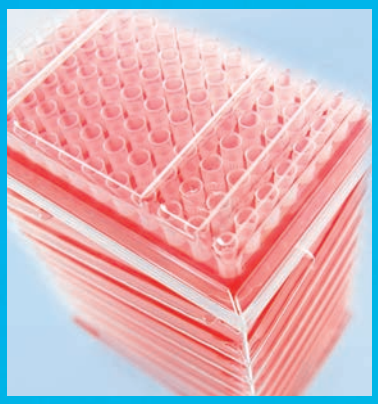
RAININ
Pipetting 360°

Rainin Catalog



2014/2015

Manual Pipettes
Electronic Pipettes
Multichannel Pipettes
Speciality Pipettes
Pipette Accessories
BioClean Tips
Liquidator 96
Reservoirs
Lite Touch Tubes
Sample Preparation Tips

Pipettes, Tips and Service

Superior Products for Peak Performance

METTLER TOLEDO

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Pipettes Tips Services

Experience the LTS Difference!

Protect Your Hands with Rainin LTS™

The patented Rainin LiteTouch™ System, cylindrical shaft and tip design provides a reliable, consistent seal without excessive force.

LTS thin-wall tips incorporate a small, well-defined seal area and a positive stop that lets you know exactly when the seal is made. With LTS, there is no need to jam or pound the shaft into the tip.

Pipetting is the most repetitive task in many laboratories

- Many researchers commonly pipette two to four hours per day

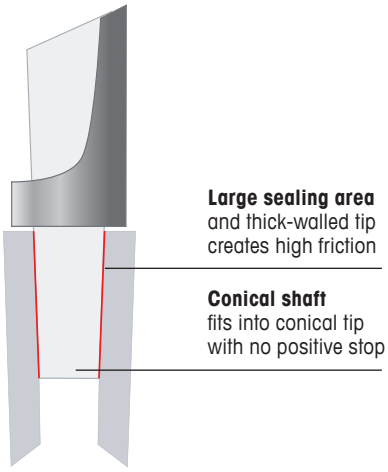
Without LTS, pipetting is a high-force activity

- Plunger forces on traditional pipettes can exceed 4 kg
- The force required to eject a traditional tip can reach 10 kg

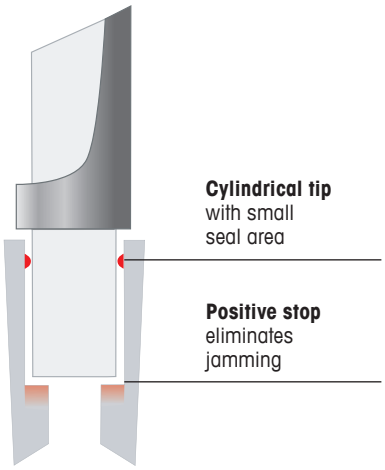
The high cost of hand fatigue due to high force and repetition lead to:

- Reduced pipetting accuracy
- Decreased productivity
- Repetitive strain injuries

Traditional Pipetting
High Forces



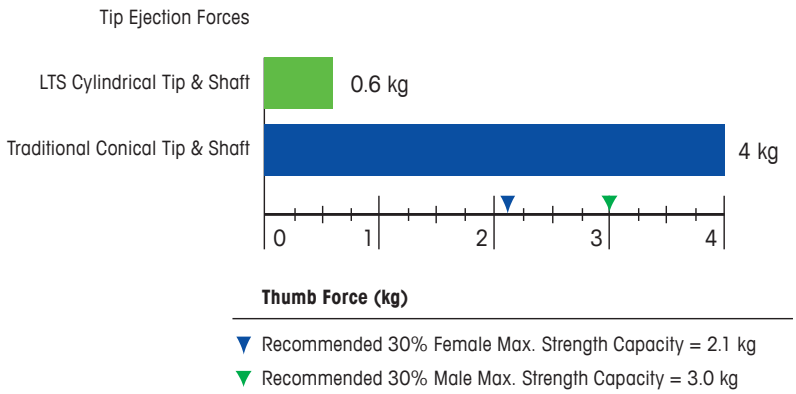
LTS cylindrical tip and shaft
Low Forces



Gain Greater Accuracy and Higher Productivity
LTS Reduces Tip Ejection Forces by 85%

Tip ejection forces for traditional conical tip/shaft designs average 4 kg, but can easily reach as high as 10 kg. With LTS, tip ejection force is only 0.6 kg!

Tip forces shown below are for LTS and a competitor's traditional pipette. Less force results in less fatigue, with consistent sample pickup, consistently reproducible results, and better productivity.



Absolutely consistent sample pickup
Rainin multichannel pipettes with LTS provide consistent sample pick-up on every channel, every time. The positive stop indicates when a perfect seal is made, on all channels at once, without rocking, pushing or tightening tips by hand.

LTS pipettes and tips save you time and money:
- No time wasted making sure each channel is secure
- Even sample pickup across all channels
- Consistent, reproducible results.

The Ultimate Lab Assistants
Precision, Accuracy and Comfort

With the highest levels of accuracy and repeatability, Rainin pipettes enhance your lab's performance and help shorten your time-to-market or time-to-publish. And to protect you, we offer innovative ergonomic designs – including the patented LTS LiteTouch System – to minimize fatigue and injury, and reduce errors and inaccuracy.

Quality materials and construction
Rainin sources the highest quality materials to ensure efficient, reliable and secure pipetting. Our pipettes are built tough and rugged for low out-of-tolerance errors and low cost of ownership.

State-of-the-art manufacturing
Advanced manufacturing and testing processes greatly diminish mechanical drift and assure years of durable and reliable service.

Optimize your workflow
We offer a broad range of application-specific instruments and consumables to assure that researchers have the right tool for their specific application.

Single channel Pipettes
Rainin offers the most flexibility. We offer a broad range of manual and electronic pipettes to assure that you always have the right tool for a given application. Loaded with ergonomic and performance enhancing features, such as the innovative LTS LiteTouch System, look to Rainin for the optimal choice for just about every pipetting task.

Multichannel Pipettes
Rainin multichannel pipettes, a hassle-free way to enjoy the benefits of pipetting with multiple channels.
The LTS LiteTouch System gives an excellent seal without nozzle O-ring, resulting in absolutely consistent sample pickup on all channels, every time.

Liquidator 96
The Liquidator™ 96 pipetting system is a powerful personal research tool, pipetting 96 channels at the same time for maximum throughput. Accurate and efficient, Liquidator 96 maximizes workflow without adding the complexity of programming or need for dedicated technicians. Incredibly fast, Liquidator 96 offers outstanding precision and solid features for high throughput pipetting across many applications.

The Performance Champions.

Pipet-Lite XLS+
Accuracy, Precision and Ergonomics

Rainin Pipet-Lite XLS+ is METTLER TOLEDO's most advanced and ergonomic family of manual pipettes. They fit your hand like a glove and built rugged to provide years of accurate and precise performance.

Total hand comfort
With sure-fit handles, contoured finger-hooks, lighter springs and low-drag seals, you can comfortably use Pipet-Lite XLS+ pipettes all day.

Smooth operation
The sealing system on XLS+ pipettes delivers a plunger stroke that is smooth, precise and requires less force than before. Perfect for pipetting applications that require delicate control!

Low plunger forces
Lighter springs, low-drag seal and Rainin Magnetic Assist™ technology all contribute the exceptionally low forces found in all XLS+ manual pipettes.

Lowest tip ejection force
XLS+ pipettes with Rainin's LTS™ LiteTouch™ System reduce tip ejection to just 0.6 kg.

Silicone shock absorber
Built-in silicone shock absorber protects your thumb by reducing impact when ejecting tips.

Autoclavable
XLS+ single-channel pipettes are designed for easy autoclaving where it counts: the complete liquid end, including the seals and piston. Autoclaving won't compromise performance or feel.

RFID equipped
Every XLS+ pipette has an RFID ("radio frequency identification") tag to enable service calibration tracking and state-of-the-art asset management

Pipet-Lite XLS+
Performance You Can Trust

With the Rainin Pipet-Lite XLS+ family of pipettes, METTLER TOLEDO blends cutting-edge engineering and innovation to deliver highly reproducible results with exceptional comfort.

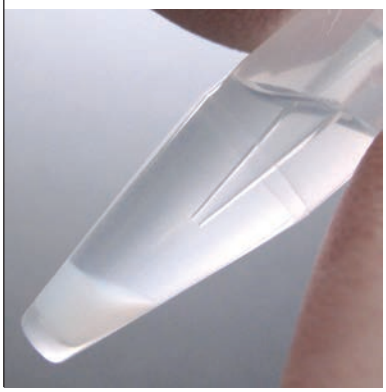
New elastomeric seals, the sure-fit handle, lighter springs and the patented Rainin LTS™ LightTouch™ System combine to deliver smooth, comfortable operation while significantly reducing your risk of repetitive strain injury.

RFID

All Rainin XLS+ pipettes are equipped with RFID tags for enhanced security, state-of-the-art inventory control and calibration tracking.

Total hand comfort
With sure-fit handles, contoured finger-hooks, lighter springs and low-drag seals, you can comfortably use Pipet-Lite XLS+ pipettes all day.

Smooth operation
The sealing system on XLS+ pipettes delivers a plunger stroke that is smooth, precise and requires less force than ever. Perfect for pipetting applications that require delicate control!



Secure volume lock
The snag-proof lock design on XLS+ pipettes prevents accidental volume drift while allowing for rapid volume adjustment, even while wearing gloves.

Single Channel
LTS and Traditional

Multichannel
8 and 12 channel

Adjustable Spacer
6 and 8 channel

Multichannel consistency
Rainin's patented LTS LiteTouch System assures a leak free seal on every channel, and with minimal force. With no nozzle o-rings, Pipet-Lite XLS+'s design eliminates a weak point and potential source of contamination.

Ultimate flexibility
With our Adjustable Spacer model, all it takes is a simple twist of a dial to quickly move samples between different plate and tube formats.

Pipet-Lite XLS+ Single Channels
Performance You Can Trust

Pipet-Lite™ XLS+™ offers proven accuracy, precision and ergonomics.

The new Pipet-Lite™ XLS+™ is one of the most ergonomic accurate and precise pipettes on the market. Its comfortable handle, light springs and "Magnetic Assist™" technology, ensure light and smooth operation, while significantly reducing the risk of repetitive strain injuries. Pipet-Lite XLS+ is the world's first pipette equipped with RFID tags for advanced calibration and asset management. Tip shaft options included low-force LTS™ for improved ergonomics and universal fit.

Ergonomic champion

Whether actively in use or resting in your hand, a pipette must fit and feel right at all times. Through subtle improvements to the highly acclaimed Pipet-Lite's grip, body, finger-hook and surface texture, we've made Pipet-Lite XLS+ one of the most balanced and comfortable pipettes available.

Standard features

- Ergonomic handle design
- Improved volume adjustment lock prevents drift
- Built-in shock absorber inside the tip ejector reduces thumb impact
- Autoclavable shaft assembly
- Available with LTS, and universal tip/shaft configuration for use with universal tips
- Corrosion free, easy to clean tip ejector
- RFID tags for asset management
- New "stictionless" sealing system

Technical Data

Ordering Information

LTS Models	MT Order No.	Volume Range
L-2XLS+	17014393	0.1–2 µl
L-10XLS+	17014388	0.5–10 µl
L-20XLS+	17014392	2–20 µl
L-100XLS+	17014384	10–100 µl
L-200XLS+	17014391	20–200 µl
L-300XLS+	17014405	20–300 µl
L-1000XLS+	17014382	100–1000 µl
L-2000XLS+	17014390	200–2000 µl
*L-5000XLS	17011790	500–5000 µl
*L-10MLXLS	17011783	1000 µl– 10 ml
*L-20MLXLS	17011788	2000 µl– 20 ml
L-STARTXLS+	17014406	Starter Kits**

Traditional Tip Models	MT Order No.	Volume Range
SL-2XLS+	17014413	0.1–2 µl
SL-10XLS+	17014409	0.5–10 µl
SL-20XLS+	17014412	2–20 µl
SL-100XLS+	17014408	10–100 µl
SL-200XLS+	17014411	20–200 µl
SL-300XLS+	17014414	20–300 µl
SL-1000XLS+	17014407	100–1000 µl
SL-2000XLS+	17014410	200–2000 µl
SL-5000XLS	17011801	500–5000 µl
SL-10MLXLS	17011795	1000 µl– 10 ml
SL-STARTXLS+	17014415	Starter Kits**

Specifications

Model	Volume µl	Increment µl	Accuracy %	Accuracy µl (±)	Precision %	Precision µl (≤)
L-2XLS+, SL-2XLS+	0.2	0.002	12.0	0.024	6.0	0.012
	1		2.7	0.027	1.3	0.013
	2		1.5	0.030	0.7	0.014
L-10XLS+, SL-10XLS+	1	0.02	2.5	0.025	1.2	0.012
	5		1.5	0.075	0.6	0.03
	10		1.0	0.1	0.4	0.04
L-20XLS+, SL-20XLS+	2	0.02	7.5	0.15	2.0	0.04
	10		1.5	0.15	0.5	0.05
	20		1.0	0.2	0.3	0.06
L-100XLS+, SL-100XLS+	10	0.2	3.5	0.35	1.0	0.1
	50		0.8	0.4	0.24	0.12
	100		0.8	0.8	0.15	0.15
L-200XLS+, SL-200XLS+	20	0.2	2.5	0.5	1.0	0.2
	100		0.8	0.8	0.25	0.25
	200		0.8	1.6	0.15	0.3
L-300XLS+, SL-300XLS+	20	0.5	2.5	0.75	1.0	0.3
	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
L-1000XLS+, SL-1000XLS+	100	2	3.0	3.0	0.6	0.6
	500		0.8	4.0	0.2	1.0
	1000		0.8	8.0	0.15	1.0
L-2000XLS+, SL-2000XLS+	200	2	3.0	6.0	0.6	1.2
	1000		0.8	8.0	0.2	2.0
	2000		0.8	16.0	0.12	2.4
L-5000XLS, SL-5000XLS	500	5	2.4	12.0	0.6	3.0
	2500		0.6	15.0	0.2	5.0
	5000		0.6	30.0	0.16	8.0
L-10MLXLS, SL-10MLXLS	1 ml	20	5	50.0	0.6	6.0
	5 ml		1	50.0	0.2	10.0
	10 ml		0.6	60.0	0.16	16.0
L-20MLXLS	2 ml	20	5.0	100.0	0.6	12.0
	10 ml		1.0	100.0	0.2	20.0
	20 ml		0.6	120.0	0.16	32.0

* The 5000 µL, 10 mL and 20 mL models do not appear the same as the photos.

** Include 20, 200, 1000 µL models, tips and accessories.

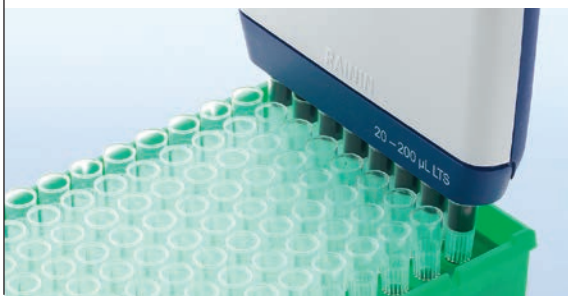
Pipet-Lite XLS+ Multichannels
Precision, Performance and Comfort

The Rainin multichannel Pipet-Lite™ XLS™+ is one of the most technically and ergonomically advanced manual multichannel pipettes on the market.

Equipped with the patented Rainin LiteTouch™ System (LTS™) technology, these multichannel pipettes are fast loading, easy on your hand and delivers precise and consistent sample pickup across all channels. Built rugged and with the finest materials available, these multichannels will deliver years of consistent, reliable service. And like all Rainin XLS pipettes, the embedded RFID tag enables calibration tracking.

Absolute consistency
New mechanical designs on all XLS+ multichannel pipettes assure the highest performance and industry-leading channel-to-channel consistency.

Fast tip loading
LTS tips for a perfect seal with minimal force, making them as easy to eject as they are to load. Absolutely no rocking or hand-tightening required!



Pipet-Lite XLS+ Multichannel with LTS
Solves Common Multichannel Problems

Advanced Functionality

- Consistent sample loading across all channels
- Easy tip mounting and ejection
- Reliable leak-free seal – every time
- Improved ergonomic handle design with fingerhook
- Improved volume adjustment lock prevents drift
- Built-in shock absorber inside the tip ejector reduces thumb impact and stress when ejecting tips
- Pipette's RFID tags can be queried for asset management
- Available in 8 and 12-channel formats

Ordering Information

Cat. No.	MT Order No.	Volume Range
8 Channel		
L8-10XLS+	17013802	0,5–10 µl
L8-20XLS+	17013803	2–20 µl
L8-50XLS+	17013804	5–50 µl
L8-200XLS+	17013805	20–200 µl
L8-300XLS+	17013806	20–300 µl
L8-1200XLS+	17014496	100–1200 µl
12 Channel		
L12-10XLS+	17013807	0,5–10 µl
L12-20XLS+	17013808	2–20 µl
L12-50XLS+	17013809	5–50 µl
L12-200XLS+	17013810	20–200 µl
L12-300XLS+	17013811	20–300 µl
L12-1200XLS+	17014497	100–1200 µl

Specifications

Model	Volume µl	Increment µl	Accuracy %	Accuracy µl (±)	Precision %	Precision µl (≤)
10 µL	1.0	0.02	2.5	0.025	1.2	0.012
	5.0		1.5	0.075	0.6	0.03
	10.0		1.0	0.1	0.4	0.04
20 µL	2	0.02	7.5	0.15	2.0	0.04
	10		1.5	0.15	0.5	0.05
	20		1.0	0.2	0.3	0.06
50 µL	5	0.05	3.5	0.18	1.5	0.075
	25		1.2	0.3	0.4	0.1
	50		0.8	0.4	0.2	0.1
200 µL	20	0.2	2.5	0.5	1.0	0.2
	100		0.8	0.8	0.25	0.25
	200		0.8	1.6	0.15	0.3
300 µL	30	0.5	2.5	0.75	1.0	0.3
	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
*1200 µL	100	2	3.6	3.6	0.6	0.6
	600		0.8	4.8	0.2	1.2
	1200		0.8	9.6	0.15	1.8

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Pipet-Lite XLS+ Adjustable Spacer
Speeds Your Work Flow

With the Pipet-Lite™ XLS+™ Adjustable Spacer, we put a new twist on pipetting: a 6 or 8-channel pipette with adjustable nozzles to quickly transfer liquids from one format to another.

Its speed, ease and accuracy make it ideal for Genomic, Proteomic, Tissue Culture and Cell Culture applications. For example, aspirate samples from microcentrifuge tubes, turn the spacing knob and dispense into a 24, 48, or 96-well plate. And like all Pipet-Lite XLS models, its embedded RFID tag enables advanced calibration tracking.

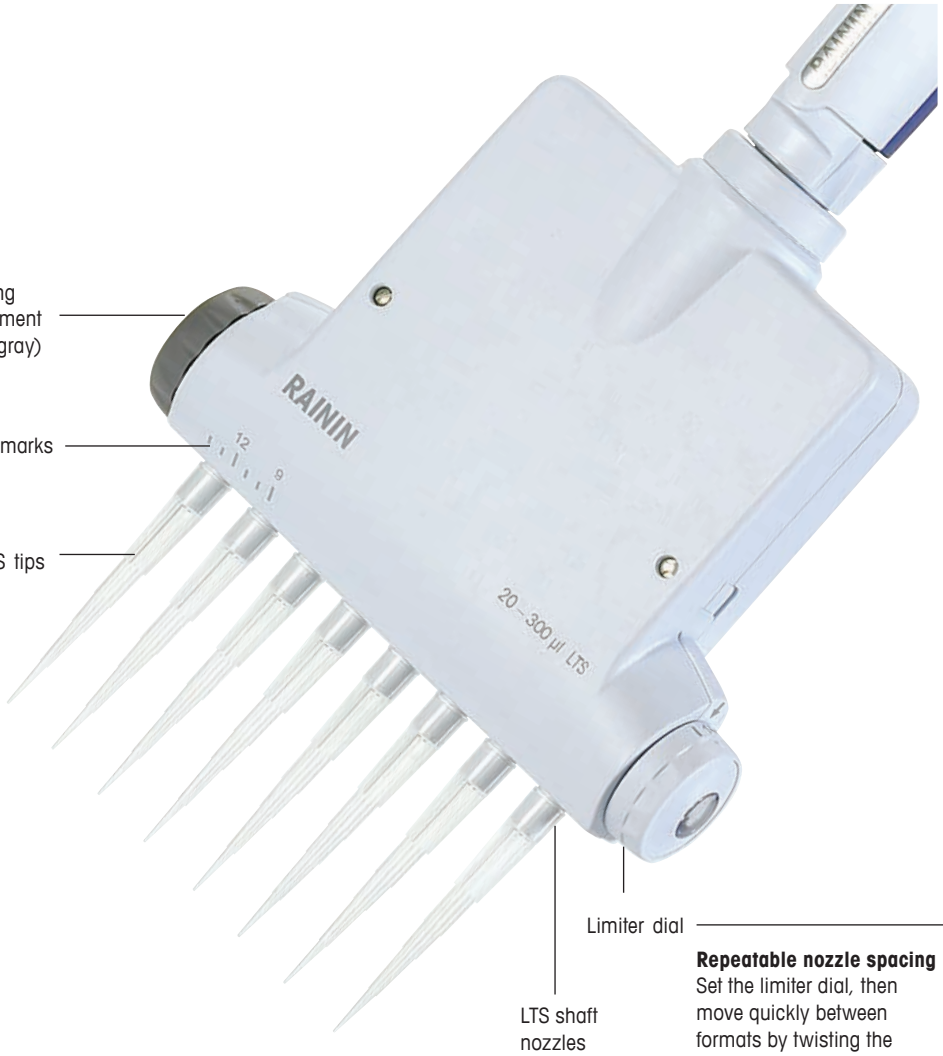
Advanced functionality

- Fits most standard format plates and tube arrays
- Precise nozzle spacing adjustment mechanism for reproducible tip spacing from experiment to experiment
- Spacing ranges:
  6-channel, 9–19 mm and 8-channel, 9–14 mm
- Improved volume adjustment lock prevents drift
- Available in: 6-channel, 300 and 1200 µl volumes
  8-channel, 50, 300 and 1200 µl volumes
- Suitable for use with 24, 48, 96-well plates, microcentrifuge tubes
- Uses LTS tips for consistent pickup.
- Pipette's RFID tags can be queried for asset management

LTS™ LiteTouch™ tip ejection system

The solution for common multichannel problems

- Consistent sample loading
- No nozzle ring
- Lower forces – no more tired hands



Spacing adjustment (dark gray)

Spacing marks

LTS tips

Fast spacing change
Set the nozzle spacing between 9 and 14 mm (8 channel) or 9 and 19 mm (6 channel) to quickly move samples between different plate and tubing formats. The adjustable spacer is ideally suited for routine micro-well work when you need to change formats quickly.

