Axygen® Axypet® Pro Pipettors

Single-channel, 8-channel, and 12-channel Pipettors

Instruction Manual



Table of contents

1. Product Description 1
2. Packing 2
3. Pipettor Design 2
4. Safety Recommendations 3
5. Specifications 4
6. Pipettor Operation 6
7. Operating Instructions 8
8. Aspiration and Dispensing Instructions 9
9. Checking Pipetting Accuracy Parameters and Pipettor Recalibration 10
10. Pipettor Maintenance 13
11. Troubleshooting 20
12. Spare Parts 22
13. Limited Warranty 23

1. Product Description

The Axygen® Axypet® Pro single-channel pipettor is a volumetric instrument designed to measure and transfer liquids precisely and safely. It can accommodate volumes from 0.1 µL to 1000 µL depending on the model.

Axygen Axypet Pro 8-channel and 12-channel pipettors have been designed for microplate filling. The pipettors enable precise and simultaneous delivery of 8 or 12 preset volume doses of liquid. These pipettors are produced in four volume ranges: 0.5-10 µL, 5-50 µL, 10-200 µL, and 30-300 µL.

Nominal Volume (µL)	Cat. No.	Range of Pipettor Volumes (µL)	Pushbutton Color Code
Single-channel Pipettors			
2	AP-2-P	0.1-2	Red
10	AP-10-P	0.5-10	Red
20	AP-20-P	2-20	Yellow
50	AP-50-P	5-50	Yellow
100	AP-100-P	10-100	Yellow
200	AP-200-P	20-200	Yellow
1000	AP-1000-P	100-1000	Blue
Multi-channel Pipettors			
10 (8-channel) 10 (12-channel)	AP-8-10-P AP-12-10-P	0.5-10	Red
50 (8-channel) 50 (12-channel)	AP-8-50-P AP-12-50-P	5-50	Yellow
200 (8-channel) 200 (12-channel)	AP-8-200-P AP-12-200-P	10-200	Yellow
300 (8-channel) 300 (12-channel)	AP-8-300-P AP-12-300-P	30-300	Green

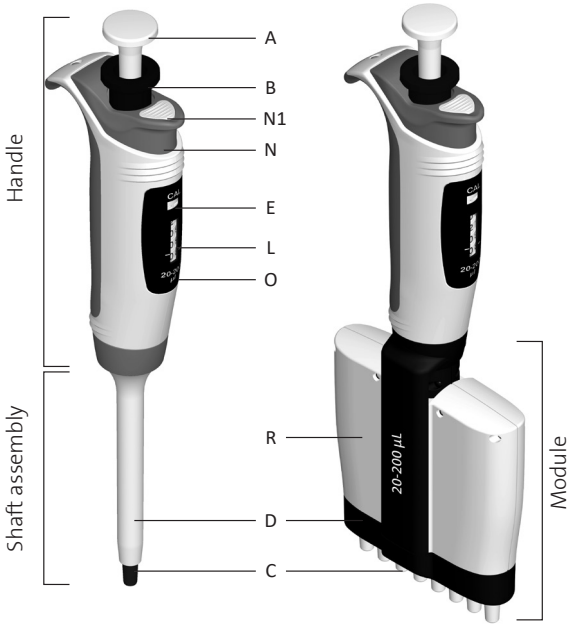
Axygen pipettors operate on the air-cushion principle (i.e., the aspirated liquid does not come into contact with the shaft or plunger of the pipettor). The liquid is drawn to the disposable tips that are attached to the pipettor.

2. Packing

The pipettors are delivered with the following:

- Pipettor
- Instruction manual
- Quality control certificate
- Calibration key
- Pipettor hanger
- Lubricant (single-channel pipettor)

3. Pipettor Design



Single- and Multi-channel Pipettors

A. Pipetting pushbutton

B. **Volume adjustment knob:** Used to set and lock the preset volume.

C. **Shaft:** Made of high quality plastic, ensuring high chemical and mechanical strength.

D. **Tip ejector:** For multi-channel pipettors, the tips are ejected sequentially, which reduces the required force.

E. **Calibration switch:** Switches the pipettor from operating mode to calibration mode (CAL).

L. **Volume counter:** Four-digit volume counter indicates the preset volume.

O. **Counter overlay:** The overlay is printed with the range of the aspirated volume according to the pipettor model.

N. **Ejector pushbutton**

N1. **Cap:** Protects the calibration mechanism.

R. **Multi-channel manifold:** Contains a set of plungers and a set of flexible-suspension shafts, reducing the required tip attachment force.

Model Identification

Pipettor model volume range is printed on the counter overlay. Additionally, it is printed on the tip ejector bar in the multi-channel pipettors.

