World's best pipettor.

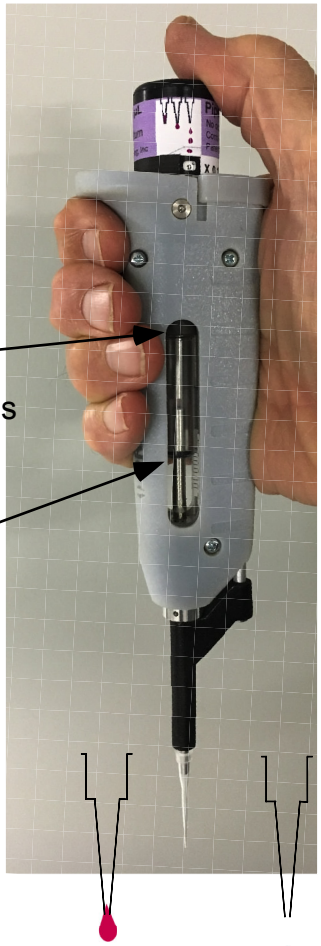
From ***20 µL down to 0.2 µL***, the unique Differential Pipettor does far more than your standard pipettor and is faster. 1 µL is rock-solid and free from any outliers, finally breaking this barrier. And the contact-free delivery option eliminates carryover and contamination and is faster and easier.

This is a major breakthrough (patents US 11491477, 11813606 and 11951470. The unique differential offset displacement mechanism gives the long stroke needed for tiny volume aspiration--while eliminating the small seals and skinny pistons that plague all regular pipettors! This eliminates leaks and gives reliable sub microliter aspiration. It simply ***aspirates better***! Then 1 piston without offset gives strong flow for the option of ***contact-free and contamination-free delivery***.

Differential displacement core mechanism you can actually see and feel.



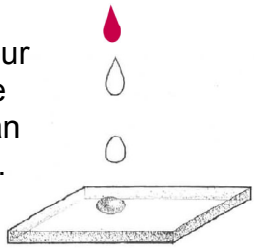
Big compliant seals in chamber over sturdy pistons



One smooth motion of your thumb down and the entire sample shoots out cleanly. Easier and faster for you, and minimal variability between all the users in your lab.

For ASPIRATION down to 200 nanoliters with ***no misses or outliers***.

For DISPENSING, your choice of ultra precise hanging drops or clean **contact-free** blowout.