Limiter dial

LTS shaft nozzles

Repeatable nozzle spacing
Set the limiter dial, then move quickly between formats by twisting the spacing knob to the maximum setting. A detent on the limiter dial sets the maximum nozzle spacing, so users can move back and forth between formats with speed, precision and consistency.

Ordering Information

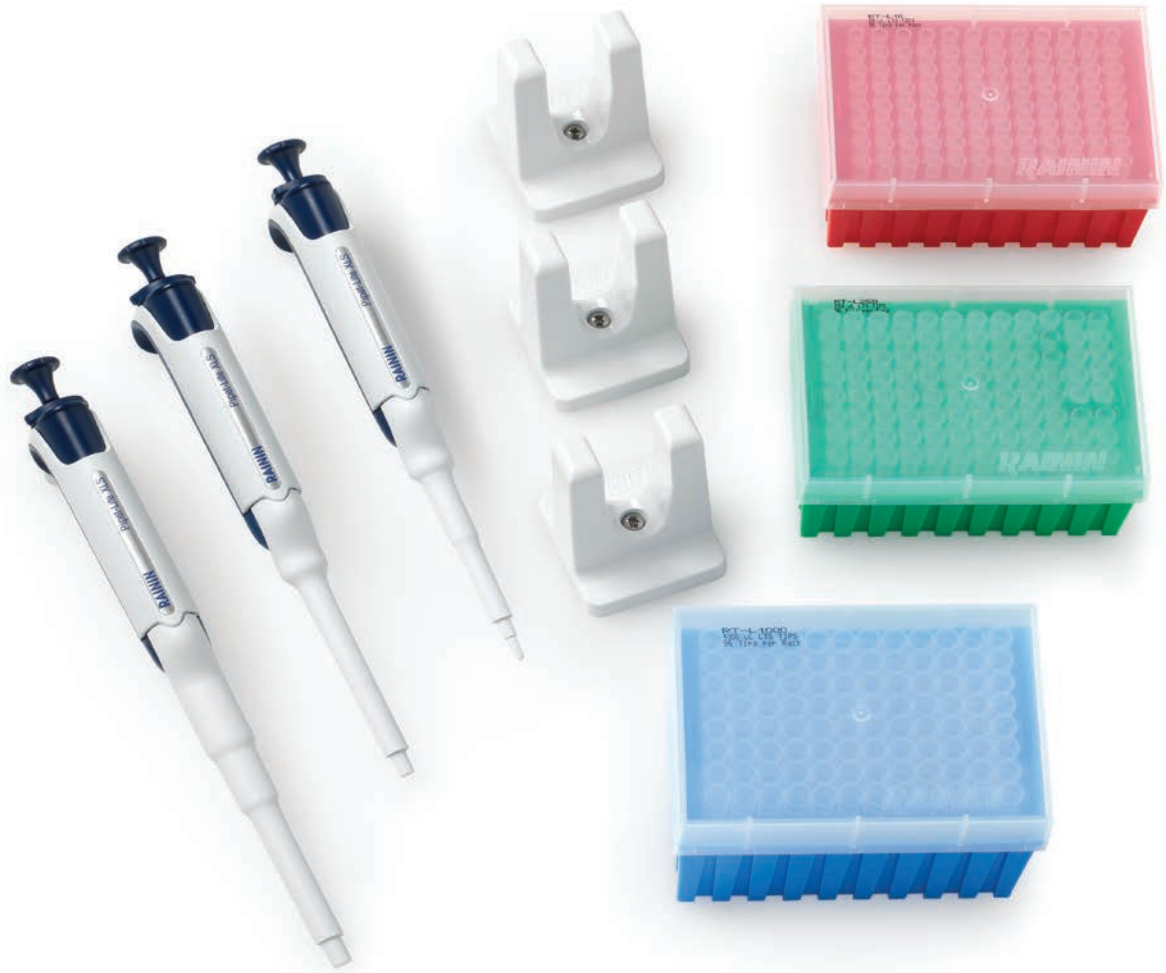
Cat. No.	MT Order No.	Volume Range
6 Channel		
LA6-300XLS	17011841	20–300 µl
LA6-1200XLS	17011840	100–1200 µl
8 Channel		
LA8-50XLS	17011844	5–50 µl
LA8-300XLS	17011843	20–300 µl
LA8-1200XLS	17011842	100–1200 µl

Specifications

Model	Volume	Increment	Accuracy		Precision	
	µl	µl	%	µl (±)	%	µl (≤)
LA8-50XLS	5	0.05	3.5	0.18	1.5	0.075
	25		1.2	0.3	0.4	0.1
	50		0.8	0.4	0.2	0.1
LA6-300XLS, LA8-300XLS	20	0.5	2.5	0.75	1.0	0.3
	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
LA6-1200XLS, LA8-1200XLS	100	2.0	3.6	3.6	0.60	0.60
	600		0.8	4.8	0.20	1.20
	1200		0.8	9.6	0.15	1.80

Starter Kits

Starter Kits and Accessories



Great for start-up labs

Choose Pipet-Lite XLS+ LTS or traditional-shaft pipette starter kits with the three most popular models – 20, 200 and 1000 µl. Starter kits also contain 3 racks of tips and pipette Hang-Ups, and you save money.

L-START XLS+

Pipet-Lite XLS+ pipettes with LTS:
L-20 XLS+, L-200 XLS+, L-1000 XLS+
Racks of LTS tips:
RT-L10, RT-L250, RT-L1000
Hang-Ups: HU-M3

SL-START XLS+

Pipet-Lite XLS+ pipettes for universal tips:
SL-20 XLS+, SL-200 XLS+, SL-1000 XLS+
Racks of traditional tips:
RT-20F, RT-250, RT-1000
Hang-Ups: HU-M3

Accessories for Manual Pipettes
Protect Your Investment

Protect your high-performance pipettes. From pipette storage options to practical reservoirs, these accessories help you to make the most of your pipettes.

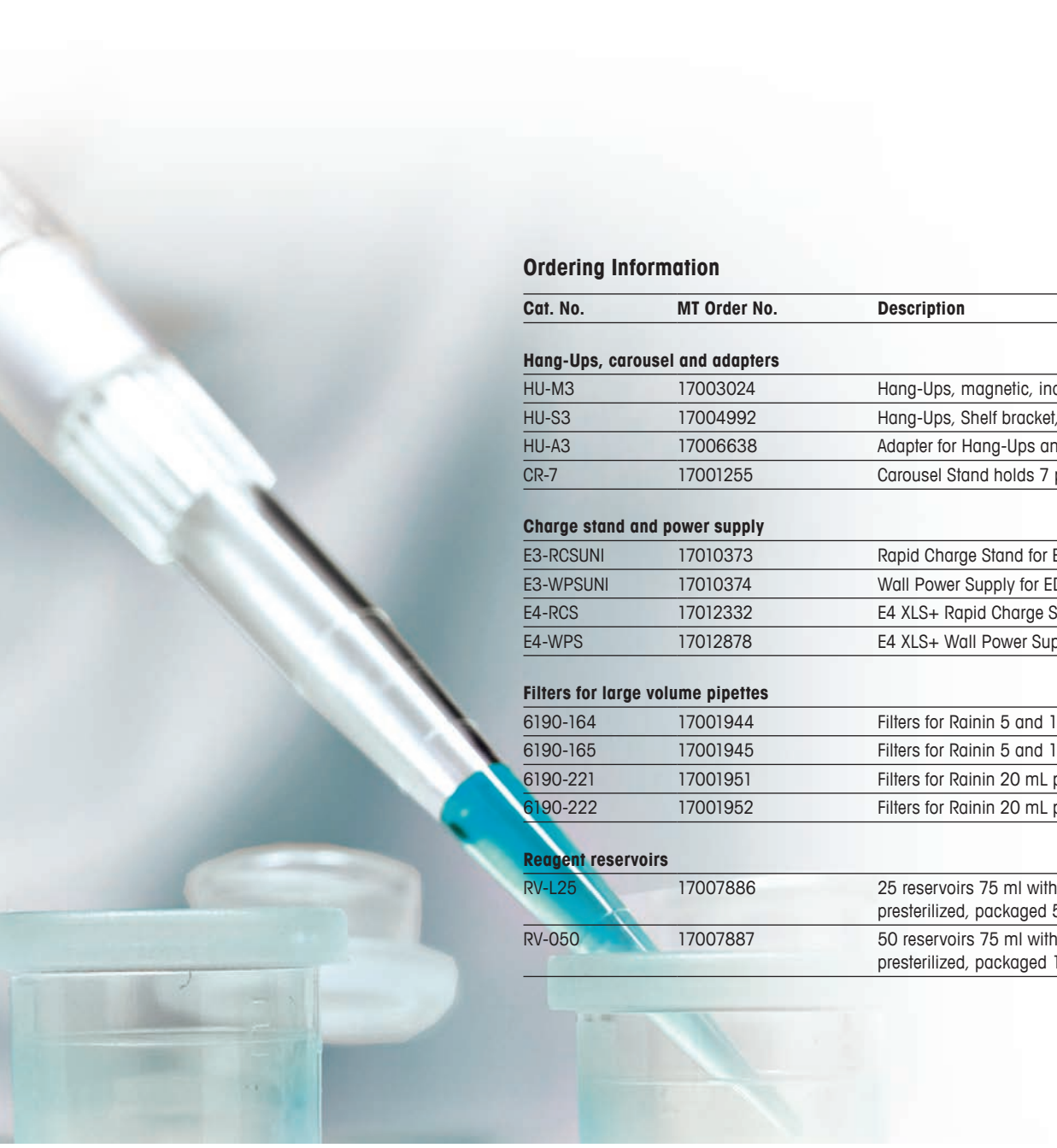
Hang-Ups™

HU-M3
Individual Hang-Ups with magnets. Adhesive disks included for mounting to non-ferrous surfaces. 3 per package.

HU-S3
Shelf Hang-Ups without magnets. Mounts to lab shelf with clamp and adjustable screws. 3 fixed to bracket.

Pipette stand

CR-7
Holds 7 Rainin pipettes, Pos-D, and Pipetman. Rotates for easy access. Sturdy base won't tip over.



Ordering Information

Cat. No.	MT Order No.	Description
Hang-Ups, carousel and adapters		
HU-M3	17003024	Hang-Ups, magnetic, individual, set of three
HU-S3	17004992	Hang-Ups, Shelf bracket, set of three
HU-A3	17006638	Adapter for Hang-Ups and Carousel, set of three
CR-7	17001255	Carousel Stand holds 7 pipettes
Charge stand and power supply		
E3-RCSUNI	17010373	Rapid Charge Stand for EDP3
E3-WPSUNI	17010374	Wall Power Supply for EDP3
E4-RCS	17012332	E4 XLS+ Rapid Charge Stand
E4-WPS	17012878	E4 XLS+ Wall Power Supply
Filters for large volume pipettes		
6190-164	17001944	Filters for Rainin 5 and 10 mL pipettes 100/pkg
6190-165	17001945	Filters for Rainin 5 and 10 mL pipettes 1000/pkg
6190-221	17001951	Filters for Rainin 20 mL pipettes 100/pkg
6190-222	17001952	Filters for Rainin 20 mL pipettes 500/pkg
Reagent reservoirs		
RV-L25	17007886	25 reservoirs 75 ml with lids; presterilized, packaged 5 bags of 5 each
RV-050	17007887	50 reservoirs 75 ml without lids; presterilized, packaged 10 bags of 5 each

Adapter

Ideal for multichannel and electronic pipettes, the adapter slips easily into a Hang-Up (HU-M3) or Carousel Stand (CR-7). No tools are required.
3 per package.

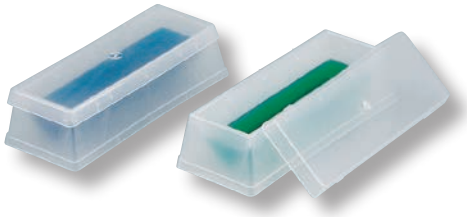
Adapter in Hang-Up

Filters

These pipette filters prevent liquids or aerosols from entering the shafts on large-volume pipettes.

Reagent reservoirs

Sterile polypropylene reagent reservoirs for use with single- and multichannel pipettes. Reservoirs are stable and stackable, available with or without lid. Large 75 ml capacity with easy-to-read calibration markings.



Available with or without lid

Pipette Management Simplified.

Smart Pipette Management
with RFID

RFID is "Radio Frequency IDentification" and with nothing more than the Rainin RFID Reader and LabX™ Direct Pipette-Scan™ software, you can enhance how your lab manages pipettes. The Rainin pipette management solution is easy to use and highly adaptable to your workflow.

- Scan a pipette's stored data (calibration and service, for example) by placing the pipette on the RFID reader
- Create custom profiles for each pipette and transfer that data directly to the pipette's RFID tag
- Integrate your LabX data with third-party asset- and calibration-management applications (LabX data exports easily as Microsoft® Excel®, Word® or text files)

Microsoft® Excel®, Word® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

RFID Reader and LabX Software
Pipette Management Simplified

Transform your workflow with the Rainin Pipet-Lite™ XLS+™ family of RFID-equipped pipettes. In seconds, everything you want to know about a pipette can be displayed on a PC screen. With seemingly endless possibilities, the Rainin RFID reader and LabX™ Direct Pipette-Scan™ software are all you need to communicate with any Rainin XLS+ pipette.

With its speed and ease, the Rainin RFID solution to better asset management complements your workflow and instills confidence in your lab's compliance with SOPs and Regulatory Agencies.

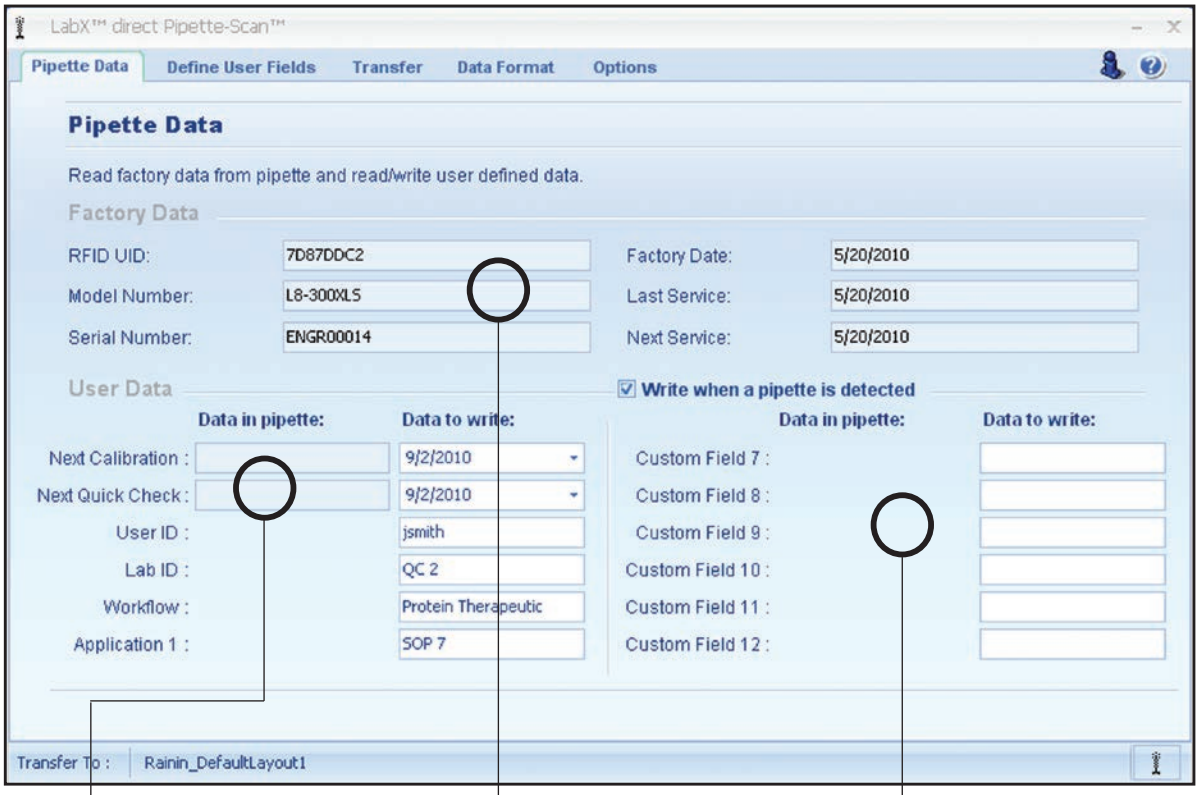
Your entire LabX database is exportable to Microsoft® Word®, Excel® or text format. With such flexibility, LabX data is accessible for spreadsheet and reports, and can be integrated with most any asset management system.

- **When was this pipette calibrated?**
- **Is it due for service?**
- **Who does it belong to?**
- **What application is it being used for?**

Scan your pipette
LabX uses the RFID reader to access the pipette's data. Once scanned, LabX displays the pipette's complete profile, including serial number, date of manufacture, calibration due date and any unique attributes assigned.

Create custom profiles
Assign unique attributes (user, lab, inventory number, etc.) using LabX's 12 customizable data fields. Fast access to each pipette's calibration and service data reduces the possibility of performance and/or compliance-related rework.

Microsoft® Excel®, Word® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.



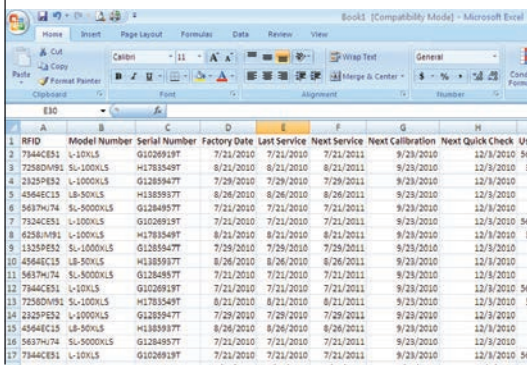
"Next Calibration" and "Next Quick Check" are standard fields; all other User Data fields are customizable.

Factory Data – Model Number, Serial Number and Date (Last Service) – is secure and cannot be changed.

Custom data fields can all be renamed.

Export your data

LabX data easily exports to Microsoft® Word®, Excel®, or as text for easy integration with other asset management applications.



Another Rainin innovation

RFID tags in every Pipet-Lite XLS+ help you manage calibration data and workflow to optimize your efficiency. A pipetting first!

RFID Reader and LabX Software
Product Information

Transform your workflow

- Quickly check your RFID-equipped pipette for:
  - Calibration date, service date, model and serial numbers
  - Any custom data you choose
- Export data to Microsoft® Word® and Excel®, or as a text file
- Upload data to third party calibration/asset management system

Other features

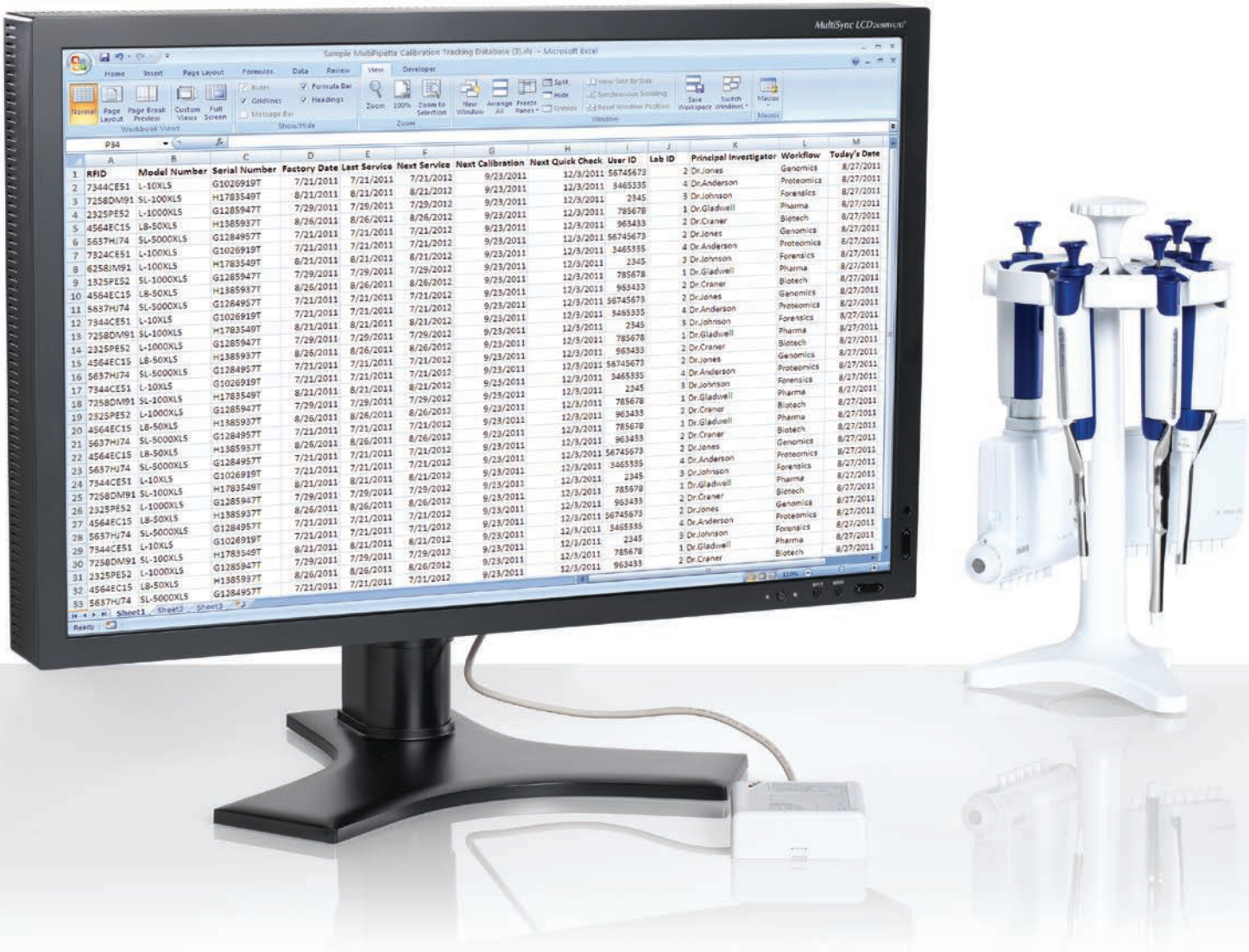
- Supported languages: Chinese, Czech, Danish, English, French, German, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Russian, Spanish, Swedish
- Compatible with Microsoft® Windows® XP/Vista/7

Specifications

RFID Reader Read/Write Operating Range	Up to 5 cm from pipette's RFID tag
Interface	USB-HID
Compatibility	PC Only (Windows Native USB)
Operating (Ambient) Temperature	–10° to 55° C
Footprint	8 cm x 8 cm
Media	3" CD-ROM

Ordering Information

Cat. No.	MT Order No.	Volume Range
RFID-KIT	17011966	Rainin RFID Kit includes RFID Reader and LabX Direct Pipette-Scan software
RFID-RDR	17011964	Rainin RFID Reader
LABX-PIPET	17011965	LabX Direct Pipette-Scan Software