Materials Used

Handle parts:

- Polypropylene (PP)
- Polycarbonate (PC)
- Polyacetal (POM)
- Stainless steel

Shaft and piston area parts:

- Polypropylene
- Polyvinylidene fluoride (PVDF)
- Polyphenylene sulfide (PPS)
- Polyamide (PA)
- Fluoropolymer elastomer
- Stainless steel

4. Safety Recommendations

Long-term and correct pipettor operation depends mainly on the method of use. Please read the Instructions for Use of the pipettor carefully and follow the rules described herein.

Symbols used:

	Danger, risk of injury.
NOTE	Risk of damage to the pipettor or errors in pipetting.

NOTE

- The pipettor is designed for the transfer of liquids only in the tip. Do not draw liquids without the tip attached. The aspirated liquid should not get inside the pipettor, as it may damage the pipettor.
- The single use of the tip reduces the risk of contamination of samples.
- Keep the pipettor clean, avoiding the use of aggressive substances (e.g., acetone) for cleaning purposes.
- Do not place the pipettor horizontally if there is liquid in the tip.
- Only using the pipettor in accordance with the manufacturer's instructions ensures the correct pipettor parameters are maintained.
- After replacing the plunger or the shaft, the pipettor should be calibrated.
- In the case of incorrect operation, the device should be cleaned in accordance with the instructions for use or transferred to a service point.
- Ambient operating temperature: -5°C to 45°C
- Ambient storage conditions: -25°C to 55°C



When working with the pipettor:

- Follow general work safety regulations regarding hazards related to work in the laboratory.
- Take special care when pipetting aggressive substances.
- Use protective clothing, goggles, and protective gloves.
- Avoid pointing the pipettor with the tip attached and filled at yourself or at others.
- Only use parts and accessories recommended by the manufacturer.

5. Specifications

The pipettor is a high quality instrument which offers excellent accuracy and precision. The accuracy and precision (repeatability) of the liquid volume depends on the quality of pipet tips used. The values for accuracy and precision shown in the table below were obtained using Axygen® pipet tips. It is recommended to use these tips to obtain proper compatibility with the pipettors and proper parameters of accuracy and precision of the aspirated liquid.

Nominal Volume (µL)	Testing Volume (µL)		Accuracy (%)	Permissible Volumes (µL)	Precision (%)	Fit to Tips Without Filter (µL)
Single-channel Pipettors						
2	Min.	0.1	±40.0	0.06 - 0.14	≤12.0	10
		0.2	±12.0	0.176 - 0.224	≤6.0	
		1	±2.7	0.973 - 1.027	≤1.3	
	Max.	2	±1.5	1.97 - 2.03	≤0.7	
10	Min.	0.5	±4.0	0.48 - 0.52	≤2.8	10
		1	±2.5	0.975 - 1.025	≤1.8	
		5	±1.5	4.925 - 5.075	≤0.7	
	Max.	10	±1.0	9.9 - 10.1	≤0.4	
20	Min.	2	±3.5	1.93 - 2.07	≤1.5	200
		10	±1.0	9.9 - 10.1	≤0.5	
	Max.	20	±0.8	19.84 - 20.16	≤0.3	
50	Min.	5	±3.5	4.825 - 5.175	≤1.3	200
		25	±1.0	24.75 - 25.25	≤0.5	
	Max.	50	±0.8	49.6 - 50.4	≤0.3	
100	Min.	10	±3.0	9.7 - 10.3	≤1.0	200
		50	±1.0	99.5 - 50.5	≤0.3	
	Max.	100	±0.8	99.2 - 100.8	≤0.2	
200	Min.	20	±2.0	19.6 - 20.4	≤0.7	200
		100	±1.0	99.0 - 101.0	≤0.3	
	Max.	200	±0.6	198.8 - 201.2	≤0.2	
1000	Min.	100	±2.5	97.5 - 102.5	≤0.6	1000
		500	±0.8	496 - 504	≤0.3	
	Max.	1000	±0.6	994 - 1006	≤0.2	
Multi-channel Pipettors						
10 (8-channel) 10 (12-channel)	Min.	0.5	±10.0	0.45 - 0.55	≤8.0	10
		1	±8.0	0.92 - 1.08	≤6.0	
		5	±4.0	4.8 - 5.2	≤2.0	
	Max.	10	±2.0	9.8 - 10.2	≤1.2	
50 (8-channel) 50 (12-channel)	Min.	5	±4.0	4.8 - 5.2	≤2.5	200
		25	±3.0	24.25 - 25.75	≤1.2	
	Max.	50	±1.6	49.2 - 50.8	≤0.6	
200 (8-channel) 200 (12-channel)	Min.	10	±5.0	9.5 - 10.5	≤3.0	200
		20	±3.0	19.4 - 20.6	≤1.5	
		100	±1.5	98.5 - 101.5	≤0.8	
	Max.	200	±1.0	198 - 202	≤0.6	
300 (8-channel) 300 (12-channel)	Min.	30	±3.0	29.1 - 30.9	≤2.0	300
		150	±1.2	148.2 - 151.8	≤1.0	
	Max.	300	±1.0	297 - 303	≤0.6	

The accuracy and precision are obtained gravimetrically using Axygen® pipet tips performing at least 10 measurements of distilled water at a temperature of 20°C ± 1°C according to the EN ISO 8655 standard.