How our unique breakthrough mechanism Works

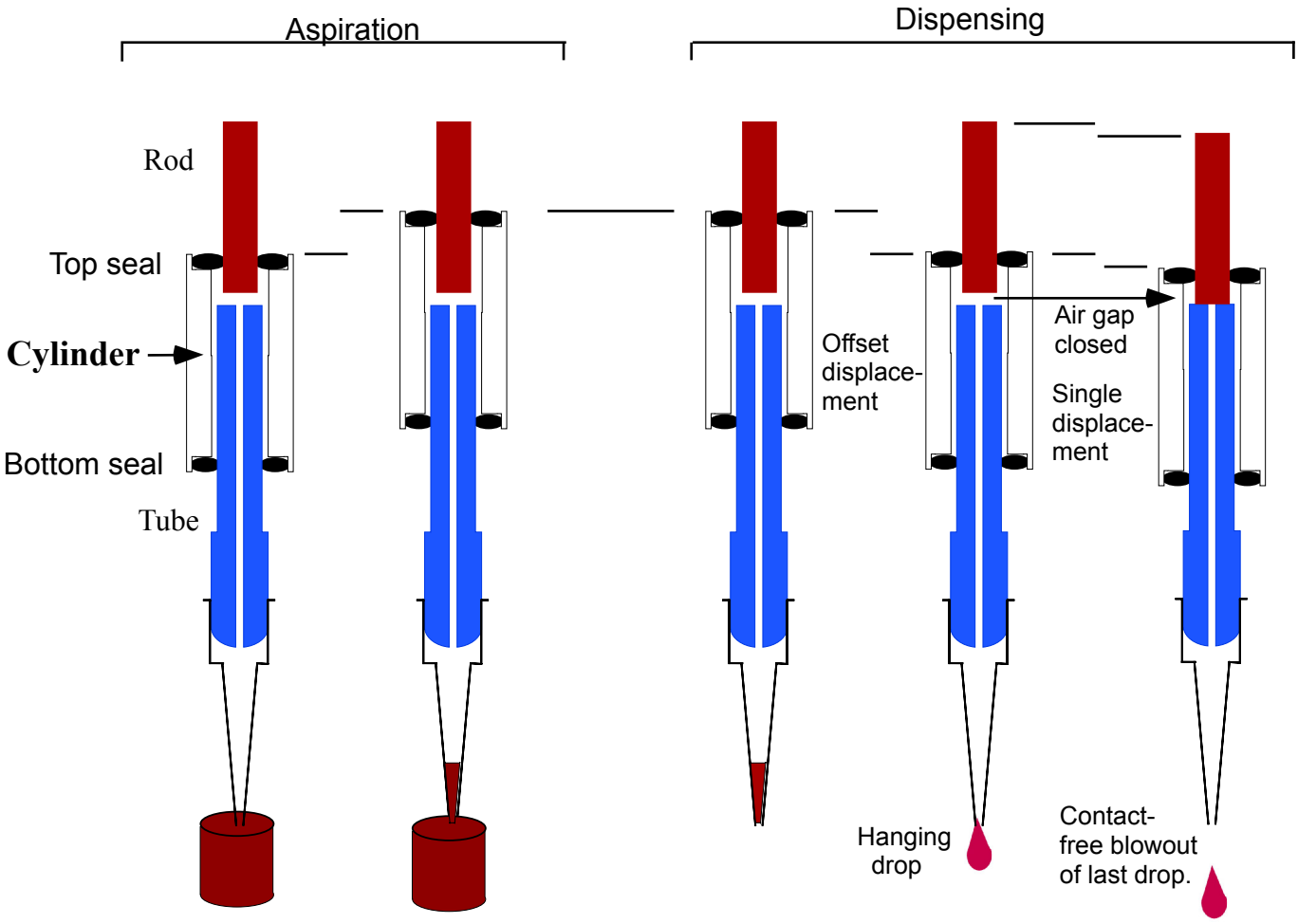


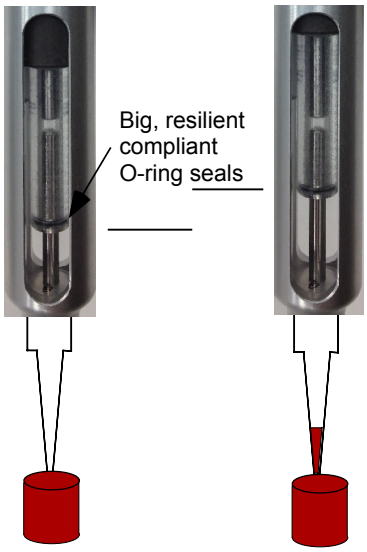
Fig 1	Fig 2	Fig 3	Fig 4	Fig 5
Dip disposable tip into sample	Release plunger up to ASPIRATE	Move tip over destination site	Push down to resistance stop for precise Offset Dis-placement DISPENSE to hanging drop. OR	Push down to bottom for vigor-ous Single Dis-placement DIS-PENSE that blows the sam-ple cleanly out.

The cylinder and its two seals move up. More of the wider tube mass leaves the common sealed chamber than thinner rod mass enters, a negative offset displacement that creates a vac-uum that aspirates the sample extremely pre-cisely. The robust sealing does not leak so there are no "outliers " or missed aspirations for tiny volumes.

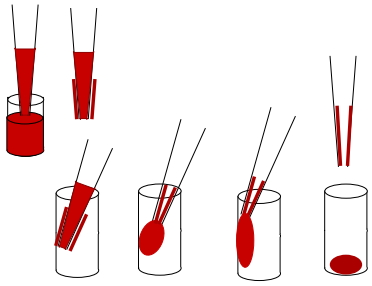
In Fig 3-4 the cylinder and its two seals sweep down to the resistance stop. More of the wider tube enters the chamber than thinner rod leaves, a positive offset displacement that dispenses the sample very precisely (and slowly) and typically leaves a hanging drop if that is what you want..

In Fig 4-5 the cylinder and seals are simply pushed down all the way to the bottom in a single smooth motion. An unseen part of the mechanism causes the rod to move down with them. With-out any offset from the rod, the full mass of the tube displaces and closes the air gap to give a fast, crisp high flow of air that blows the last drop completely out of the tip.

How our unique breakthrough mechanism gives you Better Accuracy.

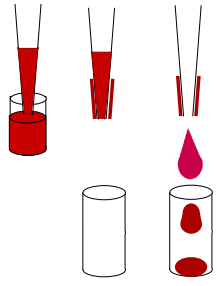


Conventional Pipetting -- 5 steps
must contact the destination for touchoff-&-drag or immersion final delivery.



- "Wickoff " volume added from outside of tip.
- Retention volume inside tip.
- User technique variability.

Differential Pipetting -- 3 steps
can deliver contact-free and contamination-free

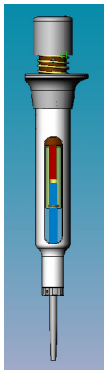


- All aspirated sample is delivered from inside tip.
- Outside "wickoff " left behind
- Not technique sensitive.

ASPIRATION.
Look at our robust sealing and feel your trust! No intermittent leaks, missed or short sample "outliers" like all the others. Our precision and accuracy are tighter. Eye strain and mental stress from constant visual tip inspections are reduced, no required duplicates and triplicates.

