Information Guide

Cleaning and Decontamination Guide for Sartorius Pipettes

SARTORIUS

Contents

1 Cleaning and Decontamination in Pipette Maintenance

Pipettes are precision instruments whose performance can be significantly impacted if not adequately maintained. To maintain the level of purity that is critical in many laboratory applications, adequate cleaning and decontamination of pipettes is necessary.

— Cleaning refers to removal of any foreign materials from the pipette such as dust, nucleic acids, proteins, buffers and salts.

— Decontamination refers to the removal or killing of microorganisms such as virus, bacteria and fungi. It also refers to the removal or neutralization of chemicals and radioactive materials.

Sartorius pipettes are designed with the end-user applications in mind and therefore are designed to be very easy to clean, have as many autoclavable products as possible, and to tolerate a variety of cleaning reagents. When selecting solutions for cleaning or decontamination of the pipette, consider the reagent or liquid that has been pipetted. Additionally, check that the cleaning solution is compatible with the pipette materials and would not have any adverse effect. Information about pipette materials are available in the pipette user manuals which can be downloaded from www.sartorius.com or hardcopies ordered by email from lhinfo.finland@sartorius.com.

2 Cleaning Guide

2.1 Cleaning the Outer Surface of the Pipette (Daily)

To clean and decontaminate the outer surface of the pipette, use a disinfectant liquid or mild detergent, for example 70% ethanol, and a soft, lint-free cloth. Gently clean the surface of the pipette with the moistened cloth and wipe it dry. Pay special attention to the tip cone.

Always check the chemical compatibility between the pipette materials and the disinfectant or decontaminant liquid.

Change the Safe-Cone Filter regularly with the tweezers provided with the pipette.

Do not let liquids enter the inner parts of the pipette.

Daily Cleaning Quick Guide

Pipette	Cleaning Reagent	Upper part	Lower part
Mechanical Pipettes			
Proline®, Proline® Plus, Mline®, Tacta®	70% (v/v) Ethyl alcohol	√	√
Electronic Pipettes			
Picus®, Picus® 2	70% (v/v) Ethyl alcohol	√	√

2.2 Cleaning the Lower Part of the Pipette (Every Three Months)

The frequency of pipette cleaning and maintenance depends on how heavily the pipette is used and which reagents it is used for – whether corrosive or biohazardous. For a pipette that is used daily, we recommend you clean and decontaminate it and check its performance every three months, however cleaning and decontamination should always be done after over-aspiration or when the pipette has clearly been contaminated.

Check the cleaning | decontamination protocol in the pipette user manual and chemical compatibility of the selected cleaning solution for your pipette. When opening the pipette lower parts, as a matter of routine the parts should be inspected for wear and tear. Always check the pipette performance after opening the lower parts.

Disinfectant Liquid

Pipette calibration is a fundamental part of Good Laboratory Practice (GLP) and we recommend that this should be done at minimum once a year. Sartorius also provides a complete repair and calibration service, including a service report and performance certificate.

Disinfectant Liquid

Always ensure the pipette materials are chemically compatible with the detergent, disinfectant, or decontaminant liquids you plan to use. In the pipette user manual, see the section on pipette parts and materials for information on pipette materials. For information on chemical compatibility, please send a request by email to lhinfo.finland@sartorius.com.

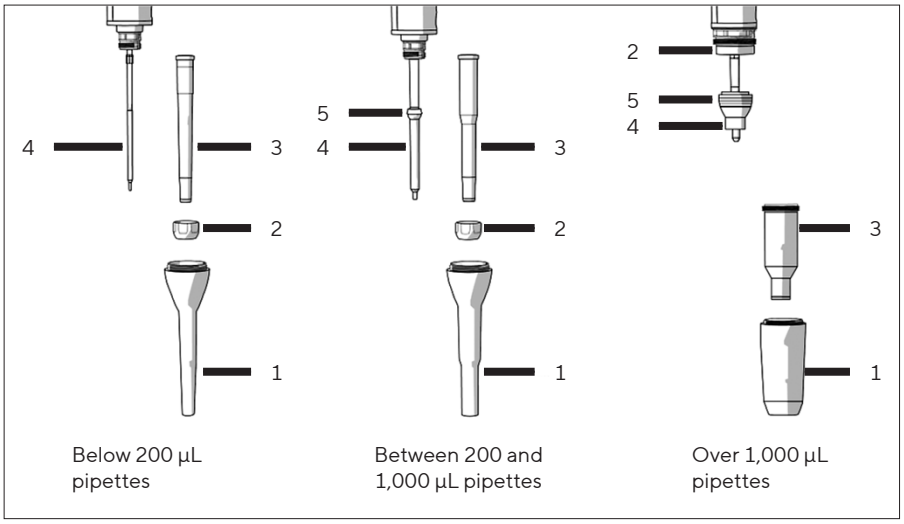
NOTE
Using tip cone filters may lengthen the service interval. Change filters regularly.

NOTE
We recommend always using gloves when cleaning the pipette.

Multichannel Pipettes:

Cleaning and maintaining the lower parts of all models: Disassembling of the lower part of a multichannel pipette should only be done by an authorized Sartorius service provider. Please contact your nearest Sartorius service provider or distributor.