The design of the pipettor enables the user to recalibrate it according to the information presented in Section 9.

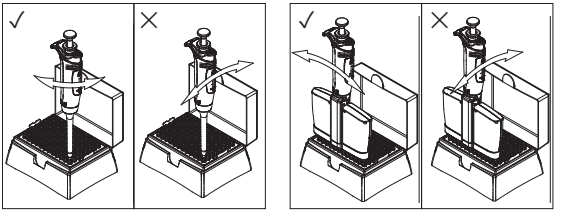
6. Pipettor Operation

Attaching the Tips

- Attach the tip corresponding to the model on the pipettor on the shaft (Section 5).
- Position the pipettor vertically when putting on the tips.
- Single-channel pipettors, when attaching the tip, press the pipet tip on firmly using a slight twisting motion. This will ensure an airtight seal.
- Multi-channel pipettors, when attaching the tips on the shafts, press the pipettor against the tips in the rack box until the shafts retract approximately 1.5 mm into the manifold. The suspension system of the shafts ensures even and tight sealing of the pipet tips. The rocking movement does not have to be performed to seal the pipet tips tightly.

NOTES:

- Do not attach the tips with a swinging movement, as this may damage the shaft or plunger. **Observe this rule particularly with single-channel pipettors of low volume range.**

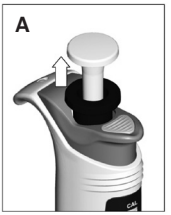


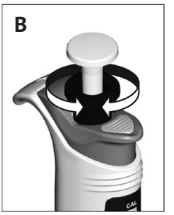
- Never draw liquids directly into the pipettor without the tip attached.

Volume Setting

NOTE: The red calibration switch above the counter should remain in the lower position during operation. Otherwise, any change in volume will result in a loss of calibration of the pipettor.









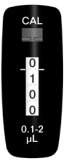
A. To enable volume selection, set the black adjustment knob to the upper position.

B. To set a certain value, turn the knob. The volume is indicated by the counter and its value consists of four digits that should be read from top to bottom. Digits on the bottom drum represent the scale division for the pipettor model. See scale intervals in Section 5. The volume range of the pipettor model is shown on the counter overlay.

C. After the desired volume has been set, move the knob down to avoid an inadvertent change of the volume.

Examples of Counter indications

The white mark separates the integer part from the decimal part of the aspirated liquid volume in µL.







Volume Ranges	0.1-2 µL	5-50 µL	100-1000 µL
Set Volume (µL)	0.1 µL	5 µL	100 µL

To attain the maximum accuracy, the set volume must be approached from a higher value by diminishing counter readings. Before reaching the desired value, reduce the speed of turning the adjustment knob to not exceed this value.

7. Operating Instructions

Observing the following recommendations will ensure maximum possible accuracy and precision of liquid sampling.

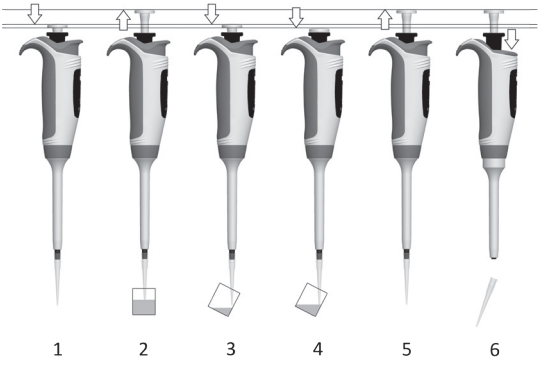
- During operation, the pipettor's volume setting should be locked, the black adjustment knob should be in the lower position.
- The pipettor is equipped with a counter operating mode switch, the calibration switch located under the CAL sign on the counter overlay. This switch should only be used when the pipettor is calibrated (upper position marked as CAL on the switch).
- Make sure to operate the pipettor slowly and smoothly.
- The depth of immersion in the sample liquid should be the minimum necessary and should remain constant during aspiration. The recommended immersion depths are given in the table below:

Model Volume Range [µL]	Immersion Depth [mm]
0.1-1	≤1
1-100	2-3
101-1000	2-4

- The pipettor should be held in a vertical position.
- Change the pipet tip when volume setting is changed or when a different liquid is to be aspirated.
- Change the pipet tip if a droplet remains on the end of the tip from the previous pipetting operation.
- Each new pipet tip should be pre-rinsed with the liquid to be pipetted.
- Liquid should never enter the pipettor shaft. To prevent this:
  - Press and release the pushbutton slowly and smoothly.
  - Never turn the pipettor upside down.
  - Never lay the pipettor on its side when there is liquid in the tip.
- Never force the volume setting beyond its recommended limits.
- When pipetting liquids with temperatures different from the ambient temperature, it is recommended to pre-rinse the tip several times before use.
- Do not pipette liquids with temperatures above 70°C.

