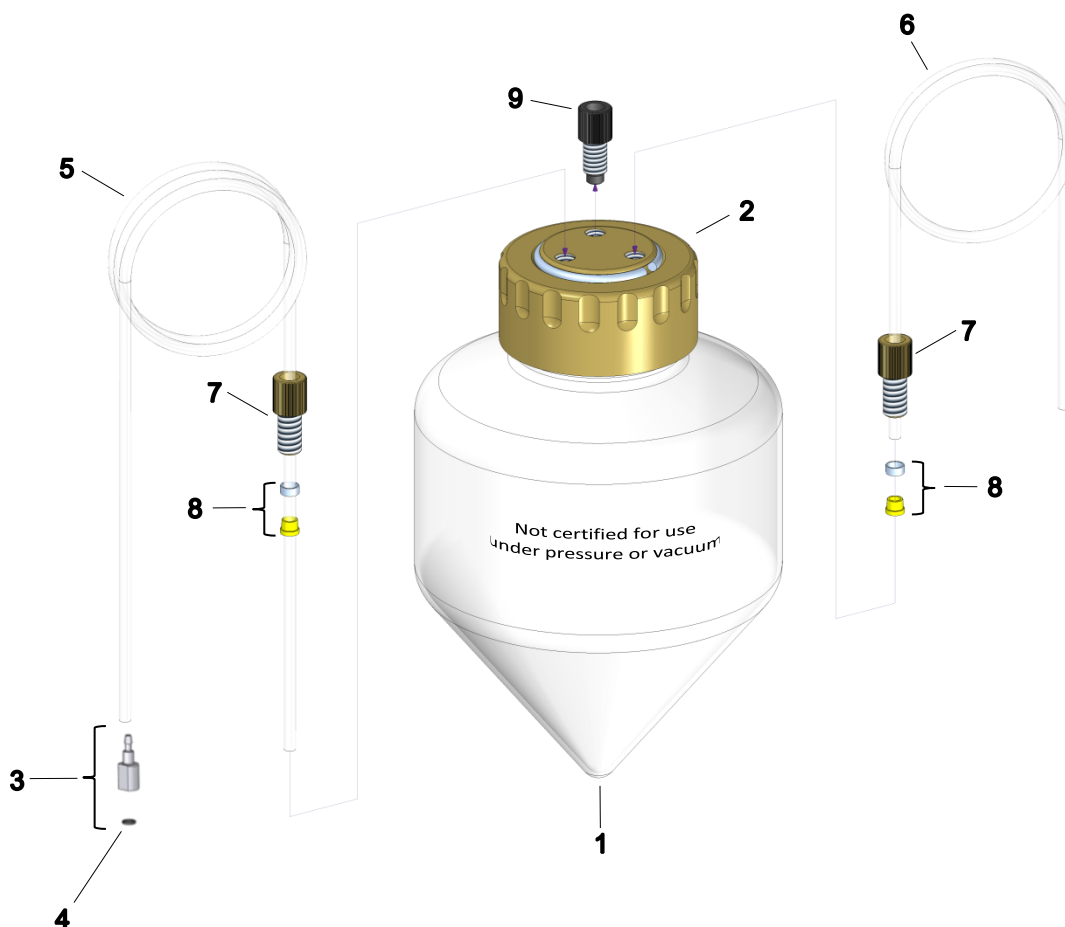

Additional Options:

Tube kit: Part-# 21707

Suction filter: Part-# 21464

Extender Tool: Part-# 21920

Description	Part-#	Qty.	Order Part-#
1) Plastic bottle 250 ml with conical base	18730	1	21812 = 4 pcs.
2) Bottle head GL 32, 1 air inlet / 2 fluid outlets	21540	1	21540
3) Inlet adapter with FFKM/FFPM O-Ring	21677	2	21677
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	2	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	2x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	3	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	3	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF, Delrin	21554	3	21909 = 10 pcs.

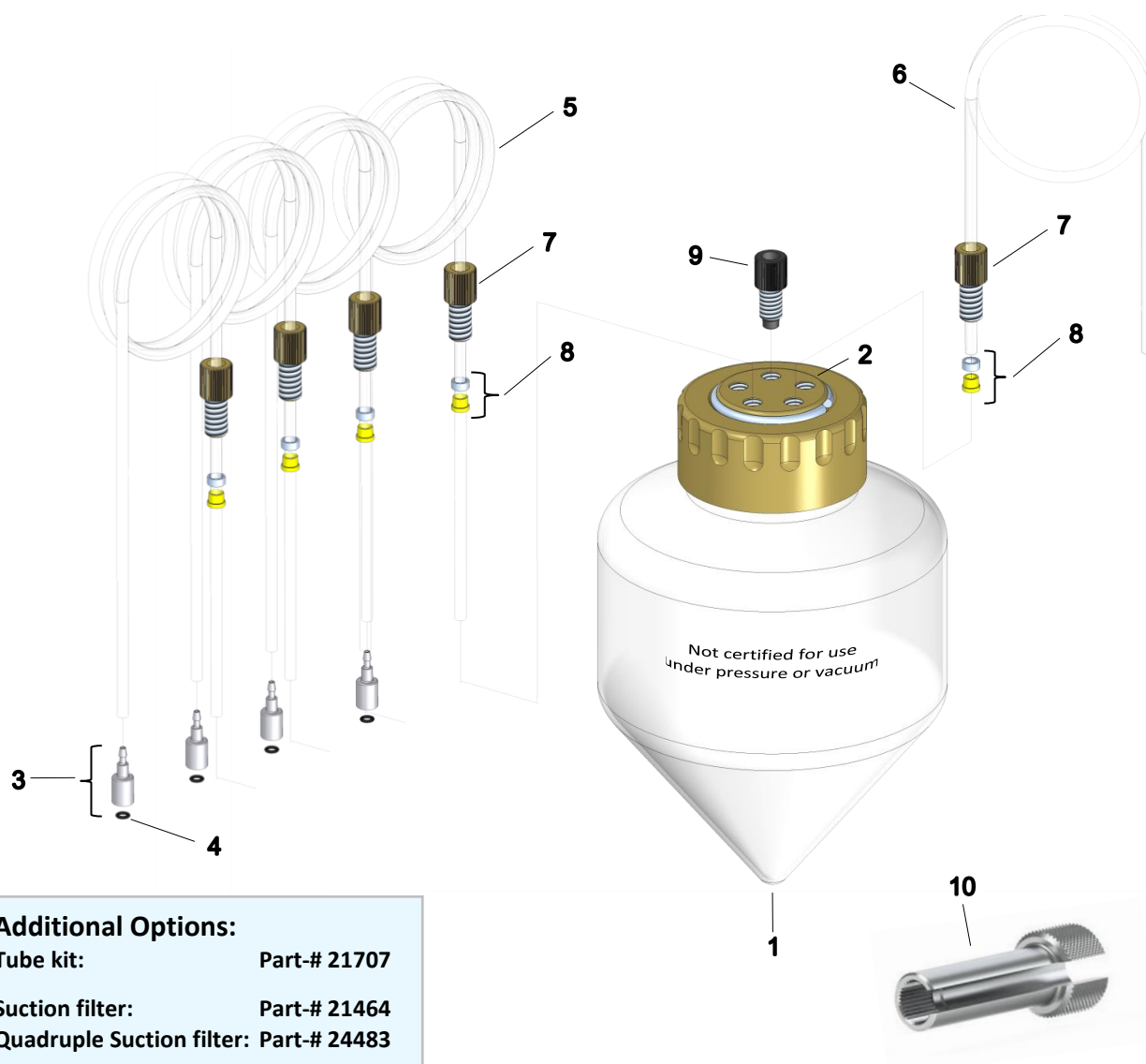
Bottle kit
Part-# 22181
500 ml; Series 2; 1 in 2 out, plastic bottle with conical base
not certified for use under pressure or vacuum!