Pipette Parts (For All Pipettes Except for Proline®):

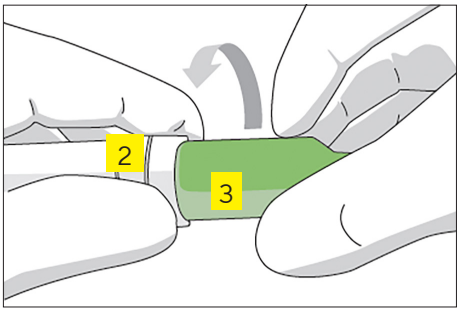


1. Tip ejector collar
2. Locking ring
3. Tip cylinder
4. Piston
5. Piston seal

To Disassemble and Clean the Pipette (Except for Proline®):

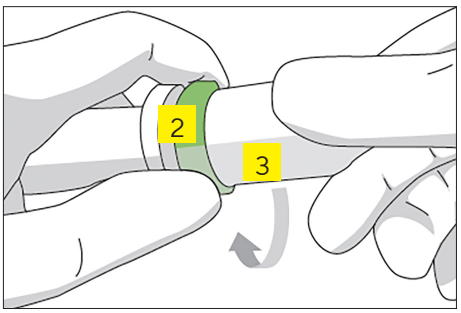
1. Eject the tip cone filter (if fitted)
2. Unscrew the tip ejector collar (1) counterclockwise and remove it.
3. Depending on the pipette volume:
   a. With all pipettes other than the 5 mL or 10 mL models, unscrew the locking ring (2) counterclockwise and carefully remove it together with the tip cone (3).

or



b. With a 2.5 mL and 5 mL pipette, hold the locking ring (2) firmly with your fingers and turn the tip cone cylinder counterclockwise with the other hand (see image below). Do not turn the locking ring as you turn the tip cone (3) as this will break the pipette.

or



c. With a 10 ml pipette hold the tip cone cylinder (3) firmly and turn the locking ring (2) clockwise with your fingers (see image below). Do not turn the tip cone (3) as this will break the pipette.

4. Clean the tip ejector collar (1), the tip cone holder, the tip cone cylinder (3), and the piston (4) with a disinfectant liquid or mild detergent and a soft, lint-free cloth.
5. Clean the interior of the tip ejector collar (1) and the tip cone cylinder with a cotton swab. Be careful with 3, 10, 20, and 100 µl pipettes to ensure the seal inside the tip cone is not damaged.
6. Rinse the parts with pure (Type 3) water or distilled water if necessary and allow them to dry.
7. Depending on the pipette volume:
   a. With a below 200 µL pipette, apply a thin layer of grease on the piston (4).

or

   b. With a pipette above 1,000 µL, apply a thin layer of grease around the seal (5).

or

   c. With a 2.5 mL, 5 mL, or 10 ml pipette, apply a thin layer of grease on the interior of the tip cone cylinder (3) and around the seal (5).

NOTE
Avoid excess grease. Only use the grease specified by the manufacturer.

NOTE
Before reassembling, check that there is no lint or particles on the surface of the piston, seal, or cylinder

To Reassemble the Pipette:

1. Depending on the pipette volume:
   a. With pipettes up to and including 1,000 µL, carefully place the tip cone (3) on the piston (4) and attach it by screwing the locking ring (2) clockwise.

or

   b. With a 2.5 mL and 5 mL pipette, carefully place the tip cone cylinder on the piston (4) and screw clockwise. Make sure the tip cone cylinder is properly tightened. Avoid over-tightening.

or

   c. With 10 mL pipettes, carefully place the tip cone cylinder on the piston (4) and screw the locking ring (2) counterclockwise. Make sure the tip cone cylinder is properly tightened. Avoid over-tightening.

2. Attach the tip ejector collar (1) by screwing it clockwise.
3. Insert a new tip cone filter.
4. Press the operating button several times to ensure that the grease has spread evenly.
5. Check the performance of the pipette.

NOTE

Always check the performance of the pipette after in-house service or maintenance.

Picus® and Picus® 2 Parts:

Lower parts of Picus® or Picus® 2 single channel pipette:

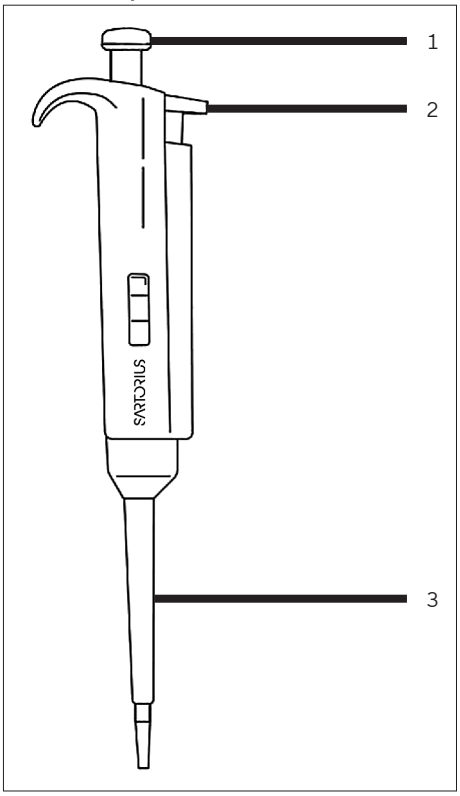
– Tip ejector collar (1), piston (2), tip cone (3), locking ring (4), spring (5)