NOTE: When pipetting acids or corrosive solutions which emit vapors, it is recommended to disassemble the shaft and rinse the piston and seal with distilled water after finishing the pipetting operation.

8. Aspiration and Dispensing Instructions



Aspirating Liquid

1. Press the pushbutton to the first positive stop. Holding the pipettor vertically, immerse the pipet tip into the sample liquid. The depth to which the pipet tip is immersed in the sample liquid depends on the model (for recommended values see Section 7). If the pipet tip is not immersed to the recommended depth or if the pipetting pushbutton is rapidly released, air may enter the disposable pipet tip.
2. Release the pipetting pushbutton slowly and smoothly to aspirate the sample. Wait one second and then withdraw the pipet tip from the liquid.

NOTE: Do not touch the used tip.

Dispensing Liquid

3. Place the end of the pipet tip against the inside wall of the vessel at an angle of 10° to 40°. Then, press the pushbutton smoothly to the first stop. Wait one second.
4. Press the pushbutton to the second stop to expel any remaining liquid. Keep the pushbutton depressed to the very end, and remove the pipettor by drawing the pipet tip against the inside surface of the receiving vessel.
5. Release the pushbutton to its starting position.
6. Eject the pipet tip by pressing the tip ejector button.

Remember to change the pipet tip whenever a different type of liquid is to be sampled.

Aspirating High-density Liquids

When pipetting liquids of higher viscosity or lower surface tension than water (e.g., sera or organic solvents), a film of liquid is formed on the inside wall of the pipet tip. This film can create an error. As the film remains relatively constant in successive pipetting operations with the same tip, this error can be eliminated by forming the film before transferring the first sample. This is done by aspirating a sample and dispensing it back into the same vessel. Now, as the film is already formed, all of the following samples will have better accuracy and repeatability.

This pre-rinsing operation should be repeated when the volume to be aspirated is changed or when a new pipet tip is used.

NOTE: Normally the degree of error resulting from heavy or viscous liquids is negligible if pipetting is done slowly and carefully. It is most important to give the liquids some time to react to the change of pressure by holding the pipet tip in its position for at least 2 seconds after the aspiration and the blow out stroke.

If in extreme cases, this method of operation does not result in accurate values, recalibrate the pipettor out in accordance with Section 9.

After calibration, it is recommended to record the recalibration and the size of the correction introduced, to facilitate reverse calibration to the standard liquid.

9. Checking Pipetting Accuracy Parameters and Pipettor Recalibration

The pipettors are factory-calibrated using the gravimetric method with Axygen® pipet tips and distilled water, in accordance with ISO 8655 guidelines for the maximum (nominal) liquid volume drawn by the pipettor and for 10% of the maximum volume according to the values given (Section 5).

The design of the pipettors enable their recalibration and adaptation to other pipetting techniques or liquid properties (i.e., temperature, density and viscosity).

It is recommended to carry out periodic checks of the operation of the pipettor at least once a year, the period of operation of the pipettor with no checks depends on the type of workload (liquids collected), and other conditions (load intensity and sterilization in the autoclave, replacement of components) in which the pipettor is used.

If during pipettor operation you find that the accuracy error (the difference between the real aspirated volume and the preset volume) exceeds the permissible value

given in the table in Section 5, the pipettor recalibration procedure should be carried out.

Recalibration of the pipettor consists in setting on the counter the value of the liquid volume obtained in weighing. Recalibration of the pipettor is performed only for one liquid volume drawn by the pipettor. The recommended volume for recalibration is 10% of the maximum (nominal) value.

Conditions for Checking the Pipetting Accuracy Parameters

The pipetting accuracy is influenced by such factors as: tips used, characteristics of the pipetted liquid (density, viscosity), or operating conditions (ambient temperature, pressure).

