sartorius

Sartorius Pipetting and Dispensing Products

turning science into solutions

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Introduction

Three key factors – ergonomics, design and reliability – form the cornerstone of our product development. These and other factors have been combined to produce a perfectly balanced mechanical pipette, the Tacta®, the newest family member, following the Picus® NxT, which is an excellent example of an electronic pipette that has all these aspects combined. Both are amongst the lightest pipettes on the market, reducing the risk of Work Related Upper Limb Disorder (WRULD). Their high reliability, and ease of use, make them valued instruments for professionals, who strive for high quality results.

Their functional and well-rounded design, suitable for a laboratory setting, has been recognised with design awards. All Sartorius pipettes are designed and manufactured in Finland, where our R&D team is constantly seeking solutions to further improve liquid handling instruments to make lab life easier.

"Designing products that people work with on a daily basis is always challenging. Many users are interviewed and multiple aspects need to be taken into account, to combine excellent ergonomics and easy usability with today's technology and features. To solve this puzzle and come up with a great product is an exciting, but sometimes tough, journey. However, it is always rewarding in the end."

– Ville Hintikka, Chief Designer at Sartorius

Ergonomics

When designing a pipette, we always consider the shape and function of the human hand. As we understand the risks of repetitive pipetting, we emphasise ergonomic design in every product we make. Simply put, this means products that you can use in a comfortable posture with minimum muscle power. Our pipettes and dispensers are designed for both right- and left-handed users. Their operating buttons are located sufficiently close together, within ergonomic reach of the thumb.

Design

We provide products with a timeless and light, yet practical, design, suitable for laboratory settings and pleasing to the eye of the user. The Tacta® and the Picus®, won the Red Dot design award, in 2016 and 2012 respectively. The Picus® was distinguished with the Fennia Prize Honorary Mention in 2012. The Tacta® and the Picus®, won the German Design Award in 2017 and 2014 respectively.

GERMAN DESIGN AWARD WINNER 2017

German Design Award SPECIAL MENTION 2014

reddot award 2016 winner

fenniaprize 12 good design grows global HONORARY MENTION

Reliability

For us, reliability has many aspects, the most important being accuracy and precision of results and secured purity.

The core of a pipette lies in its **accuracy and precision**. For this reason, we have used the newest technologies together with in-house innovations, to achieve even more reliable pipetting results. Our electronic brake, piston control system and plate tracker for electronic pipettes are our latest innovations. They increase accuracy, precision and reliability of the device. Another important factor in achieving reliable results is the optimal tip fit, which we can guarantee by designing and producing the tips ourselves, to perfectly match our pipettes.

To reduce the risk of contaminating the internal components of our pipettes, we offer special Safe-Cone Filters to be used in our pipettes, as we understand that purity is a key concern in many laboratories. We strive to produce as many autoclavable products as possible, both pipettes and tips. Our pipette tips are manufactured in ISO Class 8 Cleanroom conditions. We test every certified tip lot for DNase, RNase and endotoxins at an external laboratory. We also offer an innovative SafetySpace Filter Tip range for safer and contamination-free pipetting.

Quality

Sartorius' products are developed and manufactured according to the requirements of the ISO 9001, ISO 13485 and ISO 14001 quality and environmental standards. Tip production also follows the ISO 14644-1 standard, in order to fulfil ISO class 8 cleanroom conditions.

We continuously develop our products and processes in order to meet, and often exceed, the demands of regulatory authorities, environmental bodies, and most importantly, our customers.

Sartorius' products are developed and manufactured according to the requirements of the ISO 9001, ISO 13485 and ISO 14001 quality and environmental standards. Tip production also abides by the ISO 14644-1 standard, in order to fulfil ISO Class 8 Cleanroom conditions. ISO 13485 is a specific standard for medical device quality systems, and supplementing the more generic ISO 9001 standard, which applies to many industries.

The Finnish national accreditation body operates independently as part of the Measurement Technology Centre (MIKES). Accredited pipette calibration laboratories in Finland, Germany, France, UK, China and Japan calibrate pipettes according to precise technical requirements. Our calibration laboratories in Finland, Germany, France, UK, China and Japan have been granted this status by their national accreditation bodies.

During production and service, pipette performance testing is carried out according to ISO 8655 specifications. Sartorius accredited pipette calibration follows the ISO 17025 standard. Our pipettes are supplied with individual quality control certificates.

Sartorius offers a 2-year warranty for all mechanical and electronic pipettes. The low lifetime cost and environmental friendliness of our products, which have long warranty periods, give a high return on investment.

We follow these manufacturing quality standards

- ISO 9001 · ISO 13485 · ISO 14001 · ISO 17025 · ISO 8655

The ergonomic design label indicates products, which Sartorius has designed specifically to reduce the risk of work-related hand, arm and shoulder disorders, such as Work Related Upper Limb Disorder (WRULD).

The Optiload tip loading mechanism developed by Sartorius in Tacta®, mLINE®, Proline® Plus, Picus® and Picus® NxT pipettes allows tips to be loaded with constant force. This secures optimal tip sealing and minimum tip ejection force.

The Optilock®, volume locking system in Tacta® gives the choice of locking and unlocking the volume the traditional way, using both hands, or specially developed convenient method, using one hand.

The Optiject®, is a unique mechanism in Tacta® by which one ejects the Safe-Cone filter, without touching it or using tweezers. This allows for the truly safe disposal of contaminated filters without human contact.

Every lot of Sartorius Single Tray, Refill Pack and FlexiBulk® tips are certified to be free of DNase, RNase and endotoxins, for the protection of samples from contamination. This certificate can be downloaded from www.sartorius.com. Sartorius' tip production is ISO 8 cleanroom classified, which ensures a contamination-free manufacturing environment, and products.

Most Sartorius pipetting and dispensing products are autoclavable. Please see details in the following product specific chapters.

How to Choose a Pipette

Electronic or Mechanical Pipette

Are you looking for a pipette for sterile work, or one you could easily calibrate yourself? Or do you seek a really light and ergonomic solution? Perhaps you need a pipette with a certain pipetting mode to speed up your work? By consulting the tables below, you can choose the instrument that best suits your needs.

Electronic or Mechanical Pipette

Features	Electronic Pipettes	Mechanical Pipettes
Highest ergonomics	✓	
Fastest pipetting	✓	
User-independent results	✓	
Multiple pipetting modes	✓	
Fully autoclavable		✓[2]
Adjustment by user	✓	✓

[2] Excluding Proline

Mechanical Pipettes

Features	Tacta®	mLINE®	Proline® Plus	Proline®
Most ergonomic	✓			
Ergonomic finger hook	✓	✓	✓	✓
Weight[1]	75 g	77 g	82 g	84 g
Length[1]	225 mm	240 mm	239 mm	224 mm
Volume range, single-channels	0.1 µl – 10 ml	0.1 µl – 10 ml	0.1 µl – 10 ml	0.1 µl – 5 ml
Volume range, multi-channels	0.5 – 300 µl	0.5 – 300 µl	0.5 – 300 µl	0.5 – 300 µl
Fixed-volume models			✓	✓
Pipetting force[1]	12 N	13 N	15 N	20 N
Optiject soft tip ejection	✓			
Light tip ejection		✓	✓	
Optiload spring-loaded tip cones	all models	all models	multi-channels only	
User adjustment	✓	✓	✓	✓
Optilock on | off volume lock	✓			
Volume locking	✓	✓	click stops	click stops
Big, and easy to read display	✓	✓	✓	
Safe-Cone Filters (models >10 µl)	✓	✓	✓	✓
Filter ejector	✓	✓		
Colour-coding on pipette	✓	✓	✓	
ID tags	✓	✓		
Fully autoclavable	✓	✓	✓	
Multipacks	✓	✓	✓	
Pipette holder with pipette	✓	✓	✓	
Warranty for 2 years	✓	✓	✓	✓

[1] 1,000 µl 1-channel models
[2] Excluding Proline

Electronic Pipettes

Features	Picus® NxT	Picus®
Most ergonomic	✓	✓
Weight[1]	100 g	100 g
Length[1]	210 mm	210 mm
Volume range, single-channels	0.2 µl – 10 ml	0.2 µl – 10 ml
Volume range, multi-channels	0.2 µl – 1.2 ml	0.2 µl – 1.2 ml
Language options[2]	5	5
Pipetting modes	9	8
Advanced functions	7	6
Repeated blow-out (advanced function)	✓	
Microwell plate tracker	✓	✓
Protocols – memory places	3	
Memory places (for storing programs)	10	10
Reminders for calibration and service	✓	
Information on service & calibration intervals		✓
Password protection	✓	
Certificate of accredited 3-point calibration	✓	
Electronic tip ejection	✓	✓
Calibration adjustment by user	✓	✓
Calibration adjustment in 1, 2 or 3 points	✓	✓
Hot key for stored programs	✓	✓
Use of pipette while charging	✓	✓
Fully charged in 1 hour	✓	✓
Safe-Cone Filters	✓	✓
Autoclavable lower parts[3]	✓	✓
Optiload in multi-channels	✓	✓
Colour-coding on pipette	✓	✓
Warranty for 2 years	✓	✓

[1] 300 µl 1-channel models
[2] English, French, German, Chinese and Russian
[3] Excluding 1 200 µl multi-channel pipettes

Proline® Plus Mechanical Pipettes

Dependable Durability

Fixed volume Proline® Plus pipette

Proline® Plus has a comfortable handle and an ergonomic finger support for effortless pipetting.