Additional Options:
Tube kit: Part-# 21707

Suction filter: Part-# 21464

Extender Tool: Part-# 21920

Description	Part-#	Qty.	Order Part-#
1) Plastic bottle 500 ml with conical base	22179	1	23508 = 4 pcs.
2) Bottle head, 1 air inlet / 2 fluid outlets	22104	1	22104
3) Inlet adapter with FFKM/FFPM O-Ring	21677	2	21677
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	2	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	2x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	3	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	3	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF, Delrin	21554	3	21909 = 10 pcs.

Bottle kit	Part-# 22221
500 ml; 1 in 4 out, plastic bottle with conical base not certified for use under pressure or vacuum!	


Additional Options:

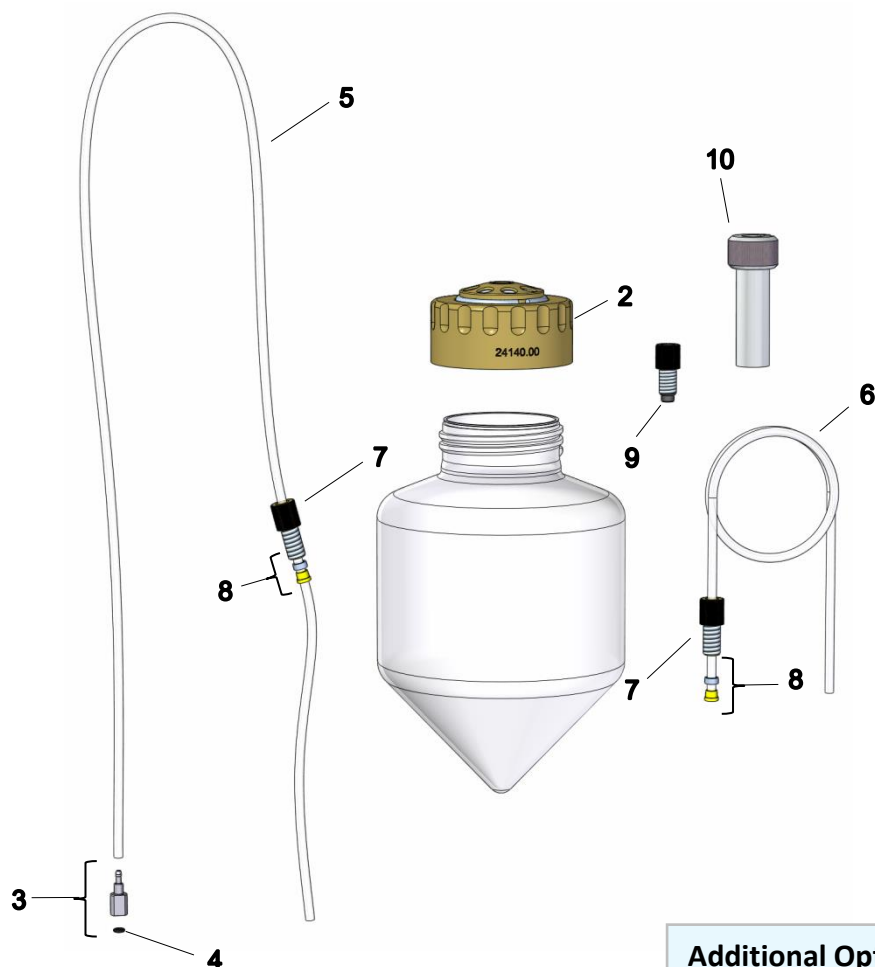
Tube kit: Part-# 21707

Suction filter: Part-# 21464

Quadruple Suction filter: Part-# 24483

Description	Part-#	Qty.	Order Part-#
1) Plastic bottle 500 ml with conical base	22179	1	23508 = 4 pcs.
2) Bottle head, 1 air inlet / 4 fluid outlets	22220	1	22220
3) Inlet adapter with FFKM/FFPM O-Ring	21677	4	21677 = 1 pc.
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	4	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	4x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	5	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	5	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF, Delrin	21554	5	21909 = 10 pcs.
10) Extender Tool	21920	1	21920

Bottle kit	Part-# 24139
500 ml; 1 in 8 out, plastic bottle with conical base not certified for use under pressure or vacuum!	


Additional Options:

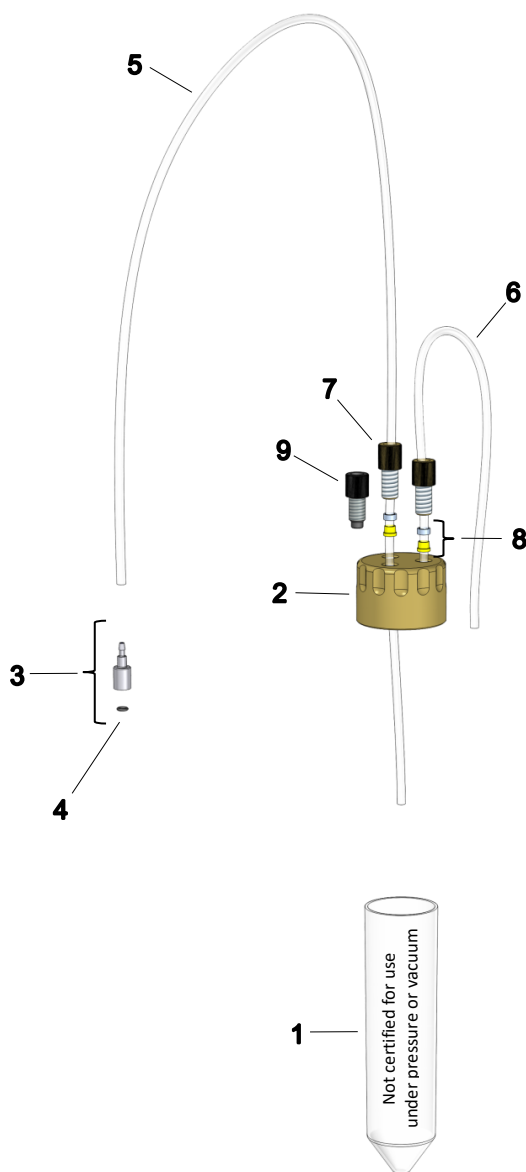
Tube kit: Part-# 21707

Suction filter: Part-# 21464

Quadruple Suction filter: Part-# 24483





Description	Part-#	Qty.	Order Part-#
1) Plastic bottle 500 ml with conical base	22179	1	23508 = 4 pcs.
2) Bottle head, 1 air inlet / 8 fluid outlets	24140	1	24140
3) Inlet adapter with FFKM/FFPM O-Ring	21677	8	21677 = 1 pc.
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	8	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	8x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	9	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	9	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF, Delrin	21554	7	21909 = 10 pcs.
10) Extender Tool	21920	1	21920

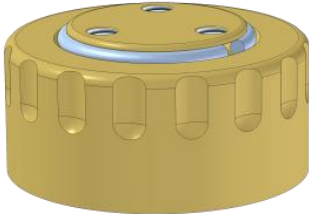

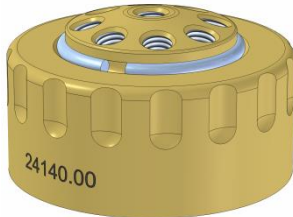

Bottle kit	Part-# 21706 * / 25502
50 ml; 1 in 2 out, plastic bottle (centrifuge tube) with conical base not certified for use under pressure or vacuum!	