To determine the accuracy error of the pipettor, the following conditions should be met:

- Ambient temperature and the temperature of the pipettor, pipet tips, and liquid should be within the range of 20°C to 25°C and stabilized during weighing within ±0.5°C.
- Measurements should be conducted using distilled water.
- Balance sensitivity should be suitable for the volume "V" to be measured:

Volume Checked (µL)	Balance Sensitivity (mg)
0.1≤V≤ 10	0.001
10≤V≤100	0.01
V>100	0.1

- When calculating the liquid volume aspirated by the pipettor, the values of conversion factor Z [µL/mg] for distilled water or a liquid with comparable density should be taken into account. Sample values of this conversion factor are given in the following table:

Temperature (°C)	Pressure (kPa)		
	95.0	101.3	105.0
20	1.0028	1.0029	1.0029
21	1.0030	1.0031	1.0031
22	1.0032	1.0033	1.0033
23	1.0034	1.0035	1.0036
24	1.0037	1.0038	1.0038
25	1.0039	1.0040	1.0040

See ISO 8655 for the full table of the value of the conversion factor Z.

NOTE: Pipetting should be performed in accordance with the rules described in Sections 7 and 8.

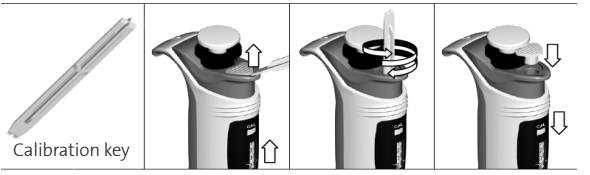
Checking the Pipetting Accuracy Parameters

- Set the pipettor to the calibration volume.
- Perform 10 aspirations, and calculate their average value in [mg].
- Calculate the volume in [µL] by multiplying the value in [mg] by the conversion factor Z [µL/mg].

If the average aspirated volume exceeds the permissible values of the range given in Section 5, the pipettor should be recalibrated.

Pipettor Recalibration

Make sure that the pipettor is set to the calibration volume and the volume adjustment knob is locked.



1. Remove the cap from the ejector pushbutton.
2. Set the calibration switch to the upper position (CAL) using the flat end of the calibration key.
3. Insert the calibration key with the cross end vertically into the hole in the ejector pushbutton, placing it in the counter's calibration knob.
4. Turn the key so that the volume indicated by the counter is equal to the volume calculated.
5. Remove the calibration key.
6. Set the calibration switch in the operating position.
7. Fit the ejector pushbutton cap.
8. Repeat the pipetting accuracy check (Section 9: Checking the pipetting accuracy parameter). If the accuracy error value is exceeded, repeat the calibration process.



Calibration position



Operating position

10. Pipettor Maintenance

Depending on the applications and the intensity of use, the pipettor requires periodic maintenance.
The components most exposed to vapors of aggressive solutions, such as shaft elements, should be regularly checked and cleaned.

To properly carry out the maintenance, familiarize yourself with the design of the shaft assembly shown in Figures 10A, 10B, 10C, and follow the instructions given in this Section.

⚠ Do not use sharp tools for pipettor maintenance. It may cause damage to the device and affect the user's safety.

Cleaning

External surfaces of the pipetting pushbutton, the ejector pushbutton, the handgrip, the shaft nut, and the adjustment knob may be cleaned using a cloth dampened in isopropyl alcohol. The remaining parts removed from the pipettor during pipettor disassembly may be washed with distilled water or isopropyl alcohol.

NOTE: Before using cleaning agents other than those recommended by the manufacturer, check the compatibility charts and consider chemical resistance of the following plastics: PP, PC, POM, PA, PPS, PVDF used to produce the pipettor parts.

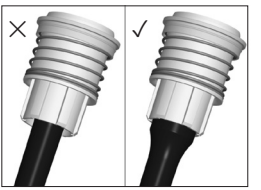
Dismantling shaft elements of the single-channel pipettor:

- Holding the pipettor handle, slightly unscrew the shaft assembly and pull the Tip ejector (D) out of it;
- Still holding the handle, unscrew the remaining part of the shaft assembly from it.

Then proceed according to the pipettor models shown in Figures 10A-C.

NOTE FOR ALL MODELS:

When inserting the Shaft or the Shaft Holder into the Connecting Bush, make sure that it is inserted properly to the end. The fins of the Shaft/Holder must match the grooves in the Bush.



Incorrect assembly of these parts may result in damage to the components.

After cleaning, apply a thin layer of lubricant on the Plunger (10A) or the Seal (10B, 10C). Lubricant is supplied with each pipettor.