Safe-Cone Filters protect the pipette from contamination, and should be changed regularly.

The Proline® Plus mechanical pipette family is designed to offer comfort and quality for your everyday manual pipetting. It combines durable construction with ease and lightness of use, and is therefore the perfect choice for liquid-handling professionals and students alike. In addition, it has the widest pipette range, including fixed volume pipettes for when volumes need to be ready-set to avoid errors.

Ergonomic Design
Proline® Plus has low pipetting forces, a comfortable handle and an ergonomic finger support for effortless pipetting. Good fit in hand minimizes the grip force needed to hold the pipette, thereby reducing the risk of strain injury.

Loading Tips on Multi-channel Pipettes with Minimum Force
Loading and ejecting tips with multi-channel pipettes requires relatively high forces. Proline® Plus multi-channel pipettes have spring loaded tip cones – the Optiload mechanism. Optiload allows tips to be loaded and ejected with minimum force, which reduces the risk of hand injuries. Moreover, it secures even tip sealing onto every individual tip cone.

Protect the Pipette with Safe-Cone Filters
The replaceable Safe-Cone Filter located inside the tip-cone prevents aerosols and fluids from penetrating the pipette, also in case of over-aspiration. The use of Safe-Cone Filters lengthens the maintenance interval of the pipette. Safe-Cone Filters are available for all Proline® Plus models greater than 10 µl. They must be replaced regularly, and always in case of over-aspiration.

Easy Maintenance and Adjustment
No opening tools are needed for cleaning and maintaining Proline® Plus pipettes, and only three parts need to be cleaned. These pipettes are also easy to adjust using the adjustment tool that is provided with the pipette.

Proline® Plus pipettes have only three parts that need cleaning and maintenance.

Features and Benefits

- Low pipetting forces that prevent WRULD and improve results in long pipetting series
- Ergonomic finger support minimizes the grip force needed to hold the pipette
- Optiload mechanism in multi-channel models for easy and light tip loading with perfect tip sealing
- Wide variety of adjustable single and multi-channel models as well as fixed single-channel models
- Volume range from 3 µl (5 µl for fixed) to 10 ml
- Easy volume setting with click stop mechanism
- Big volume display
- Colour-coding of different volumes to ease the selection of matching pipette tips
- Safe-Cone Filters available for models > 10 µl
- Fully autoclavable without disassembly
- Simple to clean and maintain with only three parts to disassemble
- Materials have high chemical and UV-resistance to secure long life-time of the pipette

Ordering Information

Proline® Plus Order Code	Channels		Volume Range (µl)	Increment (µl)	Test Volume (µl)	Systematic Error [N] Limit ± (%)	(µl)	Random Error [N] Limit (%)	(µl)
728010	1	●	0.1 – 3	0.002	3	1.4	0.042	0.8	0.024
					1.5	2.6	0.039	1.6	0.024
					0.3	10.0	0.030	6.0	0.018
728020	1	●	0.5 – 10	0.01	10	1.0	0.100	0.6	0.060
					5	1.5	0.075	1.0	0.050
					1	3.0	0.030	2.0	0.020
728030	1	●	2 – 20	0.02	20	1.0	0.200	0.5	0.100
					10	1.4	0.140	0.9	0.090
					2	4.0	0.080	3.0	0.060
728040	1	●	5 – 50	0.10	50	1.0	0.500	0.3	0.150
					25	1.4	0.350	0.5	0.125
					5	3.0	0.150	1.5	0.075
728050	1	●	10 – 100	0.10	100	0.8	0.80	0.2	0.20
					50	1.0	0.50	0.4	0.20
					10	3.0	0.30	1.0	0.10
728060	1	●	20 – 200	0.20	200	0.6	1.20	0.2	0.40
					100	0.8	0.80	0.3	0.30
					20	2.3	0.46	0.9	0.18
728070	1	●	100 – 1,000	1.00	1,000	0.7	7.0	0.2	2.0
					500	0.8	4.0	0.2	1.0
					100	2.5	2.5	0.6	0.6
728080	1	●	500 – 5,000	10.0	5,000	0.6	30	0.2	10
					2,500	0.7	17.5	0.3	7.5
					500	2.4	12	0.6	3
728090	1	●	1,000 – 10,000	20.0	10,000	0.6	60	0.2	20
					5,000	1.2	60	0.3	15
					1,000	3.0	30	0.6	6
728120	8	●	0.5 – 10	0.01	10	1.5	0.150	1.0	0.100
728220	12				5	2.5	0.125	2.0	0.100
					1	5.5	0.055	4.0	0.040
728130	8	●	10 – 100	0.10	100	0.9	0.90	0.4	0.40
728230	12				50	1.2	0.60	0.7	0.35
					10	4.0	0.40	2.0	0.20
728140	8	●	30 – 300	0.20	300	0.6	1.80	0.25	0.75
728240	12				150	1.0	1.50	0.5	0.75
					30	2.5	0.75	1.0	0.30

[N] Note: The listed systematic and random error values can be achieved only under strictly controlled conditions during type tests per ISO 8655. Due to the continuous product development by Sartorius, the systematic and random error values are subject to change without prior notice.

Tip Selection Guide

Pipette Colour-Code	Safe-Cone Standard	Filters Plus	Optifit Tip [LRT] Colour-Code	Volume	SafetySpace Tip [LRT] Colour-Code	Volume
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	721008	721018	●	0.5 – 200 µl	●	0.5 – 20 µl
●	721008	721018	●	0.5 – 200 µl	●	2 – 120 µl
			●	5 – 350 µl		
●	721008	721018	●	0.5 – 200 µl	●	2 – 120 µl
			●	5 – 350 µl		
●	721007	721017	●	0.5 – 200 µl	●	5 – 200 µl
			●	5 – 350 µl	●	5 – 300 µl
●	721006	721016	●	10 – 1,000 µl	●	50 – 1,000 µl
●	721005	721015	●	100 – 5,000 µl	–	–
●	721005	721015	●	500 – 10,000 µl	–	–
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	721008	721018	●	0.5 – 200 µl	●	5 – 200 µl
			●	5 – 350 µl		
●	721007	721017	●	5 – 350 µl	●	5 – 300 µl

[LRT] Note: Low Retention Tips are available in volumes up to 1,200 µl.
The best compatibility is achieved when combining Sartorius pipettes and Sartorius tips. The systematic error and random error results, in tests, have been achieved using Sartorius Optifit tips.

Ordering Information

Proline® Plus FIXED Volume, Single-Channel

Order Code	Channels		Volume (µl)	Test Volume (µl)	Systematic Error[N] Limit ± (%)	(µl)	Random Error[N] Limit (%)	(µl)
728515	1	●	5	5	1.3	0.065	1.2	0.060
728520	1	●	10	10	0.8	0.080	0.8	0.080
728530	1	●	20	20	0.6	0.120	0.5	0.100
728535	1	●	25	25	0.5	0.125	0.3	0.075
728545	1	●	50	50	0.5	0.250	0.3	0.150
728550	1	●	100	100	0.5	0.50	0.3	0.30
728560	1	●	200	200	0.4	0.80	0.2	0.40
728565	1	●	250	250	0.4	1.00	0.2	0.50
728567	1	●	500	500	0.3	1.50	0.2	1.00
728570	1	●	1,000	1,000	0.3	3.0	0.2	2.0
728575	1	●	2,000	2,000	0.3	6.0	0.15	3.0
728580	1	●	5,000	5,000	0.3	15	0.15	7.5
728590	1	●	10,000	10,000	0.6	60	0.2	20

[N] Note: The listed systematic and random error values can be achieved only under strictly controlled conditions during type tests per ISO 8655. Due to the continuous product development by Sartorius, the systematic and random error values are subject to change without prior notice.

Tip Selection Guide

Pipette Colour-Code	Safe-Cone Filters Standard	Plus	Optifit Tip[LRT] Colour-Code	Volume	SafetySpace Tip[LRT] Colour-Code	Volume
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	721008	721018	●	0.5 – 200 µl 5 – 350 µl	●	0.5 – 20 µl
●	721008	721018	●	0.5 – 200 µl 5 – 350 µl	●	2 – 120 µl
●	721008	721018	●	0.5 – 200 µl 5 – 350 µl	●	2 – 120 µl
●	721008	721018	● ●	0.5 – 200 µl 5 – 350 µl	●	5 – 200 µl
●	721007	721017	● ●	0.5 – 200 µl 5 – 350 µl	● ●	5 – 200 µl 5 – 300 µl
●	721006	721016	●	10 – 1,000 µl	●	50 – 1,000 µl
●	721006	721016	●	10 – 1,000 µl	●	50 – 1,000 µl
●	721005	721015	●	100 – 5,000 µl		
●	721005	721015	●	100 – 5,000 µl		
●	721005	721015	●	500 – 10,000 µl		

[LRT] Note: Low Retention Tips are available in volumes up to 1,200 µl.
The best compatibility is achieved when combining Sartorius pipettes and Sartorius tips. The systematic error and random error results, in tests, have been achieved using Sartorius Optifit tips

Proline® Plus Fixed Volume Pipettes.

