

# Ergonomic Pipetting

**RAININ**  
Pipetting 360°



## LTS™ LiteTouch™ System

- Reduce your risk of injury
- Reduce tip ejection force
- Reduce pain and fatigue
- Increase productivity
- Improve performance

## Reduce Your Risk of Repetitive Injury

Feel the Difference with Rainin LTS

**METTLER TOLEDO**

# The LTS LiteTouch System

## Because Pipetting Shouldn't Hurt

**Not only is pipetting a forceful activity – it is repetitive, and minor stresses caused by strain and overuse accumulate over time and can develop into injuries.**

**The ergonomic aspects of pipetting are easily overlooked,** particularly among younger and less-experienced users. However, loading and ejecting tips, and aspirating and dispensing liquids – over and over and over – exerts considerable force on your thumb, hand and arm. The injurious effects of those forces accumulate over time, which is why your risk of developing a repetitive strain injury (RSI) increases throughout your career.

**How often have you spent hours in the laboratory,** pipetting more samples than you care to count, only to find your hand sore or wrist aching? Pipettes are integral to many laboratory workflows, so it makes sense to pay close attention to their design and features, which significantly affect your performance and the level of strain they put on your hands and arms.

**In addition to good accuracy and precision, a pipette's ergonomic features are essential** if you want to minimize fatigue and your risk of developing a RSI. No aspect of pipetting exerts more force on a user's hand than tip ejection, which is why the Rainin LTS™ LiteTouch™ tip ejection system by METTLER TOLEDO is so unique. LTS reduces tip ejection force by up to 80% and is available on all Rainin XLS+ single and multichannel pipettes.



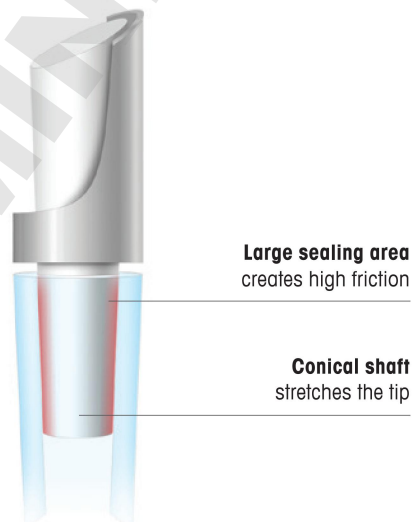


**Small sealing ring**  
significantly reduces friction

**Positive stop**  
prevents jamming

### LTS Cylindrical Tip and Shaft

By virtually eliminating friction, the Rainin LiteTouch System dramatically reduces the amount of force required to load and eject tips. A thin sealing ring near the top of the tip slides easily over the shaft, creating a firm, air-tight fit with minimal force. LTS pipettes also have cylindrical ends (not cone-shaped) and a positive stop inside the tip to guide the shaft to the correct insertion depth.



**Large sealing area**  
creates high friction

**Conical shaft**  
stretches the tip

### Traditional Pipetting

Typical pipettes have cone-shaped shafts that rely on friction to hold tips firmly. In fact, because the tip literally stretches to fit around the shaft, users typically rock or bang the shaft into the tip to achieve a reliable seal. The problem: however much force you use to insert the tips, at least as much force is required to eject them – most of which comes from your thumb.

# Less Pain = Higher Productivity

## Less Fatigue = More Reproducible Data

**Pipetting is known to increase the risk of hand fatigue and RSI, resulting in a significant loss of pipetting accuracy and precision. Rainin pipettes with LTS help increase reliability and productivity.**

With light springs and as little as 0.6 Newtons of force required for tip ejection, LTS-equipped pipettes reduce fatigue and allow you to concentrate on your work and pipetting technique.



Because LTS tips load effortlessly and achieve firm, leak-free seals without rocking or hand tightening, all Rainin multichannels are equipped with LTS.



Rainin E4 XLS+ electronic multichannels with LTS further simplify and streamline workflows.