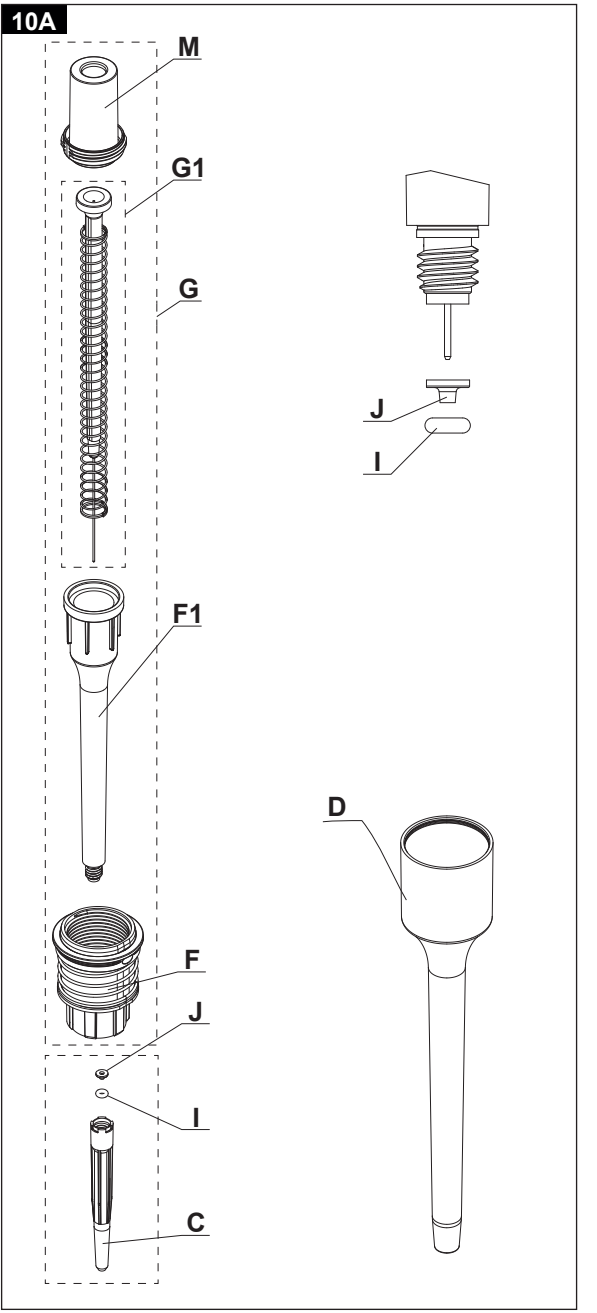
Single-channel pipettors 0.1-2, 0.5-10, 2-20 µL (Figure 10A)

To check and clean the shaft and the seal, it is not necessary to dismantle the entire assembly. Unscrew the Shaft (C) from the Shaft holder (F1) and remove the O-ring (I), and in the case of pipettor 2 µL, also the Seal (J).

If you need to clean other components:

- Unscrew the Shaft Cap (M).
- Remove from the Plunger and pipetting Spring (G1).
- Remove the Shaft holder (F1) from the Connecting Bush (F).
- Check the condition of components, and clean as recommended.
- Replace any damaged parts.
- Assemble the components in reverse order.

NOTE: When disassembling, care should be taken so that the plunger does not pop out under the action of the pipetting spring.


10A
M
G1
G
J
I
F1
D
F
J
I
C

Single-channel pipettors 5-50, 10-100, 20-200 µL (Figure 10B)

To clean the shaft or the seal, it is not necessary to dismantle the entire set. Just unscrew the Shaft (C) from the Shaft Holder (F1).

If you need to clean other components:

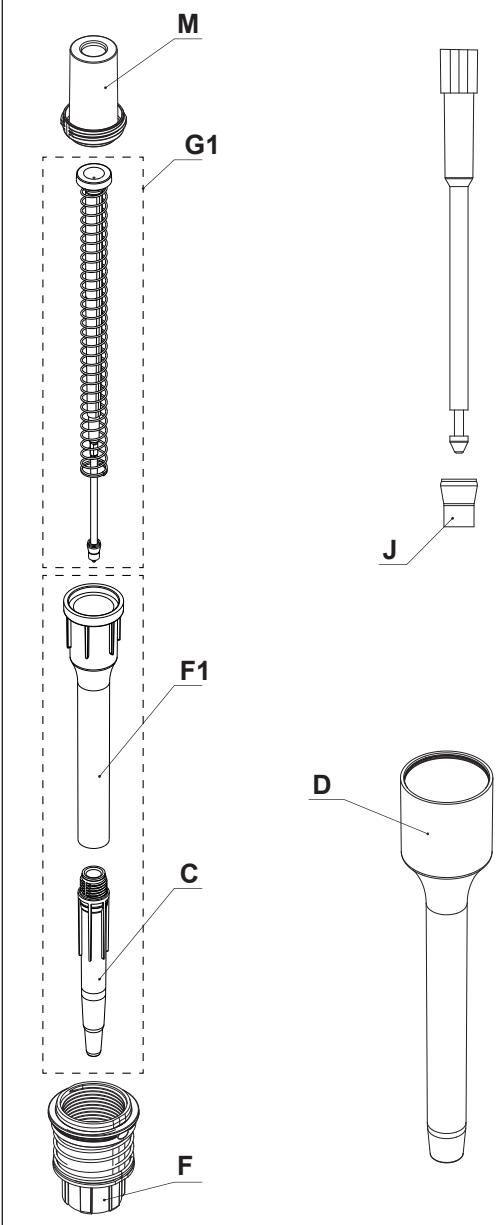
- Unscrew the Shaft Cap (M).
- Remove the Piston with the Pipetting Spring (G1).
- Remove the Shaft holder (F1) from the Connecting Bush (F).
- Check the condition of components, and clean as recommended.
- Replace any damaged parts.
- Assemble the components in reverse order.