Proline® Plus Multipacks – Complete Sets of Pipettes and Accessories

Proline® Plus Multipacks offer are sets of mechanical pipettes in an affordable package, includong a Linear Stand and racks of matching tips.

These Multipacks allow the affordable renewal of existing pipettes, or to set up new workstations, with a set of highly ergonomic pipettes with high accuracy and precision.

Ordering Information

Multipack Order Code	Proline® Plus Pipettes	Optifit Tips	Accessories
Proline® Plus Pipette 3-pack 10 LH-728670	1-channel – 0.5 – 10 µl – 10 – 100 µl – 100 – 1,000 µl	Tip Racks (96 tips) – 0.1 – 10 µl – 0.5 – 200 µl – 10 – 1,000 µl	Linear Stand
Proline® Plus Pipette 3-pack 20 LH-728671	1-channel – 2 – 20 µl – 20 – 200 µl – 100 – 1,000 µl	Tip Racks (96 tips) – 0.5 – 200 µl – 10 – 1,000 µl	Linear Stand
Proline® Plus Pipette 4-pack 20 LH-728672	1-channel – 0.5 – 10 µl – 2 – 20 µl – 20 – 200 µl – 100 – 1,000 µl	Tip Racks (96 tips) – 0.1 – 10 µl – 0.5 – 200 µl – 10 – 1,000 µl	Linear Stand
Proline® Plus Pipette 4-pack 100 LH-728673	1-channel – 0.5 – 10 µl – 10 – 100 µl – 20 – 200 µl – 100 – 1,000 µl	Tip Racks (96 tips) – 0.1 – 10 µl – 0.5 – 200 µl – 10 – 1,000 µl	Linear Stand
Proline® Plus Pipette 5-pack 10 LH-728674	1-channel – 0.5 – 10 µl – 10 – 100 µl – 20 – 200 µl – 100 – 1,000 µl – 500 – 5,000 µl	Tip Racks (96 tips) – 0.1 – 10 µl – 0.5 – 200 µl – 10 – 1,000 µl Tip Rack (50 tips) – 100 – 5,000 µl	Linear Stand
Proline® Plus Pipette 5-pack 20 LH-728675	1-channel – 2 – 20 µl – 10 – 100 µl – 20 – 200 µl – 100 – 1,000 µl – 500 – 5,000 µl	Tip Racks (96 tips) – 0.5 – 200 µl – 10 – 1,000 µl Tip Rack (50 tips) – 100 – 5,000 µl	Linear Stand
Proline® Plus Pipette 3+1-pack LH-728676	1-channel – 0.5 – 10 µl – 20 – 200 µl – 100 – 1,000 µl 8-channel – 30 – 300 µl	Tip Racks (96 tips) – 0.1 – 10 µl – 0.5 – 200 µl – 5 – 350 µl – 10 – 1,000 µl	Linear Stand
Proline® Plus Pipette 3-pack max LH-728677	1-channel – 100 – 1,000 µl – 500 – 5,000 µl – 1,000 – 10,000 µl	Tip Racks – 10 – 1,000 µl (96 tips) – 100 – 5,000 µl (50 tips) – 500 – 10,000 µl (35 tips)	Linear Stand

Proline® Mechanical Pipettes

Affordable Reliability

The fact that Proline®, our first mechanical pipette, is still in use in many laboratories by over 200 000 users, testifies to its timeless, practical design and reliability. Being the most affordable pipette in Sartorius' range of mechanical pipettes, it is ideal for universities and colleges, or any laboratory seeking a cost-efficient liquid handling tool.

Due to its relatively light weight, high accuracy and precision, it is used by many professionals.

Proline® can be used with many universal tip brands and the range includes also fixed volume models, which makes it a flexible tool for various laboratories.

Features and Benefits

- Wide range of pipettes, both adjustable and fixed volume
- Volume range from 2,5 µl (5 µl for fixed) to 5 ml
- Easy volume setting with click stop mechanism
- Safe-Cone Filters available for models > 10 µl
- User adjustment e.g. for different liquids

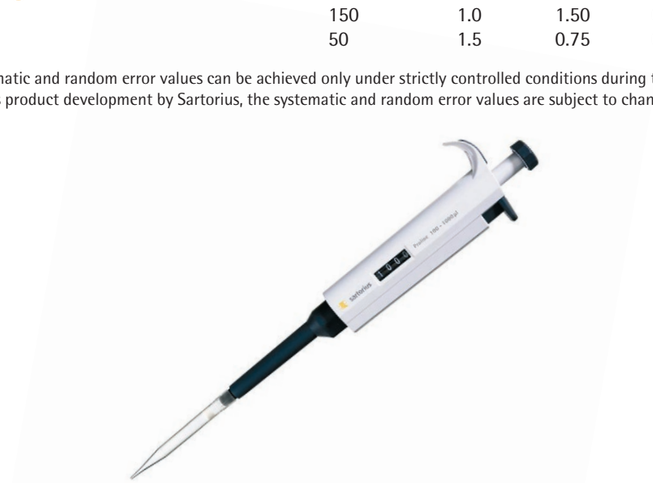
SARTORIUS 2 YEAR WARRANTY

Ergonomic Design Sartorius

Ordering Information

Proline® Order Code	Channels		Volume Range (µl)	Increment (µl)	Test Volume (µl)	Systematic Error [N] Limit ± (%)	(µl)	Random Error [N] Limit (%)	(µl)
720010	1	●	0.1 – 2.5	0.05	2.5	2.5	0.063	2.0	0.050
					1.25	3.0	0.038	3.0	0.038
					0.25	12.0	0.036	6.0	0.018
720015	1	●	0.5 – 10	0.10	10	1.0	0.100	0.8	0.080
					5	1.5	0.075	1.5	0.075
					1	3.0	0.030	2.0	0.020
720080	1	●	2 – 20	0.50	20	1.0	0.200	0.5	0.100
					10	1.4	0.140	0.9	0.090
					2	4.0	0.080	3.0	0.060
720025	1	●	5 – 50	0.50	50	1.0	0.500	0.3	0.150
					25	1.4	0.350	0.6	0.150
					5	3.0	0.150	2.0	0.100
720050	1	●	10 – 100	1.00	100	0.8	0.80	0.2	0.20
					50	1.0	0.50	0.4	0.20
					10	3.0	0.30	1.0	0.10
720070	1	●	20 – 200	1.00	200	0.6	1.20	0.2	0.40
					100	0.8	0.80	0.3	0.30
					20	2.5	0.50	0.9	0.18
720060	1	●	100 – 1,000	5.00	1,000	0.7	7.0	0.2	2.0
					500	0.8	4.0	0.25	1.25
					100	2.5	2.5	0.7	0.7
720110	1	●	1,000 – 5,000	50.0	5,000	0.6	30	0.2	10
					2,500	0.7	17.5	0.3	7.5
					1,000	1.2	12	0.3	3
720210	8	●	0.5 – 10	0.10	10	1.5	0.150	1.5	0.150
720310	12				5	2.5	0.125	2.5	0.125
					1	5.5	0.055	4.0	0.040
720220	8	●	5 – 50	0.50	50	1.0	0.500	0.5	0.250
720320	12				25	1.5	0.375	1.0	0.250
					5	3.0	0.150	2.0	0.100
720240	8	●	50 – 300	5.00	300	0.7	2.10	0.25	0.75
720340	12				150	1.0	1.50	0.5	0.75
					50	1.5	0.75	0.8	0.40

[N] Note: The listed systematic and random error values can be achieved only under strictly controlled conditions during type tests per ISO 8655. Due to the continuous product development by Sartorius, the systematic and random error values are subject to change without prior notice.



Tip Selection Guide

Pipette Colour-Code	Safe-Cone Filters Standard	Plus	Optifit Tip [LRT] Colour-Code	Volume	SafetySpace Tip [LRT] Colour-Code	Volume
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	721008	721018	●	0.5 – 200 µl	●	0.5 – 20 µl
●	721008	721018	●	0.5 – 200 µl	●	2 – 120 µl
			●	5 – 350 µl		
●	721007	721017	●	0.5 – 200 µl	●	2 – 120 µl
			●	5 – 350 µl		
●	721007	721017	●	0.5 – 200 µl	●	5 – 200 µl
			●	5 – 350 µl	●	5 – 300 µl
●	721006	721016	●	10 – 1,000 µl	●	50 – 1,000 µl
●	721005	721015	●	100 – 5,000 µl	–	–
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
			●	0.1 – 10 µl Extended	●	0.1 – 10 µl Extended [FT]
●	721014	-	●	0.5 – 200 µl	●	2 – 120 µl
			●	5 – 350 µl		
●	721014	-	●	5 – 350 µl	●	5 – 300 µl

[LRT] Note: Low Retention Tips are available in volumes up to 1,200 µl.
The best compatibility is achieved when combining Sartorius pipettes and Sartorius tips. The systematic error and random error results, in tests, have been achieved using Sartorius Optifit tips.