Tacta® Parts:

Lower parts of a Tacta® single channel pipette:

– Tip ejector collar (1), tip cone (2), locking ring (3), piston (4)

Proline® Pipette Parts:



1. Operating button
2. Tip ejector collar
3. Tip ejector

To Disassemble and Clean the Proline® Pipette:

1. Hold down the tip ejector.
2. Place the tooth of the opening tool between the tip ejector and the tip ejector collar to release the locking mechanism.
3. Carefully release the tip ejector and remove the tip ejector collar.
4. Place the wrench end of the opening tool over the tip cone, turning it anticlockwise. Do not use any other tools. The 5 ml tip cone is removed by turning it anticlockwise without any tools.
5. Remove the tip cone, piston, and spring. Remove the filter if fitted.
6. Place the tip cone, tip ejector, tip ejector collar, piston, O-ring, and spring into a beaker containing an appropriate detergent and leave for at least 30 minutes to secure complete decontamination.
7. Remove the components from the beaker and rinse them with distilled water, then dry, preferably with warm air, for at least one hour.
8. Before replacing the tip cone it is recommended to grease the piston and O-ring slightly by using the silicone grease provided.
9. After reassembling press the operating button several times to ensure that the grease has spread evenly.
10. Check the pipette calibration.

NOTE

On models 720005, 720000, 722001 and 722004 (≤ 10 µl pipettes) the O-ring cannot be accessed for maintenance.

NOTE

Excessive use of grease may jam the piston.

3 Application-Specific Cleaning and Decontamination of Pipettes

Selection of disinfectant or decontaminant liquid: Always ensure the pipette materials are chemically compatible with the detergent, disinfectant, or decontaminant liquids you plan to use. Check the pipette user manual for information on pipette materials. For information on chemical compatibility, please send a request by email to lhinfo.finland@sartorius.com.

3.1 When Cleaning Sartorius Pipettes for Specific Applications

1. The outside surface of the upper part (body) of pipettes should be cleaned by wiping with cleaning reagent or decontaminant solution using a soft, lint-free cloth, based on chemical compatibility with the pipette. The upper part (body) of Sartorius pipettes should never be immersed (or soaked) in the cleaning agent.
2. Use the same procedure described for cleaning and maintaining the lower parts of all models as described in Section 2. Cleaning and decontamination of the lower part of the pipette can be done by wiping or immersion based on required cleaning or decontamination procedure for the contaminant. Lower parts of the pipette may be soaked in cleaning reagent or decontaminant solution, based on chemical compatibility with the pipette.
3. Always remove the cleaning agent thoroughly with pure (Type 3) water or distilled water after decontamination is completed. Allow parts to dry before greasing and re-assembly.
4. Re-greasing and checking of pipette performance should be done after opening the lower parts.

The upper and lower parts of the pipette are indicated in each pipette user manual. Additionally, disassembly procedures of single channel and multi-channel pipettes are clearly explained in each pipette user manual.

Multichannel Pipettes:

Cleaning and maintaining the lower parts of all models: Opening the lower part of a multichannel pipette should only be done by an authorized Sartorius service provider. Please contact your nearest Sartorius service provider or distributor.

3.2 Cleaning and Decontamination Reagent Quick-Guide

Reagent	Proline®	Proline® Plus	MIne®	Tacta®	Picus 2®
Detergent	√	√	√	√	√
Radioactivity cleaning reagent	√	√	√	√	√
Nucleic Acid | Nuclease removal agent	√	√	√	√	√
DEPC (Diethyl pyrocarbonate)	√	√	√	√	√
Ethanol or Isopropanol	√	√	√	√	√
Sodium hypochlorite	√	√	√	√	√
Hydrogen peroxide	√	√	√	√	√
Vapor Hydrogen Peroxide	√	√	√	√	√
Quaternary ammonium disinfectant	√	√	√	√	√
UV (ultraviolet radiation)	√	√	√	√	√

3.3 Cleaning Agents and Their Activities

Cleaning reagent	Radioactive solutions	Acids & Alkalis	Organic solvents	DNA | RNA	RNase | DNase	Proteins
Pure (Type 3) water or Distilled water		√				
Detergent	√		√			√
Radioactivity cleaning reagent	√					
Sodium hypochlorite				√		
Nucleic Acid removal reagent				√		
Nuclease removal reagent					√	
DEPC (Diethyl pyrocarbonate)					√	
UV (ultraviolet radiation)				√		

NOTE
The display on all Sartorius pipettes and the soft keys on Picus® and Picus® 2 electronic pipettes are chemically resistant to the cleaning agents listed above.

3.4 Cleaning Procedures

Examples: Examples of cleaning products are provided here only as an aid. Sartorius does not endorse any particular brand of product. Examples of commonly used cleaning reagents: **Detergent:** Decon® or Deconex®, **Radioactivity cleaning reagent:** Decon 90®, Decon NoCount®, **Nucleic Acid removal reagent:** DNA Away®, RNA Away®, **Nuclease removal reagent:** RNaseZAP®, RNase | DNase Away®

Detergents, Radioactivity cleaning reagents, Nucleic Acid removal reagents and Nuclease removal reagents: Follow the cleaning product manufacturer's instructions for use. After cleaning with detergents or radioactivity cleaning reagents, remove the cleaning agent from the pipette thoroughly with pure (Type 3) water or distilled water.