DISPENSING. You can dispense by hanging drop touchoff-and-drag just like you do now. But you also have the option of dispensing the sample crisply and cleanly contact-free, and the graphic shows why that is more accurate and precise. During aspiration, some sample gets on the outside of the tip, but our clean blowout of the inside of the tip also leaves most of that unwanted outside material behind. The contact-free delivery is also not user technique dependent, so there is more consistent user-to-user results and better overall accuracy and precision.

SPECIFICATIONS



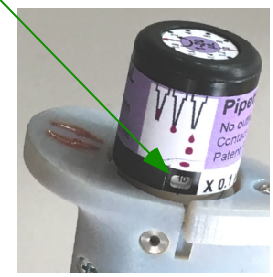
Fixed Volume

Volume	CV	Accuracy
20 µL	0.4%	1%
10 µL	0.6%	1.5%
5µL	0.8%	2%
2µL	1%	2.5%
1µL	1.5%	3%
0.75µL	2%	4%
0.5µL	3%	6%
0.2µL	8%	15%

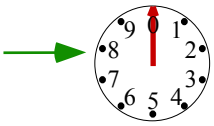
Adjustable Volume
DP20 example

Volume	CV	Accuracy
20 µL	0.4%	1%
10 µL	0.6%	2%
5 µL	0.8%	3%
2 µL	1.5%	3.5%
1 µL	2%	4%

Volume selected shows through viewing window.



Nanoliter **A**ccuracy **A**djustment label on top used with DP Tip Gage enables high accuracy in the nanoliter range.



All precision and accuracy specifications are for contact-free delivery and for using all 10 points without any statistical discards. Accuracy is for 69 deg F (20.5 C) by weighing and Artel PCS dual dye ratiometric photometry, which is tied to NIST calibration standards. Measurements are with the disposable LS4 tips. TIP ESCAPE VELOCITY of up to 10 meters per second is generated by comfortable thumb speed as needed for clean, contact-free delivery, including some more viscous biological or artificial materials. Nanoliter Accuracy Adjustment label on top can be used with companion DP Tip Gage to adjust for higher accuracy in the nanoliter range, including for varying non biological and non clinical liquids.

ORDERING .

DIFFERENTIAL PIPETTORS



Fixed Volume Differential Pipettors **$500 each** for 20, 10, 5, 2, 1, 0.75, 0.5 and 0.25 µL. under Catalog # DP-20-fix.....DP-0.25-fix.
$750 for any other desired specific volume.

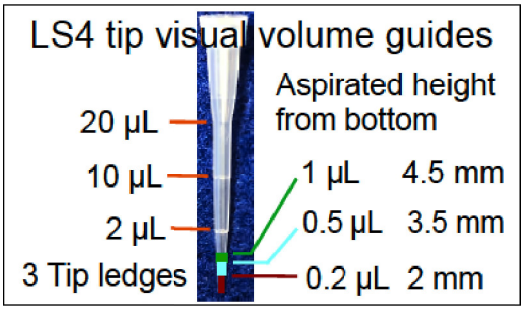
Adjustable Volume Differential Pipettors. "ultra" means lowest nanoliter capability.

Catalog #		
DP-10 - adj	0.5 µL - 10 µL	$900
DP-20 - adj	1 µL - 20 µL	$900
DP-10ultra - adj	0.25 -10 µL	$1,500
DP-20ultra - adj	0.25 -20 µL	$1,900

Span rack of 1 DP-20 Adjustable & 5 Fixed Volume units **$3,900**.
1 Adjustable Volume Queen Bee DP-20-adj unit.
5 Fixed Volume worker drone units for 0.5, 1, 2, 5 and 10 µL.
Rack, fully labelled with all operating instructions.
DP Gage for easy visual tip aspiration height volume check.
Queen Bee DP-10ultra-adj or DP-20ultra-adj by special arrangement.

DISPOSABLE TIPS Little Squirt LS4 TIPS (tip ID 0.014" = 0.36 mm)

Catalog #	
LS4-Starter	Reusable Tip Box and 5 96-tip Reload Trays (480 tips) (Required starter set). $92
LS4	Clean tips. Case of 10 96-tip Reload Trays (960 tips) $115
LS4-PCR	PCR Clean. Case of 10 96-tip Reload Trays (960 tips) ..$134
LS4-FST	Dual filter and PCR Clean, Sterile and pyrogen free Case of 10 sterile-wrapped 96-tip boxes (960 tips). ..$150



Tips have 3 distinct volume ledges. Intervening volume heights are easily verified with the DP Gage, a handy visual volume check.

TERMS 2% 10, net 30. Price FOB factory .

WARRANTY is 24 months against defects in materials and workmanship when used as prescribed.

CALIBRATION verification and certification by us at no charge every 6 months in New England and $100/yr elsewhere in the US. Our robust sealing system should not need servicing, but should calibration slip we will restore it during the warranty period.