Ordering Information

Proline® FIXED Volume, Single-Channel

Order Code	Channels		Volume Range (µl)	Test Volume (µl)	Systematic Error[N] Limit ± (%)	(µl)	Random Error[N] Limit (%)	(µl)
722001	1	●	5	5	1.3	0.065	1.2	0.060
722004	1	●	10	10	0.8	0.080	0.8	0.080
722010	1	●	20	20	0.6	0.120	0.5	0.100
722015	1	●	25	25	0.5	0.125	0.3	0.075
722020	1	●	50	50	0.5	0.250	0.3	0.150
722025	1	●	100	100	0.5	0.50	0.3	0.30
722030	1	●	200	200	0.4	0.80	0.2	0.40
722035	1	●	250	250	0.4	1.00	0.2	0.50
722040	1	●	500	500	0.3	1.50	0.2	1.00
722045	1	●	1,000	1,000	0.3	3.0	0.2	2.0
722050	1	●	2,000	2,000	0.3	6.0	0.15	3.0
722055	1	●	5,000	5,000	0.3	15	0.15	7.5

[N] Note: The listed systematic and random error values have been achieved under strictly controlled conditions during type tests per ISO 8655. Due to the continuous product development by Sartorius, the systematic and random error values are subject to change without prior notice.

Tip Selection Guide

Pipette Colour-Code	Safe-Cone Filters Standard	Plus	Optifit Tip[LRT] Colour-Code	Volume	SafetySpace Tip[LRT] Colour-Code	Volume
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	–	–	●	0.1 – 10 µl	●	0.1 – 10 µl
●	721008	721018	● ●	0.5 – 200 µl 5 – 350 µl	● ●	0.5 – 20 µl 2 – 120 µl
●	721008	721018	● ●	0.5 – 200 µl 5 – 350 µl	●	2 – 120 µl
●	721008	721018	● ●	0.5 – 200 µl 5 – 350 µl	●	2 – 120 µl
●	721007	721017	● ●	0.5 – 200 µl 5 – 350 µl	● ● ●	2 – 120 µl 5 – 200 µl 5 – 300 µl
●	721007	721017	● ●	0.5 – 200 µl 5 – 350 µl	● ●	5 – 200 µl 5 – 300 µl
●	721006	721016	●	10 – 1,000 µl	●	50 – 1,000 µl
●	721006	721016	●	10 – 1,000 µl	●	50 – 1,000 µl
●	721005	721015	●	100 – 5,000 µl		
●	721005	721015	●	100 – 5,000 µl		

[LRT] Note: Low Retention Tips are available in volumes up to 1,200 µl.
The best compatibility is achieved when combining Sartorius pipettes and Sartorius tips. The systematic error and random error results, in tests, have been achieved using Sartorius Optifit tips.

Stands and Accessories

Table of Contents

Pipette Stands

Charging Carousel Stand

Charging Stand

Linear Stand (non-charging)

When the pipette is not in use, it should be stored in an upright position in order to avoid contamination from work surfaces. Sartorius provides stands for all of its pipettes. It is recommended that electronic pipettes be stored and charged on a charging stand whenever they are not in use. In this way, their batteries always remain charged for when work begins.

Compact carousel stands are ideal for saving bench space. There is one for mechanical pipettes, and a charging carousel stand for electronic pipettes.

The Linear Stand is designed for all Sartorius mechanical and electronic pipettes. This stand is also compatible with a wide range of other pipette makes.

The simplest of all are the pipette holders which are attached to the front edge of a shelf. These are suitable for mechanical pipettes.

Ordering Information

Pipette Stands

Order Code	Item
730981	Charging Stand for one electronic pipette*
730991	Charging Carousel for 4 electronic pipettes*
725620	Linear Stand for all Sartorius pipette models
LH-725630	Carousel Stand for 6 mechanical pipettes
LH-727650	Adapter for Mechanical Carousel Stand
LH-727640	Holder for one pipette

* Supplied with a universal charger (EU, UK, US | JPN, AUS, KOR and CHN plugs)

Carousel Stand (non-charging)

Pipette Holder for one pipette

Adapter for Mechanical Carousel Stand

Elbow Pad

The Elbow Pad provides comfort while pipetting. The visco-elastic material of the pad relieves contact stress, pain and discomfort under the elbow.

The Elbow Pad is Ideal for
- long periods of pipetting
- work requiring high concentration, e.g. micro plate work
- any work where a cushion beneath the elbow or wrist is needed

Features and Benefits

- Improves pipetting ergonomics
- Conforms to any elbow size or shape
- Coating is pleasant to the skin
- The compact size takes up little bench space
- Very durable
- Easy to clean with washing up liquid, or ethanol (70%)
- Not autoclavable

Ordering Information

Elbow pad

Order Code	Item	Qty
723103	Elbow Pad	1

Safe-Cone Filters

Built-in filter ejector in Tacta®

Why Should You Use Safe-Cone Filters?
These unique and replaceable polyethylene (PE) filters prevent any fluids and liquid vapours from reaching the internal components of the pipette.

– Reduce the risk of contaminating the internal components of our pipettes
– Prolong the pipette's lifetime
– Reduce maintenance intervals
– Are cost-effective compared to filter tips

When Should You Use them?
The ultimate pipette protectors are available in two types:

Plus Filter
For more demanding applications such as radioactive work, cell culture, bacterial and virological work and molecular biology.

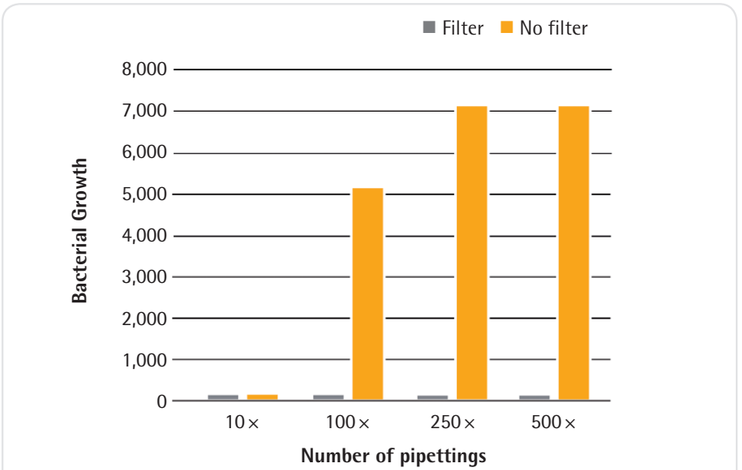
Standard Filter
For general applications. Can be used in same type of work as the Plus filter, but needs to be changed more frequently.

How Often Should You Change?
The interval of changing the filter depends completely on the application and the sample. However, according to studies, the filter is recommended to be changed daily (after 50 to 250 pipettings) and immediately in case of over-aspiration.

How to Change?
To ensure that the user is protected from contamination, tweezers should be used when removing used filters from the pipette tip cone. The Tacta® and the mLINE® feature a built-in filter ejectors, so tweezers are unnecessary. In addition, the tip cone should be cleaned with ethanol (70%) prior to the insertion of a new filter.

Tweezers for exchanging filters in pipettes are supplied with all pipettes excluding Tacta® and mLINE®.

Contamination in Pipette Interior



Pipette contamination in pipette interior when pipetting liquid culture of bacteria Micrococcus Luteus.

Ordering Information

Safe-Cone Filters

Order Code	Item	Qty/Unit
721008	Standard ∅ 2.51 mm PE	50
721007	Standard ∅ 3.15 mm PE	50
721006	Standard ∅ 5.33 mm PE	50
721005	Standard ∅ 6.73 mm PE	50
721014	Standard ∅ 1.83 mm PE	50
721018	Plus ∅ 2.51 mm PE	50
721017	Plus ∅ 3.15 mm PE	50
721016	Plus ∅ 5.33 mm PE	50
721015	Plus ∅ 6.73 mm PE	50
721009	Tweezers for Safe-Cone Filters	1

PE = polyethylene

See the pipette ordering information charts for corresponding filters and pipettes.

Reagent Vessel

Made from polypropylene, the autoclavable and durable reagent vessel is chemically resistant to all common reagents.

121°C
Fully autoclavable

Ordering Information

Reagent Vessel

Order Code	Item	Qty
783500	Reagent Vessel (capacity 120 ml)	16

Adjustment Tool

The Adjustment Tool is used to adjust the pipette in situations where the factory calibration is not applicable.

121°C
Fully autoclavable

Adjustment tool is used for adjusting mLINE® and Proline® Plus pipettes.

The Adjustment Tool for adjusting the Tacta® pipette.

Ordering Information

Adjustment Tool and Colour-coding Caps

Order Code	Item	Qty
726203	Adjustment Tool for mLINE® | Proline® Plus	1
LH-727080	Adjustment Tool for Tacta®	1
721130	Adjustment Tool for Proline®	1

Pipette Tips

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Pipette Tips

The Perfect Match for Your Pipette

Optiload for a tight fit and equal sealing on every channel's tip cone.

Sartorius pipette tips meet the highest quality and purity standards. Sartorius tips are designed and manufactured to fit Sartorius pipettes perfectly, enabling maximum tip sealing and accuracy. This combination guarantees the highest performance and precision for your pipetting needs. Moreover, correctly fitting tips protect the pipette's tip cone from wear and tear.