Sodium hypochlorite: Wipe the outside of the entire pipette or soak lower parts in 0.5 – 3% (w/v) sodium hypochlorite for 15 minutes. Remove the cleaning agent from the pipette thoroughly with pure (Type 3) water or distilled water.

DEPC (Diethyl pyrocarbonate): Soak the lower autoclavable parts of the pipette in 0.1% DEPC for 2 hours. Rinse thoroughly with sterile DEPC-treated water, then autoclave the DEPC-treated pipette parts to deactivate DEPC. Use DEPC decontamination only with autoclavable parts of the pipette since DEPC is toxic and must be deactivated by autoclaving after use.

Ethanol | Isopropanol: Wipe the outside of the entire pipette or soak lower parts in 70% (v/v) Ethanol or 60% (v/v) Isopropanol for 30 minutes.

Hydrogen peroxide: Wipe the outside of the entire pipette or soak lower parts in 3% Hydrogen peroxide for 10 minutes. Remove the cleaning agent from the pipette thoroughly with pure (Type 3) water or distilled water.

UV radiation: Expose pipette for 30 – 60 minutes to UV. The degree of inactivation by ultraviolet radiation is dependent on the UV dose applied. Sartorius pipettes have been tested and shown to have durability and no changes in performance after temporary exposure. Take note that prolonged or frequent exposure to UV radiation may cause yellowing and brittling of the pipette. We do not recommend the use of UV as an effective way to remove contamination on pipettes.

3.5 Decontamination Agents and Their Activities

Decontamination reagent	Bacteria spores	Vegetative Bacteria	Virus Enveloped	Virus Non-enveloped	Fungi
Ethanol | Isopropanol		√	√		
Sodium hypochlorite	(poor)	√	√	√	√
Hydrogen peroxide	√	√	√	√	√
Vapor Hydrogen Peroxide	√	√	√	√	√
Quaternary ammonium disinfectant		√	√		
UV (ultraviolet radiation)	(poor)	√	√	√	√

3.6 Decontamination Procedures

Examples: Examples of decontamination products are provided here only as an aid. Sartorius does not endorse any particular brand of product. Examples: **Quaternary ammonium disinfectant:** Aniospray, Phagoclean.

Ethanol | Isopropanol: Disinfection – Wipe the outside of the entire pipette or soak lower parts in 70% (v/v) Ethanol or 60% (v/v) Isopropanol for 30 minutes.

Sodium hypochlorite: Disinfection – Wipe the outside of the entire pipette or soak lower parts in 0.5 – 3% (w/v) sodium hypochlorite for 15 minutes. Remove the cleaning agent from the pipette thoroughly with pure (Type 3) water or distilled water.

Hydrogen peroxide: Disinfection – Wipe the outside of the entire pipette or soak lower parts in 3% Hydrogen peroxide for 10 minutes. Sterilization – soak lower parts in 7.5% Hydrogen peroxide for 10 minutes. Remove the cleaning agent from the pipette thoroughly with pure (Type 3) water or distilled water.

Vapor Hydrogen peroxide (VHP): Disinfection and sterilization: Follow the VHP provider's instructions for use. A minimum treatment of 0.1 – 3 mg/L vapor hydrogen peroxide at 25°C for 2 minutes has been shown to have broad spectrum efficacy.

Quaternary ammonium disinfectants: Follow the disinfectant manufacturer's instructions for use. After disinfection, remove the cleaning agent from the pipette thoroughly with pure (Type 3) water or distilled water.

UV radiation: Expose pipette for 30 – 60 minutes to UV. The degree of inactivation by ultraviolet radiation is dependent on the UV dose applied. Sartorius pipettes have been tested and shown to have durability and no changes in performance after temporary exposure. Take note that prolonged or frequent exposure to UV radiation may cause yellowing and brittling of the pipette. We do not recommend the use of UV as an effective way to remove contamination on pipettes.

4 Autoclaving Guide

4.1 Mechanical Pipettes

All Sartorius mechanical pipettes except Proline® are fully autoclavable. The entire mechanical pipette can be sterilized by steam, autoclaving at 121°C, (252°F), 1 atm for 20 minutes.

Autoclaving Instructions:

1. Remove the Safe-Cone Filter if attached.
2. The single channel pipettes can be autoclaved without special preparations. For multichannel pipettes, unscrew the lower part of the multichannel pipettes by holding the connecting collar and turning the lower part 360° counterclockwise.
3. Put the pipette into the sterilization bag, and place the bag into the autoclave.
4. Sterilize at 121°C and 1 bar overpressure for 20 minutes.
5. After autoclaving, the pipette must be cooled down and dried before reassembly. Drying can be done overnight at room temperature or at 60°C for 3 hours then cooled down.
6. To reassemble the multichannel pipette, reattach the lower part to the pipette by holding the connecting collar and turning the lower part 360° clockwise. With a single-channel pipette, check if the lower parts have become loose during autoclaving, and tighten them if necessary.
   It is recommended to check the performance of the pipette after every autoclaving. It is also recommended to grease the piston/seal of the pipette after every 10 autoclaving.