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	RFID	Model Number	Serial Number	Factory Date	Last Service	Next Service	Next Calibration	Next Quick Check	User ID	Lab ID	Principal Investigator	Workflow	Today's Date
2	7344CE51	L-10XLS	G1026919T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	56745673	2	Dr.Jones	Genomics	8/27/2011
3	7258DM91	SL-100XLS	H1783549T	8/21/2011	8/21/2011	8/21/2012	9/23/2011	12/3/2011	3465335	4	Dr.Anderson	Proteomics	8/27/2011
4	2325PE52	L-1000XLS	G1285947T	7/29/2011	7/29/2011	7/29/2012	9/23/2011	12/3/2011	2345	3	Dr.Johnson	Forensics	8/27/2011
5	4564EC15	L8-50XLS	H1385937T	8/26/2011	8/26/2011	8/26/2012	9/23/2011	12/3/2011	785678	1	Dr.Gladwell	Pharma	8/27/2011
6	5637HJ74	SL-5000XLS	G1284957T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	963433	2	Dr.Craner	Biotech	8/27/2011
7	7324CE51	L-100XLS	G1026919T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	56745673	2	Dr.Jones	Genomics	8/27/2011
8	6258JM91	L-100XLS	H1783549T	8/21/2011	8/21/2011	8/21/2012	9/23/2011	12/3/2011	3465335	4	Dr.Anderson	Proteomics	8/27/2011
9	1325PE52	SL-1000XLS	G1285947T	7/29/2011	7/29/2011	7/29/2012	9/23/2011	12/3/2011	2345	3	Dr.Johnson	Forensics	8/27/2011
10	4564EC15	L8-50XLS	H1385937T	8/26/2011	8/26/2011	8/26/2012	9/23/2011	12/3/2011	785678	1	Dr.Gladwell	Pharma	8/27/2011
11	5637HJ74	SL-5000XLS	G1284957T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	963433	2	Dr.Craner	Biotech	8/27/2011
12	7344CE51	L-10XLS	G1026919T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	56745673	2	Dr.Jones	Genomics	8/27/2011
13	7258DM91	SL-100XLS	H1783549T	8/21/2011	8/21/2011	8/21/2012	9/23/2011	12/3/2011	3465335	4	Dr.Anderson	Proteomics	8/27/2011
14	2325PE52	L-1000XLS	G1285947T	7/29/2011	7/29/2011	7/29/2012	9/23/2011	12/3/2011	2345	3	Dr.Johnson	Forensics	8/27/2011
15	4564EC15	L8-50XLS	H1385937T	8/26/2011	8/26/2011	8/26/2012	9/23/2011	12/3/2011	785678	1	Dr.Gladwell	Pharma	8/27/2011
16	5637HJ74	SL-5000XLS	G1284957T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	963433	2	Dr.Craner	Biotech	8/27/2011
17	7344CE51	L-10XLS	G1026919T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	56745673	2	Dr.Jones	Genomics	8/27/2011
18	7258DM91	SL-100XLS	H1783549T	8/21/2011	8/21/2011	8/21/2012	9/23/2011	12/3/2011	3465335	4	Dr.Anderson	Proteomics	8/27/2011
19	2325PE52	L-1000XLS	G1285947T	7/29/2011	7/29/2011	7/29/2012	9/23/2011	12/3/2011	2345	3	Dr.Johnson	Forensics	8/27/2011
20	4564EC15	L8-50XLS	H1385937T	8/26/2011	8/26/2011	8/26/2012	9/23/2011	12/3/2011	785678	1	Dr.Gladwell	Pharma	8/27/2011
21	5637HJ74	SL-5000XLS	G1284957T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	963433	2	Dr.Craner	Biotech	8/27/2011
22	4564EC15	L8-50XLS	H1385937T	8/26/2011	8/26/2011	8/26/2012	9/23/2011	12/3/2011	785678	1	Dr.Gladwell	Pharma	8/27/2011
23	5637HJ74	SL-5000XLS	G1284957T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	963433	2	Dr.Craner	Biotech	8/27/2011
24	7344CE51	L-10XLS	G1026919T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	56745673	2	Dr.Jones	Genomics	8/27/2011
25	7258DM91	SL-100XLS	H1783549T	8/21/2011	8/21/2011	8/21/2012	9/23/2011	12/3/2011	3465335	4	Dr.Anderson	Proteomics	8/27/2011
26	2325PE52	L-1000XLS	G1285947T	7/29/2011	7/29/2011	7/29/2012	9/23/2011	12/3/2011	2345	3	Dr.Johnson	Forensics	8/27/2011
27	4564EC15	L8-50XLS	H1385937T	8/26/2011	8/26/2011	8/26/2012	9/23/2011	12/3/2011	785678	1	Dr.Gladwell	Pharma	8/27/2011
28	5637HJ74	SL-5000XLS	G1284957T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	963433	2	Dr.Craner	Biotech	8/27/2011
29	7344CE51	L-10XLS	G1026919T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	56745673	2	Dr.Jones	Genomics	8/27/2011
30	7258DM91	SL-100XLS	H1783549T	8/21/2011	8/21/2011	8/21/2012	9/23/2011	12/3/2011	3465335	4	Dr.Anderson	Proteomics	8/27/2011
31	2325PE52	L-1000XLS	G1285947T	7/29/2011	7/29/2011	7/29/2012	9/23/2011	12/3/2011	2345	3	Dr.Johnson	Forensics	8/27/2011
32	4564EC15	L8-50XLS	H1385937T	8/26/2011	8/26/2011	8/26/2012	9/23/2011	12/3/2011	785678	1	Dr.Gladwell	Pharma	8/27/2011
33	5637HJ74	SL-5000XLS	G1284957T	7/21/2011	7/21/2011	7/21/2012	9/23/2011	12/3/2011	963433	2	Dr.Craner	Biotech	8/27/2011

Consistent Results, Every Time, Any User.

E4 XLS+ Electronic Pipette
Simple, Versatile and Secure

Configure the E4™ XLS+™ to be as simple or elaborate as your work requires. Keep the functions you want, hide the ones you don't, and password protect all, some or none the E4's modes and features.

Save your protocols!
Store multiple custom protocols in the on-board memory. Simultaneously review and select your protocols with a simple movement of the joystick. No more re-entering protocols over and over again!

GLP/GMP security
Reduce compliance risks! Onboard service data is extremely secure and quick to access. Avert calibration compliance errors by password protecting access to service interval alarms. Minimize pipetting SOP deviations by locking protocol settings.

Highly configurable
With the E4s' new Admin Mode, you can configure the pipette any way you want. For convenience or security, remove unwanted modes or lock in settings. Personalized setting profiles allow you to "re-set" your pipette to a preferred configuration.

Autoclavable
XLS+ single-channel pipettes are designed for easy autoclaving where it counts: the complete liquid end, including the seals and piston. Autoclaving won't compromise performance or feel.

Multifunctional
- Basic pipetting
- Multi-dispense
- Mixing
- Volume sequencing
- Dilution
- Reversed pipetting
- True Manual™ mode

E4 XLS+ Single Channel Pipette

The New Standard in Electronic Pipetting

The E4™ XLS+™ is METTLER TOLEDO's easiest to use, most richly featured and secure electronic single channel pipette.

The Rainin E4™ XLS+™ is loaded with features, functionality and a revolutionary approach to navigation that redefines simplicity and control in pipetting. The contoured body, even balance and Rainin's legendary precision and accuracy combine to an extraordinary pipetting experience.

Unparalleled Performance and Comfort

- Standard modes include Basic pipetting, Multi-Dispense and Mix
- Advanced modes include sequential volume programming for complex protocols, titration, dilution and reverse mode pipetting
- Independently control aspirate, dispense and mix speeds for challenging liquids
- Optional blowout and automatic dispense settings for precision pipetting protocols
- Password protect access to pipette settings for GLP security
- Save your favorite protocols
- Simple or complex: configure the E4 for any task
- FPLC in a tip: on board PureSpeed™ sample preparation protocol
- Multilingual display and on-screen help
- Easily accessible service records and alarms
- RFID enabled for advanced asset management
- Rapid Charge Stand charges three pipettes simultaneously in one hour
- LTS-equipped models feature Rainin's patented cylindrical shaft and tip design – up to 80% lower ejection force than traditional systems

Easy as 1… 2… 3…

Whatever your application, the E4 XLS+ is easy to program and makes setting up protocols fast. For example, here's how easy it is to program a serial dilution protocol, typically used in qPCR, ELISA and many cell assays:

1. Set the total volume to be transferred.

2. Specify the mixing volume and number of mixing cycles.

3. Set the aspirate, dispense and mix speeds.

E4™ XLS™+ Electronic Multichannels
Speed Your Workflow

Experience the speed and ease of the new E4™ XLS+™ multichannel for high-throughput work.

Fast loading, light-weight, easy to handle and precision and consistency across all channels. Pipette settings, protocols and service alarms can be password protected for GLP/GMP compliance. What's more, GLP data, such as service records, cycles and status data is completely tamper proof.

Precise, High-throughput Pipetting

- LTS™ for consistent sample loading across all channels and up to 80% lower tip ejection forces
- Standard modes include Basic pipetting, Multi-dispense and Mix
- Advanced modes include sequential volume programming for complex protocols, titration, dilution and reverse mode pipetting
- Control of aspirate, dispense and mix speeds for challenging liquids
- Optional blowout and automatic dispense settings for precision pipetting
- Password protect pipette settings for GLP security
- Save your favorite protocols
- Simple or complex: configure the E4 for any task
- FPLC in your tip: on board PureSpeed™ sample preparation protocol
- Multilingual display and on-screen Help
- Easily accessible service records and alarms
- RFID enabled for advanced asset management
- Optional Rapid Charge Stand charges three pipettes in one hour

Absolute consistency
New mechanical designs on all XLS+ multichannel pipettes assure the highest performance and industry-leading channel-to-channel consistency.

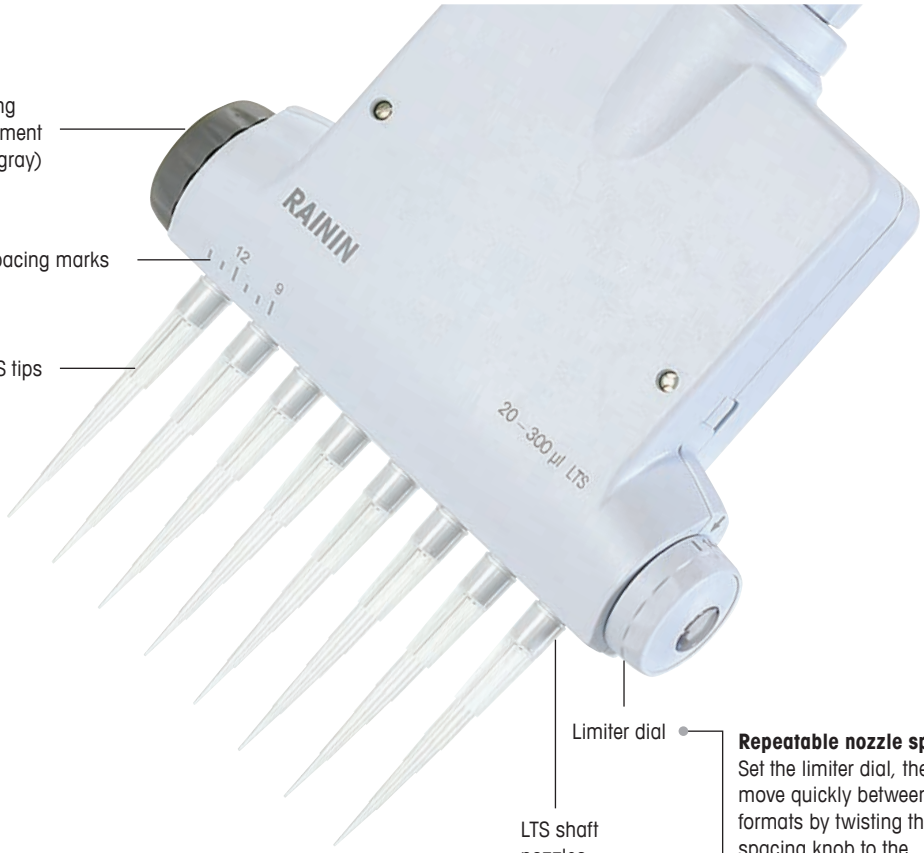
Simplify repetitive pipetting
Multi-dispense takes the drudgery out of repetitive pipetting by calculating how many aliquots can be dispensed from a single pickup. Autopace simplifies repeat dispensing – click the joystick once and repeat dispense across a plate.

E4 XLS+ Adjustable Spacer

Different Formats? Not a Problem!

For high throughput work involving multiple formats, nothing beats Rainin's E4™ XLS+™ Adjustable Spacer multichannel pipette for speed and flexibility.

The E4 is easily configured to be as simple or elaborate as your work requires. Its large color screen, joystick control and graphic interface make moving between functions and operating the pipette easy and effortless. Not only is every E4 function highly customizable, multiple protocols can be stored on board for later use.



Spacing adjustment (dark gray)

Spacing marks

LTS tips

Fast spacing change
Set the nozzle spacing between 9 and 14 mm (8 channel) or 9 and 19 mm (6 channel) to quickly move samples between different plate and tubing formats. The adjustable spacer is ideally suited for routine microwell work when you need to change formats quickly.

Limiter dial

LTS shaft nozzles

Repeatable nozzle spacing
Set the limiter dial, then move quickly between formats by twisting the spacing knob to the maximum setting. A detent on the limiter dial sets the maximum nozzle spacing, so users can move back and forth between formats with speed, precision and consistency.

Eliminate "speed bumps"
Don't let changing sample formats slow you down. Set the nozzle spacing between 9 and 14 mm (8 channel) or 9 and 19 mm (6 channel) and quickly move samples between different plates and tubes. Perfect for high throughput applications with precious samples.

Enhanced GLP functionality
Easily accessible service data, usage alarms and the E4's large, easy to read screen both enhance and complement GLP compliance. Embedded RFID tags enable advanced asset calibration and inventory management.

Technical Data

Ordering information

Cat. No.	MT Order No.	Volume Range
LTS Models		
E4-10XLS+	17014484	0.5–10 µL
E4-20XLS+	17014487	2–20 µL
E4-100XLS+	17014483	10–100 µL
E4-200XLS+	17014486	20–200 µL
E4-300XLS+	17014488	20–300 µL
E4-1000XLS+	17014482	100–1000 µL
E4-2000XLS+	17014485	200–2000 µL
E4-5000XLS	17012312	500–5000 µL
E4-10MLXLS	17012313	1-10 ml
E4-20MLXLS	17012314	2-20 ml
Traditional Tip Models		
SE4-10XLS+	17014491	0.5–10 µL
SE4-20XLS+	17014494	2–20 µL
SE4-100XLS+	17014490	10–100 µL
SE4-200XLS+	17014493	20–200 µL
SE4-300XLS+	17014495	20–300 µL
SE4-1000XLS+	17014489	100–1000 µL
SE4-2000XLS+	17014492	200–2000 µL
SE4-5000XLS	17012353	500–5000 µL
SE4-10MLXLS	17012354	1-10 ml

Accessories

Cat. No.	MT Order No.	Description
E4-RCS	17012332	E4 XLS+ rapid charge stand
E4-WPS	17012878	E4 XLS+ wall power supply
E4-BATT	17012337	E4 XLS+ battery
E4-USB	17012336	E4 XLS+ USB cable

Specifications

Model	Volume µl	Increment µl	Accuracy %µl	Accuracy ±)	Precision %	Precision µl (≤)
E4-10XLS+	1	0.01	2.5	0.025	1.2	0.012
SE4-10XLS+	5		1.5	0.075	0.6	0.03
	10		1.0	0.1	0.4	0.04
E4-20XLS+	2	0.02	7.5	0.15	2.0	0.04
SE4-20XLS+	10		1.5	0.15	0.5	0.05
	20		1.0	0.2	0.3	0.06
E4-100XLS+	10	0.1	3.5	0.35	1.0	0.1
SE4-100XLS+	50		0.8	0.4	0.24	0.12
	100		0.8	0.8	0.15	0.15
E4-200XLS+	20	0.2	2.5	0.5	1.0	0.2
SE4-200XLS+	100		0.8	0.8	0.25	0.25
	200		0.8	1.6	0.15	0.3
E4-300XLS+	30	0.2	2.5	0.75	1.0	0.3
SE4-300XLS+	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
E4-1000XLS+	100	1	3.0	3.0	0.6	0.6
SE4-1000XLS+	500		0.8	4.0	0.2	1.0
	1000		0.8	8.0	0.15	1.5
E4-2000XLS+	200	2	3.0	6.0	0.6	1.2
SE4-2000XLS+	1000		0.8	8.0	0.2	2.0
	2000		0.8	16.0	0.12	2.4
E4-5000XLS	500	5	2.4	12.0	0.6	3.0
SE4-5000XLS	2500		0.6	15.0	0.2	5.0
	5000		0.6	30.0	0.16	8.0
E4-10MLXLS	1 ml	10	5	50.0	0.6	6.0
SE4-10MLXLS	5 ml		1	50.0	0.2	10.0
	10 ml		60.0	30.0	0.16	16.0
E4-20MLXLS	2 ml	20	5.0	100.0	0.6	12.0
	10 ml		1.0	100.0	0.2	20.0
	20 ml		0.6	120.0	0.16	32.0

Rainin, E4, XLS, and LTS are trademarks of Rainin Instrument, LLC.

Ordering information

Cat. No.	MT Order No.	Volume Range
8 Channel		
E8-10XLS+	17013792	0,5–10 µl
E8-20XLS+	17013793	2–20 µl
E8-50XLS+	17013794	5–50 µl
E8-200XLS+	17013795	20–200 µl
E8-300XLS+	17013796	20–300 µl
E8-1200XLS+	17014498	100–1200 µl
12 Channel		
E12-10XLS+	17013797	0,5–10 µl
E12-20XLS+	17013798	2–20 µl
E12-50XLS+	17013799	5–50 µl
E12-200XLS+	17013800	20–200 µl
E12-300XLS+	17013801	20–300 µl
E12-1200XLS+	17014499	100–1200 µl

Specifications

Model	Volume	Increment	Accuracy		Precision	
	µl	µl	%	µl ±)	%	µl (≤)
10 µL	1.0	0.01	2.5	0.025	1.2	0.012
	5.0		1.5	0.075	0.6	0.03
	10.0		1.0	0.1	0.4	0.04
20 µL	2	0.02	7.5	0.15	2.0	0.04
	10		1.5	0.15	0.5	0.05
	20		1.0	0.2	0.3	0.06
50 µL	5	0.05	3.5	0.18	1.5	0.075
	25		1.2	0.3	0.4	0.1
	50		0.8	0.4	0.2	0.1
200 µL	20	0.2	2.5	0.5	1.0	0.2
	100		0.8	0.8	0.25	0.25
	200		0.8	1.6	0.15	0.3
300 µL	30	0.2	2.5	0.75	1.0	0.3
	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
***1200 µL**	100	1	3.6	3.6	0.6	0.6
	600		0.8	4.8	0.2	1.2
	1200		0.8	9.6	0.15	1.8

*Photos depict 10 µL to 300 µL XLS+ models.

Rainin, LTS, LiteTouch, E4, XLS and Pipetting 360° and True Manual are trademarks of Rainin Instrument, LLC.
LabX and Direct Pipette-Scan are trademarks of METTLER TOLEDO.

Adjustable spacer models

Cat. No.	MT Order No.	Volume Range
EA6-300XLS	17012327	20-300 µl
EA6-1200XLS	17012328	100-1200 µl
EA8-50XLS	17012329	5-50 µl
EA8-300XLS	17012330	20-300 µl
EA8-1200XLS	17012331	100-1200 µl

Accessories

Cat. No.	MT Order No.	Description
E4-RCS	17012332	E4 XLS rapid charge stand
E4-WPS	17012878	E4 XLS wall power supply
E4-BATT	17012337	E4 XLS battery
E4-USB	17012336	E4 XLS USB cable

Specifications

Model	Volume	Increment	Accuracy		Precision	
	µl	µl	%	µl (±)	%	µl (≤)
LA8-50XLS	5	0.05	3.5	0.18	1.5	0.075
	25		1.2	0.3	0.4	0.1
	50		0.8	0.4	0.2	0.1
LA6-300XLS, LA8-300XLS	30	0.2	2.5	0.75	1.0	0.3
	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
LA6-1200XLS, LA8-1200XLS	100	1.0	3.6	3.6	0.60	0.60
	600		0.8	4.8	0.20	1.20
	1200		0.8	9.6	0.15	1.80

Efficient Sample Preparation.

PureSpeed Tips
Simplify Your Workflow

PureSpeed tips radically simplify purification of biomolecules, including recombinant and native proteins. This innovative approach produces the highest concentration of purified biomolecules, allowing for many options for downstream functional assays.

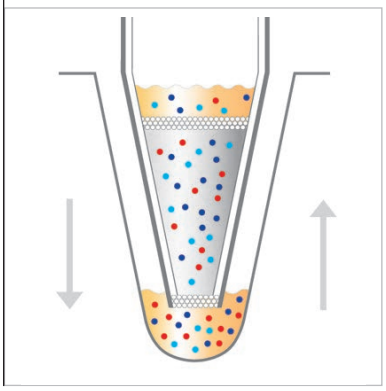
When used in conjunction with Rainin's E4 XLS electronic pipette, PureSpeed becomes a powerful, semi-automated purification system. And, unlike gravity-flow affinity columns, spin columns, magnetic beads and loose resins, PureSpeed's unique process draws sample repeatedly over a low dead volume packed resin bed. The result: higher controlled contact time with the resin and higher efficiency binding.

- Superior concentration and purity compared with conventional methods
- Microliter to milliliter purification of biomolecules
- Parallel processing of up to 12 samples with Rainin's E4 XLS electronic pipette
- Faster than conventional methods – pure samples in as few as 15 minutes
- Gentle – retain protein activity and avoid shearing biomolecular complexes
- Small elution volumes – no additional concentration steps are required

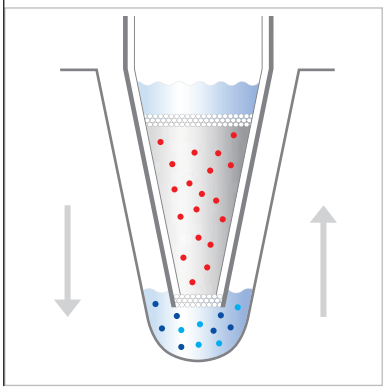
Capture, Purify and Enrich
PureSpeed Simplifies Your Workflow

PureSpeed's patented process offers greater speed, efficiency and concentration than either gravity-fed affinity columns or spin colums. Used in conjunction with Rainin's E4 XLS electronic pipette, PureSpeed is a convenient, low-cost solution for purifying micro-scale volumes of target bio-molecules in as little as 15 minutes.