Sartorius tip packages are designed to make the daily work of lab professionals easier. Our offering covers a variety of functional tip package options with various purity ratings. The high purity and consistent quality of Sartorius tips provide your valuable samples with the ultimate protection from contamination. We adhere to strict quality standards and control procedures - from raw material to automated manufacturing and packaging.

Sartorius tips correspond with the colour-coding of Sartorius pipettes, to allow easy matching of corresponding volumes.

Premium Quality and Purity

Manufacturing the tips in our own production facility allows us to maintain the highest quality and purity standards, by selecting the best plastic materials and controlling the manufacturing process from beginning to end.

Our quality management system follows not only ISO 9001 and ISO 14001, but also ISO 13485. Tip production also abides by the ISO 14644-1 standard, in order to fulfil ISO Class 8 cleanroom conditions for secured tip purity.

Lot-specific purity certificate

Contamination Free Tips

To avoid contamination through human contact, we have automated the entire tip manufacturing process. Pure virgin polypropylene (PP) plastic is automatically fed from silos into moulding machines. Moulding machines and robots located in isolated clean cells, load the tips automatically into tip trays and packaging. HEPA filters and higher air pressure are applied for purity within the cell. All Sartorius Single Tray tip racks, Single Refill Packs and FlexiBulk® packs are individually and automatically packed in air-tight plastic, **in order** to rule out any danger of contamination.

Additionally, our highly experienced and trained personnel are equipped with specially designed coveralls, masks, hair nets and gloves, in order to further diminish risks of contamination.

An independent laboratory checks every tip lot of Single Tray and Refill Pack for RNase, DNase and endotoxins. Lot-specific purity certificates can be downloaded from www.sartorius.com.

ISO9001 - 13485 - 14001 Sartorius Certified

DNase - RNase - Endotoxin Free Sartorius Certified

121°C Fully autoclavable

Definitions:

DNase	A deoxyribonuclease (DNase) is any enzyme that catalyzes the degradation of DNA. The absence of DNase is tested by using fluorometric assay. The detection level of the assay is 6.25* 10^{-5} U/µl when DNase I is used as a standard.
RNase	Ribonuclease (RNase) is an enzyme that catalyzes the degradation of RNA into smaller components and can be generally found from organisms. The absence of RNase is tested by using fluorometric assay. The detection level of the assay is 3.125* 10^{-9} U/µl, when RNase A is used as a standard.
Endotoxins	Endotoxins are lipopolysaccharides found in the Gram-negative bacteria and can cause several serious health effects in humans and animals. Limulus Amebocyte Lysate (LAL) Gel Clot method is used to detect the presence of endotoxins on the pipette tips. The detection level of the LAL assay is 0.005 IU/ml (EU/ml).
Sterilization	The destruction of all microbial life, including bacterial endospores. Can be accomplished e.g. using steam, heating, chemicals, or radiation. We use e-beam irradiation.

Features and Benefits

Best Fit – Highest Possible Accuracy

- Perfect fitting and sealing with Sartorius pipettes secure the highest possible accuracy and precision
- Compatible with Optiload feature in Sartorius Picus® NxT, Picus®, Tacta®, eLINE®, mLINE® and Proline® Plus pipettes enabling ergonomic and light tip attachment and ejection
- Colour-coding of tip trays allows easy matching with a corresponding colour-coded Sartorius pipette
- Compatible with most other pipette makes

Premium Quality and Purity:

- Strict quality standards, ISO 9001 and ISO 13485, are followed from R&D to production and delivery
- Manufactured in ISO 8 classified clean room conditions
- Manufacturing process free of DNase, RNase and endotoxins: Single Trays, Refill Packs and FlexiBulk® packs certified pure by lot number
- Pre-sterilised tips are e-beam irradiated
- All tip packages, including individual racks, are lot numbered for full traceability
- The highest quality virgin polypropylene used as raw material

Tip Selection Guide per Application

Tip Type	Optifit Tips			SafetySpace Filter Tips	Low Retention Tips
Purity	**Standard**	**Free of DNase, RNase & endotoxins**	**Pre-sterilized & free of DNase, RNase and endotoxins**	**Pre-sterilized & free of DNase, RNase and endotoxins**	
Regular pipetting applications	✓				
Applications where prevention of cross-contamination is vital		✓	✓	✓	
Pipetting liquids with low surface tension (e.g. detergents, solvents)					✓

Optifit Tips

Standard Tips for Various Needs

Sartorius Optifit tips are an excellent choice for various laboratories and pipetting tasks with their wide range of packaging and purity options. The Optifit tips are packed in single tray racks, refill towers, single refill packs, and bulk packages. Optifit tips are available DNase, RNase and endotoxin free, as well as e-beam pre-sterilized.

The Single Tray tip racks are ideal for easy tip loading and for contamination-free pipetting. In order to reuse the empty tip racks and to create less waste, you may fill the empty racks with Refill tips, either using the refill tower or purity certified refill pack tips. The FlexiBulk® pack is the choice, if you need a cost-effective, yet purity-certified solution, in bulk tip format.

Available Packaging Options

– Single tray rack
– Refill tower
– Refill pack
– FlexiBulk® pack
– Bulk in a bag

Optifit tips provide excellent tip sealing

Features and Benefits

– Standard non-filter tips made to Sartorius quality standards
– Low Retention Tip range also available for liquids with low surface tension
– Perfect fitting and sealing with Sartorius Picus® NxT, Picus®, Tacta®, eLINE®, mLINE®, Proline® Plus, and Proline® pipettes
– Wide tip volume range from 10 µl to 10 ml
– Wide selection of packaging and purity options
– Available as DNase, RNase and endotoxin-free
– e-beam pre-sterilized packaging options available
– Full traceability
– Colour-coded trays to match with corresponding Sartorius pipettes
– Fully autoclavable at 121°C, at 1 bar, for 20 minutes

SafetySpace Filter Tips

Protect Valuable Samples

SafetySpace Filter Tips, made of virgin polypropylene, feature filter barriers that effectively capture solid and liquid aerosol particles. The filter is made of polyethylene without self-sealing additives to avoid any interference with the sample and results. The filter protects the sample against contamination. In addition, it protects the pipette and prolongs the maintenance interval of the pipette.

The SafetySpace Filter Tips are Ideal for:
– molecular biology
– microbiology
– cell culture applications
– radioactive work

The unique feature with SafetySpace Filter Tips is the additional space left between the sample and the filter that conventional filter tips do not have. This extra space prevents the liquid from touching, and permeating, the filter and thus guarantees the pipetting accuracy. Any liquid types and pipetting techniques can be applied without the risk of the liquid permeating the filter.

The Extra Space is Particularly Useful in the Following Applications:
– pipetting foaming liquids such as buffers and proteins
– pipetting solvents
– multiple dispensing functions of electronic pipettes
– reverse pipetting

Available Packaging Options

– Single Tray Rack

Features and Benefits

– Filter minimizes the risk of aerosol contamination
– Volume of air between the sample and filter reduces the risk of contaminating the internal components of our pipettes
– Covers tip volumes from 10 µl to 1,200 µl
– Certified free of DNase, RNase and endotoxins
– e-beam pre-sterilized
– Full traceability
– Colour-coded trays indicate the matching colour-coded Sartorius pipette

Low Retention Tips

Ensure Optimal Sample Recovery

The four tips on the right are low retention tips, providing maximum sample recovery.

Pipetting liquids that contain detergents can be problematic when using standard pipette tips. Some liquid residue often remains in the tip due to differences in surface energies between the plastic pipette tip and the sample. The residue causes imprecision in pipetting and loss of valuable samples or reagents.

We use an advanced technology to manufacture Low Retention Tips that have an extremely even and durable hydrophobic surface. Unlike some other hydrophobic tips on the market, our low retention tips do not contain any leachables that might risk your sample.