NOTE: When disassembling, care should be taken so the plunger does not pop out under the action of the pipetting spring.

After replacing the shaft, it is advised to perform a calibration check of the pipettor.

If the pipettor is operating incorrectly, please check if the pipettor was reassembled correctly.

10B

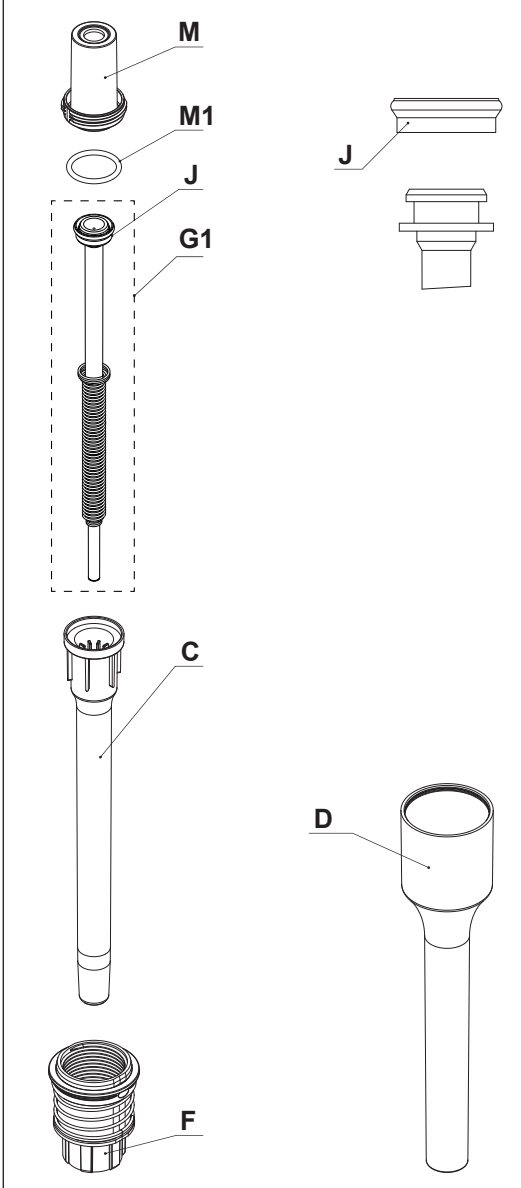


Single-channel pipettors 100-1000 µL (Figure 10C)

- Unscrew the Shaft Cap (M) and slide it off the Piston (G1).
- Remove the Piston with the Pipetting Spring (G1) from the Shaft (C).
- Clean the parts of the lubricant and examine the components, especially the condition of the Seal (J), O-ring (M1) and the interior of the Shaft Cap (M).
- Replace any damaged parts.
- Assemble the components in reverse order.

NOTE: After replacing the piston or the shaft cap, it is advised to perform a calibration check of the pipettor. In case of any signs of incorrect operation of the pipettor, check the correctness of assembly.

10C



Sterilization

Sterilization in an Autoclave

The pipettor can be sterilized in an autoclave at 121°C for 20 minutes. Sterilization under other conditions may cause damage to the pipettor. It is recommended to:

- Unscrew the shaft nut slightly prior to sterilization and re-tighten after autoclaving.
- Set the locking ring in upper (unlocked) position prior to sterilization.
- Sterilize the pipettors in autoclave with an initial vacuum and drying cycle.
- After sterilization, the pipettor should be dried and cooled to room temperature.

The precision of the results should not alter if the pipetting process and autoclaving are carried out as described in this manual. Because a slight change in the accuracy of the dosage may occur, it is recommended to:

- Check the calibration of the pipettor after the initial first, third, and fifth autoclaving cycles and then after every 10 autoclaving cycles.

Ultra Violet (UV) Sterilization

The pipettors are UV resistant. However, the recommended distance from the radiation source to the exposed element should be not less than 50 cm. Prolonged and very intense UV exposure can cause discoloration of pipettor parts without effecting their performance.

11. Troubleshooting

If you notice an improper pipettor operation, identify the cause and eliminate the fault. Follow the instructions in the sequence provided. Replacement of parts should be required only occasionally and should not occur under normal pipettor use.