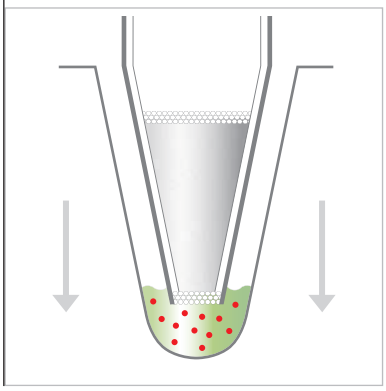
Capture
Sample is aspirated into the tip and the target biomolecule binds to the resin contained in the tip. The sample is drawn through the resin repeatedly to allow binding to reach equilibrium.

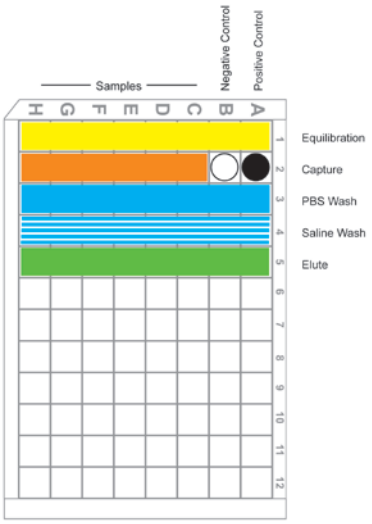


Purify
Similar to the capture step, multiple repetitive wash steps remove non-specific biomolecules and contaminants. The concentrated target biomolecule remain bound to the resin.



Enrich
Drawing the elution buffer repeatedly through the tip removes the concentrated target biomolecule from the resin into a fresh sample well. A minimal elution buffer volume is required, producing the highest concentration possible.





Prepare multiple samples simultaneously
Multiple samples can be purified at the same time using Rainin's 8- or 12-channel E4 XLS multichannel pipettes. The figure here shows how 1–6 samples and two controls can be processed quickly and simply.

Each deepwell plate row represents a phase in the purification process. Rainin's E4 XLS electronic pipette automatically aspirates and dispenses the solutions and guides the user through the process.

Expand Your Applications with PureSpeed Tips

With their fast set-up time, improved workflow and reduced reagent requirements, many genomics and proteomics applications can benefit from Rainin's PureSpeed Tips:

Structural determination
Target expression screening
Protein-protein interactions
Assay development
Process development
Immunoprecipitation assays

Purification screening
Biomarker discovery
Biomarker validation
Library screening & selection
Lead characterization
Lead optimization

Structural analysis
Protein analytics
Pre-clinical assays
Immunogenicity
Chromatin Immunoprecipitation

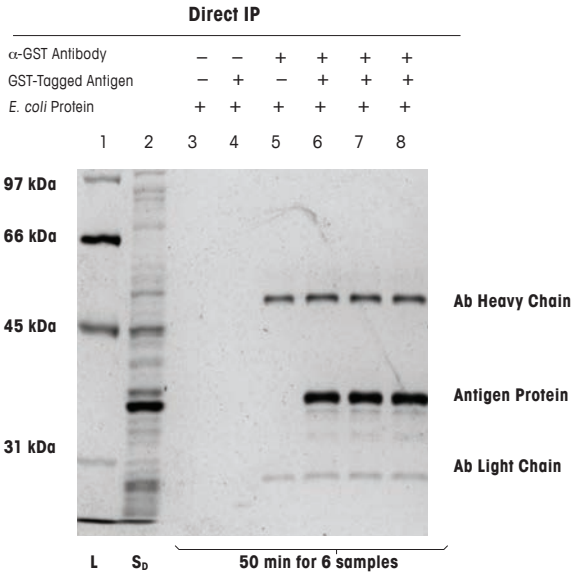
PureSpeed Applications
Simplify Proteomic and Genomic Experiments

PureSpeed sample preparation tips can streamline many types of experiments. The examples shown here demonstrate the breadth and flexibility of the PureSpeed technology.

Immunoprecipitation

PureSpeed ProA and ProG pre-packed tips can be used with the Rainin E4 XLS pipette to perform direct and indirect immunoprecipitation. Compared to magnetic beads and loose agarose resin, PureSpeed offers a simpler protocol and delivers more concentrated immunoprecipitated sample.

With a multichannel E4 XLS pipette, PureSpeed is able to process up to 12 samples simultaneously.



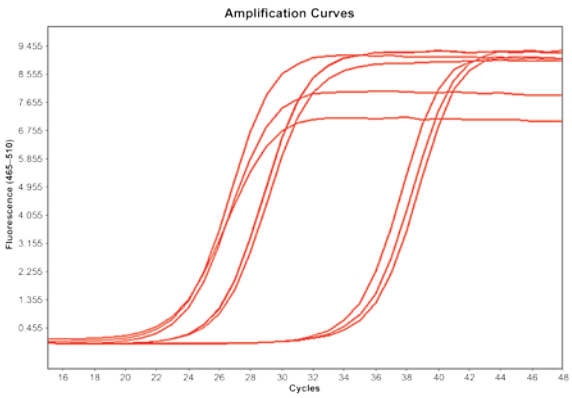
Direct IP with PureSpeed ProG Tips
Direct IP was carried out with Pro G PureSpeed tips. Pluses and minuses indicate the inclusion or exclusion of antibody, antigen protein or both within a given sample. L and SD denote the molecular weight ladder and protein sample containing the antigen protein, respectively. The time needed for the protocol is noted beneath the gel.

Reference: METTLER TOLEDO White Paper, High Performance Immunoprecipitation with PureSpeed Tips

Chromatin Immunoprecipitation (ChIP)

Use PureSpeed to study the interactions between proteins and DNA in a cell. Unlike magnetic beads, loose agarose resin, spin columns and fixed staphylococcus cells, PureSpeed markedly reduces the hands-on time needed for ChIP.

For ChIP procedures, pre-packed ProA and ProG tips are able to produce highly concentrated samples. When used with the multichannel Rainin E4 XLS pipette, PureSpeed tips offers a truly parallel solution for ChIP experiments.



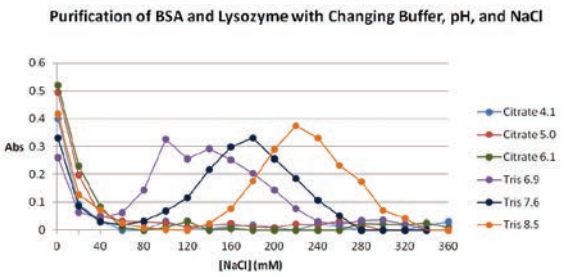
Shown above are triplicate qPCR amplification curves of ChIP input DNA (far left), histone H3K27Ac immunoprecipitated DNA (middle), and IgG negative control (far right). PureSpeed ProA tips, using the appropriate antibody, were used to immunoprecipitate the template DNA for this analysis.

Reference: METTLER TOLEDO Application Note, Chromatin Immunoprecipitation

Ion Exchange Chromatography

Using the inexpensive and semi-automated PureSpeed system, it is easy to separate biomolecules based on their overall charge characteristics.

Proteins, oligonucleotides, and other molecules can be resolved and purified using our pre-packed strong and weak anion and cation exchange tips.



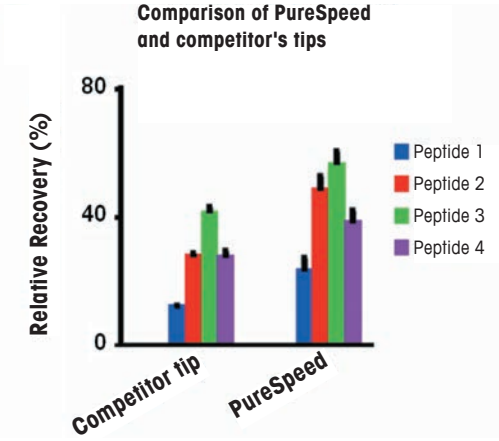
Multivariable Optimization with PureSpeed.
Using PureSpeed Strong Anion Exchange Tips, 833 µg of lysozyme and BSA were mixed together and separated using strong anion exchange tips. Different buffers of increasing pH were used in the purification. Citrate was used in the pH regimes of 4.1, 5.0, and 6.1, while Tris-HCl was used in the pH regimes of 6.9, 7.6, and 8.5. BSA was not bound in acidic conditions with citrate as the buffer, but was able to bind the resin and be purified using Tris-HCl. When the pH was increased, the elution behavior of BSA shifted significantly.

Reference: METTLER TOLEDO White Paper, Ion Exchange with PureSpeed Tips

Desalting Mass Spectrometry Samples

PureSpeed C18 Desalting Tips offer the highest peptide capacity, 10 µg, which is critical for generating high-intensity sample spectra during mass spectrometry.

PureSpeed is an affordable, automated solution for purifying up to 12 samples at once, facilitating collection of high-quality sequence coverage data.



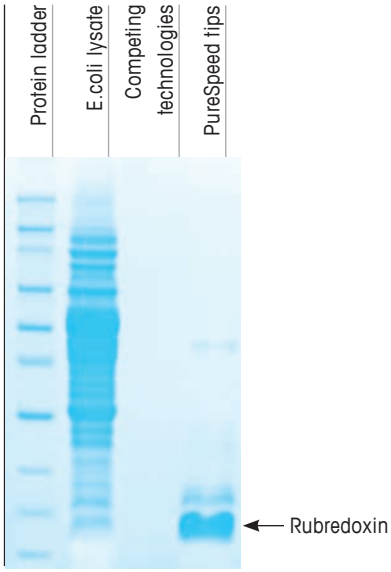
Shown above is the recovery when 2 µg each of four peptides are applied to PureSpeed and competitor desalting tips, then washed, eluted, and quantified by HPLC. As can be seen, PureSpeed C18 Desalting Tips recover more peptide than competing desalting tips. The peptide sequences were:
P1 – NH2-LGGGGGGDFR-COOH
P2 – NH2-LLGGGGDFR-COOH
P3 – NH2-LLLGGDFR-COOH
P4 – NH2-LLLLDFR-COOH

Reference: METTLER TOLEDO White Paper, High Capacity Desalting

Applications (continued)

Recombinant and Native Protein Purification
PureSpeed can simplify your method to capture, purify, and enrich recombinant proteins and native proteins, such as antibodies. Ni-IMAC, ProA and ProG resins can be completely saturated with recombinant proteins or antibodies.

Combined with high volume wash steps and low elution buffer volumes, PureSpeed delivers the highest concentration of purified material in as little as 15 minutes.



PureSpeed Ordering Information

Cat. No.	MT Order No.	Description
PureSpeed ProA Tips		
PT-2-A5	17012561	5 µL ProA resin, 12 x 200 µL tips
PT-2-A20	17012562	20 µL ProA resin, 12 x 200 µL tips
PT-10-A20	17012568	20 µL ProA resin, 12 x 1000 µL tips
PT-10-A80	17012569	80 µL ProA resin, 12 x 1000 µL tips
PureSpeed ProG Tips		
PT-2-G5	17012563	5 µL ProG resin, 12 x 200 µL tips
PT-2-G20	17012564	20 µL ProG resin, 12 x 200 µL tips
PT-10-G20	17012570	20 µL ProG resin, 12 x 1000 µL tips
PT-10-G80	17012571	80 µL ProG resin, 12 x 1000 µL tips
PureSpeed IMAC Tips		
PT-2-N5	17012566	5 µL IMAC resin, 12 x 200 µL tips
PT-2-N20	17012567	20 µL IMAC resin, 12 x 200 µL tips
PT-10-N20	17012572	20 µL IMAC resin, 12 x 1000 µL tips
PT-10-N80	17012573	80 µL IMAC resin, 12 x 1000 µL tips
PureSpeed Ion Exchange Tips		
PT-10-WC20	17014190	20 µL Weak Cation Exchange resin, 12 x 1000 µL tips
PT-10-WC80	17014191	80 µL Weak Cation Exchange resin, 12 x 1000 µL tips
PT-10-WA20	17014186	20 µL Weak Anion Exchange resin, 12 x 1000 µL tips
PT-10-WA80	17014187	80 µL Weak Anion Exchange resin, 12 x 1000 µL tips
PT-10-SC20	17014188	20 µL Strong Cation Exchange resin, 12 x 1000 µL tips
PT-10-SC80	17014189	80 µL Strong Cation Exchange resin, 12 x 1000 µL tips
PT-10-SA20	17014184	20 µL Strong Anion Exchange resin, 12 x 1000 µL tips
PT-10-SA80	17014185	80 µL Strong Anion Exchange resin, 12 x 1000 µL tips

Cat. No.	MT Order No.	Description
PureSpeed C18 Desalting Tips		
PT-C18-12	17014044	10 µL PureSpeed C18 Desalting Tips, Universal, 12 x 10 µL tips
PT-LC18-12	17014043	20 µL C18 Desalting Tips, LTS, 12 x 20 µL tips
PT-C18-96	17014046	10 µL PureSpeed C18 Desalting Tips, Universal, 96 x 10 µL tips
PT-LC18-96	17014045	20 µL C18 Desalting Tips, LTS, 96 x 20 µL tips
PT-C18-960	17014048	10 µL PureSpeed C18 Desalting Tips, Universal, 960 x 10 µL tips
PT-LC18-960	17014047	20 µL C18 Desalting Tips, LTS, 960 x 20 µL tips
PureSpeed Starter Kits		
PT-S2-A20	17012577	Starter Kit, E4-200XLS, ProA
PT-S10-A20	17012579	Starter Kit, E4-1000XLS, ProA
PT-S2-G20	17012578	Starter Kit, E4-200XLS, ProG
PT-S10-G20	17012580	Starter Kit, E4-1000XLS, ProG
PT-S2-N20	17012576	Starter Kit, E4-200XLS, IMAC
PT-S10-N20	17012581	Starter Kit, E4-1000XLS, IMAC
PT-S2-E8	17013548	Starter Kit, E8-200XLS
PT-S10-E8	17013546	Starter Kit, E8-1200XLS
PT-S2-E12	17013549	Starter Kit, E12-200XLS
PT-S10-E12	17013547	Starter Kit, E12-1200XLS
PureSpeed Accessories		
PT-ACC	17012588	PureSpeed Accessory Kit: Base, SD card, 96-deepwell plate, ColorTrak Guides, Adapters
PT-PT96	17012584	PureSpeed Base (in PT-ACC)
PT-E4-SD	17012587	E4 XLS Micro SD Card with PureSpeed protocol (in PT-ACC)
PT-2-H	17012582	Pack of 10 adapters, for 200 µL multichannel (in PT-ACC)
PT-10-H	17012583	Pack of 10 adapters, for 1000 µL multichannel (in PT-ACC)
PT-2-S	17013242	Adapter for 200 µL single channel (in Starter Kit)
PT-10-S	17013226	Adapter for 1000 µL single channel (in Starter Kit)
LR-P2-96P-5	17012623	96-deepwell plate, 5-pack (one supplied in PT-ACC)

The Manual Multi-Task Master.

20 µL and 200 µL Liquidator™ 96
Fast, Versatile Lab Assistants

METTLER TOLEDO has designed its 20 µL and 200 µL Rainin Liquidator™ 96 for speed, accuracy and ease of use. Understanding how researchers work and how high-throughput pipetting fits into a lab's overall workflow, METTLER TOLEDO engineers designed Liquidator™ 96 to deliver extraordinary accuracy and precision, with exceptionally good ergonomics and requiring virtually no training.

- Unique manual pipetting system for medium- to high-throughput applications
- Two volume ranges – 0.5-20 µL and 5-200 µL
- Minimal footprint, fits any lab bench or laminar flow cabinet
- Uses 96-well plates and 384-well plates
- Simple to use – no programming
- Flexible and familiar operation
- Fast – for immediate results
- Saves time and money
- Ergonomic, low force

Liquidator 96
Speed your Workflow

For genomic, proteomic and cell-based work, 96- and 384-well plates allow researchers to set up multiple samples in a compact format that can greatly enhance downstream assays. But despite their many benefits, working with 96- and 384-well plates can be challenging:

- Single- and multi-channel pipettes are inexpensive, but they can be slow and tedious for filling multiple plates and greatly increase the risk of skipping or repeating wells.
- Automated pipetting systems offer higher throughput, but generally have large footprints and require dedicated space and electricity, user training and fairly complex programming knowledge.

The Liquidator™ 96 solves these problems by streamlining 96- and 384-well plate work with simultaneous, manual 96-well filling. It is compact, requires no electricity and is available in two volume ranges – 0.5 to 20 µL and 5 to 200 µL. Fully manual, Liquidator 96 is easy to use and requires virtually no training.

1. Load tips
Liquidator 96 uses Liquidator LTS tips to ensure consistent picking on all 96 channels.

2. Aspirate
Simple pull of the handle, easy on the hands.

3. Dispense
Faster than all other manual pipetting methods and even many robots, Liquidator 96 can fill a 96-well plate in just seconds.

Technical Specifications

Instrument	20 µL Liquidator™ 96	200 µL Liquidator™ 96
Volume Range	0.5 – 20 µL	5 – 200 µL
Accuracy	20 µL: ± 1.0 %	200 µL: ± 1.0 %
	10 µL: ± 1.2 %	100 µL: ± 1.0 %
	2 µL: ± 6.0 %	20 µL: ± 2.0 %
	1 µL: ± 12.0 %	5 µL: ± 5.0 %
Precision	20 µL: ≤ 0.8 %	200 µL: ≤ 0.5 %
	10 µL: ≤ 1.0 %	100 µL: ≤ 0.8 %
	2 µL: ≤ 5.0 %	20 µL: ≤ 1.5 %
	1 µL: ≤ 10.0 %	5 µL: ≤ 3.5 %
Volume Increment	0.02 µL	0.2 µL
Compatible Formats	96 and 384 wells	96 and 384 wells
Plate Positions	4	4
Pipetting Technology	Air displacement	Air displacement
Power Requirements	n/a	n/a
Dimensions (w x d x h)	Both models: 37 cm x 46 cm x 41 cm (14.5 in x 18 in x 16 in)	

Watch the Liquidator demo
www.mt.com/liquidator96

Maximize Data Quality
Pipette 96 Channels at Once

Liquidator™ 96 offers many advantages over multichannel pipettes.

By pipetting 96-channels at once, Liquidator 96 is faster than an 8- or 12-channel pipette and increases the data quality of time sensitive experiments, like ELISA. For example, here's how Liquidator 96 enhances the workflow of enzyme-based experiments:

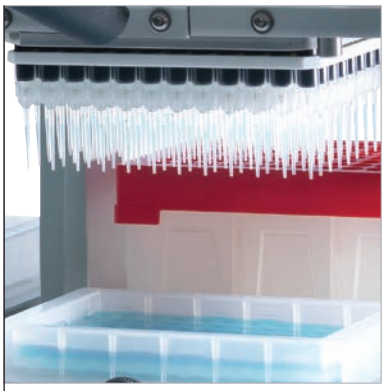
Perfectly timed reactions
Liquidator 96 enhances time-critical assays, such as ELISA, by starting and stopping reactions in all wells at the same time. Simultaneous 96-well pipetting eliminates well-to-well variability and the need rush through an assay.

Never skip or repeat wells again
When processing 96-well plates with single or multichannel pipettes, skipping wells and double pipetting are possible. Because Liquidator 96 fills all 96 wells simultaneously, it's impossible to skip wells or accidentally repeat into a well.

Trust the purity of your consumables
Rest assured that Liquidator 96 consumables are completely inert and will never affect experimental outcome in any way. BioClean tips and reservoirs are guaranteed to be free of DNA, DNase, RNase, pyrogens and ATP.

Start and stop assay reactions simultaneously

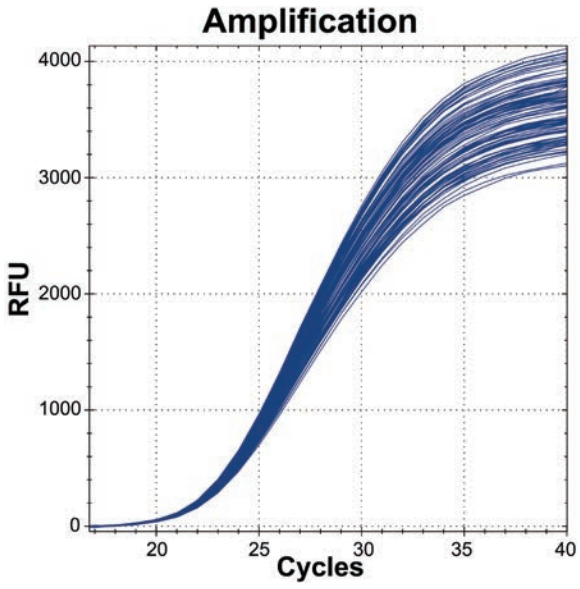
Eliminate the risk of skipping or repeating wells



Get guaranteed purity with BioClean™ consumables

Tackle your most demanding applications with confidence

As a highly accurate and precise pipetting station, Liquidator™ 96 can be used to quickly and easily set up your most demanding applications. For example, because small errors when pipetting template can produce large differences in Cq values between replicates, qPCR requires uniform pipetting of nucleic acid templates into reactions.



Testing scientific hypotheses requires minimal qPCR error, so Rainin tested Liquidator 96's ability to generate high-quality qPCR data. The 20 µL Liquidator 96 was used in all pipetting steps for qPCR, including a 2 µL template addition step.

The data at left show the superimposition of 96 qPCRs set up in parallel using the 20 µL Liquidator 96, which has a range of 0.5 to 20 µL. The mean Cq value of this data was 22.24 ± 0.04. The data obtained demonstrate Liquidator 96's excellent reproducibility in micro-volume pipetting applications.

Faster, Better Workflows
Liquidator 96 in Real Life

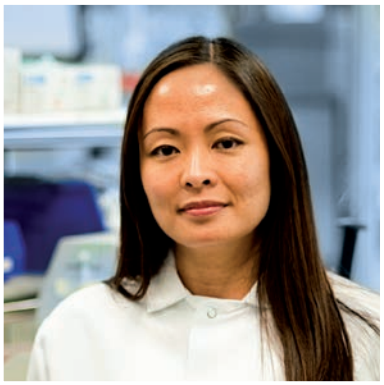
From sequencing sample preparation to immunological assays to cell-based experiments, Liquidator™ 96 is helping researchers around the world to streamline their workflows and get faster, better results.

Ali Vahedi
Scientist, Singulex, Inc.

Singulex, Inc. scientist Ali Vahedi supports customers who use the company's immunoassays to conduct research on low abundance biomarkers. Singulex's Erenna® System uses single molecule technology to detect biomarkers for up to 384 samples in standard microplate formats.

Vahedi found many Singulex researchers using multichannel pipettes for assays and wondered if the Liquidator 96 could streamline their workflow. By conducting comparative experiment between a multichannel pipette and Liquidator 96 on Singulex protocols, he demonstrated that the Liquidator 96 provides data with as high quality as a multichannel pipette while making the workflow 5–10 times faster. The company has since invested in multiple Liquidator 96s and scientists at Singulex are satisfied with the increased productivity.