Low Retention Tips maximize the sample recovery, when handling detergent containing or other liquids with low surface tension. Better reproducibility in pipetting is especially beneficial in sensitive molecular biology applications, where reagents often contain detergents, for example in:

– PCR, real-time PCR
– Cloning, sequencing and other DNA & RNA techniques
– SDS-PAGE and other protein analysis methods
– Protein purification techniques

Packaging options for Low Retention tips

Available Packaging Options

– Single Tray Rack
– Refill Tower

Features and Benefits

– Extremely hydrophobic tips surface
– Maximum sample recovery for fluids with low surface tension
– Durable, high chemical resistance, no leachables
– Covers tip volumes from 10 µl to 1,200 µl
– Filter (SafetySpace) and non-filter (Optifit) tip options are available
– DNase, RNase and endotoxin-free packaging options available
– e-beam pre-sterilized packaging options available
– Full traceability
– Colour-coded trays indicate the matching colour-coded Sartorius pipette
– Non-filter tips are fully autoclavable at 121°C, at 1 bar, for 20 minutes

Low Retention Tips LowRet Sartorius

Packaging Options

Single Tray Racks

Racked Tips

Single Tray Rack

- 96 tips in convenient and reusable tray racks (sales unit contains 10 tray racks, total 960 tips)
- Certified free of DNase, RNase and endotoxins
- e-beam pre-sterilized option available
- Lot-specific purity certificates can be downloaded from www.sartorius.com
- Informative rack labelling: volume, product number, lot number improves tip identification and traceability
- Air-tight plastic wrapping around the rack secures purity during transport and storage (wrapping is regular waste)
- Tip trays are colour-coded to indicate the matching, colour-coded Sartorius pipette
- Covers a large range of tip volumes from 10 µl to 10 ml
- Fully autoclavable at 121°C, at 1 bar, for 20 minutes
- Tray racks can be easily reloaded with Refill tips
- Racks, trays and tips are 100% recyclable polypropylene (PP)

Refill Towers

Refill Tips

Refill Tower

- Space-saving with 10 × 96 tips in one tower
- Tip trays are compatible with Single Tray racks for convenient use
- Trays are colour-coded to indicate the matching, colour-coded Sartorius pipette
- Covers the most widely used tip sizes: 10 µl, 200 µl and 350 µl
- Trays and tips are fully autoclavable at 121°C, at 1 bar, for 20 minutes
- 100% recyclable cardboard packaging, and plastic (PP) trays and tips

Single refill packs

Single Refill Packs

- Individually packed air-tight tip trays for maximum purity with less packaging material compared to racked tips
- 10, 15 or 20 trays of 96 tip trays, depending on tip volume
- Certified free of DNase, RNase and endotoxins
- e-beam pre-sterilized option available
- Lot-specific purity certificates can be downloaded from www.sartorius.com
- Tip trays are compatible with Single Tray racks for convenient use
- Informative rack labelling: volume, product number, lot number improves tip identification and traceability
- Tip trays are colour-coded to indicate the matching, colour-coded Sartorius pipette
- Covers a large range of tip volumes from 10 µl to 1,200 µl
- Trays and tips are fully autoclavable at 121°C, at 1 bar, for 20 minutes
- 100% recyclable trays and tips (PP). Container lid is regular waste.

FlexiBulk®

Bulk Tips

FlexiBulk®

- Tips made to the Sartorius quality standard in economical packaging
- Packed orderly in compact re-sealable plastic packages (480 or 960 pcs depending on tip volume)
- Covers a large range of tip volumes from 200 µl to 1,200 µl
- Lot-specific purity certificates can be downloaded from www.sartorius.com
- Tips are fully autoclavable at 121°C, at 1 bar, for 20 minutes
- 100% recyclable tips (PP) and package (PET)

Bulk in a bag

Bulk in a Bag

- Tips made to the Sartorius quality standard in economical packaging
- Packed in re-sealable bags in cardboard boxes (100, 250 or 1,000 pcs depending on tip volume)
- Covers tip volumes 10 µl, 5 ml and 10 ml
- Tips are fully autoclavable at 121°C, at 1 bar, for 20 minutes
- 100% recyclable tips and package

Ordering Information

Optifit Tips

Volume Range	Length	Packaging	Low Retention	Purity Level: Free of RNase, DNase, endotoxins	Purity Level: Pre-sterilised	Tips/Unit	Order Code
● 0.1 – 10 µl	31.5 mm	Single Tray		•		10 × 96	790010
		Single Tray	•	•		10 × 96	LH-L790010
		Single Tray		•	•	10 × 96	790011
		Refill Tower				10 × 96	790012
		Refill Tower	•			10 × 96	LH-L790012
		Refill Pack		•	•	20 × 96	790013
		Bulk in Bag				1,000	790014
● 0.5 – 200 µl	51 mm	Single Tray		•		10 × 96	790200
		Single Tray	•	•		10 × 96	LH-L790200
		Single Tray		•	•	10 × 96	790201
		Refill Tower				10 × 96	790202
		Refill Tower	•			10 × 96	LH-L790202
		Refill Pack		•	•	15 × 96	790203
		FlexiBulk®		•		960	LH-B790204
● 5 – 350 µl	54 mm	Single Tray		•		10 × 96	790350
		Single Tray	•	•		10 × 96	LH-L790350
		Single Tray		•	•	10 × 96	790351
		Refill Tower				10 × 96	790352
		Refill Tower	•			10 × 96	LH-L790352
		Refill Pack		•	•	15 × 96	790353
		FlexiBulk®	•			960	LH-B790354
● 10 – 1,000 µl	71.5 mm	Single Tray		•		10 × 96	791 000
		Single Tray	•	•		10 × 96	LH-L791000
		Single Tray		•	•	10 × 96	791001
		Refill Pack		•		10 × 96	791002
		Refill Pack		•	•	10 × 96	791003
		FlexiBulk®	•			480	LH-B791004

For your guidance the tips are shown here in the actual size.

Volume Range		Length	Packaging	Low Retention	Purity Level: Free of RNase, DNase, endotoxins	Purity Level: Pre-sterilised	Tips/Unit	Order Code
● 10 – 1,000 µl	Wide bore tip	68.5 mm	Single Tray		•		10 × 96	791020
			Single Tray		•	•	10 × 96	791021
			FlexiBulk®		•		480	LH-B791024
● 50 – 1,200 µl		71.5 mm	Single Tray		•		10 × 96	791 200
			Single Tray	•	•		10 × 96	LH-L791200
			Single Tray		•	•	10 × 96	791201
			Refill Pack		•		10 × 96	791202
			Refill Pack		•	•	10 × 96	791203
			FlexiBulk®		•		480	LH-B791204
● 100 – 5,000 µl		150 mm	Single Tray		•		50	780304
			Single Tray		•	•	50	780305
			Bulk in Bag				100	780300
			Bulk in Bag				1,000	780308
● 100 – 10,000 µl		155 mm	Single Tray				35	LH-780314
			Bulk in Bag				250	LH-780316

Note: The ordering information for 10,000 µl tip for Midi Plus can be found on page 69.

Empty Tip Boxes for Refill System (Tips and Trays are Not Included)

Item	Tip Type (Non-filter Tips)	Racks/Unit	Order Code
Empty Tip Box for Refill System	10, 200, 350 µl	10	790910
Empty Tip Box for Refill System	1,000, 1,200 µl	10	790920

Ordering Information

SafetySpace Filter Tips

Volume Range	Length	Packaging	Low Retention	Purity Level: Free of RNase, DNase, endotoxins	Purity Level: Pre-sterilised	Tips/Unit	Order Code
0.1 – 10 µl	31.5 mm	Single Tray		•	•	10 × 96	790011F
		Single Tray	•	•	•	10 × 96	LH-LF790011
0.5 – 20 µl	51 mm	Single Tray		•	•	10 × 96	790021F
		Single Tray	•	•	•	10 × 96	LH-LF790021
2 – 120 µl	51 mm	Single Tray		•	•	10 × 96	790101F
		Single Tray	•	•	•	10 × 96	LH-LF790101
5 – 200 µl	52.5 mm	Single Tray		•	•	10 × 96	790201F
		Single Tray	•	•	•	10 × 96	LH-LF790201
5 – 300 µl	52.5 mm	Single Tray		•	•	10 × 96	790301F
		Single Tray	•	•	•	10 × 96	LH-LF790301
50 – 1,000 µl	78 mm	Single Tray		•	•	10 × 96	791001F
		Single Tray	•	•	•	10 × 96	LH-LF791001
50 – 1,200 µl	90 mm	Single Tray		•	•	10 × 96	791211F
		Single Tray	•	•	•	10 × 96	LH-LF791211

For your guidance the tips are shown here in the actual size.
Filter tips are not recommended to be used simultaneously with Safe-Cone Filters.

Extended Standard Tips

Volume Range	Length	Packaging	Low Retention	Purity Level: Free of RNase, DNase, endotoxins	Purity Level: Pre-sterilised	Tips/Unit	Order Code
0.1 – 10 µl	46 mm	Single Tray		•		10 × 96	783210
		Single Tray		•	•	10 × 96	783211
0.5 – 200 µl	77.5 mm	Single Tray		•		10 × 96	LH-X780200
		Single Tray		•	•	10 × 96	LH-X780201
10 – 1,000 µl	102 mm	Single Tray		•		8 × 96	LH-X781000
		Single Tray		•	•	8 × 96	LH-X781001
50 – 1,200 µl	90 mm	Single Tray		•		10 × 96	791210
		Single Tray	•	•		10 × 96	LH-L791210
		Single Tray		•	•	10 × 96	791211
		Refill Pack		•		10 × 96	791212
		Refill Pack		•	•	10 × 96	791213

Extended Filter Tips

0.1 – 10 µl	46 mm	Single Tray		•	•	10 × 96	783201
0.5 – 200 µl	77.5 mm	Single Tray		•	•	10 × 96	LH-XF780201
10 – 1,000 µl	102 mm	Single Tray		•	•	8 × 96	LH-XF781001

For your guidance the tips are shown here in the actual size.
Extended filter tips are not recommended to be used simultaneously with Safe-Cone Filters.
The liquid handling properties of extended tips might differ from standard Optifit tips.

Maxi-volume Liquid Handling

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Midi Plus Pipetting Controller

Excellent Performance and Ergonomics

The Midi Plus is a lightweight electronic cordless pipetting controller, which allows aspiration from bottles and tubes, without the arm and hand elevations required in the case of serological or volumetric pipettes.