Problem	Cause	Solution
Droplets of liquid remain in the pipet tip.	The pipet tip is emptied too fast.	Decrease the speed of pressing the pipettor pushbutton.
	The pipet tip wettability has increased due to extensive use.	Replace the tip with a new one.
Droplets of air appear in the liquid aspirated into the pipet tip.	The pipet tip immersion is too shallow.	Immerse the tip deeper according to the instructions.
	The pipet tip is incorrectly pressed onto the pipettor shaft.	Press the pipettor firmly.
	The tip is damaged or worn out due to extensive use.	Replace the tip with a new one.
The pipettor incorrectly aspirates the liquid or the liquid drops out from the tip.	The pipettor tip is incorrectly pressed onto the pipettor shaft.	Press the pipet tip firmly.
	The shaft surface is damaged or contaminated at the sealing site.	Clean the shaft or replace it with a new one.
	The plunger or the seal is damaged due to prolonged aspiration of aggressive liquids.	Disassemble the shaft assembly; wash the shaft, the plunger and the seal (Section 10: Cleaning). Replace the elements with new ones if necessary.
	The inside of the pipettor is contaminated.	
	No lubrication on the sealing elements.	Apply a small amount of lubricant onto the plunger and reassemble the shaft in the correct order.
Uneven work of the pipetting set, the pipetting pushbutton gets blocked.	The inside of the pipettor is contaminated due to aspiration of aggressive substances.	Unscrew the shaft assembly, wash the parts. Replace the elements with new ones if necessary. Apply a small amount of lubricant on the plunger and reassemble the shaft in the correct order.
	The inside of the pipettor is contaminated due to the liquid entering the pipettor.	
	No lubrication on the sealing elements, (e.g. after repeated autoclaving procedures).	
Incorrect aspiration.	Liquid with properties other than water (density, viscosity).	Calibrate the pipettor using the liquid which is to be pipetted.
	The volume adjustment knob used in the “CAL” mode.	Calibrate the pipettor according to Section 9.

If the problem continues after carrying out the above steps, contact your Corning representative.

Before returning the pipettor, please ensure the pipettor is completely free of any chemical, radioactive, or microbiological contamination which could pose a threat during transport and repair.

12. Spare Parts

Contact Corning Customer Service to inquire about the availability of spare parts. Pipettor model and name of the part required should be specified.

NOTE: The replacement of the plunger requires conducting the calibration procedure according to Section 9.

Item	Description	Model	Cat. No.	Qty/Pk
A	Pipetting pushbutton	All	SP19685	1
G	Plunger assembly	2	SP9801	1
		10	SP9802	1
		20	SP9803	1
G1	Piston (with seal and spring)	50/100	SP9804	1
		200	SP9805	1
		1000	SP9806	1
M	Shaft cap (with O-ring)	1000	SP9807	1
C, I, J	Shaft kit (with seal and O-ring)	2	SP9811	1
C, I	Shaft kit (with O-ring)	10	SP9812	1
		20	SP9813	1
C, F1	Shaft holder with shaft	50/100	SP9814	1
		200	SP9815	1
C	Shaft	50/100	SP9824	1
		200	SP9825	1
		1000	SP9816	1
F	Connecting bush	All	SP9810	1
D	Tip ejector	2/10	SP9817	1
		20-200	SP9818	1
		1000	SP9819	1

13. Limited Warranty

Corning Incorporated (Corning) warrants that this product will be free from defects in material and workmanship for a period of three (3) years from date of purchase. CORNING DISCLAIMS ALL OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Corning's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in material or workmanship within the warranty period, provided the purchaser notifies Corning of any such defect. Corning is not liable for any incidental or consequential damages, commercial loss, or any other damages from the use of this product.

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in the supplied instruction manual. This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces, or other causes not arising from defects in original material or workmanship. This warranty does not cover the PTFE seal, O-ring, or shaft. Claims for transit damage should be filed with the transportation carrier.

In the event this product fails within the specified period of time because of a defect in material or workmanship, contact Corning Customer Service at: USA/Canada 1.800.492.1110, outside the U.S. +1.978.442.2200, visit **www.corning.com/lifesciences**, or contact your local support office.

Corning Customer Service will help arrange local service where available or coordinate a return authorization number and shipping instructions. Products received without proper authorization will be returned. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. Corning will not be responsible for damage incurred by improper packaging. Corning may elect for onsite service for larger equipment.

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No individual may accept for, or on behalf of Corning, any other obligation of liability, or extend the period of this warranty.

For your reference, make a note of the model number, serial number, date of purchase, and supplier here.

Model No. _____
Serial No. _____
Date Purchased _____
Supplier _____

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