Additional Options:

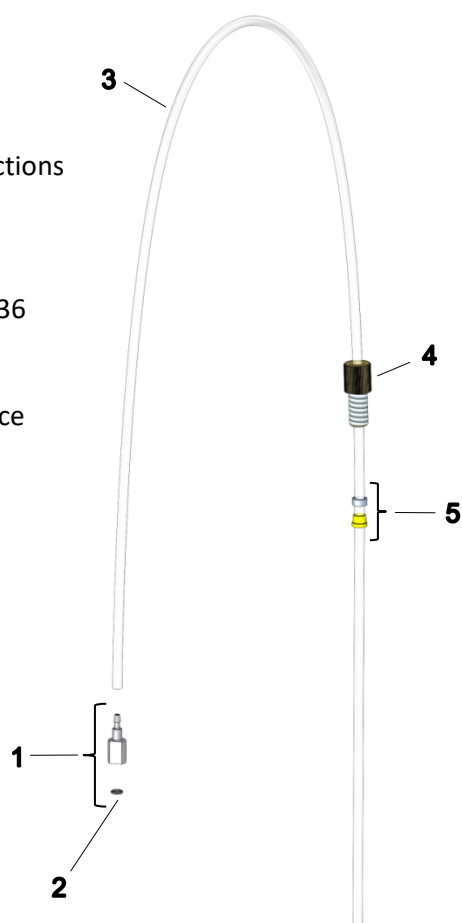
Tube kit:	Part-# 21707
Suction filter:	Part-# 21464
Extender Tool:	Part-# 21920

Description	Part-#	Qty.	Order Part-#
1) Plastic Bottle 50 ml with conical base	20568	1	21814 = 20 pcs.
2) Bottle head 50 ml, 1 in / 2 out FEP O-Ring <i>old part-# 21649 (Silicon O-Ring)</i>	25500	1	25500
3) Inlet adapter with FFKM/FFPM O-Ring	21677	2	21677
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	2	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	2x 700 mm	21911 = 10 m
6) Tube Ø 3.17; Ø 1.58, FEP, 400 mm		1x 400 mm	
7) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	3	21816 = 10 pcs.
8) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	3	21817 = 10 pcs.
9) Blind plug 1/4-28 UNF; POM (Delrin)	21554	3	21909 = 10 pcs.
Blind plug 1/4-28 UNF; ETFE (Tefzel)	25695		25696 = 10 pcs.

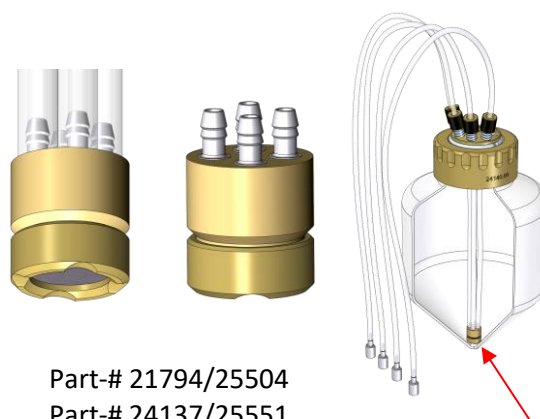
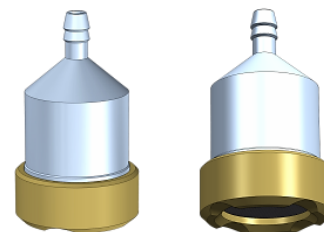
7.2 Bottle Heads	
Bottle head GL 45, 1 air inlet / 2 fluid outlets	Part-# 21514 * / 25546
<ul style="list-style-type: none"> · Bottle head for GL 45 laboratory bottles with 1 compressed air inlet / 2 fluid outlets · for male nuts or blind plugs 1/4-28 UNF · Screw cap made of PBT · Body made of PEEK · The heads can be autoclaved Part-# 21514 * with silicon O-Ring Part-# 25546 with FEP O-Ring 	
	
* discontinued	
Bottle head GL 45, 1 air inlet / 4 fluid outlets	Part-# 21793 * / 25505
<ul style="list-style-type: none"> · Bottle head for GL 45 laboratory bottles with 1 compressed air inlet / 4 fluid outlets · for male nuts or blind plugs 1/4-28 UNF · Screw cap made of PBT · Body made of PEEK · The heads can be autoclaved Part-# 21793 * with silicon O-Ring Part-# 25505 with FEP O-Ring 	
	
* discontinued	
Bottle head GL 45, 1 air inlet / 8 fluid outlets	Part-# 24134 * / 25550
<ul style="list-style-type: none"> · Bottle head for GL 45 laboratory bottles with 1 compressed air inlet / 8 fluid outlets · for male nuts or blind plugs 1/4-28 UNF · Screw cap made of PBT · Body made of PEEK · The heads can be autoclaved Part-# 24134 * with silicon O-Ring Part-# 25550 with FEP O-Ring 	
	
* discontinued	
Bottle head GL 32, 1 air inlet / 2 fluid outlets	Part-# 21540
<ul style="list-style-type: none"> · Bottle head for GL 32 laboratory bottles with 1 compressed air inlet / 2 fluid outlets · for male nuts or blind plugs 1/4-28 UNF · Screw cap made of PBT · Body made of PEEK · The head can be autoclaved 	
	

Bottle head, 1 air inlet / 2 fluid outlets	Part-# 22104
<ul style="list-style-type: none"> · Bottle head for 500 ml conical laboratory bottles with 1 compressed air inlet / 2 fluid outlets · for male nuts or blind plugs 1/4-28 UNF · made of PEEK · The heads can be autoclaved 	
Bottle head, 1 air inlet / 4 fluid outlets	Part-# 22220
<ul style="list-style-type: none"> · Bottle head for 500 ml conical laboratory bottles with 1 compressed air inlet / 4 fluid outlets · for male nuts or blind plugs 1/4-28 UNF · made of PEEK · The heads can be autoclaved 	
Bottle head, 1 air inlet / 8 fluid outlets	Part-# 24140
<ul style="list-style-type: none"> · Bottle head for 500 ml conical laboratory bottles with 1 compressed air inlet / 8 fluid outlets · for male nuts or blind plugs 1/4-28 UNF · made of PEEK · The heads can be autoclaved 	
Bottle head 50 ml, 1 air inlet / 2 fluid outlets	Part-# 25500
<ul style="list-style-type: none"> · Bottle head for 50 ml plastic bottles (centrifuge tubes) with 1 compressed air inlet / 2 fluid outlets · For male nuts or blind plugs 1/4-28 UNF · Made of PEEK · The heads can be autoclaved · With FEP O-Ring <p><i>Old part-# 21649 with silicon O-Ring</i></p>	

7.3 Bottles	
Glass bottle 250 ml “Pressure Plus”; GL 45	Part-# 17859
<ul style="list-style-type: none"> · 250 ml “Pressure Plus” glass bottle with GL 45 thread · certified for use with pressure up to 1,5 bar or vacuum up to – 1 bar <p>1 shipping unit = 1 piece</p> 	
Plastic bottle 250 ml with conical base; with cap	Part-# 18730 Order Part-# 21812 = 4 pcs.
<ul style="list-style-type: none"> · 250 ml plastic bottle (centrifuge tube) with conical base · made of translucent polypropylene (PP) · with polyethylene (PE) screw cap <p>Part-# 21812 -> 1 shipping unit = 4 pieces</p> <p>Not certified for use under pressure or vacuum!</p> 	
Plastic bottle 500 ml with conical base; with cap	Part-# 22179 Order Part-# 23508 = 4 pcs.
<ul style="list-style-type: none"> · 500 ml plastic bottle (centrifuge tube) with conical base · made of translucent polypropylene (PP) · with polyethylene (PE) screw cap <p>Part-# 23508 -> 1 shipping unit = 4 pieces</p> <p>Not certified for use under pressure or vacuum!</p> 	
Plastic bottle 50 ml with conical base; with cap	Part-# 20568 Order Part-# 21814 = 20 pcs.
<ul style="list-style-type: none"> · 50 ml plastic bottle (centrifuge tube) with conical base · made of translucent polypropylene (PP) · with polyethylene (PE) screw cap <p>Part-# 21814-> 1 shipping unit = 20 pieces</p> <p>Not certified for use under pressure or vacuum!</p> 	