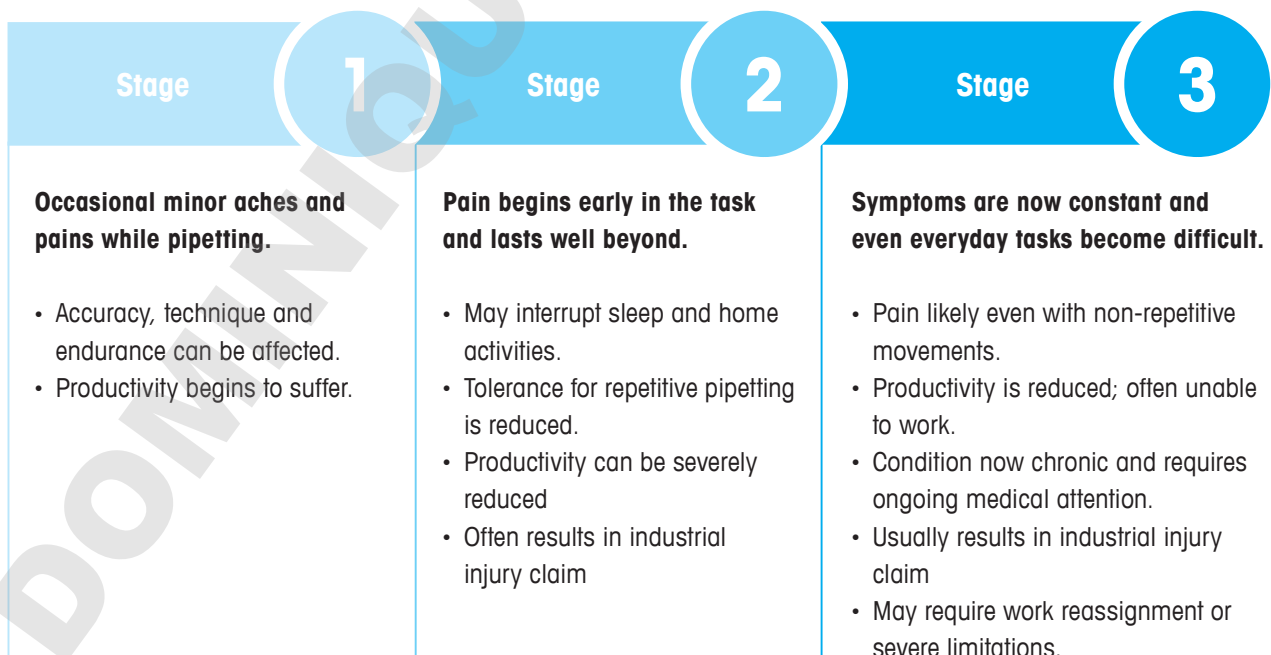






## Is Pipetting Bad for Your Health?

It has been understood for many years that prolonged pipetting can lead to physical pain and muscular disorders. In fact, pipetting more than one hour per day, or roughly 300 hours per year, is linked to injury.<sup>1</sup> The chart below describes the cumulative effects of repetitive strain injuries.



<sup>1</sup> Bjørksten 1994, David & Buckle 1995

# Rainin XLS+ Pipettes with LTS

## XLS for accuracy, LTS for comfort

**Rainin XLS+ pipettes equipped with the patented LTS LiteTouch System combine proven accuracy with exceptional comfort and performance.**

With LTS-equipped Rainin XLS+ pipettes, you'll experience comfort and performance, even after hours of pipetting. Rainin pipettes equipped with the patented LTS tip ejection system not only minimize fatigue and significantly reduce the likelihood of developing RSIs, but like all Rainin XLS+ pipettes, they feature:

- Ergonomically designed, lightweight bodies that fit comfortably in your hand.
- A finger hook to support the pipette in your hand so you can relax your grip.
- Light springs and low-drag seals for low plunger forces during aspiration and dispense.

