

Highlighting innovative design features  
and useful application information for:  
**Thermo Scientific Manual Liquid Handling**

**Thermo**  
SCIENTIFIC

# smart notes

**design and innovation** ▶ Adjustable tip spacing



Q  
A

**Is there an easier and more efficient way to transfer liquids between various labware formats, than using traditional handheld pipettes?**

**Yes.** The adjustable tip spacing feature on the Thermo Scientific™ E1-ClipTip™ Electronic Equalizer Multichannel Pipette allows you to set the distance between pipette tips for different types of labware by simply sliding a handle. This exponentially reduces the number of repetitions and time needed to perform many common applications.



From test tubes to deepwell blocks; microcentrifuge tubes to 96-well plates. Even 48-well microplates to agarose gels — daily pipetting can require multiple labware formats in an application. Depending on the application a single channel pipette may be the only option when working between multiple labware formats. This dramatically increases the number of repetitive motions, and overall time needed to complete these tasks. The E1-ClipTip Electronic Equalizer Multichannel pipettes combine electronic pipetting action with multidispensing mode and adjustable tip spacing to significantly reduce pipetting time. The ClipTip interlocking tip interface ensures that the tips are securely locked and sealed on the pipette, decreasing the risk of uneven sample loading or loose tips to waste valuable samples and time.

# Adjustable tip spacing can reduce pipetting time by up to 90%

What could once only be accomplished through repetitive motions using a single-channel pipette, can now be quickly and efficiently performed by using multichannel electronic pipettes. Multidispensing mode, found only in electronic pipettes, enables dispensing of the same volume repetitively with one aspiration.

For instance, aspirate 300  $\mu$ l of sample and dispense 30  $\mu$ l, 10 times. The adjustable tip spacing enables you to transfer multiple samples between various labware formats at once with only one movement.

## Figure 1: Sample transfer from microcentrifuge tubes to a 96-well microplate.

Using a single channel manual pipette and an E1-ClipTip electronic Equalizer 8-channel pipette, samples were transferred from 8 microcentrifuge tubes to a 96-well microplate. The length of time needed to fill the entire microplate was recorded. Completing the task by using the E1-ClipTip took 90% less time when compared to a single channel manual pipette.

### Reduced repetition and strain

A notable part of the time savings is a result of the reduction in motions needed to transfer the liquid from labware to labware. When using an electronic pipette with adjustable tip spacing and multidispensing mode, the repetition of forearm movements can be substantially reduced. In addition, exhausting thumb movements are eliminated by index finger trigger operation and electronic tip ejection. Pipetting becomes more efficient and comfortable decreasing the risk of Repetitive Strain Injury (RSI) and lessening the risk of mistakes.

## Figure 2: The number of forearm and finger motions required to transfer samples from microcentrifuge tubes to fill up a 96-well microplate.

The number of forearm and finger motions was counted when samples were transferred from 8 separate microcentrifuge tubes to fill up a 96-well microplate. The same pipettes were in use as in the experiment above (Figure 1). With the E1-ClipTip pipette thumb was used only for electronic tip ejection. Using the E1-ClipTip required over 90% less motions when compared to use of a manual single channel pipette.

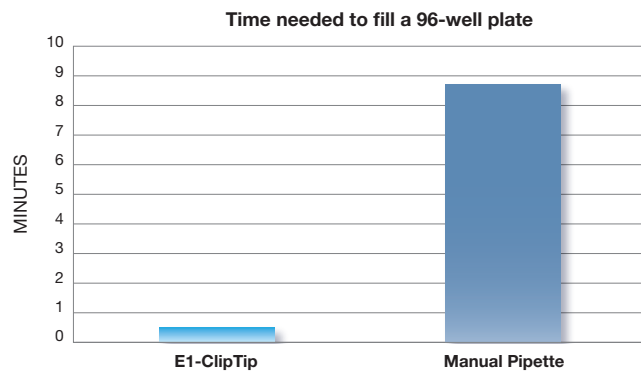


Figure 1

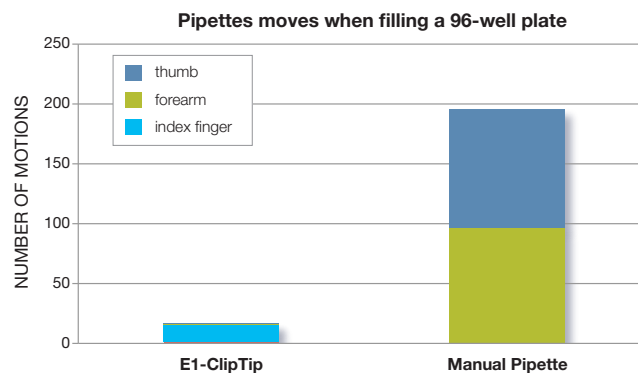


Figure 2

## Summary

When transferring samples between different labware formats, the adjustable tip spacing found on E1-ClipTip Equalizer multichannel electronic pipettes will take up to 90% less time, and reduce 90% of tiresome repetitions compared to single channel pipettes. The reduction in repetitions can lessen the risk of pipetting mistakes and Repetitive Strain Injury (RSI).

See how interlocking ClipTip technology secures tips onto the pipette for reproducible results.

Learn more at [www.thermoscientific.com/cliptip](http://www.thermoscientific.com/cliptip)

© 2014 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.

**Australia** +61 39757 4300  
**Austria** +43 1 801 40 0  
**Belgium** +32 53 73 42 41  
**China** +86 21 6865 4588 or  
+86 10 8419 3588  
**France** +33 2 2803 2180  
**Germany national toll free** 0800 1 536 376  
**Germany international** +49 6184 90 6000

**India toll free** 1800 22 8374  
**India** +91 22 6716 2200  
**Italy** +39 02 95059 554  
**Japan** +81 45 453 9220  
**Netherlands** +31 76 579 55 55  
**New Zealand** +64 9 980 6700  
**Nordic/Baltic/CIS countries**  
+358 9 329 10200

**Russia** +7 812 703 42 15  
**Spain/Portugal** +34 93 223 09 18  
**Switzerland** +41 44 454 12 22  
**UK/Ireland** +44 870 609 9203  
**USA/Canada** +1 866 984 3766

**Other Asian countries** +852 2885 4613  
**Countries not listed** +49 6184 90 6000

**Thermo**  
SCIENTIFIC  
Part of Thermo Fisher Scientific