4.2 Electronic Pipettes

The lower parts of Sartorius electronic pipettes are autoclavable, excluding the 1200 µl multichannel models. Please see the autoclaving symbol printed on the lower part of your multichannel pipette to ensure the section is autoclavable.

Autoclaving Instructions:

1. Remove the Safe-Cone Filter if attached.
2. Disassemble the lower part: For single channel electronic pipettes, unscrew the tip ejector collar, tip cone and piston as instructed in user manual by turning them counter-clockwise and place these parts in a sterilization bag. For multichannel electronic pipettes, unscrew the connecting collar counterclockwise to remove the tip cone housing, and place it in a sterilization bag.
3. Sterilize at 121°C and 1 bar overpressure for 20 minutes.
4. After autoclaving, the autoclaved pipette parts must be dried and cooled down before reassembly. Drying can be done overnight at room temperature or at 60°C for 3 hours then cooled down.
   It is recommended to check the performance of the pipette after every autoclaving. It is also recommended to grease the piston | seal of the single channel electronic pipette after every 10 autoclaving. We recommend sending multichannel pipettes to your local Sartorius service center for greasing after every 10 autoclaving.

4.3 Autoclaving Quick-Guide

Pipette	Model	Autoclavability	Notes
Proline® Plus, Mline®, Tacta®	Single channels	Fully autoclavable	No need to dis-assemble before autoclaving
Proline® Plus, Mline®, Tacta®	Multi-channels	Fully autoclavable	Unscrew lower part before autoclaving
Picus®, Picus® 2	Single channels	Only lower parts	Autoclave tip ejector collar, tip cone and piston
Picus®, Picus® 2	Multi-channels	Only lower parts	Autoclave the tip cone housing
Picus®, Picus® 2	Multi-channel 1200 µl	Not autoclavable	Not autoclavable

4.4 Drying of Pipettes

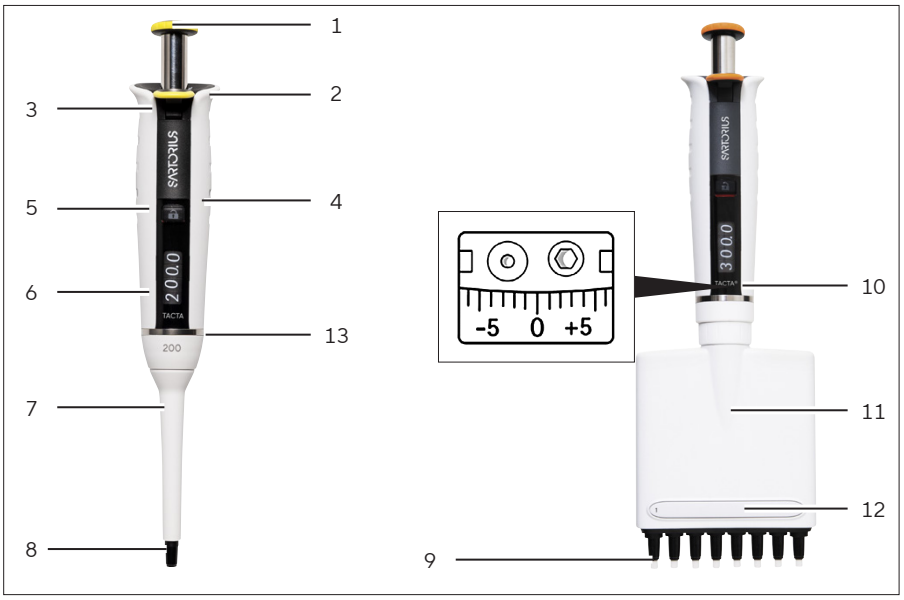
Drying of Sartorius pipettes can be done overnight at room temperature or at 60°C for 3 hours. Pipettes must always be cooled down after drying in the oven before reassembly. The upper parts (body) of electronic pipettes should not be dried in a drying oven.