Erenna is a registered trademark of Singulex, Inc.



Kay Mekaru
Researcher, Affymetrix

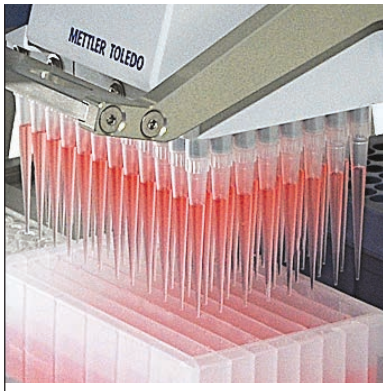
Affymetrix Research Services researcher Kay Mekaru needed a faster way for her team to prepare high-quality, genotyping-quality DNA using PCR. Two time-consuming steps in the protocol were setting up three replica plates from a master plate, then pipetting PCR mastermix into the individual wells prior to thermal cycling. Mekaru's team had been using multichannel pipettes for the steps, but incorporating the Liquidator 96 into their protocol saves them 30–45 minutes for every two PCR plates they prepare.

"We use the Rainin Liquidator 96 for high-throughput applications," says Mekaru. "Finding it versatile for many application areas, we replaced lower capacity pipettes with Liquidator 96 in PCR, purification and hybridization processes."

Liquidator 96
Fast Manual Benchtop System

Incredibly fast, Liquidator™ 96 is ideal for many applications: genomics, proteomics, and general plate replication, plate filling between 96 and 384 wells, wash and dilution steps in various assays. Designed for ultimate performance, precision, and accuracy, Liquidator 96 ensures reproducible results from well-to-well and plate-to-plate.

Saves time and money
Faster than all other manual pipetting systems and even expensive 4- and 8-channel robots. Uses SBS footprint 96-well or 384-well plates. Liquidator 96 is mobile and compact, and can be used anywhere, including laminar flow cabinets.



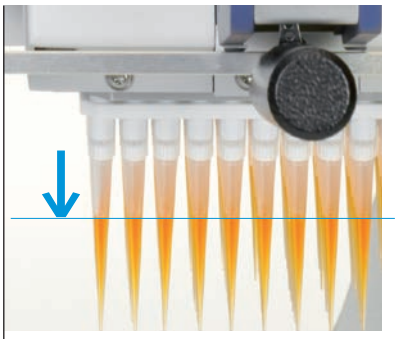
Accurate and precise
Rugged monoblock base plate, strict production tolerances, and high quality tooling provide a stable platform to give best accuracy and precision across the whole volume range. Lockable volume setting prevents drift.

Ready to go
Ready for immediate use by anyone, whether experienced or new to the instrument. Intuitive, requires no expensive operator training, software compliance, or even electricity, and never any bottle-necks waiting for programs to finish.

Accurate, No-Stress ELISA
Rely on Liquidator 96 Reproducibility

Stay focused on the true scientific challenges. Liquidator™ 96 provides new levels of accuracy, precision and control for every type of ELISA assay.

Perfectly timed reactions start and stop simultaneously
Liquidator 96 is vital for time-critical assays, such as ELISA, as reactions in all wells can be started and stopped at precisely the same time. No more rushing or well-to-well variability.



Error free – all wells filled precisely
Rainin Liquidator LTS tips guarantee absolutely consistent pickup. Whatever the dial is set to is exactly what is picked up in the tip with no variability between channels. All wells are filled with exactly the same sample volume.

Flexible sample preparation
with adjustable spacer pipette. Use the adjustable spacer multichannel pipettes to move samples between different format vials, tubes and plates with efficiency and precision.

Technique	How Liquidator™ 96 Helps
PCR and qPCR	Easily pipette PCR/qPCR reagents into 96-well plates with BioClean tips
ELISA	Add reagents quickly and start/stop reactions in all 96 wells at once
Protein Crystallography	Quickly dispense buffers to plates for hanging drop method
Luminex® Assays	Add buffers, antibodies and other solutions consistently to Luminex® plates
Drug Compound Screening	Speed and accuracy adding cells, biomolecules and compounds to 96/384-well plates
Sequencing Sample Prep	Dispense buffers, enzyme and nucleic acids in parallel
Sequencing Sample Clean-Up	Speed precipitations and purification with 96-channel pipetting
Standard enzymatic assays	Pipette enzyme, buffer, and substrate into plates accurately and precisely
Cellular culture set-up	Create mother-daughter plates in seconds
Cellular culture siRNA treatment	Easily and accurately pipette siRNAs into culture plates
Cell lysis	With correct reagents, break cells via pipetting for up to 96 samples

Luminex is a registered trademark of Luminex Corporation.

Reservoirs for Liquidator 96
Convenient Formats

A variety of reservoirs for use with Liquidator™ 96. Standard and low-profile, in 8-channel, 12-channel or 96-well configurations, pyramidal or V-shaped bottoms. Sterile or non-sterile packages. Deepwell blocks.

Affordable and contamination-free
Available in a wide range of volumes and geometries, Rainin's high-performance reservoirs accommodate virtually any sample processing requirement on the Liquidator 96. The SBS footprint allows secure placement on the Liquidator 96 deck and complete compatibility with any robotic liquid handling system. Bottom contours are designed to minimize reagent waste. Reservoirs and accessories are available either sterile or non-sterile, in convenient 5-packs.

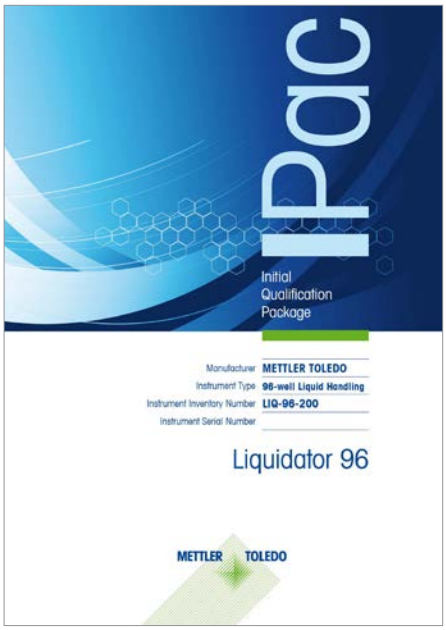
Rainin reservoirs and vessels are subjected to rigorous testing for biological contaminants and are certified to be free of detectable DNase, RNase and pyrogens. Sterile reservoirs are individually-wrapped for additional security.

- Many volumes and well geometries
- Sterile and non-sterile versions
- SBS format
- Convenient 5-packs
- Certified nuclease and pyrogen-free
- Autoclavable and reusable
- Eight-cap strips for racked 1.2 ml microtubes
- Polymeric mat for sealing 96 deepwell plate

Optimize Your Investment
With IPac

METTLER TOLEDO Rainin's IPac Initial Qualification is a comprehensive solution to all of your installation needs: installation, configuration, calibration, training and verification. The IPac procedure should be performed with a new Liquidator™ installation, when an existing Liquidator needs to be moved and for equipment that has not been previously verified. IPac Qualification covers:

- Proper Installation
- Optimized Configuration
- Initial Calibration and Function Test
- Employee Training
- Documented Regulatory Compliance

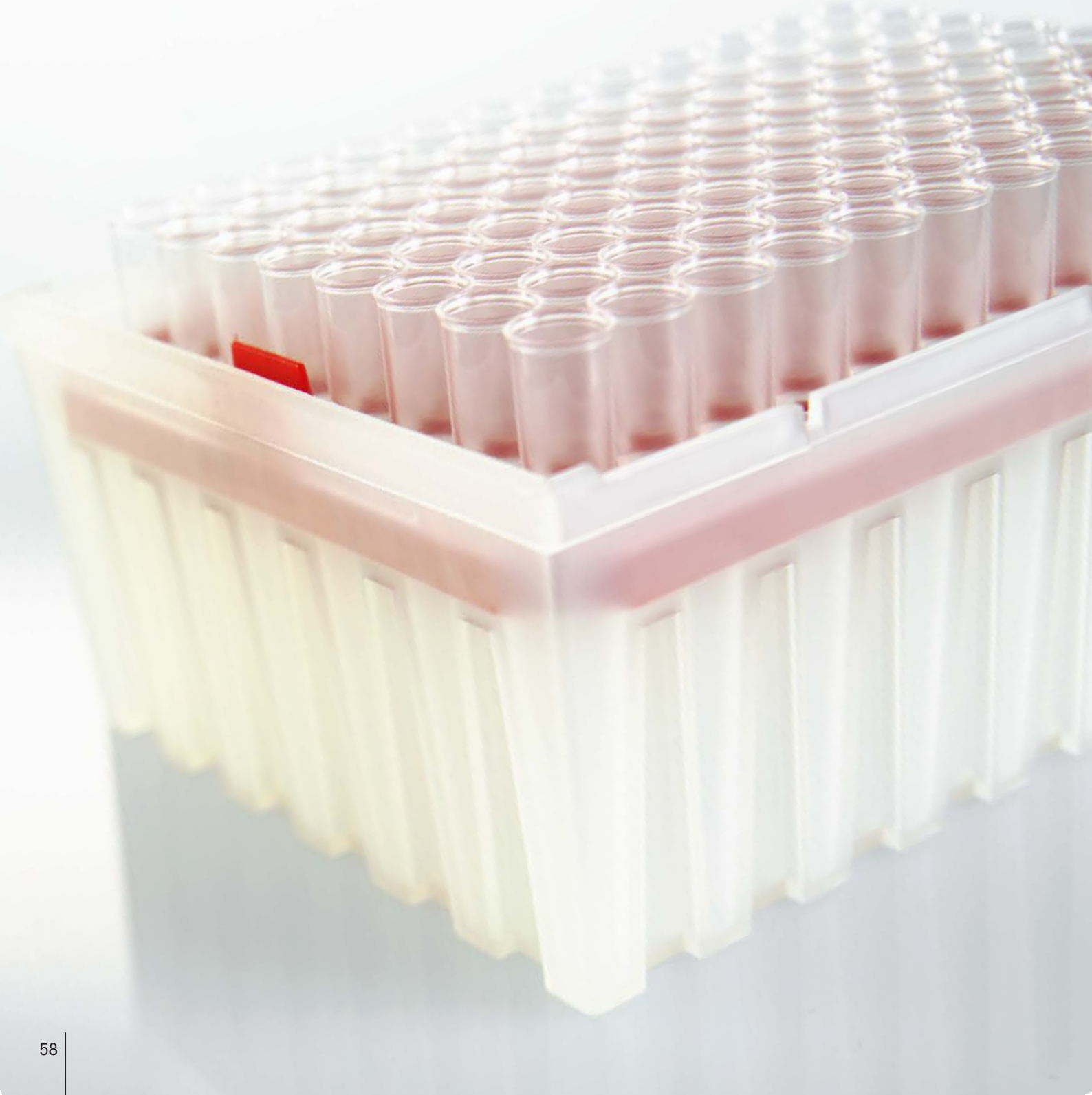


Quality Consumables and Service

METTLER TOLEDO offers a complete line of high-quality consumables and services specifically designed for 20 µL and 200 µL Liquidator™ 96 workstations. BioClean™ Liquidator 96 tips, reservoirs and other vessels are precision engineered and certified to be free of detectable biologic contaminants. Highly-trained METTLER TOLEDO service technicians ensure that your Liquidator 96 delivers years of accurate, precise and trouble-free performance.

Catalog No.	MT Order No.	Description
Liquidator 96 Instruments		
LIQ-96-20	17014207	0.5 – 20 µL 96-channel Manual Pipetting System
LIQ-96-200	17010335	5 – 200 µL 96-channel Manual Pipetting System
Liquidator 96 Service Plan		
LIQ-IPAC	17012282	IPAC Initial Qualification for Liquidator 96
BioClean Liquidator 96 Tips		
LQR-20	17011185	Liquidator 96 tips, racked, 20 µL
LQR-20S	17011186	Liquidator 96 tips, racked, presterilized, 20 µL
LQR-20F	17011117	Liquidator 96 tips, racked, filter, presterilized, 20 µL
LQS-20	17011187	Liquidator 96 tips, stacked, 20 µL
LQS-20S	17011287	Liquidator 96 tips, stacked, presterilized, 20 µL
LQR-200	17010645	Liquidator 96 tips, racked, 200 µL
LQR-200S	17010647	Liquidator 96 tips, racked, presterilized, 200 µL
LQR-200F	17010646	Liquidator 96 tips, racked, filter, presterilized, 200 µL
LQS-200	17010648	Liquidator 96 tips, stacked, 200 µL
LQS-200S	17010649	Liquidator 96 tips, stacked, presterilized, 200 µL
Accessories		
LIQ-384-PA	17010394	384-well adapter plate stage
LIQ-384-PA-B	17010791	384-well adapter plate stage – black
LIQ-AP-20	17014270	Height adjustment post for 20 µL Liquidator 96
LIQ-AP	17010396	Height adjustment post for 200 µL Liquidator 96
LIQ-MAG1	17011288	Magnetic bead separator plate, 24 posts
LIQ-MAG2	17011289	Magnetic bead separator plate, 96 posts
LIQ-96-ADP	17012767	Anodized aluminum 96-well PCR plate holder
SBS polypropylene reusable reservoirs		
LR-R1-PB-5	17012602	Low profile 96 pyramidal wells, 5-pack
LR-R1-PB-5-S	17012603	Sterile low profile 96 pyramidal wells, 5-pack
LR-R1-8V-5	17012608	Low profile 8-channel V-bottom, 5-pack
LR-R1-8V-5-S	17012609	Sterile low profile 8-channel V-bottom, 5-pack
LR-R1-12V-5	17012612	Low profile 12-channel V-bottom, 5-pack
LR-R1-12V-5-S	17012613	Sterile low profile 12-channel V-bottom, 5-pack
LR-R2-PB-5	17012604	Standard profile 96 pyramidal wells 5-pack
LR-R2-PB-5-S	17012605	Sterile standard profile 96 pyramidal wells, 5-pack
LR-R2-8V-5	17012606	Standard profile 8-channel V-bottom, 5-pack
LR-R2-8V-5-S	17012607	Sterile standard profile 8-channel V-bottom, 5-pack
LR-R2-12V-5	17012610	Standard profile 12-channel V-bottom, 5-pack
LR-R2-12V-5-S	17012611	Sterile standard profile 12-channel V-bottom, 5-pack
Deepwell plates, mats, tube strips, cap strips		
LR-P2-96P-5	17012623	2.2 mL 96-deepwell plate, square wells, 5-pack
LR-P2-96P-5-S	17012624	Sterile 2.2 mL 96-deepwell plate, square wells, 5-pack
LR-P2-96-M-5	17012625	Polymeric sealing mat for 96-deepwell plate, 5-pack
LR-P2-96-M-5-S	17012626	Sterile polymeric sealing mat for 96-deepwell plate, 5-pack
LR-T-96-5	17012627	Racked 1.2 mL microtubes, 8-tube strips (8x12), 5-pack
LR-T-96-5-S	17012628	Sterile Racked 1.2 mL microtubes, 8-tube strips (8x12), 5-pack
LR-T-CS8	17012629	8-cap strips for 1.2 mL microtubes, box of 300 strips
LR-T-CS8-S	17012630	Sterile 8-cap strips for 1.2 mL microtubes, box of 300 strips

Clean,
Inert Pipette Tips.



Rainin Tip Manufacturing Facility
Designed to Deliver the Cleanest Tips

The rigorously clean Class 100K Rainin manufacturing facility ensures an absence of contamination throughout the manufacturing environment. Full automation eliminates any possibility of human contact with the tips and results in a pristine product without any detectable trace of biological contamination.

Automated material handling
High-capacity vacuum pumps to transfer virgin polypropylene pellets from stainless steel silos to the injection molding machines. Then, to ensure product cleanliness, the innovative racker system automatically places the tips in the racks, eliminating all human contact during the manufacturing process.

Clean room environment
More than 20,000 sq. ft. of clean rooms specially designed for tip production and packaging. HEPA filters and positive pressure ensure contaminants do not enter the tip production area.

Staff procedures and training
Rainin manufacturing personnel wear masks, gloves and hair nets to reduce the risk of introducing contamination to the tip manufacturing environment.

Rigorous quality assurance testing
Statistically relevant quantities of newly molded tips are continuously sampled from the production line and subjected to rigorous quality testing. Sampling occurs throughout the day at a minimum frequency of once every four hours. Every tip packaged is subjected to 100% visual inspection.

Certification
Filtered and presterilized bioclean tips are sterilized by gamma irradiation and certified.

Protecting sample integrity

Clean pipette tips are critical in life science research
To ensure high quality lab results, tips coming into contact with samples must be free of DNase, RNase, DNA, pyrogen and adenosine triphosphate (ATP). Understanding these typical sample contaminants and taking precautionary measures to reduce or eliminate them at their source is vital to protecting sample integrity.

Contamination originates both in and out of the lab
Human contact is the primary source of contamination. Poor handling procedures can compromise tip purity. The manufacturing process and tip packaging environment are other potential contamination sources that should not be overlooked.

How can contaminants be reduced or eliminated?
Laboratory personnel typically employ a set of procedures to minimize sources of contamination in the lab. But because sample contaminants can originate outside the lab, it is important to evaluate what controls have been put into place at the production level, to assure that possible risk factors have been reduced or eliminated before the product arrives in the lab.

BioClean™ Tips TechZone
Contamination-free Performance

Through innovative design and high-quality production, high-grade Rainin BioClean tips ensure optimal pipetting performance. Manufactured under clean-room conditions, these inert tips are 100% contamination-free, preventing experiment inconsistencies and compromised data fidelity.

BioClean production – no contamination
To ensure high quality lab results, tips must be inert and free of DNase, RNase, DNA, pyrogen and adenosine triphosphate (ATP). Rainin puts great focus on BioClean production by eliminating human contact wherever possible. Our tips are clean.

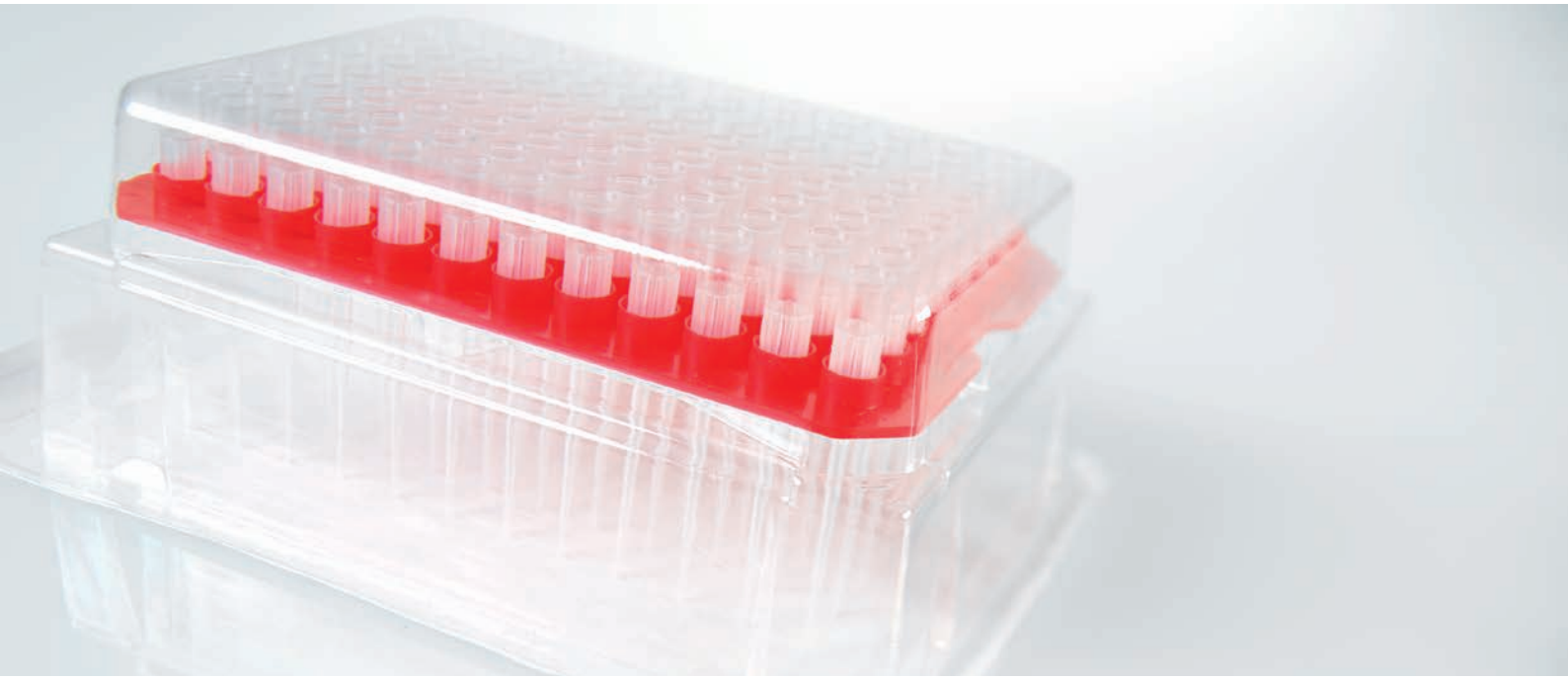
Perfect production – flawless tip geometry
Virgin polypropylene material and state-of-the-art manufacturing result in flawless Rainin tips.
No deformation, cracking, flash, just perfect tip geometry.

FinePoint™ – thin walls for complete liquid transfer
Pipetting accuracy demands an ability to completely dispense the liquid sample from the pipette tip. FinePoint tips feature an acutely tapered design, coupled with very thin tip walls. This results in a subtle, highly flexible pipette tip. The exceedingly thin wall at the orifice end of the tip prevents residual amounts of fluid from clinging to the end of the tip during dispensing. When drawn against the wall of a vessel, the FinePoint design allows for complete touch-off and discharge of the last trace of fluid from the tip.

Ecologically friendly
Innovative packaging solutions for tip rack refilling significantly reduce plastic waste.

Rainin BioClean Tips

With a wide array of tips, in a variety of feature-sets, volume ranges and packaging options, scientists can always work with the optimal application-specific pipetting system. LTS LiteTouch™ and traditional-shaft designs.



Certified contamination-free

BioClean filter and presterilized tips are gamma irradiated to guarantee product sterility. Tested in both internal and external labs, these tips are certified free of DNase, RNase, DNA, pyrogens and ATP. A test certificate is included in each package.

Highest quality

Virgin polypropylene. State-of-the-art manufacturing.

Large Variety

The large selection of available sizes, packaging options, and technical variations provides the ideal tool for every application.