7.4 Tube kit		Part-# 21707	
For bottles, ¼-28 UNF, FEP, nature, 700 mm			
<div><ul style="list-style-type: none">· Tube kit for additional fluid outlets from bottle kits (e.g. items no. 21584/25547, 21794/25504, 21613, 21706/25502) or as replacement for fluid tube connections· 700 mm FEP tube, inner diameter 1.58 mm / outer diameter 3.17 mm· with male nut Part-# 21593 and ferrule Part-# 21608· with inlet adapter Part-# 21677 and O-ring Part-# 18636<p>We do not offer ready made tube kits for syringes since these can be easily made from FEP tubing Part-# 21438, the male nut Part-# 21593 and the ferrule Part-# 21608.</p></div>		<div></div>	
Description	Part-#	Qty.	Order Part-#
1) Inlet adapter with FFKM/FFPM O-Ring	21677	1	21677
2) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in the 21677)	18636	1	18636 = 1 pc. 21718 = 10 pcs.
3) Tube Ø 3.17; Ø 1.58, FEP, 700 mm	21438	700 mm	21911 = 10 m
4) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	2	21816 = 10 pcs.
5) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel	21608	2	21817 = 10 pcs.

7.5 Filter	
Suction filter	Part-# 21464
<ul style="list-style-type: none"> · Immersion suction filter for fluid uptake · for tubing with inner diameter 1.6 mm · Filter made of stainless steel 1.4401 with mesh 40 µm · Body made of stainless steel 1.4404, sealing cap made of PEEK · the filter can be autoclaved · can be used for all bottle kits · Dimension: Ø 9.6 x 16.3 mm 	
Quadruple suction filter	Part-# 24483
<ul style="list-style-type: none"> · Immersion suction filter for fluid uptake · for tubing with inner diameter 1.6 mm · Filter made of stainless steel 1.4401 with mesh 40 µm · Body made and sealing cap of PEEK · the filter can be autoclaved · Dimension: Ø 9.6 x 13.5 mm · all four channels have to be connected · can be used for the following bottle kits: <ul style="list-style-type: none"> - 250 ml; GL 45; 1 in 4 out, "Pressure Plus" - 250 ml; GL 45; 1 in 8 out, "Pressure Plus" - 500 ml; 1 in 4 out, plastic bottle with conical base - 500 ml; 1 in 8 out, plastic bottle with conical base 	



Part-# 21794/25504
Part-# 24137/25551
Part-# 22221
Part-# 24139

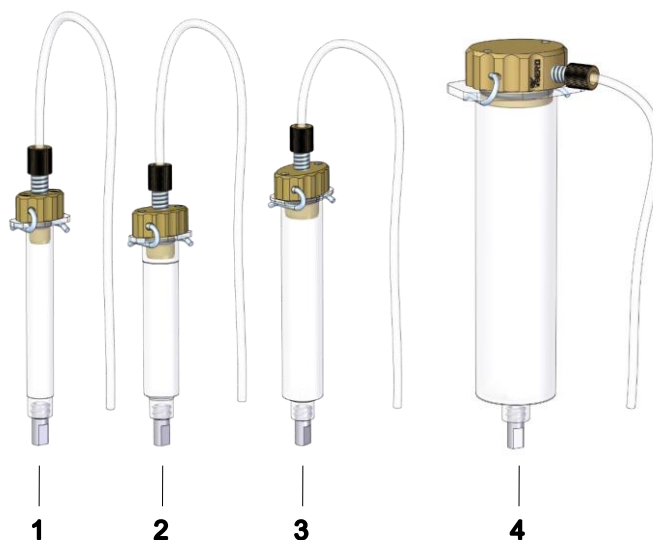
8 Syringes

8.1 Syringe kits

4 Syringe kits are available for:

- 3 ml with single use BD Plastipak syringe
- 5 ml with single use BD Plastipak syringe
- 10 ml with single use BD Plastipak syringe
- 60 ml with single use BB Omnifix syringe

All syringe kits have matching adapter heads for compressed air supply made from PEEK with an FPM O-Ring. They are supplied with FEP tubing with inner diameter of 1.58 mm and all required fittings, including 1 stainless steel (1.4404 / A316L) inlet adapter with FFKM/FFPM O-ring for the adaptation to the valve head.



The adapter head and the inlet adapter can be autoclaved.

All syringe kits 3 ml to 10 ml include 5 single use syringes each.

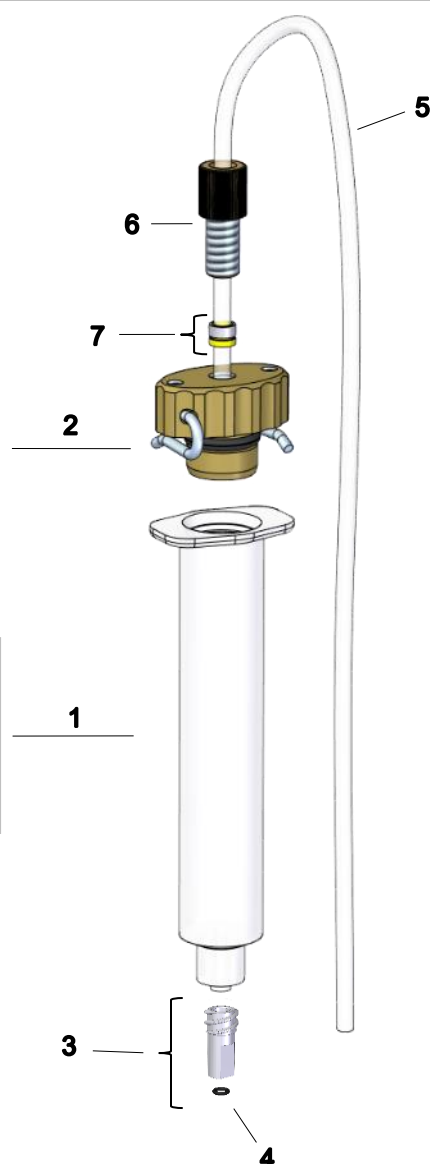
The syringe kit 60 ml includes 3 single use syringes.

	Part-#
1) 3 ml; BD	21612
2) 5 ml; BD	21586
3) 10 ml; BD	21587
4) 60 ml; BB, Radial	24857

Assembling and components of syringe kits 3 ml to 60 ml

Adapter head	3 ml	Part-# 21569
Adapter head	5 ml	Part-# 21571
Adapter head	10 ml	Part-# 21573
Adapter head	60 ml, Radial	Part-# 24854
Adapter head	60 ml, Discontinued	Part-# 20915

Syringe	3 ml	Part-# 21590 / 21722 = 10 pcs.
Syringe	5 ml	Part-# 21591 / 21723 = 10 pcs.
Syringe	10 ml	Part-# 21592 / 21724 = 10 pcs.
Syringe	60 ml	Part-# 20889 / 21725 = 10 pcs.