5 Summary of Pipette Parts

5.1 Mechanical Pipettes Parts And Materials

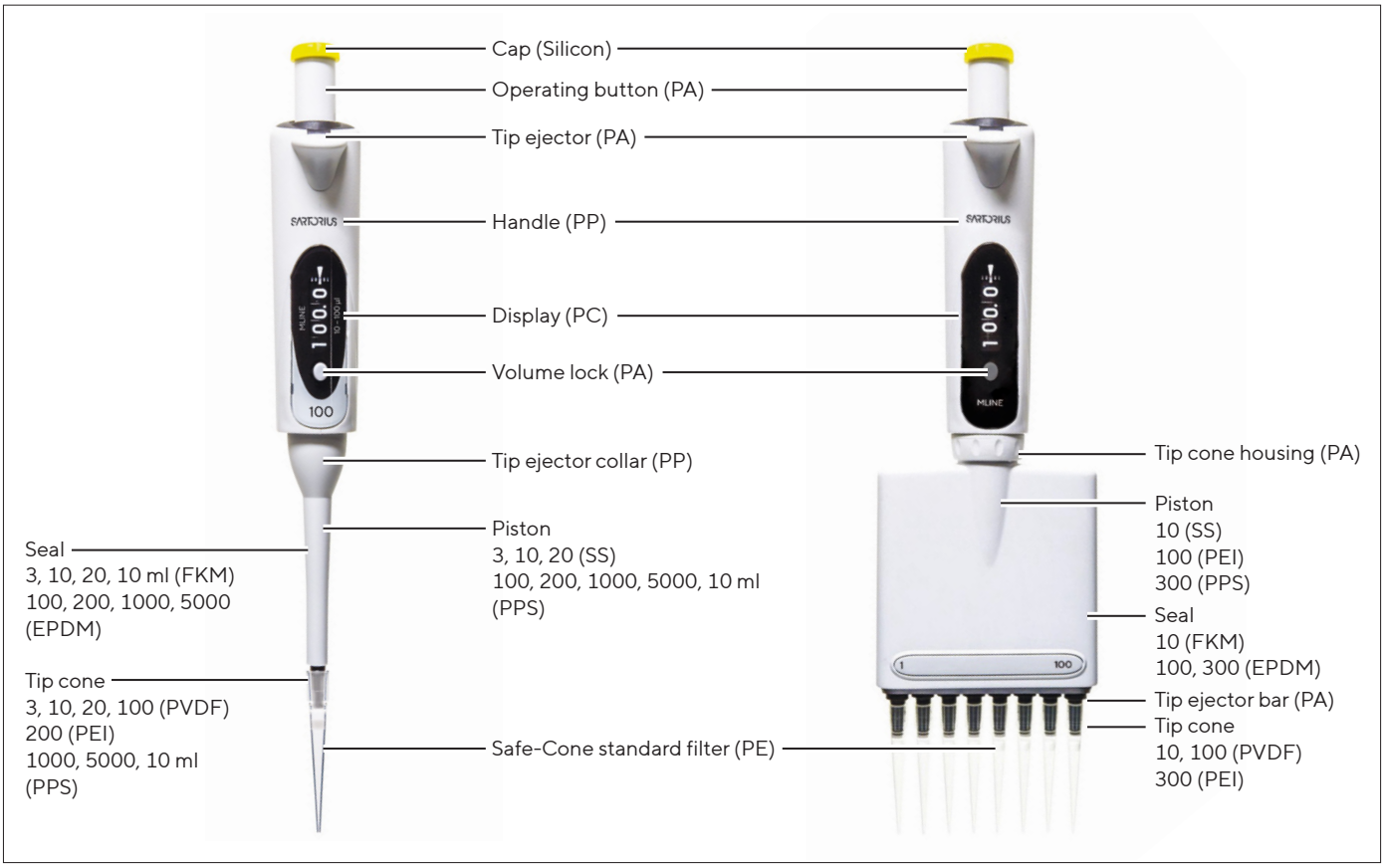
5.1.1 Tacta® Mechanical Pipette

Pipette Parts and Materials

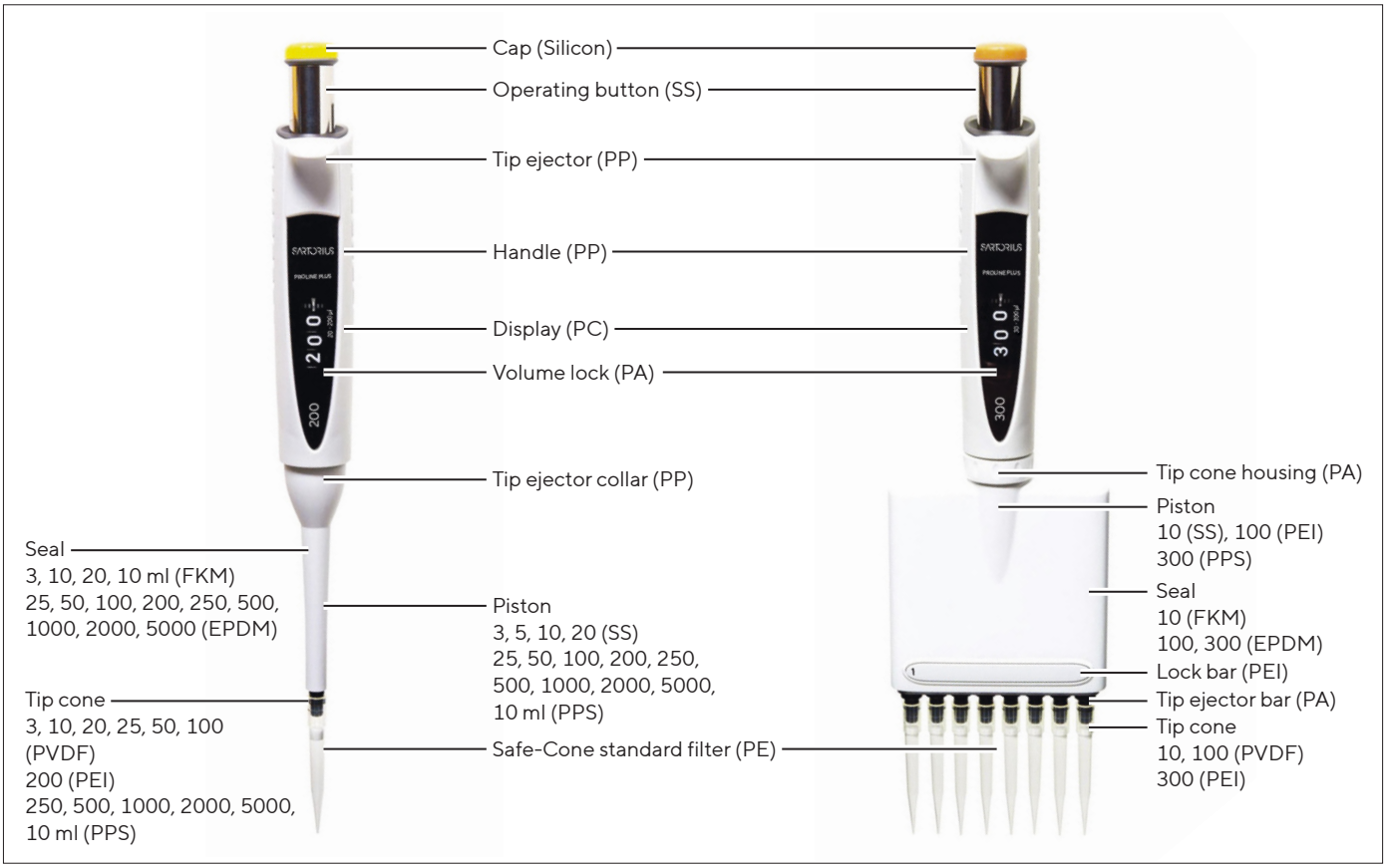


1. Operating button (polyamide (PA), silicone (SI), stainless steel (SS))
2. Finger support (polypropylene (PP))
3. Tip ejector (PA)
4. Handle (PP)
5. Volume lock (SI)
6. Display (polycarbonate (PC))
7. Tip ejector collar (PP)
8. Tip cone (polyvinylidenefluoride (PVDF) in 3, 10, 20, and 100 µl pipettes, polyetherimide (PEI) in 200 and 300 µl pipettes, polyphenylenesulphide (PPS) in 1000 µl, 5000 µl, and 10 ml pipettes)
9. Safe-Cone Filter (polyethylene (PE))
10. Adjustment window (PC)
11. Tip cone housing (PA)
12. Tip ejector bar (PA)
13. Stainless steel, corrosion-resistant metal ring (SSt EN 1.4404 | AISI 316L)