High quality production

- BioClean tips and packaging: contamination-free
- Flawless tip geometry

Innovative designs

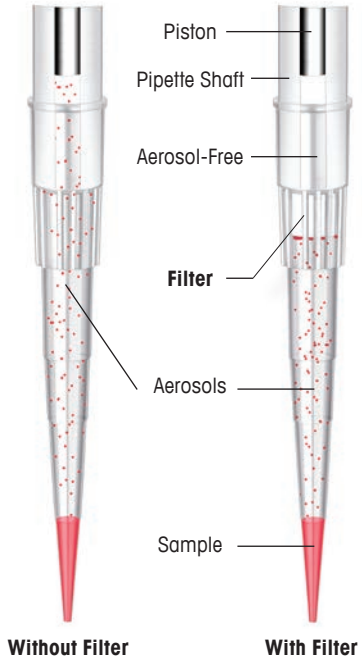
- LTS LiteTouch System
- Space Saver reduces plastic waste and lab clutter

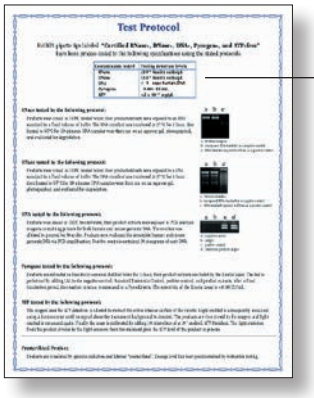
Wide selection of tips

- Optimized, application – specific tip designs
- Many volume ranges
- Green packaging options

Aerosol Resistant Tips
Protection against Aerosol Contamination

Rainin's Aerosol Resistant tips are your best choice for preventing aerosols and liquids in the tip from reaching and contaminating the pipette shaft. Effective in preventing sample cross-contamination in all PCR-based applications, such as genotyping, qPCR and forensic analyses.





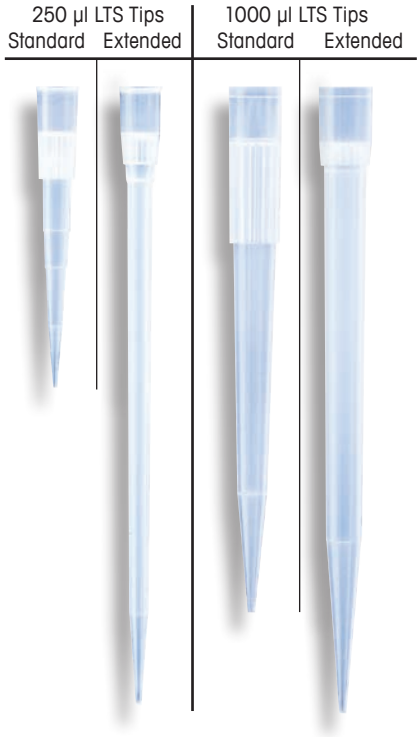
Contaminants Tested	Testing Detection Levels
RNase	≤ 10^{-9} Kunitz units/µl
DNase	≤ 10^{-7} Kunitz units/µl
DNA	< 1 copy human DNA
Pyrogens (LAL test)	0.001 EU/ml
ATP	< 10^{-12} mg/µl

Hydrophobic filter eliminates contamination
Hydrophobic filter forms a barrier against aerosols and liquids, eliminating potential sample and pipette cross-contamination that could jeopardize results.

Pure polyethylene filters contain no additives
The filters in Rainin's aerosol-resistant tips are comprised of an exceptionally dense matrix of sintered polyethylene particles. Unlike other filter types contain additives that can inhibit enzymatic reactions, Rainin filters are composed of pure polyethylene. These sintered particles form a hydrophobic, tortuous path matrix (average pore size: 40 µm) that prevent aerosols and liquids from being aspirated into the body of the pipette.

Certification
Filtered and presterilized bioclean tips are gamma-radiated to ensure the packaged product is completely sterile. In addition, each tip lot is process-tested to specifications shown here and labeled "Certified free of DNase, RNase, DNA, pyrogen, and ATP." A test protocol certificate is included in each package.

Specialty Tips
For Specialized Research



Low-retention LTS tip

Minimal retention of dense sample

Generic tip

Dense sample binding in standard tips

Extended-length tips
For pipetting into tall narrow tubes

102 mm long
Rainin extended-length LTS tips will reach to the bottom of blocks, tall vials, flasks, 100 mm tubes, etc.

Narrow diameter
These tips will pass through 8 mm ID penetrable septa, such as on the specimen collection kits. Reach the bottom of these vials easily, without the pipette shaft touching the vessel wall and becoming contaminated.

Racked for convenience
Supplied in racks, standard, presterilized and with aerosol-resistant filters. RT-L1000X and RT-L1000XS tips hold a full 1200 µl volume.

Low-retention tips
For pipetting proteins, enzymes and DNA

Ultra-hydrophobicity
Unlike other companies that dip or tumble their tips after molding to apply a repellant coating, Rainin integrates a proprietary additive into the polypropylene matrix during the molding process. This avoids problems associated with inconsistent and incomplete coatings. The exposed trifluoromethyl additive reduces interaction between the aspirated liquid and the polypropylene tip matrix, resulting in an exceptionally hydrophobic tip surface that is not affected by autoclaving. Available in 10, 250 and 1,000 µl LTS tip volumes.

Low-retention tips perform better with demanding samples
Ensure higher pipetting accuracy and reproducibility, even when working with viscous, tenacious samples. Greater pipetting accuracy means less of your valuable samples are wasted.

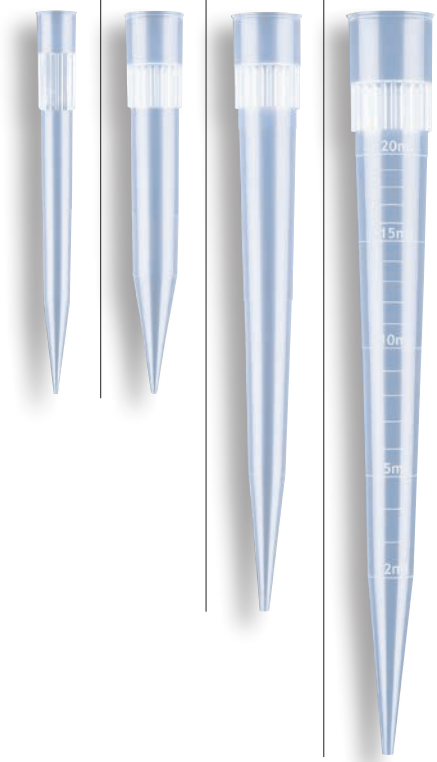
Specialty Tips
For Your Specialized Research

LTS Tips

250 µl | 1000 µl

Available as LTS and Traditional Tips

2000 µl | 5000 µl | 10 ml | 20 ml



Wide-orifice tips
Ideal for delicate samples

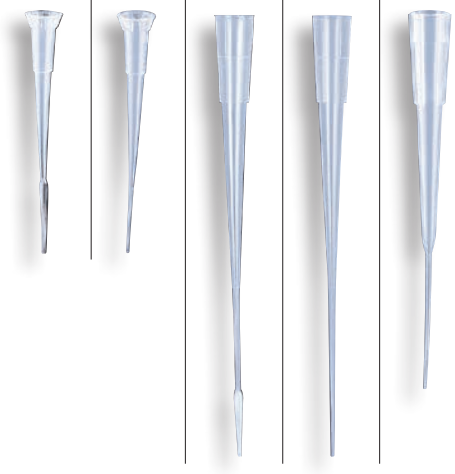
Ideal for delicate samples such as those containing mammalian cells or high-molecular-weight DNA. The wide orifice (1.5 mm) minimizes shear forces on delicate samples and flow resistance for viscous samples.

Large-volume tips
For macro-volume pipetting

Deliver large volumes with the same accuracy as smaller volumes. 2000 µl tips are available in removable cover racks, standard, presterilized, and with aerosol-resistant filters. 5000 µl tips are also available in removable-cover racks, standard or presterilized. 20 ml tips (LTS only) have graduation marks. Both 10 ml and 20 ml tips are available pre-sterilized in individual packets, as well as in bulk.

ShaftGard™ and Gel-Well™ Tips only available as Traditional Tips

ShaftGard™ 10 µl Tip	Standard 10 µl Tip
Shaft and tip ejector protected from contamination from vessel walls	Shaft and tip ejector may be contaminated by vessel walls

10 µl Flat	10 µl Round	250 µl Flat	250 µl Round	250 µl Round
				

ShaftGard™ 10µl tips
Best against cross-contamination

Complete protection of shaft and tip ejector
With ShaftGard tips, the shaft and tip ejector are protected from accidental contamination, reducing the need to decontaminate or sterilize the shaft and tip ejector when working with biological, radioactive, or other critical samples.

Contamination-free tip ejection
The tip ejector is enclosed by the tip and ejects the tip by pressing on the "shoulder" inside the tip – affording further protection against contamination.

Longer for microtube access
ShaftGard tips are significantly longer than standard micro-10 tips for easier access into microcentrifuge and PCR tubes. Use with 2 and 10 µl pipettes with traditional, conical shafts.

Gel-Well™
Great for gels in narrow wells

Designed for dispensing samples into narrow wells in electrophoretic slab gel apparatus, for sample recovery, or when high accuracy is required at low volumes. The flexible ultra-thin micro-capillary is ideal for DNA sequencing and protein separation. Autoclave cycles at 1 bar and 121° C up to 15 minutes are possible without significant capillary shrinkage or closure.

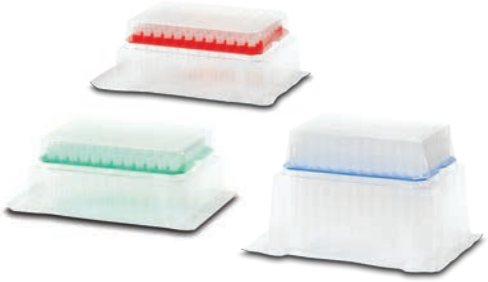
- **Available with flat or round tip ends**
- **Certified RNase/DNase-free**

Fit pipettes of major manufacturers, such as Eppendorf, Gilson, BioHit, as well as the traditional (non-LTS) Rainin pipettes.

BioClean™ Tips in Green Packaging

Reducing Waste at the Source

Many labs are concerned with reducing environmental impact. Rainin has long been a pioneer in addressing these concerns through innovative package design for tip-rack refilling to reduce plastic waste at the source.



Green-Pak™ SpaceSaver™ – 85% less waste
Stacked refills reduce waste and save space

Standard or presterilized Your selection
Contamination-free Protected from contamination
Fast loading Packing 96 tips takes seconds
Save space Needs only 35% of the space used by 10 conventional tip racks
Ecological Shell is made from recycled water bottles.

Green-Pak™ – 75% less waste
Refills with aerosol-resistant tips

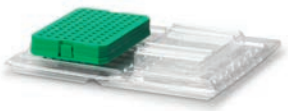
Standard, presterilized and with filter Your choice
Protected Each refill is completely sealed. No contamination
Fast trouble-free loading Easy to align over the empty rack
Ecological Recyclable code 1 PET shell

Rainin Tip Packaging Options

With a wide choice of packaging options, from standard racks to bulk tips to the waste-reducing SpaceSaver refills, Rainin has the perfect tip packaging for you.

Waste from 10 Racks

85% Less



Waste from SpaceSaver

Seeing is believing
Plastic waste comparison

The photo shows the plastic waste from 10 empty 96-place racks, and that from an equivalent number of Green-Pak SpaceSaver stacked refills. Green-Pak SpaceSaver reduces waste by about 85%, compared to regular racks.

Removable-cover racks
The backbone of Rainin's eco-friendly refill system

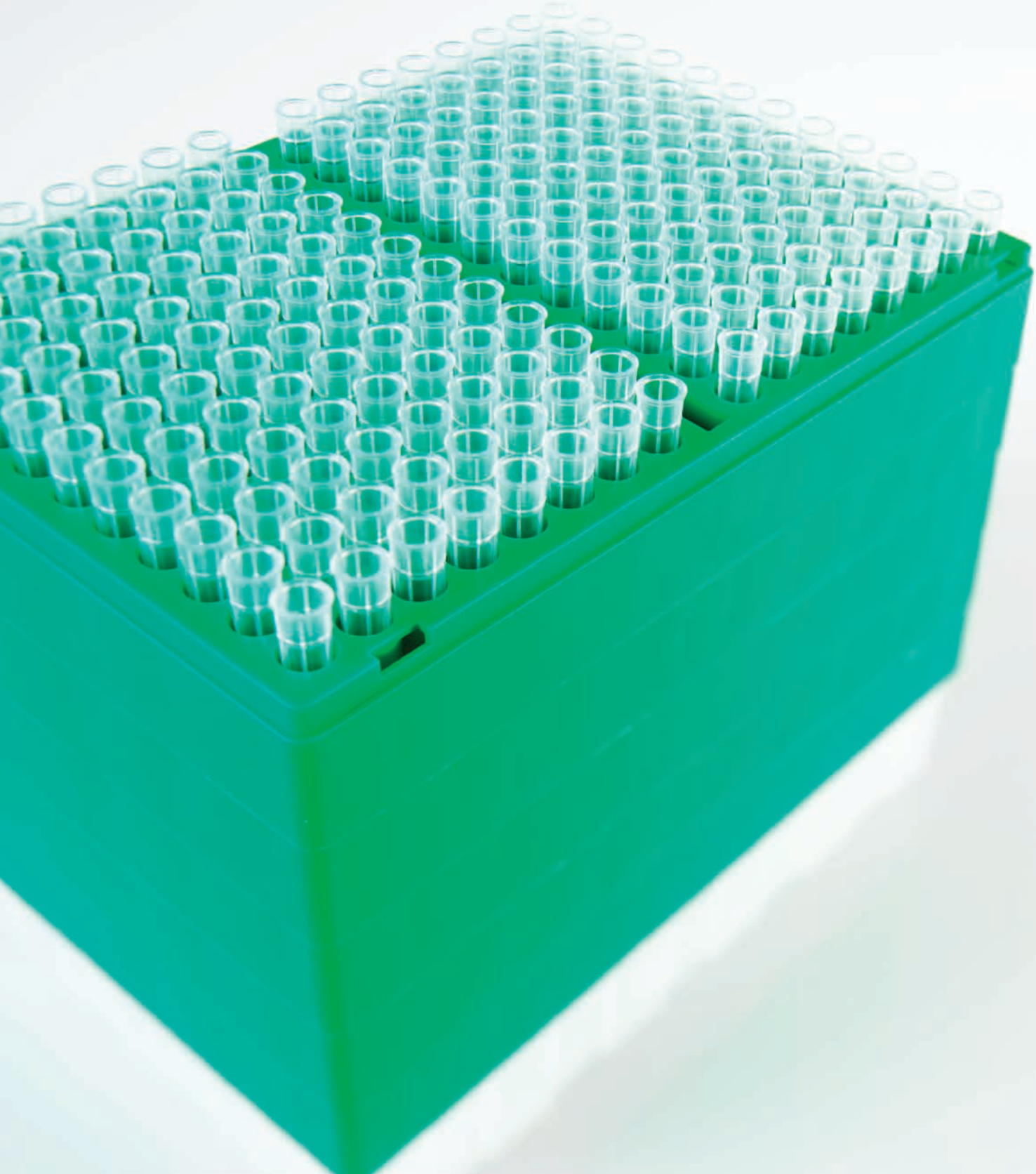
Standard, presterilized and with filter You choose
Refillable SpaceSaver and Green-Pak designed to refill these racks
Fast tip loading The sturdy, non-flexing shelf construction allows easy tip loading with single and multichannel pipettes
Protected Sealed bottoms and overlapping lids protect tips from particulates and micro-organisms
Autoclavable Two-position lid allows autoclaving with the lid in the vent position

Economical bulk tips
High quality, practically zero waste

Bulk tips are available in the following sizes:
LTS: 10, 250, 300, 1000, 1200, 2000, 5000 µl, 10 ml, and 20 ml.
Traditional: 10, 250, 1000, 2000, 2500, 5000 µl and 10 ml.

10 ml and 20 ml are also available individually wrapped and presterilized.

Rainin's most efficient
double-96 format.



StableStak™ and StableRak™

Maximum Stability for Multichannel Work

The unique Double-96 format systems have been designed for multichannel, high-production environments. Each layer contains 192 easy-loading tips, and rubber feet prevent skidding. Ideal for working in hoods or other confined pipetting environments.

StableStak – multilayer stacks
Save space, get 60% less waste!

- One StableStak (960 tips in 5 layers) replaces ten 96-place racks
- Each layer has 192 tips ready for use at once!
- Available in standard and presterilized in 10, 250, 300, and 1000 µl volumes

StableRak – individual racks
Ideal for filter-tip users, 35% less waste

- Contains 192 tips in one rack
- Five StableRaks (960 tips) replace ten 96-place racks
- Available in filter, presterilized, and standard in 10, 250, 300, 1000, and 1200 µl volumes

Easiest to use Deep-well for quick tip mounting
Stable Non-skid rubber feet keep the racks in place
Rigid Strong flat trays for even tip loading
Double-96 format Saves time, increases productivity

LTS Tips for Rainin LTS Pipettes

Cat. No.	MT Order No.	Description	Maximum Capacity	Fits LTS Pipette	Type
Removable-cover racks					
RT-L10	17002930	960 tips in 10 racks	20 µl	2, 10, 20 µl	
RT-L10S	17002929	960 tips in 10 racks	20 µl	2, 10, 20 µl	Presterilized
RT-L10F	17002928	960 tips in 10 racks	20 µl	2, 10, 20 µl	Filter, presterilized
RT-L250	17002932	960 tips in 10 racks	200 µl	50,100, 200 µl	
RT-L250S	17002931	960 tips in 10 racks	200 µl	50,100, 200 µl	Presterilized
RT-L200F	17002927	960 tips in 10 racks	200 µl	50,100, 200 µl	Filter, presterilized
RT-L250W	17007102	960 tips in 10 racks	200 µl	50,100, 200 µl	Wide-orifice
RT-L250WS	17007101	960 tips in 10 racks	200 µl	50,100, 200 µl	Wide-orifice, presterilized
RT-L300	17002935	768 tips in 8 racks	300 µl	300 µl	
RT-L300S	17002934	768 tips in 8 racks	300 µl	300 µl	Presterilized
RT-L300F	17002933	768 tips in 8 racks	300 µl	300 µl	Filter, presterilized
RT-L1000	17002922	768 tips in 8 racks	1000 µl	1000 µl	
RT-L1000S	17002921	768 tips in 8 racks	1000 µl	1000 µl	Presterilized
RT-L1000F	17002920	768 tips in 8 racks	1000 µl	1000 µl	Filter, presterilized
RT-L1000W	17007100	768 tips in 8 racks	1000 µl	1000 µl	Wide-orifice
RT-L1000WS	17007099	768 tips in 8 racks	1000 µl	1000 µl	Wide-orifice, presterilized
RT-L1200	17006421	768 tips in 8 racks	1200 µl	1200, 1000 µl	
RT-L1200S	17006420	768 tips in 8 racks	1200 µl	1200, 1000 µl	Presterilized
RT-L1200F	17006419	768 tips in 8 racks	1200 µl	1200, 1000 µl	Filter, presterilized
RT-L2000	17002926	480 tips in 8 racks	2000 µl	2000 µl	
RT-L2000S	17002924	480 tips in 8 racks	2000 µl	2000 µl	Presterilized
RT-L2000F	17002923	480 tips in 8 racks	2000 µl	2000 µl	Filter, presterilized
RT-L5000	17002937	192 tips in 8 racks	5000 µl	5000 µl	
RT-L5000S	17002936	192 tips in 8 racks	5000 µl	5000 µl	Presterilized

Green-Pak					
GP-L10	17002424	960 tips in 10 refills	20 µl	2, 10, 20 µl	
GP-L10S	17002430	960 tips in 10 refills	20 µl	2, 10, 20 µl	Presterilized
GP-L10F	17002429	960 tips in 10 refills	20 µl	2, 10, 20 µl	Filter, presterilized
GP-L250	17002425	960 tips in 10 refills	200 µl	50,100, 200 µl	
GP-L250S	17002431	960 tips in 10 refills	200 µl	50,100, 200 µl	Presterilized
GP-L200F	17002428	960 tips in 10 refills	200 µl	50,100, 200 µl	Filter, presterilized
GP-L1000	17002423	768 tips in 8 refills	1000 µl	1000 µl	
GP-L1000S	17002427	768 tips in 8 refills	1000 µl	1000 µl	Presterilized
GP-L1000F	17002426	768 tips in 8 refills	1000 µl	1000 µl	Filter, presterilized
GPR-L10	17001865	Empty racks/lids for any GP/GPS 10 µl refills, red, package of 10			
GPR-L250	17001863	Empty racks/lids for any GP/GPS 250 µl refills, green, package of 10			
GPR-L1000	17001864	Empty racks/lids for any GP/GPS 1000 µl refills, blue, package of 8			

Green-Pak SpaceSaver					
GPS-L10	17005091	960 tips in 10 refills	20 µl	2, 10, 20 µl	
GPS-L10S	17005090	960 tips in 10 refills	20 µl	2, 10, 20 µl	Presterilized
GPS-L250	17005093	960 tips in 10 refills	200 µl	50,100, 200 µl	
GPS-L250S	17005092	960 tips in 10 refills	200 µl	50,100, 200 µl	Presterilized
GPS-L300	17005095	768 tips in 8 refills	300 µl	300 µl	
GPS-L300S	17005094	768 tips in 8 refills	300 µl	300 µl	Presterilized
GPS-L1000	17005089	768 tips in 8 refills	1000 µl	1000 µl	
GPS-L1000S	17005088	768 tips in 8 refills	1000 µl	1000 µl	Presterilized

Extended-length tips					
RT-L250X	17008814	768 tips in 8 racks	200 µl	50,100, 200 µl	Ext length
RT-L250XS	17008815	768 tips in 8 racks	200 µl	50,100, 200 µl	Presterilized, ext length
RT-L200XF	17008887	768 tips in 8 racks	200 µl	50,100, 200 µl	Filter, presterilized, ext length
RT-L1000X	17008817	768 tips in 8 racks	1200 µl	1000, 1200 µl	Ext length
RT-L1000XS	17008818	768 tips in 8 racks	1200 µl	1000, 1200 µl	Presterilized, ext length
RT-L1000XF	17008819	768 tips in 8 racks	1200 µl	1000, 1200 µl	Filter, presterilized, ext length

Cat. No.	MT Order No.	Description	Maximum Capacity	Fits LTS Pipette	Type
Low-retention tips					
RT-L10LR	17007955	960 tips in 10 racks	20 µl	2, 10, 20 µl	Low-retention
RT-L10SLR	17007956	960 tips in 10 racks	20 µl	2, 10, 20 µl	Presterilized, low-ret.
RT-L10FLR	17007957	960 tips in 10 racks	20 µl	2, 10, 20 µl	Filter, presterilized, low-ret.
RT-L250LR	17007959	960 tips in 10 racks	200 µl	50,100, 200 µl	Low-retention
RT-L250SLR	17007960	960 tips in 10 racks	200 µl	50,100, 200 µl	Presterilized, low-ret.
RT-L200FLR	17007961	960 tips in 10 racks	200 µl	50,100, 200 µl	Filter, presterilized, low-ret.
RT-L1000LR	17007952	768 tips in 8 racks	1000 µl	1000 µl	Low-retention
RT-L1000SLR	17007953	768 tips in 8 racks	1000 µl	1000 µl	Presterilized, low-ret.
RT-L1000FLR	17007954	768 tips in 8 racks	1000 µl	1000 µl	Filter, presterilized, low-ret.