Description	Part-#	Qty.	Order Part-#
1) Disposable syringe (volumes from 3 to 60 ml)	see above	5*	see above
2) Adapter head, PEEK with FPM O-Ring	see above	1	see above
3) Inlet adapter short with FFKM/FFPM O-Ring	24858	1	24858
4) O-Ring FFKM/FFPM, Ø 2.5 x 0.8 (incl. in 24858)	18636	1	18636 = 1 pc. 21718 = 10 pcs.
5) Tube Ø 3.17; Ø 1.58, FEP, 600 mm (700 mm for 60 ml)	21438	600 mm 700 mm	21911 = 10 m
6) Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	1	21816 = 10 pcs.
7) Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/Steel	21608	1	21817 = 10 pcs.

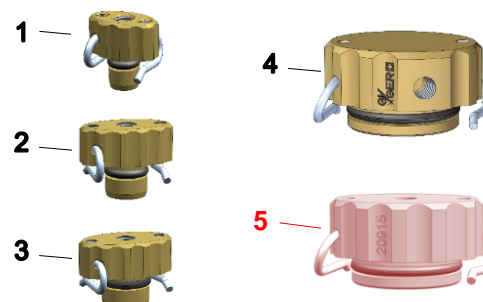
* Syringe kit 60 ml, Part-# 24857, comes with only 3 pcs.

8.2 Adapter Heads


Adapter heads


- Adapter heads for the supply of compressed air into disposable syringes
- Made of PEEK, with O-ring made of FPM
- Adjustable mounting brackets made of stainless steel
- The adapter head and the inlet adapter can be autoclaved

A specific adapter head is required for each syringe type!

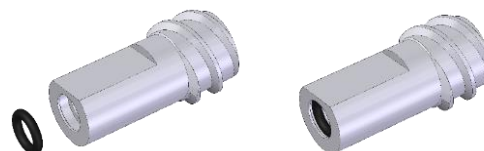
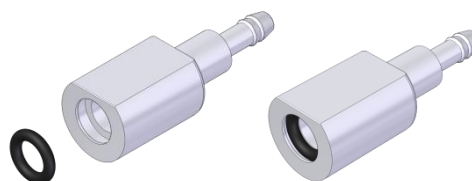


	Order Part-#
1) Adapter head for disposable syringe BD Plastipak 3 ml	21569
Spare O-ring FPM Ø 4.0 x 2.5 10 pcs. Set	22137
2) Adapter head for disposable syringe BD Plastipak 5 ml	21571
Spare O-ring FPM Ø 7.0 x 2.5 10 pcs. Set	22138
3) Adapter head for disposable syringe BD Plastipak 10 ml	21573
Spare O-ring FPM Ø 9.0 x 2.5 10 pcs. Set	23534
4) Adapter Head Radial for disposable syringe BB Omnifix 60 ml	24854
Spare O-ring FPM Ø 23.0 x 2.5 10 pcs. Set	23535
5) Adapter Head for disposable syringe BB Omnifix 60 ml, discontinued only available as long as stocks last	20915
Spare O-ring FPM Ø 23.0 x 2.5 10 pcs. Set	23535




8.3 Syringes		
Disposable syringes		
BD Plastipak disposable syringes		
<ul style="list-style-type: none"> · BD Plastipak disposable syringes with centric Luer-Lock · Barrel and plunger made of polypropylene (PP) · Latex and PVC free <p>1 shipping unit = 10 pieces Not recommended for the storage of substrates over longer periods!</p> 		
Disposable syringe	Part-#	Order Part-#
BD Plastipak disposable syringe 3 ml; 10 pcs.	21590	21722 = 10 pcs.
Disposable syringe	Part-#	Order Part-#
BD Plastipak disposable syringe 5 ml; 10 pcs.	21591	21723 = 10 pcs.
Disposable syringe	Part-#	Order Part-#
BD Plastipak disposable syringe 10 ml; 10 pcs.	21592	21724 = 10 pcs.

Disposable syringe	Part-#	Order Part-#
BB Omnifix disposable syringe 60 ml	20889	21725 = 10 pcs.
<ul style="list-style-type: none"> · BBraun disposable syringe 60 ml with centric Luer-Lock · Barrel and plunger made of polypropylene (PP) · Latex and PVC free <p>Part-# 21725 -> 1 shipping unit = 10 pieces Not recommended for the storage of substrates over longer periods!</p> 		

9 Parts for Fluid Supply	
9.1 Inlet adapter	
Series 2 – for tubing with ID 1.6 mm	Part-# 21677
<ul style="list-style-type: none"> · Inlet adapter (stainless steel 1.4404 / A316L) for fluid uptake via tubing with inner diameter 1.6mm · Adapter supplied with O-ring – Part-# 18636 · Adapter must be used with FFKM/FFPM O-ring Part-# 18636 for usage with DMSO · the adapter can be autoclaved 	
Series 2 – for Luer-Lock short	Part-# 24858
<ul style="list-style-type: none"> · Inlet adapter (stainless steel 1.4404 / A316L) for direct attachment of Luer-Lock syringes onto the valve head · Adapter supplied with O-ring – Part-# 18636 · Adapter must be used with FFKM/FFPM O-ring Part-# 18636 for usage with DMSO · the adapter can be autoclaved 	
<p><i>Old part-# 21676</i></p>	

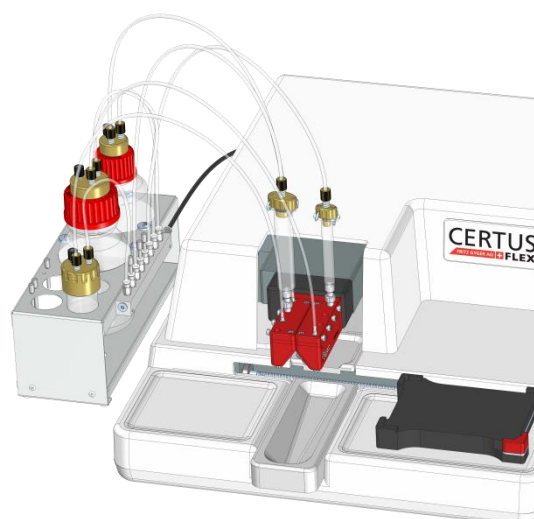


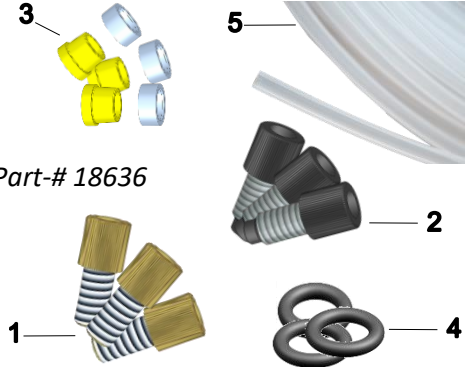
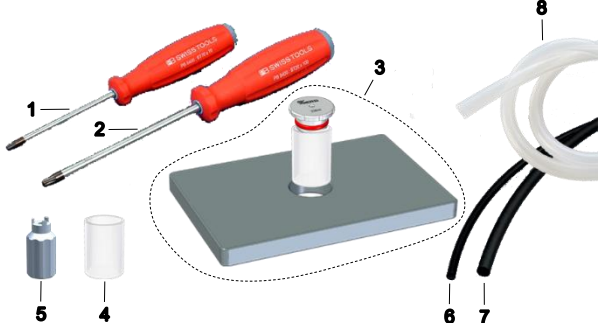
14 µl less transfer volume compares to the old version

9.2 O-ring	
O-ring, Ø 2.5 x 0.8 mm, FFKM/FFPM for usage with DMSO	Part-# 18636
<ul style="list-style-type: none"> · O-Ring for inlet adapter assembly's 21677, 21676 and 24858 · made from FFKM/FFPM · 1 shipping unit = 1 piece 	
This O-ring should not be used with amines in high concentrations at temperatures above 70° C !	
O-ring, Ø 2.5 x 0.8 mm, FFKM/FFPM for usage with DMSO	Part-# 21718
<ul style="list-style-type: none"> · O-Ring for inlet adapter assembly's 21677, 21676 and 24858 · made of FFKM/FFPM · 1 shipping unit = 10 pieces 	
This O-ring should not be used with amines in high concentrations at temperatures above 70° C !	
9.3 Assembling tool	
Tool for changing O-rings	Part-# 21705
<ul style="list-style-type: none"> · Tool for the safe and comfortable changing of O-rings in the inlet adapters. It helps to prevent the damaging of O-ring and inlet adapter and facilitates the correct positioning of the O-ring inside the adapter. For Series 2 inlet adapters only! 	