For complete pipetting control and ease, all Rainin XLS+ pipettes feature a "stiction-less" sealing system that allows the plunger to slide smoothly from start to finish. Corrosion-resistant plastic tip ejectors made of high quality PVDF polymer can be removed with a single-hand motion for easy cleaning. And the entire liquid end of every XLS+ pipette – shaft, seal assembly/spring and tip ejector – can be autoclaved for easy sterilization.



### Total hand comfort

With sure-fit handles, contoured finger-hooks, lighter springs and low-drag seals, Rainin XLS+ pipettes are so light and comfortable, using them all day won't contribute to pain or discomfort.



### Greater control

XLS+ multichannels are among the easiest and the most responsive pipettes you'll ever use. Lightweight and extraordinary channel-to-channel consistency assures smooth operation from start to finish.



### Easy operation

For serial dilutions, filling plates, pipetting unusual liquids and performing complex pipetting steps, the electronic E4's versatile range of pipetting modes offer maximum convenience.



## Rainin LTS Tips are BioClean Ultra™ for Optimal Performance

Like all Rainin tips, LTS tips meet METTLER TOLEDO's rigorous BioClean Ultra standards. Made from virgin polypropylene with absolutely no bioactive components, and manufactured in Class 100,000 clean room conditions to eliminate the possibility of external contaminants (DNA, DNase, RNase, ATP, Pyrogens, PCR Inhibitors, protein or protease), high-quality BioClean Ultra LTS tips are guaranteed to be completely inert and free from contamination, so they won't influence experimental outcome in any way.



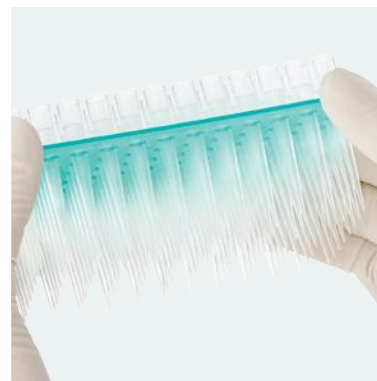
### Exceptional design

Their precision design and engineering, exacting standards and automated production result in flawless tips that are pliable and will never crack.



### Robotic production

Automating our Class 100,000 clean room tip manufacturing facility has eliminated human contact during manufacturing and packaging.



### BioClean Ultra quality

Strict quality testing assures absolute cleanliness and purity; each tip lot is rigorously tested and certified to be free of contamination.

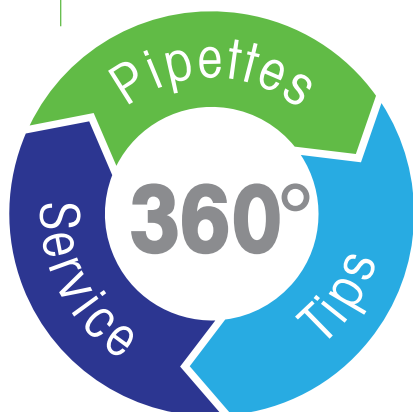
# Pipetting 360°

## Your Complete Liquid Handling Solution

**You maximize the performance of your Rainin pipettes and the reliability of your results when you use BioClean Ultra™ tips and Rainin Service by METTLER TOLEDO.**

### Precision Pipettes

In addition to offering the widest selection of volume ranges, Rainin pipettes are packed with ergonomic features, including LTS – our innovative and highly-acclaimed LiteTouch™ System.



### Superior Service

Factory-trained technicians, ISO accredited facilities and state-of-the-art balances are just a few of the reasons to choose Rainin Service by METTLER TOLEDO for pipette calibration and repair.

### BioClean Ultra Tips

Designed and engineered for Rainin pipettes and manufactured in a Class 100,000 facility, BioClean tips are guaranteed to deliver flawless, contamination-free performance

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Laboratory Division  
Local contact: [www.mt.com/contacts](http://www.mt.com/contacts)

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