StableRak double-96 format individual racks					
SR-L10	17005862	960 tips in 5 racks	20 µl	2, 10, 20 µl	
SR-L10S	17005861	960 tips in 5 racks	20 µl	2, 10, 20 µl	Presterilized
SR-L10F	17005860	960 tips in 5 racks	20 µl	2, 10, 20 µl	Filter, presterilized
SR-L250	17005864	960 tips in 5 racks	200 µl	50,100, 200 µl	
SR-L250S	17005863	960 tips in 5 racks	200 µl	50,100, 200 µl	Presterilized
SR-L200F	17005859	960 tips in 5 racks	200 µl	50,100, 200 µl	Filter, presterilized
SR-L300	17005867	768 tips in 4 racks	300 µl	300 µl	
SR-L300S	17005866	768 tips in 4 racks	300 µl	300 µl	Presterilized
SR-L300F	17005865	768 tips in 4 racks	300 µl	300 µl	Filter, presterilized
SR-L1000	17007083	768 tips in 4 racks	1000 µl	1000 µl	
SR-L1000S	17007082	768 tips in 4 racks	1000 µl	1000 µl	Presterilized
SR-L1000F	17007081	768 tips in 4 racks	1000 µl	1000 µl	Filter, presterilized
SR-L1200	17007086	768 tips in 4 racks	1200 µl	1200, 1000 µl	
SR-L1200S	17007085	768 tips in 4 racks	1200 µl	1200, 1000 µl	Presterilized
SR-L1200F	17007084	768 tips in 4 racks	1200 µl	1200, 1000 µl	Filter, presterilized

StableStak double-96 format stacked racks					
SS-L10	17005873	960 tips in 5 layers	20 µl	2, 10, 20 µl	
SS-L10S	17005872	960 tips in 5 layers	20 µl	2, 10, 20 µl	Presterilized
SS-L250	17005875	960 tips in 5 layers	200 µl	50,100, 200 µl	
SS-L250S	17005874	960 tips in 5 layers	200 µl	50,100, 200 µl	Presterilized
SS-L300	17005877	768 tips in 4 layers	300 µl	300 µl	
SS-L300S	17005876	768 tips in 4 layers	300 µl	300 µl	Presterilized
SS-L1000	17007090	768 tips in 4 layers	1000 µl	1000 µl	
SS-L1000S	17007089	768 tips in 4 layers	1000 µl	1000 µl	Presterilized

Bulk tips					
RC-L10	17001128	1000 tips in bags	20 µl	2, 10, 20 µl	
RC-L10/10	17000504	10x1000 tips in bags	20 µl	2, 10, 20 µl	
RC-L250	17001118	1000 tips in bags	200 µl	50,100, 200 µl	
RC-L250/10	17000506	10x1000 tips in bags	200 µl	50,100, 200 µl	
RC-L300	17001132	1000 tips in bags	300 µl	300 µl	
RC-L1000	17001129	1000 tips in bags	1000 µl	1000 µl	
RC-L1000/10	17000498	10x1000 tips in bags	1000 µl	1000 µl	
RC-L1200	17006324	1000 tips in bags	1200 µl	1200,1000 µl	
RC-L2000	17001130	1000 tips in bags	2000 µl	2000 µl	
RC-L5000	17001133	1000 tips in bags	5000 µl	5000 µl	
RC-L10ML	17001119	200 tips in bags	10 ml	10 ml	
RC-L10MLS	17005940	75 tips individ. wrapped	10 ml	10 ml	Presterilized, individ. wrapped
RC-L20ML	17001131	100 tips in bags	20 ml	20 ml	
RC-L20MLS	17005941	50 tips individ. wrapped	20 ml	20 ml	Presterilized, individ. wrapped

Pipette Compatibility with LTS Tips

Fine Point

	Pipette Model	Recommended Volume Range (µL)	Fine Point LTS 20 µL		250 µL		300 µL		1000 µL		1200 µL		2000 µL		Filtered						Macro LTS 5000 µL		10 mL		20 mL	
			RC-L10 / RT-L10 / GP-L10 / GPS-L10 / SR-L10 / SS-L10 / RT-L10LR	RT-L10S / GP-L10S / GPS-L10S / SR-L10S / SS-L10S / RT-L10SLR	RC-L250 / RT-L250 / GP-L250 / GPS-L250 / SR-L250 / SS-L250 / RT-L250LR / RT-L250W / RT-L250X	RT-L250S / GP-L250S / GPS-L250S / SR-L250S / SS-L250S / RT-L250SLR / RT-L250WS / RT-L250XS	RC-L300 / RT-L300 / GPS-L300 / SR-L300 / SS-L300	RT-L300S / GPS-L300S / SR-L300S / SS-L300S	RC-L1000 / RT-L1000 / GP-L1000 / GPS-L1000 / SR-L1000 / SS-L1000 / RT-L1000LR / RT-L1000W / RT-L1000X	RT-L1000S / GP-L1000S / GPS-L1000S / SR-L1000S / SS-L1000S / RT-L1000SLR / RT-L1000WS / RT-L1000XS	RC-L1200 / RT-L1200 / SR-L1200	RT-L1200S / SR-L1200S	RC-L2000 / RT-L2000	RT-L2000S	RT-L10F / GP-L10F / SR-L10F/ RT-L10FLR (30 µL)	RT-L200F / GP-L200F / SR-L200F / RT-L200FLR / RT-L200XF (200 µL)	RT-L300F / SR-L300F (300 µL)	RT-L1000F / GP-L1000F / SR-L1000F / RT-L1000FLR (1000 uL)	RT-L1200F / SR-L1200F / RT-L1000XF (1250 µL)	RT-L2000F (2000 µL)	RC-L5000 / RT-L5000	RT-L5000S	RC-L10ML	RC-L10MLS (Individually Wrapped)	RC-L20ML	RC-L20MLS (Individually Wrapped)
Pipet-Lite XLS	L-2XLS	0.1 - 2	•	•											•											
	L-10XLS	0.5 - 10	•	•											•											
	L8-10XLS+	0.5 - 10	•	•											•											
	L12-10XLS+	0.5 - 10	•	•											•											
	L-20XLS	2 - 20	•	•											•											
	L8-20XLS+	2 - 20	•	•											•											
	L12-20XLS+	2 - 20	•	•											•											
	L8-50XLS+	5 - 50			•	•										•										
	L12-50XLS+	5 - 50			•	•										•										
	LA8-50XLS	5 - 50			•	•										•										
	L-100XLS	10 - 100			•	•										•										
	L-200XLS	20 - 200			•	•										•										
	L8-200XLS+	20 - 200			•	•										•										
	L12-200XLS+	20 - 200			•	•										•										
	L-300XLS	20 - 300					•	•									•									
	L8-300XLS+	20 - 300					•	•									•									
	L12-300XLS+	20 - 300					•	•									•									
	LA6-300XLS	20 - 300					•	•									•									
	LA8-300XLS	20 - 300					•	•									•									
	L-1000XLS	100 - 1000							•	•	•	•						•	•							
	L8-1200XLS	100 - 1200							•	•	•	•							•							
	L12-1200XLS	100 - 1200							•	•	•	•							•							
	LA6-1200XLS	100 - 1200							•	•	•	•							•							
	LA8-1200XLS	100 - 1200							•	•	•	•							•							
	L-2000XLS	200 - 2000											•	•						•						
	L-5000XLS	500 - 5000																			•	•				
	L-10MLXLS	1 - 10 mL																					•	•		
	L-20MLXLS	2 - 20 mL																							•	•

Key: RC - Bulk, RT - Lift-Off-Cover Rack, GP - Green-Pak Refill, GPS - Green-Pak SpaceSaver Refill, SR - StableRak, SS - StableStak

Fine Point

		Fine Point LTS 20 µL		250 µL		300 µL		1000 µL		1200 µL		2000 µL		Filtered						Macro LTS 5000 µL		10 mL		20 mL	
Pipette Model	Recommended Volume Range (µL)	RC-L10 / RT-L10 / GP-L10 / GPS-L10 / SR-L10 / SS-L10 / RT-L10LR	RT-L10S / GP-L10S / GPS-L10S / SR-L10S / SS-L10S / RT-L10SLR	RC-L250 / RT-L250 / GP-L250 / GPS-L250 / SR-L250 / SS-L250 / RT-L250LR / RT-L250W / RT-L250X	RT-L250S / GP-L250S / GPS-L250S / SR-L250S / SS-L250S / RT-L250SLR / RT-L250WS / RT-L250XS	RC-L300 / RT-L300 / GPS-L300 / SR-L300 / SS-L300	RT-L300S / GPS-L300S / SR-L300S / SS-L300S	RC-L1000 / RT-L1000 / GP-L1000 / GPS-L1000 / SR-L1000 / SS-L1000 / RT-L1000LR / RT-L1000W / RT-L1000X	RT-L1000S / GP-L1000S / GPS-L1000S / SR-L1000S / SS-L1000S / RT-L1000SLR / RT-L1000WS / RT-L1000XS	RC-L1200 / RT-L1200 / SR-L1200	RT-L1200S / SR-L1200S	RC-L2000 / RT-L2000	RT-L2000S	RT-L10F / GP-L10F / SR-L10F/ RT-L10FLR (30 µL)	RT-L200F / GP-L200F / SR-L200F / RT-L200FLR / RT-L200XF (200 µL)	RT-L300F / SR-L300F (300 µL)	RT-L1000F / GP-L1000F / SR-L1000F / RT-L1000FLR (1000 uL)	RT-L1200F / SR-L1200F / RT-L1000XF (1250 µL)	RT-L2000F (2000 µL)	RC-L5000 / RT-L5000	RT-L5000S	RC-L10ML	RC-L10MLS (Individually Wrapped)	RC-L20ML	RC-L20MLS (Individually Wrapped)
E4																									
E4-10XLS	0.5 - 10	•	•											•											
E8-10XLS+	0.5 - 10	•	•											•											
E12-10XLS+	0.5 - 10	•	•											•											
E4-20XLS	2.0 - 20	•	•											•											
E8-20XLS+	2.0 - 20	•	•											•											
E12-20XLS+	2.0 - 20	•	•											•											
E8-50XLS+	5 - 50			•	•										•										
E12-50XLS+	5 - 50			•	•										•										
EA8-50XLS+	5 - 50			•	•										•										
E4-100XLS	10 - 100			•	•										•										
E4-200XLS	20 - 200			•	•										•										
E8-200XLS+	20 - 200			•	•										•										
E12-200XLS+	20 - 200			•	•										•										
E4-300XLS	30 - 300					•	•									•									
E8-300XLS+	30 - 300					•	•									•									
E12-300XLS+	30 - 300					•	•									•									
EA6-300XLS	30 - 300					•	•									•									
EA8-300XLS	30 - 300					•	•									•									
E4-1000XLS	100 - 1000							•	•	•	•						•	•							
E8-1200XLS	100 - 1200							•	•	•	•							•							
EA6-1200XLS	100 - 1200							•	•	•	•							•							
EA8-1200XLS	100 - 1200							•	•	•	•							•							
E12-1200XLS	100 - 1200							•	•	•	•							•							
E4-2000XLS	200 - 2000											•	•						•						
E4-5000XLS	500 - 5000																			•	•				
E4-10MLXLS	1 - 10 mL																					•	•		
E4-20MLXLS	2 - 10 mL																							•	•

Key: RC - Bulk, RT - Lift-Off-Cover Rack, GP - Green-Pak Refill, GPS - Green-Pak SpaceSaver Refill, SR - StableRak, SS - StableStak

Traditional Tips

Cat. No.	MT Order No.	Description	Maximum Capacity	Fits Traditional Pipette Model	Type
Removable-cover racks					
RT-10	17002896	960 tips in 10 racks	10 µl	2, 10 µl	
RT-10S	17002905	960 tips in 10 racks	10 µl	2, 10 µl	Presterilized
RT-10F	17002904	960 tips in 10 racks	10 µl	2, 10 µl	Filter, presterilized
RT-10G	17002908	960 tips in 10 racks	10 µl	2, 10 µl	ShaftGard
RT-10GS	17002907	960 tips in 10 racks	10 µl	2, 10 µl	ShaftGard / Presterilized
RT-10GF	17002906	960 tips in 10 racks	10 µl	2, 10 µl	ShaftGard / Filter, prester.
RT-20F	17002917	960 tips in 10 racks	30 µl	20, 25 µl	Filter, presterilized
RT-100F	17002903	960 tips in 10 racks	100 µl	100 µl	Filter, presterilized
RT-250	17002916	960 tips in 10 racks	250 µl	20, 25, 100, 200, 250 µl	
RT-250S	17002913	960 tips in 10 racks	250 µl	20, 25, 100, 200, 250 µl	Presterilized
RT-200F	17002912	960 tips in 10 racks	200 µl	200, 250 µl	Filter, presterilized
RT-1000	17002902	768 tips in 8 racks	1000 µl	1000 µl	
RT-1000S	17002901	768 tips in 8 racks	1000 µl	1000 µl	Presterilized
RT-1000F	17002897	768 tips in 8 racks	1000 µl	1000 µl	Filter, presterilized
RT-2000	17002911	480 tips in 8 racks	2000 µl	2000, 2500 µl	
RT-2000S	17002910	480 tips in 8 racks	2000 µl	2000, 2500 µl	Presterilized
RT-2000F	17002909	480 tips in 8 racks	2000 µl	2000, 2500 µl	Filter, presterilized
RT-5000	17002919	192 tips in 8 racks	5000 µl	5000 µl	
RT-5000S	17002918	192 tips in 8 racks	5000 µl	5000 µl	Presterilized

Green-Pak					
GP-10	17002419	960 tips in 10 refills	10 µl	2, 10 µl	
GP-10S	17002415	960 tips in 10 refills	10 µl	2, 10 µl	Presterilized
GP-10F	17002414	960 tips in 10 refills	10 µl	2, 10 µl	Filter, presterilized
GP-10GF	17002416	960 tips in 10 refills	10 µl	2, 10 µl	ShaftGard / Filter, prester.
GP-20F	17002422	960 tips in 10 refills	30 µl	20, 25 µl	Filter, presterilized
GP-100F	17002413	960 tips in 10 refills	100 µl	100 µl	Filter, presterilized
GP-250	17002409	960 tips in 10 refills	250 µl	20, 25, 100, 200, 250 µl	
GP-250S	17002421	960 tips in 10 refills	250 µl	20, 25, 100, 200, 250 µl	Presterilized
GP-200F	17002420	960 tips in 10 refills	200 µl	200, 250 µl	Filter, presterilized
GP-1000	17002412	768 tips in 8 refills	1000 µl	1000 µl	
GP-1000S	17002411	768 tips in 8 refills	1000 µl	1000 µl	Presterilized
GP-1000F	17002410	768 tips in 8 refills	1000 µl	1000 µl	Filter, presterilized
GPR-10	17001860	Empty racks/ lids for GP-10 products, Purple, pkg of 10			
GPR-10G	17001862	Empty racks/ lids for GP-10G, GPS-10G products, Red, pkg of 10, ShaftGard			
GPR-250	17001861	Empty racks/ lids for GP-250, GPS-250 products, Green, pkg of 10			
GPR-1000	17001859	Empty racks/ lids for GP-1000, GPS-1000 products, Blue, pkg of 8			

Green-Pak SpaceSaver					
GPS-10G	17005085	960 tips in 10 refills	10 µl	2, 10 µl	ShaftGard
GPS-10GS	17005084	960 tips in 10 refills	10 µl	2, 10 µl	ShaftGard / Presterilized
GPS-250	17005087	960 tips in 10 refills	250 µl	20, 25, 100, 200, 250 µl	
GPS-250S	17005086	960 tips in 10 refills	250 µl	20, 25, 100, 200, 250 µl	Presterilized
GPS-1000	17005083	768 tips in 8 refills	1000 µl	1000 µl	
GPS-1000S	17005082	768 tips in 8 refills	1000 µl	1000 µl	Presterilized

Cat. No.	MT Order No.	Description	Maximum Capacity	Fits Traditional Pipette Model	Type
Specialty tips					
GT-10-2	17002375	200 tips in 1 rack	10 µl	2, 10 µl	Gel-Well, 0.17 mm
GT-10-4	17002377	200 tips in 1 rack	10 µl	2, 10 µl	Gel-Well, 0.37 mm
GT-10-6	17002380	200 tips in 1 rack	10 µl	2, 10 µl	Gel-Well, 0.57 mm
GT-250-2	17002376	200 tips in 1 rack	250 µl	20, 25, 100, 200, 250 µl	Gel-Well, 0.17 mm
GT-250-4	17002378	200 tips in 1 rack	250 µl	20, 25, 100, 200, 250 µl	Gel-Well, 0.37 mm
GT-250-6	17002379	200 tips in 1 rack	250 µl	20, 25, 100, 200, 250 µl	Gel-Well, 0.57 mm
RC-250W	17001127	1000 tips in bags	250 µl	20, 25, 100, 200, 250 µl	Wide-orifice

Bulk tips					
RC-10	17001124	1000 tips in bags	10 µl	2, 10 µl	
RC-10G	17001123	1000 tips in bags	10 µl	2, 10 µl	ShaftGard
RC-10/10	17004280	10x1000 tips in bags	10 µl	2, 10 µl	
RC-250	17001116	1000 tips in bags	250 µl	20, 25, 100, 200, 250 µl	
RC-250/10	17001975	10x1000 tips in bags	250 µl	20, 25, 100, 200, 250 µl	
RC-200	17001120	1000 tips in bags	1000 µl	1000 µl	Non-finepoint
RC-1000	17001121	1000 tips in bags	1000 µl	1000 µl	
RC-1000/10	17001977	10x1000 tips in bags	1000 µl	1000 µl	
RC-2000	17001125	1000 tips in bags	2000 µl	2000, 2500 µl	
RC-2500	17001126	1000 tips in bags	2500 µl	2500 µl	
RC-5000	17001117	1000 tips in bags	5000 µl	5000 µl	
RC-10ML	17001122	200 tips in bags	10 ml	10 ml	
RC-10MLS	17005939	75 tips individ. wrapped	10 ml	10 ml	

The Right Tool for Every Application.

Specialty Products
Enhance Your Workflow

METTLER TOLEDO's selection of Rainin pipettes and tips cover most lab applications, but sometimes a specialty tool is preferable. Pipetting viscous or volatile liquids, repeat dispensing, transferring aggressive liquids safely or serological pipetting – these are tasks that are best served by our specialized products.

Pos-D
Problem-free pipetting of problem liquids.

AutoRep Repeater
Repetitive pipetting.

Pipet-X
For use with disposable glass and plastic pipets.

Disp-X
Handle reagents safely and easily.

LiteTouch Tubes
Unique opening method – better ergonomics and no contamination.

Special products for special applications

Positive-displacement pipette
Specially suited for liquid samples with high densities, viscosities or vapor pressures. Absolutely eliminates cross-contamination from aerosols, samples or pipette.

Repeater pipette
Speed up long pipetting series. Positive displacement syringes for volumes from 1 µl – 50 ml. Electronic and manual versions.

Pipet controller
Lightweight, easy to use, variable speed. Uses standard serological pipets.

Bottle-top dispenser
Built-in safety features protect the user from accidental spills and ensure smooth, trouble-free operation.

Microcentrifuge tubes 1.7 ml
One-handed operation, easy to use, colored and natural tubes.

Rainin Classic

Traditional Pipette with Ergonomic Benefits

Based on the look, feel and handling of traditional pipettes, Rainin Classic provides years of reproducible performance. Lighter spring forces, low-drag seals and a shock absorber make it easier on your hands.

Durable

Stainless steel and quality PVDF ensure fewer out-of-tolerance failures, many years of performance with low cost of ownership. Simple maintenance. No lubrication.

Lower plunger force

Lighter aspiration and blowout springs reduce pain and injury. Plunger force in Rainin Classic is 25% less than in similar traditional pipettes.

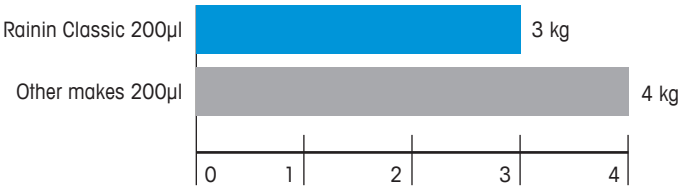
Comfortable finger-hook

The ergonomically designed finger-hook allows you to rest the hand and use a lighter grip during pipetting cycles.

Silicone shock absorber

The silicone shock absorber in the tip ejector provides extra protection by reducing impact forces when ejecting tips.

Pipette plunger force comparison



Rainin Classic reduces plunger force by 25%.

Ordering information

Cat. No.	MT Order No.	Volume Range
Rainin Classic		
PR-2	17008648	0.1–2 µl
PR-10	17008649	0.5–10 µl
PR-20	17008650	2–20 µl
PR-100	17008651	10–100 µl
PR-200	17008652	20–200 µl
PR-1000	17008653	100–1000 µl
PR-5000	17008654	500–5000 µl
PR-10ML	17008655	1–10 ml
PR-START	17008708	Starter Kit

Rainin Classic™ PR-START

Rainin Classic pipettes: PR-20, PR-200, PR-1000
Racks of traditional tips: RT-250, RT-1000
Hang-Ups (HU-M3): Set of 3

Pos-D™ Positive Displacement Pipette

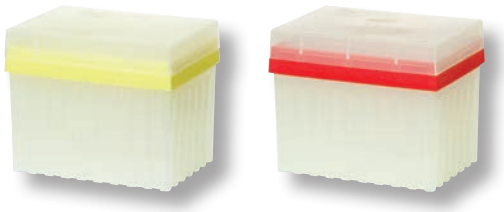
Problem-free Pipetting of Problem Liquids

Pos-D is specially suited for liquids with high densities, viscosities or vapor pressures. Given the disposable capillaries and pistons, positive displacement absolutely eliminates cross-contamination from aerosols, samples or pipette.

Comfortable
Pos-D rests in your hand while you work – no need to grip! The display faces you, so no twisting wrist or pipette to set or read volume. Natural feel, fits comfortably in your hand.

Easy to load
Pre-assembled, presterilized capillaries in racks.

No aerosol contamination
No air between the liquid sample and the piston prevents formation of aerosols and protects samples from instrument contamination.



Presterilized and racked capillaries

Sterilized by e-beam radiation
Get the security of assembled, presterilized, and racked capillaries and pistons for almost the same price or less than non-sterile capillaries.

Easy to pick up and eject
Assembled and racked by a robotic process without human contact, Rainin capillaries are easy to use and also fit Gilson Microman.

Prevent sample carryover
Disposable capillaries and pistons provide absolute protection against cross contamination.

Color-coded racks and plunger buttons
For convenience, the plunger button tops on each of the six volume ranges of the Pos-D pipette match the accent color of the appropriate capillary-piston rack.