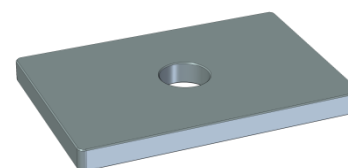
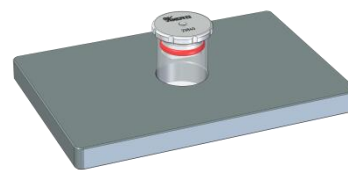
9.4 Male nut	Part-#	Order Part-#
Male nut 1/4-28 UNF; Ø 2-3.2, PEEK	21593	21816 = 10 pcs.
<ul style="list-style-type: none"> • Male nut 1/4-28 UNF; Ø 2-3.2 • Made of PEEK • For the fixing / sealing of tubes Ø ca. 3.2 / Ø ca. 1.6 mm in the bottle heads • Order Part-# 21816 = 1 shipping unit = 10 pieces 		
9.5 Ferrule	Part-#	Order Part-#
Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel; 2 parts	21608	21817 = 10 pcs.
<ul style="list-style-type: none"> • Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel; 2 parts • Made of ETFE (Tefzel) and stainless steel • For the fixing / sealing of tubes Ø ca. 3.2 / Ø ca. 1.6 mm in the bottle heads • Order Part-# 21817 = 1 shipping unit = 10 pieces 		
9.6 Tube	Part-#	Order Part-#
Tube Ø 3.17; Ø 1.58, FEP transparent	21438	21911 = 10 m
<ul style="list-style-type: none"> • Tube with outer diameter 3.17 mm / inner diameter 1.58 mm for all fluid uptake and compressed air supply tubing with bottles or syringes of configurations • Made of transparent FEP • Order Part-# 21911 = 1 shipping unit = 10 m 		
9.7 Blind plug	Part-#	Order Part-#
Blind plug 1/4-28 UNF, Delrin	21554	21909 = 10 pcs.
<ul style="list-style-type: none"> • Blind plug 1/4-28 UNF • Made of POM (Delrin) • For the closing of unutilised outlet ports in the bottle heads • Order Part-# 21909 = 1 shipping unit = 10 pieces 		
Blind plug 1/4-28 UNF, ETFE (Tefzel)	25695	25696 = 10 pcs.
<ul style="list-style-type: none"> • Blind plug 1/4-28 UNF • Made of ETFE (Tefzel) • For the closing of unutilised outlet ports in the bottle heads • Order Part-# 25696 = 1 shipping unit = 10 pieces 		

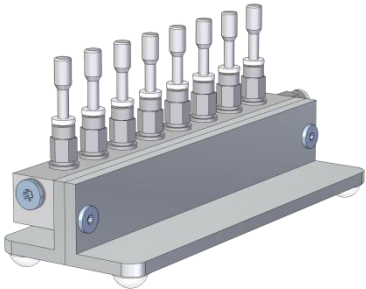
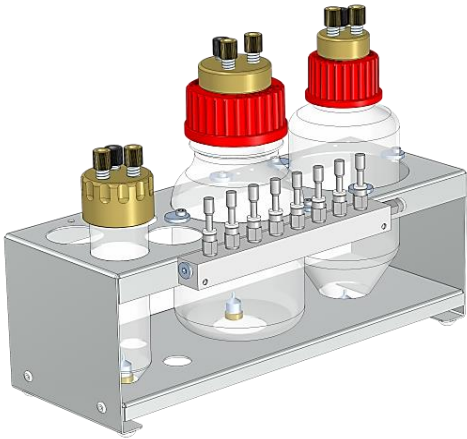
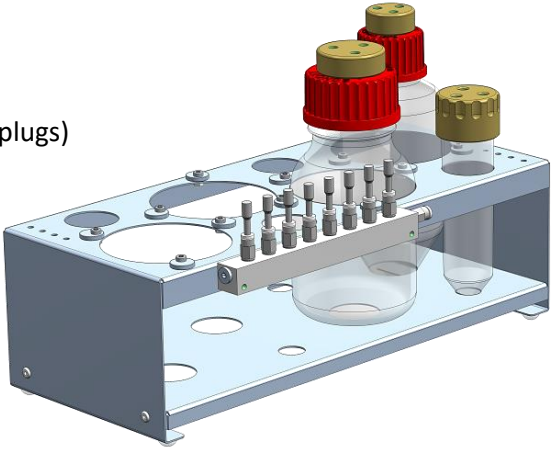
9.8 Extender Tool		
Tool for tighten nut	Part-# 21920	
<ul style="list-style-type: none"> · for Blind plug 1/4-28 UNF Part-# 21554 / 21909 · for Blind plug 1/4-28 UNF Part-# 25695 / 25696 · for Male nut 1/4-28 UNF Part-# 21593 / 21816 · Made of Aluminium · useful for all bottle and syringe kits, especially for Part-# 21794/25504, 21584/25547, 21613, 22181, 22221, 21706/25502 		
10 Accessories Kits		
10.1 Starter Kit		
CERTUS FLEX starter kit	Part-# 21861	
<ul style="list-style-type: none"> · Special price starter kit · Versatile equipment for a broad range of applications: <ul style="list-style-type: none"> · 1 x bottle holder 2-4-0 – <i>Part-# 21614</i> · 1 x 250 ml bottle kit; GL 45; 1 in 2 out – <i>Part-# 21584</i> · 1 x 50ml bottle kit – <i>Part-# 21706</i> · 1 x 3ml syringe kit – <i>Part-# 21612</i> · 1 x 5ml syringe kit – <i>Part-# 21586</i> · 1 x 10ml syringe kit – <i>Part-# 21587</i> · 1 unit (10 pieces) FFKM/FFPM O-ring – <i>Part-# 21718</i> · miscellaneous parts for tube attachments – <i>Part-# 21862</i> <p>This starter kit is only available together with the purchase of a CERTUS FLEX dispenser!</p> <p><i>(the items shown in the picture are only indicative!)</i></p>		