It fits all commonly used 1 – 100 ml glass or plastic pipettes, but can also be used with Sartorius 5 ml and 10 ml disposable tips. The speed can be fine-tuned by applying varying finger pressure to the operating buttons.

The Midi Plus is ideal, for example, in microbiological work: dispensing into a culture media dish can be performed carefully, drop by drop, without breaking the fine surface of the medium.

– Stepless speed control
– Hydrophobic autoclavable filter protects the device in case of over-aspiration
– Convenient fold-out bench stand supports the unit and pipette when not in use
– Low battery warning

Features

Pipette types	Plastic or glass 1 – 100 ml Pasteur pipettes 5 ml and 10 ml Sartorius pipette tips
Rechargeable during use	Yes
Speed control	Stepless adjustable control
Gravity dispensing	Yes
Stand	Attached support
Weight	207 g
Low battery indicator	Yes
Autoclavable parts	Nose cone, pipette holder and filter

Ordering Information

Order Code	Item	Qty/Unit
710931	Midi Plus Pipetting Controller with Universal Charger[1]	1
LH-7129120	Replacement filter, 0.45 µm, non-sterile, autoclavable	5
LH-7129130	Replacement filter, 0.2 µm, sterile	5
LH-711019	Adapter set (standard), autoclavable, including nose-cone and silicone adapter	1
LH-711017	Adapter set for 5 ml pipette tip, autoclavable, including nose-cone and silicone adapter	1
LH-711018	Adapter set for 10 ml pipette tip, autoclavable, including nose-cone and silicone adapter	1
780300	Optifit Tip 5 ml (length 150 mm)	100
780308	Optifit Tip 5 ml (length 150 mm)	1,000
780310	Midi Plus Tip 10 ml (length 242 mm)	100

[1] Supplied with a universal charger (incl. EU, UK, US | JPN, AUS, KOR and CHN plugs)

Prospenser Plus and Prospenser

Dispensing Made Easy

Chemical Resistance
Prospenser and Prospenser Plus offer excellent chemical resistance thanks to their high quality materials. The ceramic piston is chemically stable and compatible with an extremely wide range of liquids.

Light to Use
The operating handle is designed to be comfortable to hold while aspirating and light to press while dispensing. The piston moves smoothly, guaranteeing excellent results in everyday use.

Easily Replaceable Valves
Valves can be easily replaced by the user so there is no need to send the unit to be serviced.

Easy to Attach Aspiration Tube
The aspiration tube is easy to attach with a secure threaded connection. This prevents air entering the system and ensures consistent results.

Volume Setting
Prospenser and Prospenser Plus have an incremental volume setting enabling you to set the exact volume every time.

Versatile Accessories
There is a wide range of accessories available including bottle adapters, dispensing heads, and aspiration tubes.

Fully Autoclavable
Prospenser and Prospenser Plus are easy to disassemble for cleaning and are fully autoclavable.

SARTORIUS 2 YEAR WARRANTY

121°C Fully autoclavable

Prospenser Plus – Advanced Features

Media Recirculation System
Prospenser Plus is equipped with a media recirculation system that allows unused media to be recovered from the device and returned to the bottle. This ensures easy priming and minimizes media loss.

Connector for Drying Tube and Filters
Prospenser Plus has a luer connection at the back of the unit for drying tubes and filters. Drying tubes are recommended for humidity sensitive liquids.

Smart 360° Rotating Dispensing Head
The dispensing head can be turned to the required position without needing to turn the bottle. This ensures the bottle label is always visible to the user.

SARTORIUS 2 YEAR WARRANTY

121°C Fully autoclavable

Biotrate Digital Burette

for Convenient Titration

Sartorius Biotrate is a premium digital burette equipped with sophisticated functions for easy titration. Biotrate offers high chemical resistance and it is a smart solution for titrating various liquids accurately and safely. Biotrate is easy and convenient to use due to its large and clear electronic display, smooth operating wheels, and 360° rotating dispensing head.

High Chemical Resistance
– Highly resistant parts in the liquid pathway guarantee excellent chemical resistance.
– The softly-moving piston ensures reliable results.

Premium Quality
– High quality parts and materials guarantee highly accurate and precise results as well as long lifetime.

Convenient to Use
– Biotrate is comfortable to use due to soft touch operating wheels and 360° rotating dispensing head.
– Extremely smooth and light to operate. Ordering Information and Performance Specifications Chemical Resistance
– Biotrate offers excellent chemical resistance due to its high-quality materials, allowing the use of wide variety of liquids.

Light to Use
– The operating wheels are light and comfortable to use due to the soft touch surface and smoothly moving piston. These guarantee good ergonomics and excellent results in everyday use.

Long Life Battery
– Biotrate is powered with a long life battery so there is no need to plug in or re-charge the unit. The battery is also easy to replace by the user.

Large and Clear Display
– The display indicates clearly the measured volume, and showswhether you are measuring an aspirated or titrated volume.

Easy to Clean
– Biotrate is easy to disassemble for cleaning and autoclaving. The liquid pathway is fully autoclavable.

User Adjustment
– Biotrate can be adjusted for various liquids and it is easy to revert to factory settings. The display also indicates when a custom adjustment is in use.

Ordering Information

Prospenser Plus

Order Code	Item	Volume Range	Increment	Systematic Error (%)	Systematic Error (ml)	Random Error (%)	Random Error (ml)
LH-723070	Prospenser Plus	0.2 – 1 ml	0.05 ml	0.6	0.006	0.2	0.002
LH-723071	Prospenser Plus	0.4 – 2 ml	0.05 ml	0.6	0.012	0.2	0.004
LH-723072	Prospenser Plus	1 – 5 ml	0.10 ml	0.6	0.03	0.2	0.01
LH-723073	Prospenser Plus	2 – 10 ml	0.25 ml	0.6	0.06	0.2	0.02
LH-723074	Prospenser Plus	5 – 30 ml	0.50 ml	0.6	0.18	0.2	0.06
LH-723075	Prospenser Plus	10 – 60 ml	1.00 ml	0.6	0.36	0.2	0.02

Note: All Prospenser Plus models have A45 thread as a default and they are supplied with A32, A38, and S40 bottle adapters. Bottle not included.

Prospenser

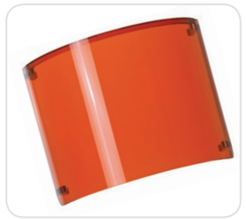
Order Code	Item	Volume Range	Increment	Systematic Error (%)	Systematic Error (ml)	Random Error (%)	Random Error (ml)
LH-723060	Prospenser	0.2 – 1 ml	0.05 ml	0.6	0.006	0.2	0.002
LH-723061	Prospenser	0.4 – 2 ml	0.05 ml	0.6	0.012	0.2	0.004
LH-723062	Prospenser	1 – 5 ml	0.10 ml	0.6	0.03	0.2	0.01
LH-723063	Prospenser	2 – 10 ml	0.25 ml	0.6	0.06	0.2	0.02
LH-723064	Prospenser	5 – 30 ml	0.50 ml	0.6	0.18	0.2	0.06
LH-723065	Prospenser	10 – 60 ml	1.00 ml	0.6	0.36	0.2	0.02

Note: All Prospenser models have A32 thread as a default and they are supplied with A28, S40, and A45 bottle adapters. Bottle not included.

Biotrate Digital Burette

Order Code	Item	Nominal Volume	Readability	Systematic Error (%)	Systematic Error (ml)	Random Error (%)	Random Error (ml)
LH-723080	Biotrate	10 ml	0.01 ml	0.3	0.03	0.1	0.01
LH-723081	Biotrate	20 ml	0.01 ml	0.2	0.04	0.1	0.02
LH-723082	Biotrate	50 ml	0.01 ml	0.2	0.10	0.1	0.05

Note: All Biotrate models have A45 thread as a default and they are supplied with A32, A38, and S40 bottle adapters. Bottle not included.



UV-Protection Window Biotrate is supplied with an amber coloured replacement window for protecting light sensitive media.