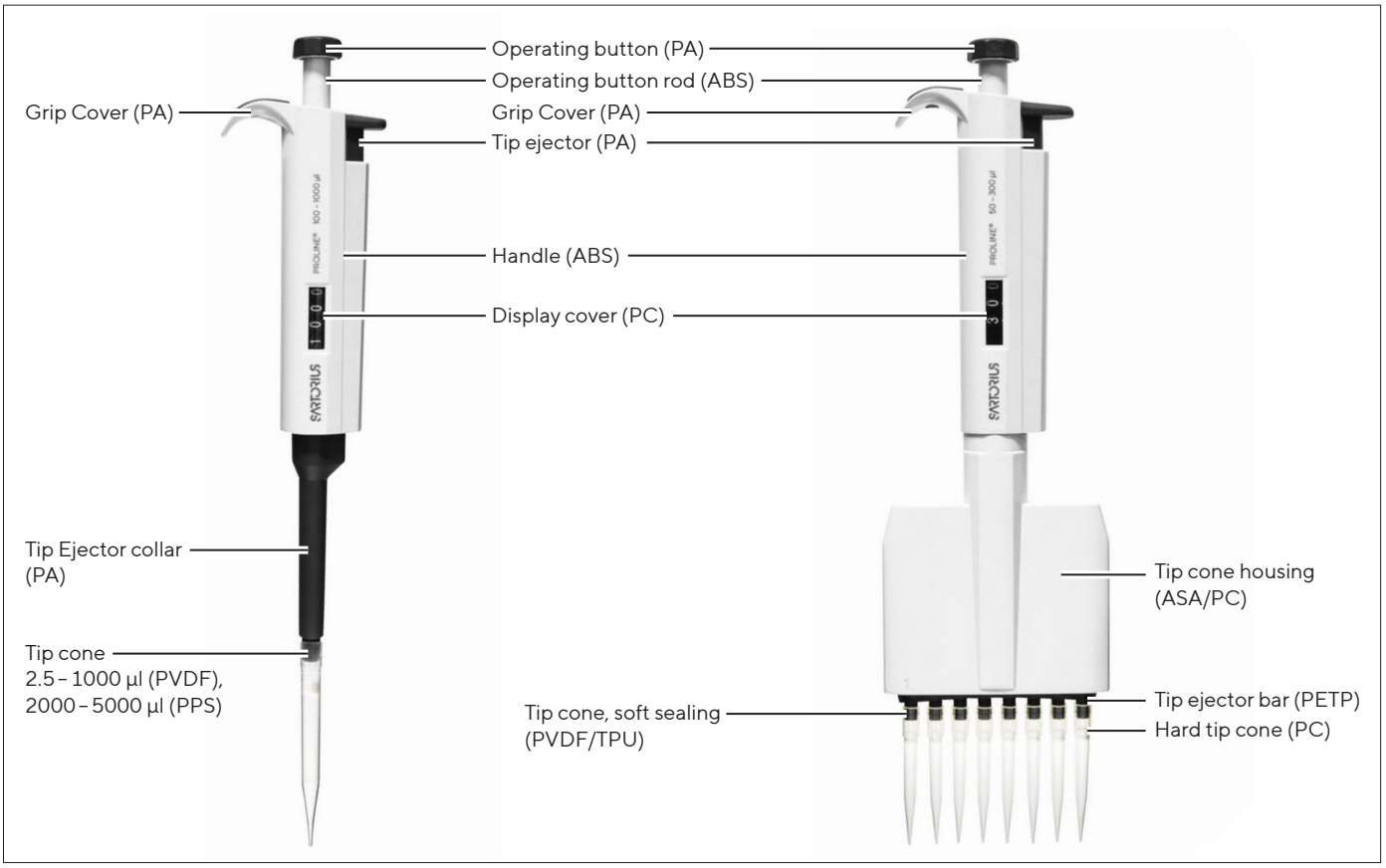
5.1.2 Mline® Mechanical Pipette



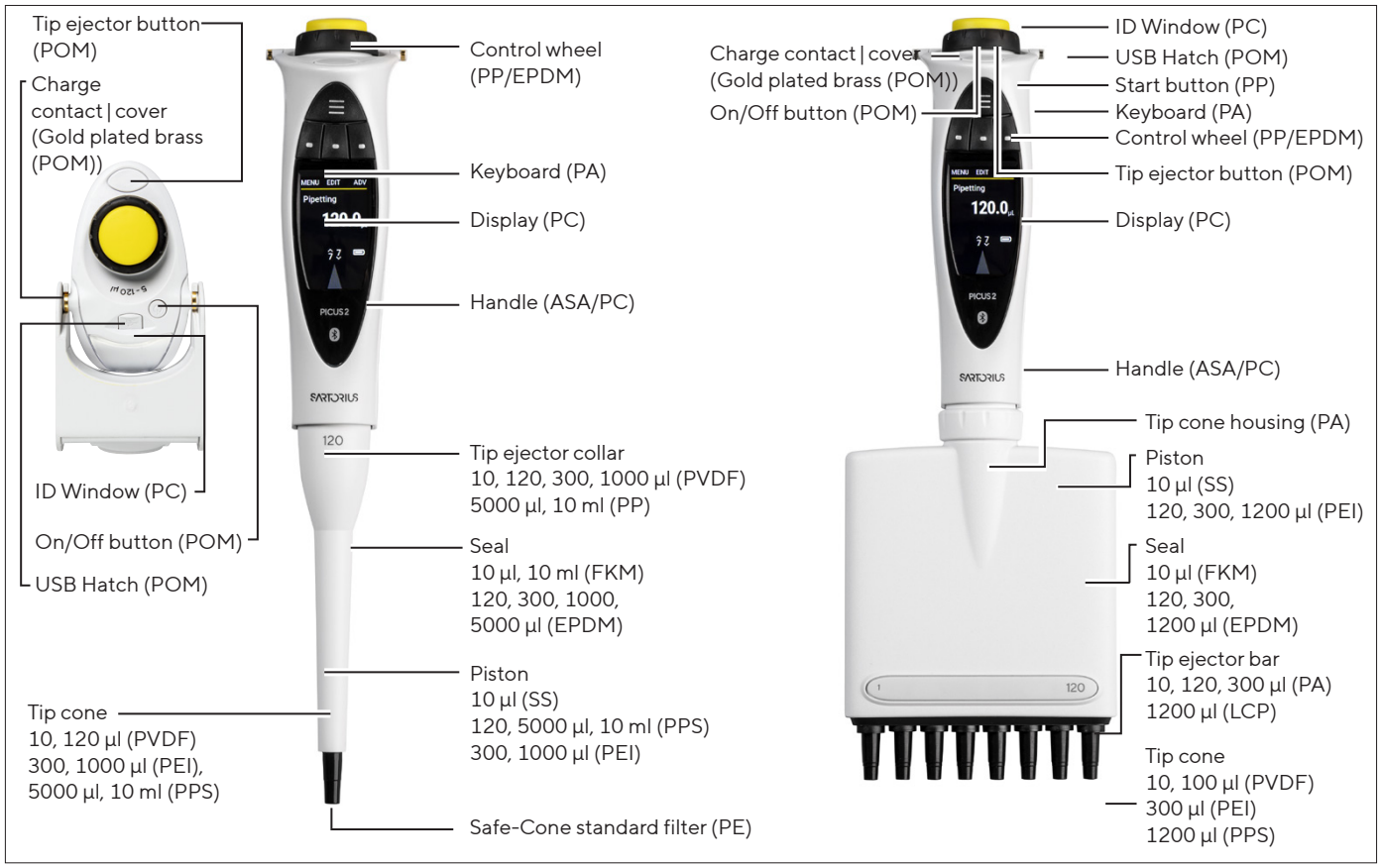
5.1.3 Proline® Plus Mechanical Pipette



5.1.4 Proline® Mechanical Pipette



5.2 Electronic Pipette Parts and Materials: Picus and Picus® 2



6 Contact

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6.1 Further Information About Pipette Cleaning, Decontamination and Maintenance

Kindly email to lhinfo.finland@sartorius.com

6.2 Pipette Maintenance, Servicing or Calibration

Visit https://www.sartorius.com/en/services/instrument-service/liquid-handling-product-services

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