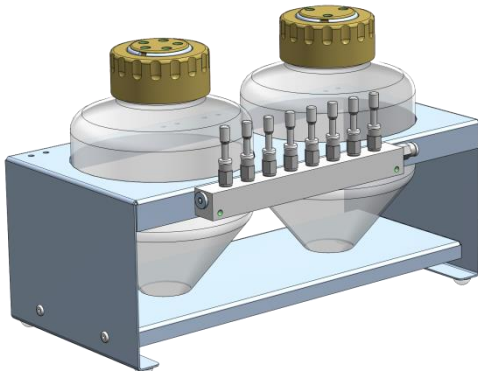


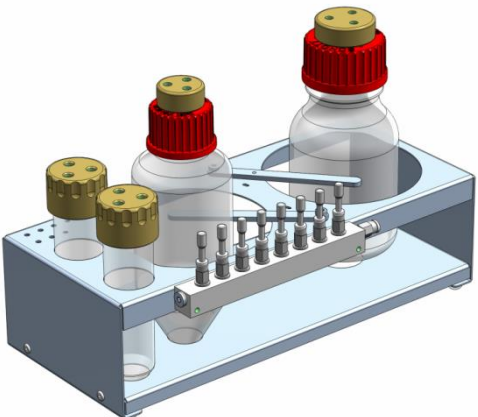
10.2 Spare parts kit	
CERTUS FLEX Spare parts kit small	Part-# 21862
<p>• miscellaneous parts for tube attachments</p> <p>1) 3 x Male nut 1/4-28 UNF; Ø 2-3.2, PEEK – <i>Part-# 21593</i></p> <p>2) 3 x Blind plug 1/4-28 UNF, Delrin – <i>Part-# 21554</i></p> <p>3) 3 x Ferrule 1/4-28 UNF; Ø 3.2, Tefzel/steel – <i>Part-# 21608</i></p> <p>4) 3 x O-ring, Ø 2.5 x 0.8 mm, FFKM/FFPM – for usage with DMSO – <i>Part-# 18636</i></p> <p>5) 3 m Tube Ø 3.17; Ø 1.58, FEP transparent – <i>Part-# 21438</i></p>	
10.3 CERTUS FLEX Accessories kit, Type 2	Part-# 23996
<p>• Accessories kit (included):</p> <p>1) 1x screwdriver T10 <i>Part-# 17864</i></p> <p>2) 1x screwdriver T20 <i>Part-# 17863</i></p> <p>3) 1x Calibration kit, Type 2 <i>Part-# 23839</i></p> <p>4) 1x spare calibration jar, Type 2 <i>Part-# 23978</i></p> <p>5) 1x valve spanner <i>Part-# 19236</i></p> <p>6) 1x tube 1 m, Ø 4; Ø 2.5 mm, PA black <i>Part-# 18806</i></p> <p>7) 1x tube 5 m, Ø 6; Ø 4 mm, PA black <i>Part-# 18779</i></p> <p>8) 1x tube 1.2 m, Ø 12; Ø 8 mm, silicon <i>Part-# 24448</i></p>	

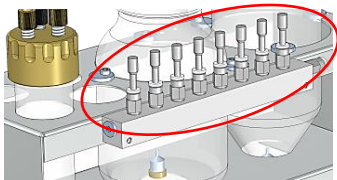
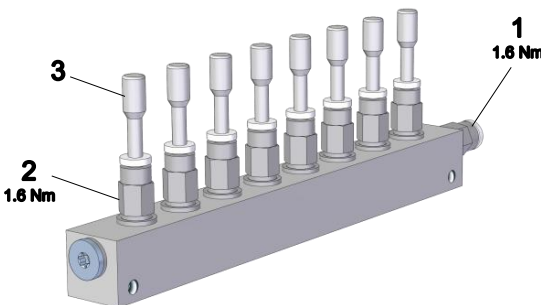
10.4 Calibration kit, Type 2	Part-# 23839
<ul style="list-style-type: none"> · Calibration kit for the calibration of valves on the CERTUS FLEX dispenser · consists of Adapter plate, Type 2 (23842), Calibration cap, Type 2 (23840) and Calibration jar, Type 2 (23978) 	
Adapter plate, Type 2	Part-# 23842
<ul style="list-style-type: none"> · Adapter plate for the correct and stable positioning of the Calibration jar, Type 2 (23978) 	
Calibration cap, Type 2	Part-# 23840
<ul style="list-style-type: none"> · Cap to prevent evaporation and back splashing 	
Calibration jar, Type 2	Part-# 23978
<ul style="list-style-type: none"> · Small jar, diameter 22 mm x height 33 mm, volume 5 ml · Made from borosilicate glass · fits into the adapter plate 	





11 Supply Accessories	
11.1 Compressed air manifold	
1 x 8 outlet connections	Part-# 21268
<ul style="list-style-type: none"> · Supply of compressed air to eight channels · To be used when syringe kits or large bottles are used for fluid uptake which do not require a bottle holder. · anodised Aluminium · Dimensions L 135 x W 50 x H 62 mm (height of closing plugs) <p>Note that the CERTUS FLEX cannot be operated without compressed air!</p>	
	
11.2 Bottle holder	
Type 2-4-0; 2 x Ø 71/61 mm; 4 x Ø 30 mm	Part-# 21614
<ul style="list-style-type: none"> · Holds 2 x 250ml bottles and 4 x 50ml tubes · Compressed air supply for up to 8 channels · Made from stainless steel · Dimensions L 248 x W 107 x H 131 mm (height of closing plugs) · H 188 mm with 250 ml bottle (without tubing) <p>(bottle kits shown in the picture are not included!)</p>	
	
Type 4-4-0; 4 x Ø 71/61 mm; 4 x Ø 30 mm	Part-# 21712
<ul style="list-style-type: none"> · Holds 4 x 250ml bottles and 4 x 50ml tubes · Compressed air supply for up to 8 channels · Made from stainless steel · Dimensions L 298 x W 145 x H 131 mm (height of closing plugs) · H 188 mm with 250 ml bottle (without tubing) <p>(bottle kits shown in the picture are not included!)</p>	
	


Type 2x500 ml	Part-# 23008
<ul style="list-style-type: none"> · Holds 2 x 500ml conical bottles · Compressed air supply for up to 8 channels · Made from stainless steel · Dimensions L 248 x W 135 x H 131 mm (height of closing plugs) · H 163 mm with 500 ml conical bottle (without tubing) <p>Discontinued, replaced with Type Universal, Part-# 23491</p> <p>(bottle kits shown in the picture are not included!)</p>	
	


Type Universal	Part-# 23491
<ul style="list-style-type: none"> · Holds multiple bottle kits · Compressed air supply for up to 8 channels · 2 x 50 ml, 2 x 250 ml conical or glass · or 2 x 500 ml conical · or 2 x 1000 ml glass · or any combination of two bottles · Made from stainless steel · Dimensions L 282 x W 135 x H 114 mm (height of closing plugs) · H 166 mm with 500 ml conical bottle (without tubing) <p>(bottle kits shown in the picture are not included!)</p>	
	



Plug			
Plug Connector for compressed air manifolds			
<ul style="list-style-type: none"> · Plug Connector for the compressed air manifolds · for Part-# 21268; 21614; 21712; 23008; 23491 <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div>			
Description	Part-#	Qty.	Order Part-#
1) Plug Connector, inlet; Ø 4 mm Including sealing gasket	24503	1	24503 = 1 pc.
2) Plug Connector, outlet; Ø 3.2 mm, Including sealing gasket	23888	8	23888 = 1 pc.
3) Plug for closing of unutilised outlet ports of compressed air manifolds	18442	8	21913 = 10 pcs.







