Volume setting

All CappAero pipettes and volume controllers are colour coded. Please ensure that you always use controllers and pipettes with identical colour coding.

0.2µl	-	2µl	Violet
0.5µl	-	10µl	White
2µl	-	20µl	Gray
5µl	-	50µl	Red
10µl	-	100µl	Orange
20µl	-	200µl	Yellow
30µl	-	300µl	Black
100µl	-	1000µl	Blue
1000µl	-	5000µl	Green

Variable volume controller

1. Gently unlock the volume dial by pushing the lock lever on the side downwards.
2. Turn the dial to the desired volume.
3. Re-lock by pushing the lock lever upwards until it "clicks".
   By turning the volume controller 180º, the dial is equally visible for left- and right-handed users.

Fixed volume controller

All CappAero variable pipettes are supplied with a fixed volume controller at the nominal volume of the pipette. As an example, a 20-200ul pipette comes also with a 200ul fixed volume controller. The volume is printed on the side of the controller. To turn your pipette into a fixed volume pipette, simply put the fixed volume controller in place and you can start pipetting.

If you frequently pipette certain volumes, we recommend that you order additional fixed volume controllers to your specifications as this offers the safest and most convenient volume setting of all. Fixed volume controller can be ordered at any time. Please list the desired volume(s) as well as the colour coding of the pipette when ordering.

General Operation

1. Ensure that the volume controller is properly positioned.
2. Set the volume dial of the controller at the desired volume. If the dial is obstructed, first unlock the volume dial.
3. Lock the volume dial and mount the tip into the pipette*.
4. Press the plunger down to the first stop. Place the tips in the liquid. To draw up the set volume, release the plunger slowly and hold the tips in the liquid for 1-2 seconds after aspiration.
5. Place the tip where the sample is supposed to be delivered. Push the plunger slowly to the second stop to blow out the liquid.

** To easily mount the tips on your multi channel pipette, place one of the outer tip bases in the first tip and then mount the rest by a firm but gentle rocking motion. Please avoid hammering the pipette down onto the tips in the rack. Doing so may damage the O-rings and result in leaking tips and inaccurate pipetting. Also, by working with very forceful motions you increase the risk of repetitive strain injuries to your hand, arm and shoulder.*

Tip Ejection

Single channel pipettes: Eject the tip by pushing the plunger to the third stop. CappAero single channel pipettes have all pipetting functions (aspiration, blow-out and tip ejection) conveniently combined into a one-button operation.

Multi channel pipettes: Eject the tips by pressing the lever on the side of the handle. CappAero multi channel pipettes have a levered tip ejection system, making one handed tip ejection effortless and easy. The lever can be positioned at your fingertips or on the palm of your hand, as you prefer.

For accurate pipetting, the pipette should only be used in a fully upright position when aspirating.
For more information regarding pipetting techniques, please see the pipetting guidelines available on www.cappbrand.com .

Recalibration

Calibration is performed using distilled water with a stable environment. The test room should have a relative humidity above 50% and a constant (± 0,5ºC) temperature between 15ºC and 30ºC, according to the guidelines given in ISO 8655. If you pipette liquids with properties very different from those of water or perform the calibration at significantly different conditions, please perform adjustments for temperature and density as needed.

For high accuracy pipetting, we recommend CappExpel™ low retention pipette tips to ensure that the full volume of the aliquot is transferred to the weighing container.

1. Set the volume at top volume or mount the fixed volume controller.
2. Pipette 10 aliquots and determine the exact volume of each by accurate weighing.
3. Determine average and standard deviation and calculate accuracy and precision.

If the results are outside the specifications as given on the Capp Quality Certificate, please consider if all five elements of pipetting system have been applied. If so, please perform readjustment as given in the following.

Variable volume controller adjustment

1. Pick the block for volume controllers and the 3 mm Allen key supplied with the pipette. Pass the 3mm Allen key through one of the holes located in the extremities of the block. Make sure that the shorter piece of the Allen key is completely fixed under the block, and place it on the table.

2. Remove the volume controller from the pipette, unlock it and gently take off the colored cap.

3. Place the volume controller on top of the 3 mm Allen key and make sure that the internal bottom screw [S2] is fixed on the Allen key during the remaining procedure.
4. Using the 2 mm Allen key, loosen the top screw [S1] slightly (no more than half a turn) to unfasten the volume dial – the turning wheel must also be completely fixed during this procedure.

5. Turn the volume dial to the average volume determined by weighing.

6. Hold the turning wheel in a fixed position and re-tighten the top screw of the volume controller. Tip: Locking the controller will make the re-tightening easier. Caution: Do not over-toque this screw.
7. Put the cap back on the volume controller.

8. Set the controller at nominal volume and check the accuracy and precision again.

9. If the pipette is performing within the specifications, it is now adjusted and ready for use. If it still is not performing within the specifications, please repeat the procedure described above.

Fixed Volume Controller

1. Remove the coloured cap from the volume controller.
2. Use the 1,5 mm Allen key supplied with the pipette. Turn the top screw [S3] to adjust the volume. Turn clockwise to increase volume, counter-clockwise to reduce volume. One full turn equals approximately:

0.2µl	- 2µl	0.05µl
0.5µl	- 10µl	0.4µl
2µl	- 20µl	0.7µl
5µl	- 50µl	2.5µl
10µl	- 100µl	3.0µl
20µl	- 200µl	6.3µl
30µl	- 300µl	6.3µl
100µl	- 1000µl	30µl
1000µl	- 5000µl	150µl

3. Put the cap back on the volume controller.
4. Set the controller in the pipette and check the accuracy and precision again.
5. If the pipette is performing within the specifications, it is now adjusted and ready for use. If it still is not performing within the specifications, please repeat the procedure described above.

Maintenance

Cleaning

We suggest cleaning at regular intervals depending on how much the pipette is used. When cleaning the pipette, you can use any of the cleaning agents normally used in the laboratory for instrument cleaning purposes, such as water with mild detergents or sterile antiseptic agents.

Lubrication

Lubrication is normally only necessary after extensive use. If the pipette is autoclaved often, you may need to lubricate the pipette more frequently. It should only be done with the oil supplied with the pipette and we recommend sending the pipette to a CappCare Service Provider for a Service Check, which will also include lubrication.

Please note: If the piston seems "heavy" to push or comes back up slowly, re-lubrication often is not necessary. Simply set the pipette at maximum volume (easiest done by putting on the fixed volume controller delivered with the pipette) and operate the plunger fully up and down 3-5 times to redistribute the oil evenly over the pistons, ensuring a lower actuation force.

Autoclaving

CappAero pipette is fully autoclavable with the exception of the volume controllers. Simply remove the volume controller and put the pipette in the autoclave. It must not exceed 121ºC and a period of 20 minutes.

Warranty

The pipette is guaranteed for a period of three years from the date of delivery against defects in materials and workmanship of this product. The warranty covers the costs of defective materials and labour. In case your pipette needs to be repaired, please return the pipette to your supplier for repair.
Please ensure that the pipette is decontaminated before returning it for repair. Non-decontaminated pipettes will not be repaired.

A decontamination assurance form is available at www.capp.dk

Serial Number

Your pipette has been engraved with a serial number (two letters and four digits) placed on the side of the handle near the top. Please refer to this serial number with all inquiries relating to this pipette.

Spare parts

All pipettes are supplied with a drawing indicating all spare parts numbers. If you need to order spare parts for your pipette, please use the part numbers indicated at the drawing.