Ordering information

Cat. No.	MT Order No.	Volume Range
Pos-D pipettes		
MR-10	17008575	0.5–10 µl
MR-25	17008576	3–25 µl
MR-50	17008577	20–50 µl
MR-100	17008578	10–100 µl
MR-250	17008579	50–250 µl
MR-1000	17008580	100–1000 µl
Capillaries and Pistons		
C-10	17008604	3 racks of 60 each, presterilized
C-25	17008605	3 racks of 60 each, presterilized
C-50	17008606	3 racks of 60 each, presterilized
C-100	17008607	3 racks of 60 each, presterilized
C-250	17008608	3 racks of 60 each, presterilized
C-1000	17008609	3 racks of 60 each, presterilized

AutoRep™ E and AutoRep S
Adjustable Electronic and Manual Repeaters

Speed up long pipetting series, precisely and fatigue-free. Wide selection of easy-to-exchange syringes ensures optimal performance on any volume from 1 µl – 50 ml. Encode syringes recognized by AutoRep.

AutoRep S
Manual Dispenser

AutoRep E
Electronic Dispenser

Ordering Information

Cat. No.	MT-Order-No	Description
AutoRep repeater pipette		
AR-E1EU	17000725	AutoRep E Rep 1 µl – 50 ml EU
AR-E1UK	17000727	AutoRep E Rep 1 µl – 50 ml UK
AR-E1	17000723	AutoRep E electronic repeater pipette, 1 µl to 50 ml
AR-S	17013008	AutoRep S manual repeater pipette, 2 µl to 5 ml
AR-ADP	17000556	Charger adapter, AutoRep E
AR-BA	17003233	NiMH battery pack, AutoRep E
AR-RB	17004324	Charging base, AutoRep E
SM-ARS	17013009	Shelf mount for AutoRep S
VT-ARS	17013010	Volume tables for AutoRep S
Encode syringes		
ENC-100	17007399	0.1 ml, 100 per pkg
ENC-100S	17007400	0.1 ml, 100 per pkg/ sterile
ENC-500	17001871	0.5 ml, 100 per pkg
ENC-500S	17001872	0.5 ml, 100 per pkg, sterile
ENC-1250	17001873	1.25 ml, 100 per pkg
ENC-1250S	17001874	1.25 ml, 100 per pkg, sterile
ENC-2500	17001877	2.5 ml, 100 per pkg
ENC-2500S	17001878	2.5 ml, 100 per pkg, sterile
ENC-5ML	17001883	5 ml, 100 per pkg
ENC-5MLS	17001884	5 ml, 100 per pkg, sterile
ENC-12ML	17001875	12.5 ml, 100 per pkg
ENC-12MLS	17001876	12.5 ml, 100 per pkg, sterile
ENC-25ML	17001879	25 ml*, 50 per pkg
ENC-25MLS	17001880	25 ml*, 25 per pkg, sterile
ENC-50ML	17001881	50 ml*, 25 per pkg
ENC-50MLS	17001882	50 ml*, 25 per pkg, sterile
ENC-SET	17001885	Encode set, non-sterile, 20 each: 0.5, 1.25, 2.5, 5, 12.5 ml
ENC-10ADP	17000546	Adapter for 25, 50 ml, non-sterile, 10/pkg
ENC-ADPS	17000547	Adapter, 25, 50 ml, sterile, individually-wrapped, 5/pkg

* Includes one adapter. Sterile syringe tips are endotoxin-free, individually wrapped.

Reduces repetitive strain injuries.
AutoRep™ E virtually eliminates all forces contributing to repetitive strain injuries often experienced in multi-dispense pipetting.

Three modes for flexibility.
Dispensing: Step counter displays volume.
Auto-Dispensing: Learns your pace and continues at this same pace. No time-interval programming.
Pipetting: Positive-displacement syringe.

Rechargeable battery eliminates downtime.
Fully charge the AutoRep™ E in only 2.5 hours. The no-memory, no-maintenance NiMH battery pack may be charged in the same base while another pack is used.

Encode™ syringes for AutoRep E and AutoRep S
- AutoRep E displays Encode syringe volume automatically
- Ideal for viscous or high vapor pressure liquids

For complete details about AutoRep S, see www.mt.com/rainin

Pipet-X™ Pipet Controller

Sample Large Volumes with Confidence

Sample large volumes (up to 100 ml) with our new lightweight Pipet-X pipet controller. Ample flexibility for a wide range of liquid transfer and measurement options.

One tool is all you need
The Pipet-X pipet controller excels at all serological pipetting applications; uses standard plastic or glass serological pipets.

Flexible one-handed control
The ergonomic grip and buttons are designed for comfort with large or small hands.

Smart recharging
Pipet-X uses a rechargeable NiMH battery for up to 8 hours of uninterrupted use. Operate while recharging with power cord.

Contamination free
A built-in check valve and 0.2 micron hydrophobic membrane filter protect the Pipet-X internal components from contamination during aspiration.

Pipet-X™ pipet controller

Cat. No.	MT Order No.	Description
PX-100EU	17011743	Pipet-X Pipet Controller; 0.1 – 100 mL
PX-100	17011733	Pipet-X pipet Controller; 0.1–100 mL
PX-SA	17011744	Pipet-X Silicone Adapter with Check Valve
PX-020	17011745	Pipet-X Spare Membrane Filter: 0.2 µm, sterile
PX-NIMH	17011746	Pipet-X Nickel-Metal Hydride Battery

Disp-X™ Bottle-Top Dispenser

Handle Reagents Safely and Easily

The built-in safety features of our new Disp-X manual bottle-top dispenser protect from accidental spills and ensure smooth, trouble-free operation. Compatible with a wide range liquids.

Superior chemical compatibility
High-grade inert materials used in manufacturing assure the purity of your reagents from the first aliquot to the last.

Built-in safety features
Discharge tube and closure cap prevent accidental dispensing or spilling of corrosive liquid.

Clear and easy control
Adjustable control knob makes setting the volume easy.

Flexible filling and discharging options
Different filling and discharging tube diameters and shapes to suit your application workflow.

Disp-X™ bottle-top dispenser

Cat. No.	MT Order No.	Description
DX-5EU	17011769	Disp-X 0.5–5 ml Bottle-Top Dispenser
DX-10EU	17011771	Disp-X 1–10 ml Bottle-Top Dispenser
DX-25EU	17011773	Disp-X 2.5–25 ml Bottle-Top Dispenser
DX-50EU	17011775	Disp-X 5–50 ml Bottle-Top Dispenser
DX-5	17011768	Disp-X 0.5–5 ml Bottle-Top Dispenser
DX-10	17011770	Disp-X 1–10 ml Bottle-Top Dispenser
DX-25	17011772	Disp-X 2.5–25 ml Bottle-Top Dispenser
DX-50	17011774	Disp-X 5–50 ml Bottle-Top Dispenser

Accessories

Cat. No.	MT Order No.	Description
DX-DT10	17011747	Discharge Tubes 5 or 10 ml bent, 80 mm, pack of 2
DX-DT50	17011748	Discharge Tubes 25 or 50 ml bent, 120 mm, pack of 2
DX-FT250	17011749	Filling Tubes with Adapter 250 mm x 6.9 mm OD, pack of 2
DX-FT390	17012004	Filling Tubes with Adapter 390 mm x 6.9 mm OD, pack of 2
DX-FT335	17011750	Filling Tubes with Adapter 335 mm x 6.9 mm OD, pack of 2
DX-FV10	17011757	Filling Valve with Sealing Washer 5 or 10 m
DX-FV50	17011765	Filling Valve with Sealing Washer 25 or 50 m
DX-DV10	17011766	Discharge Valve with Sealing Washer 5 or 10 ml
DX-DV50	17011767	Discharge Valve with Sealing Washer 15 or 50 ml

LiteTouch™ 1.7 ml Microcentrifuge Tubes
Quick and Easy One-Hand Operation

The unique rear tab and hinge design on our innovative LiteTouch microcentrifuge tubes makes them easier and faster to open with just one hand. By placing the tab over the hinge, a light downward pressure is all it takes to "pop" the secure seal and lift the cap.

Compared with the prying motion required to open conventional tubes, the new LiteTouch tubes are a dramatic, ergonomic improvement that will enhance your work flow and speed throughput with multiple samples.

Innovative, easy opening
The LiteTouch tube employs a patented rear hinge and tab mechanism to open the cap. This mechanism eliminates the need to push up on the front of the cap, improving control, reducing fatigue and increasing throughput.

Clarity, color, convenience
LiteTouch tubes are made from a durable, high-clarity homo-polymer. Frosted writing surfaces on the cap and tube for labeling, and graduation marks every 0.5 ml. LiteTouch tubes are autoclavable. Available in natural, blue, black, red, green and yellow. Photo-opaque black tubes are suitable for light-sensitive applications.

Reduced cross contamination
Pressing down on the rear tab instead of prying up from the front virtually eliminates cross-contamination of gloves, pipettes, other surfaces and the sample.

Quality is assured
Manufactured under Class 100,000 clean-room conditions, LiteTouch tubes are free of detectable biological contamination such as RNase, DNase, DNA, ATP, pyrogens, nucleases and PCR inhibitors.

Ordering Information

Cat. No.	MT Order No.	Description
LTT-170-N	17011860	LiteTouch 1.7 ml microcentrifuge tube (natural) 1 bag of 500
LTT-170-B	17011862	LiteTouch 1.7 ml microcentrifuge tube (blue) 1 bag of 500
LTT-170-G	17011863	LiteTouch 1.7 ml microcentrifuge tube (green) 1 bag of 500
LTT-170-R	17011864	LiteTouch 1.7 ml microcentrifuge tube (red) 1 bag of 500
LTT-170-Y	17011865	LiteTouch 1.7 ml microcentrifuge tube (yellow) 1 bag of 500
LTT-170-X	17012132	LiteTouch 1.7 ml microcentrifuge tube (photo-opaque black) 1 bag of 500
LTT-170-N-S	17011861	LiteTouch 1.7 ml microcentrifuge tube (natural) 1 bag of 500, sterile

Superior Service.

METTLER TOLEDO Pipette Service
Superior Service For Top Performance

Like other precision instruments, pipettes need regular servicing to perform at their best. For the best possible pipetting performance and fewest out-of-tolerance failures, researchers need great pipettes and great service. METTLER TOLEDO's comprehensive service programs result in the lowest number of out-of-tolerance pipettes returned for service.

40 years of continuous improvement
Based on rigorous documentation, extensive training, and long-term proficiency testing, our pipette service centers have achieved the highest level of calibration competency and data integrity using the gravimetric method.

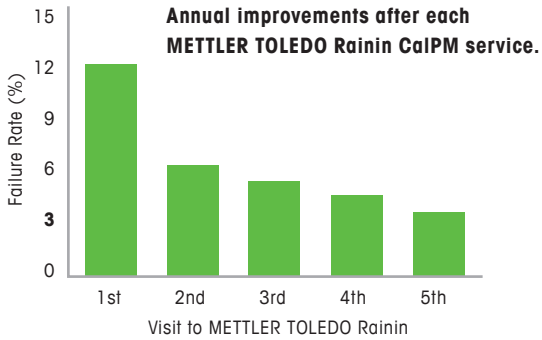
ISO 17025 accreditation or local equivalent assures you that the highest calibration standards are being met. The result: you can focus on your work, rather than spending valuable time auditing your service provider.

Our data shows that regular service in a preventive maintenance and calibration plan provides the highest level of performance with the fewest out-of-tolerance failures.

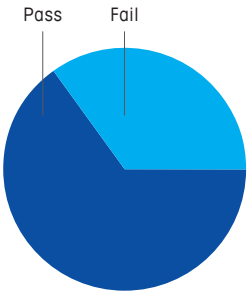
Tailored services
With our full range of tailored services you can develop a continuous improvement program that includes asset management, quality control, standards compliance, performance optimizations and reducing total cost of ownership.

Preventive Maintenance
Stop Failures Before They Occur

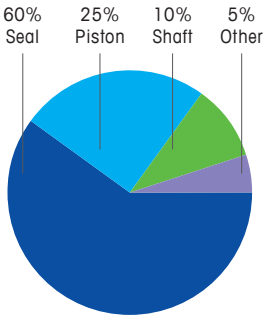
Preventive Maintenance is the key to keeping your pipettes at peak performance and reducing or even preventing out-of-tolerance failure between calibration intervals. Compared with other service providers, METTLER TOLEDO pipette service offerings are the most comprehensive and affordable available.



This chart shows a sample reduction in out-of-tolerance pipette failures that occur over time when pipettes are serviced on a regular basis.



Typical "As Found" Failure Rates
As a population, pipettes checked annually without METTLER TOLEDO Rainin preventive maintenance will have a 20% or more failure rate.



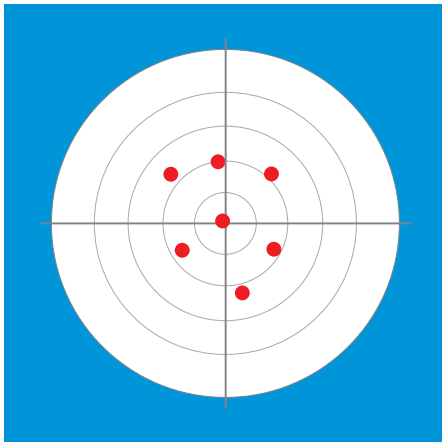
Failure Rate by Component
Over 95% of pipette failure is attributable to sealing system wear. This is predictable and preventable with regular preventive maintenance.

Nothing lasts forever
A pipette is made of a variety of mechanical parts. Like all things mechanical, nothing lasts forever. Piston surfaces can deteriorate over time, leading to premature seal failure and pipette inaccuracy. Seals can leak after being exposed to rough piston surfaces or to sample contamination. Shaft ends can be worn over time, especially when high force or "banging" is applied when mounting tips. Often, leakage is gradual and may not be discovered until it is too late, adversely affecting the integrity of your research.

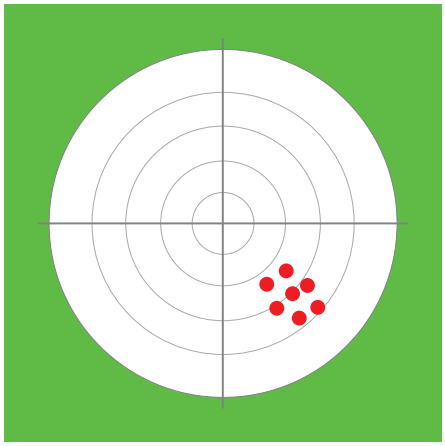
Sealing system wear is predictable and preventable
95% of all pipette failure relates to sealing system wear. Under normal use and based on our extensive experience, seals should be replaced at least once per year, shafts and pistons every 3-5 years. Failure rates can be significantly reduced if scheduled preventive maintenance is utilized.

Rainin has been a leading pipette manufacturer and a service provider for more than 40 years. Rainin is a part METTLER TOLEDO which is one of the most respected manufacturers and suppliers of high precision balance technology. Together, no company is better experienced and equipped to keep your pipettes in perfect working condition – choose Pipette Service with METTLER TOLEDO balances!

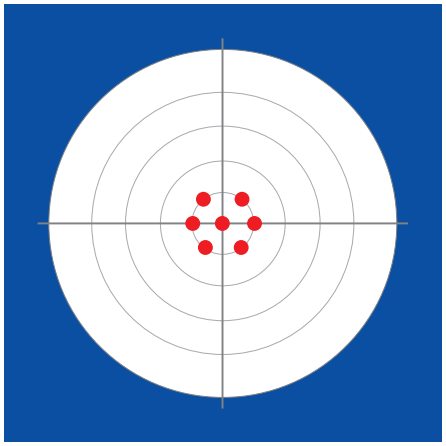
Pipette Accuracy and Precision



Accurate but not Precise



Precise but not Accurate



Accurate and Precise

Accuracy (Mean Error)
Accuracy, or mean error, is the amount by which the mean value of a large set of replicate liquid measurements deviates from the nominal value of the volume shown on the digital display of the pipette. The specification given for each pipette is the maximum allowable value for mean error. Mean error may be expressed as shown in the equations below.

Precision (Repeatability)
Precision is the numerical assessment of the random dispersion of a number of replicate measurements, expressed as standard deviation or coefficient of variation. In this publication, precision refers to a "within-run" deviation, i.e. the standard deviation for a series of measurements at the same volume setting, performed at one location in a contiguous time period, with a new disposable tip for each pipetting cycle. Standard deviation and coefficient of variation may be expressed as shown in the equations below.

Mean Error:
The difference between the mean volume of actual measurements and the true value as specified by the volume setting of the pipette. Expressed in µl.

$$E = \bar{v} - v_o$$

E = mean error
$\bar{v}$ = mean error
v_o = volume setting

As a percentage

$$E\,\% = \frac{\bar{v} - v_o}{v_o} \times 100$$

Standard Deviation:
Quantifies the magnitude of scatter due to random error.

$$s = \sqrt{\frac{\sum_{i=1}^{n} (\bar{w} - w_i)^2}{n - 1}}$$

s = standard deviation
n = number of weighings
$\bar{w}$ = mean weighing
w_i = individual weighings

As a percentage, also known as coefficient of variation (CV)

$$S\,\% = \frac{S}{\bar{v}} \times 100$$

Pipette Specifications

Pipet-Lite XLS and Rainin Classic

Model	Volume µl	Increment µl	Accuracy %	Accuracy µl (±)	Precision %	Precision µl (≤)
2 µl	0.2	0.002	12	0.024	6	0.012
	1.0		2.7	0.027	1.3	0.013
	2.0		1.5	0.030	0.7	0.014
10 µl	1	0.02	2.5	0.025	1.2	0.012
	5		1.5	0.075	0.6	0.03
	10		1	0.1	0.4	0.04
20 µl	2	0.02	7.5	0.15	2	0.04
	10		1.5	0.15	0.5	0.05
	20		1	0.2	0.3	0.06
100 µl	10	0.2	3.5	0.35	1	0.1
	50		0.8	0.4	0.24	0.12
	100		0.8	0.8	0.15	0.15
200 µl	20	0.2	2.5	0.5	1	0.2
	100		0.8	0.8	0.25	0.25
	200		0.8	1.6	0.15	0.3
300 ul	30	0.5	2.5	0.75	1.0	0.3
	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
1000 µl	100	2	3	3	0.6	0.6
	500		0.8	4	0.2	1
	1000		0.8	8	0.15	1.5
2000 µl	200	2	3	6	0.6	1.2
	1000		0.8	8	0.2	2
	2000		0.8	16	0.12	2.4
5000 µl	500	5	2.4	12	0.6	3
	2500		0.6	15	0.2	5
	5000		0.6	30	0.16	8
10 ml	1 ml	20	5	50	0.6	6
	5 ml		1	50	0.2	10
	10 ml		0.6	60	0.16	16
20 ml	2 ml	20	5	100	0.6	12
	10 ml		1	100	0.2	20
	20 ml		0.6	120	0.16	32

E4 XLS

Model	Volume µl	Increment µl	Accuracy %	Accuracy µl (±)	Precision %	Precision µl (≤)
10 µl	1	0.01	2.5	0.025	1.2	0.012
	5		1.5	0.075	0.6	0.03
	10		1.0	0.1	0.4	0.04
20 µl	2	0.02	7.5	0.15	2	0.04
	10		1.5	0.15	0.5	0.05
	20		1.0	0.2	0.3	0.06
100 µl	10	0.1	3.5	0.35	1	0.1
	50		0.8	0.4	0.24	0.12
	100		0.8	0.8	0.15	0.15
200 µl	20	0.2	2.5	0.5	1	0.2
	100		0.8	0.8	0.25	0.25
	200		0.8	1.6	0.15	0.3
300 ul	30	0.2	2.5	0.75	1	0.3
	150		0.8	1.2	0.25	0.375
	300		0.8	2.4	0.15	0.45
1000 µl	100	1	3	3	0.6	0.6
	500		0.8	4	0.2	1
	1000		0.8	8	0.15	1.5
2000 µl	200	2	3	6	0.6	1.2
	1000		0.8	8	0.2	2
	2000		0.8	16	0.12	2.4
5000 µl	500	5	2.4	12	0.6	3
	2500		0.6	15	0.2	5
	5000		0.6	30	0.16	8
10 ml	1 ml	10	5	50	0.6	6
	5 ml		1	50	0.2	10
	10 ml		0.6	60	0.16	16
20 ml	2 ml	20	5	100	0.6	12
	10 ml		1	100	0.2	20
	20 ml		0.6	120	0.16	32

Multichannel Manual and Electronic Pipettes

Model	Volume µl	Increment µl (man)	Increment µl (elec)	Accuracy %	Accuracy µl (±)	Precision %	Precision µl (≤)
10 µl	1	0.02	0.01	2.5	0.025	1.2	0.012
	5			1.5	0.075	0.6	0.03
	10			1.0	0.1	0.4	0.04
20 µl	2	0.02	0.02	7.5	0.15	2.0	0.04
	10			1.5	0.15	0.5	0.05
	20			1.0	0.2	0.3	0.06
50 µl	5	0.05	0.05	3.5	0.18	1.5	0.075
	25			1.2	0.3	0.4	0.1
	50			0.8	0.4	0.2	0.1
200 µl	20	0.2	0.2	2.5	0.5	1.0	0.2
	100			0.8	0.8	0.25	0.25
	200			0.8	1.6	0.15	0.3
300 µl	30	0.5	0.2	2.5	0.75	1.0	0.3
	150			0.8	1.2	0.25	0.375
	300			0.8	2.4	0.15	0.45
1200 µl	100	2	1	3.6	3.6	0.6	0.6
	600			0.8	4.8	0.2	1.2
	1200			0.8	9.6	0.15	1.8

Pos-D

Model	Volume µl	Increment µl	Accuracy %	Accuracy µl (±)	Precision %	Precision µl (≤)
10 µl	1	0.02	9.0	0.09	3.0	0.03
	5		2.0	0.10	0.6	0.03
	10		1.5	0.15	0.6	0.06
25 µl	3	0.02	8.3	0.25	2.7	0.08
	10		2.7	0.27	0.8	0.08
	25		1.2	0.30	0.4	0.10
50 µl	20	0.02	1.7	0.34	1.0	0.20
	50		1.4	0.70	0.6	0.30
100 µl	10	0.2	5.0	0.50	2.0	0.20
	50		1.5	0.75	0.6	0.30
	100		1.0	1.00	0.4	0.40
250 µl	50	0.2	3.0	1.50	0.6	0.30
	100		1.7	1.70	0.3	0.30
	250		1.0	2.50	0.2	0.50
1000 µl	100	2	3.0	3.00	1.6	1.60
	500		1.0	5.00	0.5	2.50
	1000		0.8	8.00	0.4	4.00

Pipet-Lite XLS

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For more information

Quality certificate
Development, production and testing according to ISO 9001.

Environment management system
according to ISO 14001.

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This mark gives you the assurance that our products conform with the latest directives.

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