Tube	
<ul style="list-style-type: none"> · Tube made of polyamide (PA) to be used for compressed air tubing of the CERTUS dispensers · available by the meter · to supply the Certus Flex with compressed air · to connect the Certus Flex with the manifold 	
Tube for compressed air Ø 6 mm / ø 4 mm, PA, black	Part-# 18779
Tube for compressed air Ø 4 mm / ø 2.5 mm, PA, black	Part-# 18806
Tube for waste drain Ø 12 mm / ø 8 mm, silicon, nature	Part-# 24448


11.3 Membrane pump	
<ul style="list-style-type: none"> · Provides stationary compressed air supply · Delivers a constant air pressure of 2.4 bar · for Ø 6 mm / ø 4 mm tubing · sound absorber included · L x W x H: 17 x 9 x 18 cm (<i>without power cable</i>) · Country specific power cables must be ordered separate. 	
230V/50Hz	Part-# 20343
115V/60Hz	Part-# 20344



11.4 Air pressure regulator	
<ul style="list-style-type: none"> · Regulator to allow reduction of supplied compressed air pressure to the required 2 bar · With stopcock and air filter 	

11.5 Power cable	
<ul style="list-style-type: none"> · Country specific power cables (included) · For Certus Flex · For Membrane pump 	
Type J / socket C 13 (Switzerland)	Part-# 20274
Power cable	
Type E+F (EU) / socket C13 (Germany/France)	Part-# 20273
Power cable	
Type B / socket C13 (USA/Japan)	Part-# 20272
Power cable	
Type G / socket C13 (United Kingdom)	Part-# 20631

11.6 Screwdriver	
T10	Part-# 17864
<ul style="list-style-type: none"> · Torx T10 screwdriver for fastening / unfastening the inlet adapters and other components 	
T20	Part-# 17863
<ul style="list-style-type: none"> · Torx T20 screwdriver for fastening / unfastening the valve head and other components 	

12 Software	
12.1 CERTUS CONTROL	Part-# 24062
<ul style="list-style-type: none"> · PC software to operate the CERTUS FLEX · For Microsoft Windows: 7 8 10 <div data-bbox="183 459 531 560">  </div>	 <p>CERTUS CONTROL</p>
12.2 WEB CONTROL; CERTUS CONTROL add-on	Part-# 25042
<ul style="list-style-type: none"> · CERTUS CONTROL add-on · Web browser-based user interface · Mainly developed for the use on large HTS systems · Location-independent wireless execution of commands on the CERTUS FLEX <div data-bbox="175 1008 525 1108">  </div>	 <p>WEB CONTROL</p>
12.3 LICENSE KEY INTEGRATION MANAGER; SiLA	Part-# 20500
<ul style="list-style-type: none"> · CERTUS FLEX Automatic Digital Dispenser can optionally be integrated into laboratory automation. Therefore, the SiLA License key is required. <div data-bbox="175 1444 311 1518">  </div> <ul style="list-style-type: none"> · Contact us for further details 	 <p>CERTUS CONTROL INTEGRATION MANAGER</p>

13 Case	
Demo case Certus Flex	Part-# 24066
<ul style="list-style-type: none"> · Heavy-duty PELI™ transport case with integrated telescopic handle and wheels · Dimensions 794 x 615 x 444 mm · The following elements can be stowed inside the transport case: <ul style="list-style-type: none"> · 1 x CERTUS FLEX dispenser incl. dispensing heads · 1 x Bottle holder · 1 x membrane pump (Part-# 20343 or 20344) · 1 x Notebook / laptop · Various accessories, spare parts and tools 	

14 Documents	
14.1 Safety Instructions	Part-#25040
<ul style="list-style-type: none"> · Multi Language Safety Instructions · EN, DA, DE, ES, FR, IT, NL, SV · Decontamination Declaration · Production Report · CE Conformity · USB drive: digital user manual, CERTUS CONTROL PC software 	
14.2 Operating manual	
German	Part-# 23360
English	Part-# 23361
<ul style="list-style-type: none"> · Printed operating manual · 230+ pages 	

Please contact your distributor to obtain further information and the valid prices for the items listed in this catalog.

Our Distributors:

- in Canada:
Phytronix Instruments Inc. 4975, rue Ambroise-Lafortune, suite 100, Boisbriand (Quebec),
Canada J7H 0A4, Tel. +1 450 419 6415
www.phytronix.com

- in China:
Tekon Biotech (Shanghai) Ltd., Rm. 2101, No. 6, Lane 1139, Pudong Ave., Shanghai 200135,
Tel:+86-21-5860.5185
www.tekontech.com

- in Hong Kong:
Tekon Technologies (Hong Kong) Ltd., Flat C, 13rd Floor, Nathan Commercial Building, 430 - 436 Nathan
Road, Yaumatei, Kowloon, Tel:+852-2388.6345
www.tekontech.com

- in Japan:
DKSH Japan K.K., 3-4-19, Mita-ku, Tokyo 108-8361, Tel. +81 3 5730 7606
www.dksh.jp

- in Republic of Korea (S.Korea):
Advanced Technology Inc., #112, Gaetbeoi-ro Yeonsu-gu, Incheon, South Korea 21999
www.bioautomation.co.kr

- in Taiwan:
Tekon Scientific corporation, 6F-2, No.51, Chingtao E. Rd., Taipei 10053, Tel:+886-2-2322.3857
www.tekontech.com

- in USA and Mexico:
Trajan Scientific Americas Inc / LEAP Technologies,
1015 Aviation Pkwy, Suite 1000, 27560 Morrisville, NC, Tel. +1 919 929 8814
www.leaptec.com

- in Israel and the Palestinian:
Danyel Biotech Ltd
Ha Mada 8, Science Park, 78124 Rehovot, Israel
www.danyel.co.il

- for all other countries:
Fritz Gyger AG, Bodmerstrasse 12, CH-3645 Gwatt (Thun), Tel. +41 (0) 33 336 22 77
www.fgyger.ch

Additional information about our company and our products is available on our website www.fgyger.ch

With this update all earlier versions of the CERTUS FLEX catalogue become void.

We do not assume liability for mistakes and printing errors.

We reserve the right to undertake technical modifications within the course of technical progress and as efforts towards continuous improvement.

Version 24 changes

September 2023

	page
Max plate height definition 44 mm instead of 45 mm, resp. 49 mm instead of 50 mm (overall -1 mm)	14 ; 17 ; 20
Higher resistant O-ring and blind plugs, here for new bottle kits	25 ; 35

Version 23 changes

October 2022

	page
Part-# 25024 exchanged to part -# 25042	54

Version 22 changes

July 2022

	page
New part-# for Operating manual	55

Version 21 changes

June 2022

	page
Pos. 5: 60 ml; BB, Discontinued, only available as long as stocks last part -# 21688, no longer available	40
Pump dimension added	52

Version 20 changes

February 2022

New Parts

	page
Max plate height definition 45 mm instead of 46 mm, resp. 50 mm instead of 51 mm	17
Max plate height definition 45 mm instead of 46 mm, resp. 50 mm instead of 51 mm	20

Version 19 changes

April 2021

New Parts

	Part-#
WEB CONTROL, CERTUS CONTROL add-on	25024
CERTUS FLEX DWP basic unit	24298
New document: Safety Instruction	25040
New User Manual German	21146
New User Manual English	21147

Version 18 changes

March 2021

New Parts

	Part-#
Syringe Kit 60 ml; BB, Radial	24857
Adapter Head Radial for 60 ml syringe kit	24854
Syringe adapter Luer-Lock short	24858

Discontinued Parts

	Part-#
Syringe Kit 60 ml; BB	21688
Adapter head for 60 ml syringe (axial)	20915
Inlet adapter Series 2 – for Luer-Lock	21676

Version 17 changes

September 2020

New Parts

GCR Valves				
Micro valve	Nozzle Ø	Travel	Filter	Part-#
SMLD 300GCR	0.10 mm	0.03 mm	40 µm	24647
SMLD 300GCR	0.15 mm	0.03 mm	40 µm	24648
SMLD 300GCR	0.15 mm	0.03 mm	no	24649
SMLD 300GCR	0.15 mm	0.06 mm	40 µm	24656
SMLD 300GCR	0.15 mm	0.06 mm	no	24650
SMLD 300GCR	0.20 mm	0.10 mm	40 µm	24655
SMLD 300GCR	0.20 mm	0.10 mm	no	24651
SMLD 300GCR	0.30 mm	0.10 mm	40 µm	24652
SMLD 300GCR	0.30 mm	0.10 mm	no	24653
SMLD 300GCR	0.45 mm	0.15 mm	no	24654

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