Bottle support, for bottles 75 – 120 mm

Aspiration tube, 310 mm

Dispensing head, 1.5 mm spiral

Accessories

Biotrate

Order Code	Item	Material	Biotrate
LH-721650	Dispensing head, standard	FEP	✓
LH-721651	Dispensing head, fine tip	FEP	✓
LH-721648	Dispensing head, 1.5 mm spiral	FEP	✓
LH-721652	Dispensing head, 0.4 m adjustable	FEP	✓
LH-721653	Dispensing head, luer lock	FEP | PP	✓
LH-721654	Dispensing head, luer lock	FEP | PFA	✓
LH-721678	Aspiration tube, 310 mm	FEP	✓
LH-721679	Aspiration tube, 400 mm	FEP	✓
LH-721682	Recirculation tube, 70 mm	FEP	✓
LH-721689	Bottle adapter, A28	ETFE	✓
LH-721684	Bottle adapter, A28	PP	✓
LH-721683	Bottle adapter, A32	PP	✓
LH-721688	Bottle adapter, A32	ETFE	✓
LH-721686	Bottle adapter, A38	PP	✓
LH-721733	Bottle adapter, A38	ETFE	✓
LH-721685	Bottle adapter, A38 | 430	PP	✓
LH-721732	Bottle adapter, A38 | 430	ETFE	✓
LH-721687	Bottle adapter, S40	PP	✓
LH-721734	Bottle adapter, S40	ETFE	✓
LH-721735	Bottle adapter, NS29 | 32	Silicone	✓
LH-721743	Bottle support, for bottles 75 – 120 mm	Silicone	✓

Prospenser Plus and Prospenser

Order Code	Item	Material	Prospenser Plus	Prospenser	Prospenser
			All models	1, 2, 5 & 10 ml	30 & 60 ml
LH-721647	Dispensing head, standard	FEP	✓		
LH-721655	Dispensing head, standard	FEP		✓	
LH-721656	Dispensing head, standard	FEP			✓
LH-721648	Dispensing head, 1.5 mm spiral	FEP	✓		
LH-721649	Dispensing head, 3.0 mm spiral	FEP	✓		
LH-721657	Dispensing head, spiral	FEP		✓	
LH-721658	Dispensing head, spiral	FEP			✓
LH-721653	Dispensing head, luer lock	FEP | PP	✓		
LH-721654	Dispensing head, luer lock	FEP | PFA	✓		
LH-721659	Dispensing head, luer lock	FEP | PP			✓
LH-721660	Dispensing head, luer lock	FEP | PFA			✓
LH-721678	Aspiration tube, 310 mm	FEP	✓		✓
LH-721680	Aspiration tube, 310 mm	FEP		✓	
LH-721679	Aspiration tube, 400 mm	FEP	✓		✓
LH-721681	Aspiration tube, 400 mm	FEP		✓	
LH-721682	Recirculation tube, 70 mm	FEP	✓		
LH-721736	Bottle adapter, A25	PP		✓	✓
LH-721737	Bottle adapter, A28	PP		✓	✓
LH-721689	Bottle adapter, A28	ETFE	✓		
LH-721684	Bottle adapter, A28	PP	✓		
LH-721683	Bottle adapter, A32	PP	✓		
LH-721688	Bottle adapter, A32	ETFE	✓		
LH-721686	Bottle adapter, A38	PP	✓		
LH-721733	Bottle adapter, A38	ETFE	✓		
LH-721738	Bottle adapter, A38	PP		✓	✓
LH-721685	Bottle adapter, A38 | 430	PP	✓		
LH-721732	Bottle adapter, A38 | 430	ETFE	✓		
LH-721741	Bottle adapter, A45	ETFE		✓	✓
LH-721739	Bottle adapter, A45	PP		✓	✓
LH-721687	Bottle adapter, S40	PP	✓		
LH-721734	Bottle adapter, S40	ETFE	✓		
LH-721740	Bottle adapter, S40	PP		✓	✓
LH-721742	Bottle adapter, S40	ETFE		✓	✓
LH-721735	Bottle adapter, NS29 | 32	Silicone	✓		
LH-721743	Bottle support, for bottles 75 – 120 mm	Silicone	✓	✓	✓

Pipetting Academy

Table of Contents

Pipetting Academy

Training for Better Performance, Ergonomics and Safety

Sartorius Pipetting Academy offers insight and training for pipetting related topics. It's a comprehensive combination of theory and practice that provides you with useful knowledge and tips for your daily work. Thousands of laboratory professionals around the globe have been trained at the Pipetting Academy over the last two decades.

Pipetting Academy Training Modules

Basics of Pipetting Module
Basics module brings together the essentials of pipetting techniques, ergonomics, and calibration. It is an excellent package for anyone who is new to pipetting or feels a need to polish pipetting practices.
In basic module you will learn:
– to choose the right equipment
– the basics of pipetting techniques
– the best practices in lab ergonomics
– daily maintenance and checking of pipettes

Ergonomics Module
The ergonomics module is intended for laboratory personnel and occupational and health professionals who are interested in improving the work ergonomics, minimizing ergonomic risk factors and preventing musculoskeletal disorders. In the ergonomics module you will learn:
– to recognize the ergonomic risk factors in pipetting and lab work
– to select the right tools and working postures
– to apply the best ergonomics and make your work more enjoyable

Pipetting Techniques Module
Pipetting is a precision task influenced by multiple factors such as equipment, pipetting techniques, liquids, and environmental conditions. In pipetting techniques module you will learn:
– to understand the influence of pipetting techniques on pipetting results
– to identify the influence of different error sources on pipetting results
– how to select pipetting tools and techniques for different liquids and conditions

Pipetting in Cell Culture Applications Module
Working in cell culture lab has special requirements in terms of techniques and the purity of equipment. In the cell culture module you will learn:
– how to avoid contamination
– the best pipetting practices for cell culture work
– to recognize the factors affecting your results

Pipetting Standards and Maintenance Module
Regular pipette maintenance and calibration ensures reliable results and conformance to regulation. In Pipetting Standards and Maintenance Module you will learn:
– to define your pipette maintenance program according to ISO 8655 standard
– to handle pipettes as precision instruments
– to ensure reliable performance of your pipettes

Best Practices for Working with Proteins
To achieve the best results, protein samples should have a high concentration and maintain a high biological activity. In this Pipetting Academy Module you will learn:
– best pipetting practices for protein work
– how to ensure your sample quality and yield

Best Pipetting Practices for Nucleic Acid Work
DNA and RNA extraction and qPCR assays are the cornerstones of many research in life science. In Best Pipetting Practices for Nucleic Acid Work you will learn
– to maintain sample quality and purity
– to avoid contamination
– to recognize the factors affecting your results

Best Practices for Cell-based Sample Preparation
Have you ever wondered if sample preparation could be the source of variance you see in your cell-based assays? In Best practices for Cell-based Sample Preparation Pipetting Academy you will learn:
– the aspects that affect your cell-based assays with Incucyte or IQue screener
– how to reduce variability between experiments
– how to speed up the workflow and improve your cell health with smart pipetting practices

Contact Sartorius to Set Up Your Tailored Pipetting Academy

– To sign up for the seminar, contact your local Sartorius representative
– The seminar will be held in the location most suitable to you and your colleagues
– The trainer will be certified to hold Pipetting Academy seminars
– Each participate will receive a certificate of participation after the seminar

See You at the Pipetting Academy!

Pipetting Recommendations

Hold the pipette in a vertical position during aspiration.

Avoid contamination with Safe-Cone Filters.

Tacta® volume lock can be used in two ways, by pressing it while changing the volune, or by sliding it up to open it, and back to lock it.

Preparations Before Pipetting

– Use the tip specified by the manufacturer.
– Ensure that the pipette and the tip have been tested according to ISO 8655 and the tip is seated correctly.
– Make sure pipettes have been correctly calibrated.
– Check that the pipette, tip and liquid are all at the same temperature.
– When pipetting liquids with temperatures different to the ambient temperature, do not pre-rinse the tip. Change the tip after each pipetting.
– Ensure that any fluid viscosity variations have been accounted for and the correct technique is employed, i.e. reverse pipetting.
– If handling infectious or radioactive agents make sure appropriate shielding and other precautions protect the operator.
– Use Safe-Cone Filter in the tip cone whenever possible.
– Use racked tips when possible for best ergonomics

While Pipetting

– Hold the pipette in a vertical position, while aspirating. Tilting the pipette at an angle causes a volume greater than the set volume of liquid to enter the tip.
– In most cases, pre-rinsing of the tip is recommended, to achieve accurate results. Do not pre-rinse the tip, if the temperature of the liquid is different to the ambient temperature.
– When aspirating fluid, the pipette tip should normally be immersed to a depth of 2 – 3 mm.
– When using a mechanical pipette, operate the piston with a smooth and consistent thumb action, for repeated results without foaming or bubbles.
– You should pipette against the inside wall of the receiving vessel. Remove the tip by drawing it upwards against the inside wall.
– Ensure that the pipette blow out action is fully activated.
– Ensure that the volume is still set at the required position. A pipette with a volume locking mechanism is recommended, in order to avoid accidental volume change during pipetting.
– Avoid laying the pipette on its side while there is liquid in the tip. It may seep up into the mechanism.

Charging while pipetting is possible with Sartorius electronic pipettes.

Load the tip onto the pipette carefully and take advantage of the Optiload tip loading mechanism.

Clean the pipette before sending it to service.

Other Precautions

– Store the pipette on a stand when not in use – see page 46, on pipette stands, for more information. Electronic pipettes should be returned to their charging stands.
– Avoid dropping the pipette or allowing contact with dirt or grease.
– Change the Safe-Cone Filter regularly (recommendation after 50 to 250 pipetting cycles), and in every case of overaspiration.
– Never strike the tip cone against the tip tray when loading the tip, as this can damage the pipette.
– Avoid exposing the unit to extreme temperature changes, humidity and dust (operating temperature from 15°C to 40°C).
– Service the pipette regularly.
– Clean the pipette thoroughly before sending it in for service. Decontaminate the pipette with 70% ethanol. Notify the service personnel of the purpose for which the instrument has been used. Postal services may refuse to deliver instruments used for hazardous materials. Make sure that a qualified person services the pipette.

WolfLabs

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct.
If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.