SARSTEDT

Sarpette® M

Instructions for Use
SARSTEDT No.: 90.3100.xxx / 90.3108.xxx / 90.3112.xxx

Life Science

Contents

1 Product description

1.1 Safety instructions

- Read instruction manual carefully before use and keep for future reference.
- Follow the manufacturer‘s instructions and instructions for use and maintenance.
- Avoid possible overexertion of the hand during prolonged pipetting work and its medical consequences (e.g. tendonitis).

1.2 Description

The Sarpette® M allows precise and effortless pipetting. The single-channel models cover a volume range of 0.1 µl to 10 ml. The six models of the 8- or 12-channel versions in the range of 0.5 to 300 µl are perfectly suited for a uniform liquid transfer in microtiter plates. All models are fully assembled autoclavable at 121°C. The main advantages are the digital display (E) for a permanent volume display and the innovative Justip™ system (H) with a softly padded ejection button (C) for optimum tip ejection. The Swift Set calibration system (F) allows readjustments by the user.

2 Commissioning

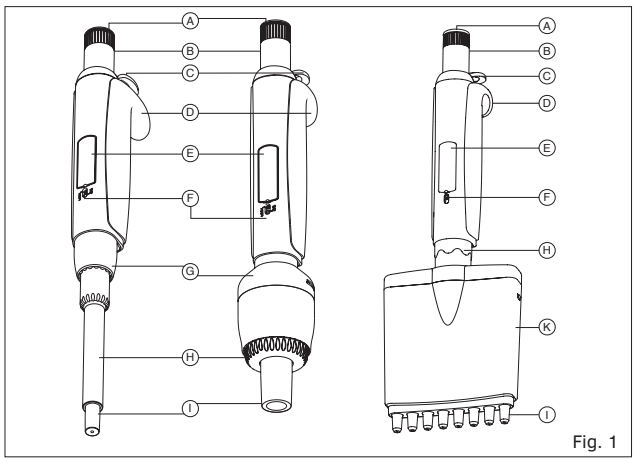


Fig. 1

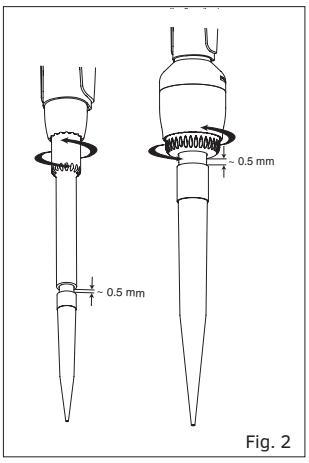


Fig. 2

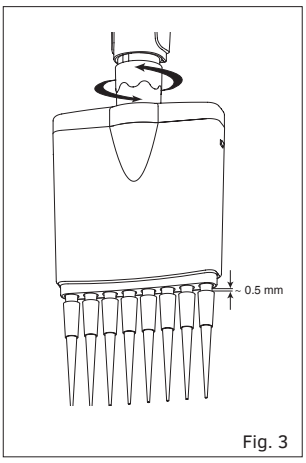


Fig. 3

2.1 Positioning for work with the pipette

Place the finger rest (D) on the distal phalange of the index finger. The push button (B) and tip ejector (C) can be actuated by a slight movement of the thumb. The rotatable multi-channel housing (K) enables individual selection of the best possible adapted working position.

2.2 Set volume

The volume is adjusted by turning the push button (B) until the desired volume appears in the digital display (E) (turning clockwise reduces the volume and vice versa). Sensitive click stops of the micrometre screw and the freely rotating coloured pushbutton cap (A) prevent unwanted adjustments during ongoing pipetting operations.

When the letter (E) lights up next to the numbers in the display, the selected volume is no longer in the working range of the pipette. Over-rotating the micrometre screw can damage the mechanism.

2.3 Tip selection

The SARSTEDT Refill Revolution pipette tips provide the best possible combination of pipette and tip for every application. Use only tips offered by the manufacturer or compatible with them. Further information and a detailed brochure can be found at www.refillrevolution.tips.

Reproducibility is improved if each tip is flushed with the material to be pipetted at least once before use.

2.4 Tip ejection (Figs. 2 and 3)

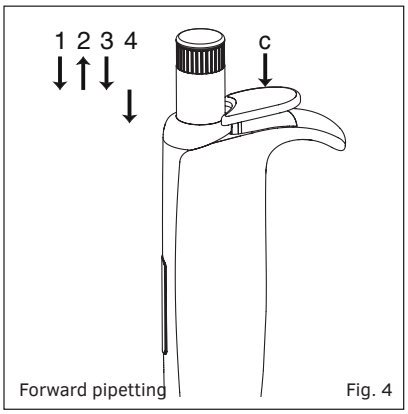
The patented Justip™ system allows immediate positioning of the shaft height (± 2 mm) for an ideal adjustment and perfect ejection of the tips. The distance between the tip and the ejection rod is set to ~0.5 mm by turning the ejection screw (< LO – HI >). Built-in click stops prevent unwanted adjustments.

2.5 Protective filter

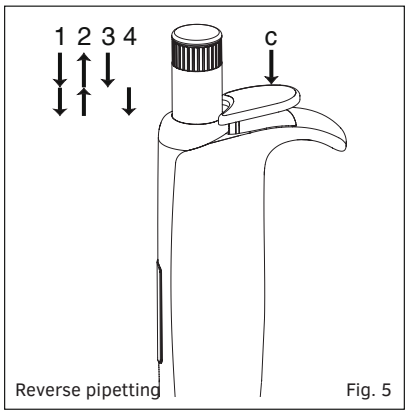
Macropipettes (5 and 10 ml models) can be provided with a protective filter for additional safety against penetration of liquid and risk of contamination. This is recommended when dosing large volumes and/or toxic, radioactive or highly aggressive liquids. It is essential to replace a wet or contaminated filter. The filters are not autoclavable.

3 Pipetting procedure

Before pipetting, a new, clean tip must be firmly attached.



Forward pipetting Fig. 4



Reverse pipetting Fig. 5

3.1 Normal pipetting procedure (Fig. 4)

The precisely adjusted volume is aspirated and then discharged.

- Phase 1: Press the operating button until the first stop is reached.
- Phase 2: Immerse the tip vertically approx. 2 – 3 mm deep and slowly release the button. Wait 2 seconds, remove pipette and filled tip vertically without touching the container.
- Phase 3: Place the tip against the wall of the second container, slowly press the operating button to the first stop to eject liquid.
- Phase 4: Press the operating button completely. Residues are expelled from the tip.
  Draw the pipette tip 10-15 mm along the wall of the receiver tube.
- Phase 5: Discard the used tip by pressing the ejection button (C).

3.2 Reverse pipetting procedure (Fig. 5)

Any excess volume is aspirated, but only the set volume is dispensed.

- Phase 1: Press the operating button until the overstroke (second stop) is reached.
- Phase 2: Immerse the tip vertically approx. 2-3 mm deep and slowly release the button. Wait 2 sec., remove the pipette and filled tip vertically without touching the container wall.
- Phase 3: Place the tip on the wall of the second container and press button only up to the first stop, to deliver the exact set amount of liquid.
- Phase 4: Remove the pipette from the second container and repeat Phase 2. Expel the remaining content by pressing the button until the second stop (overstroke). Discard the used tip by pressing the ejection button (C).

4 Maintenance

As a rule, the models do not require maintenance. Continuous care and cleaning contribute to the optimal function and longevity of the instrument. It is recommended to check the performance data according to internal control procedures (SOP, GLP, etc.) or at least once a year. Replace defective parts only with original parts from the manufacturer.

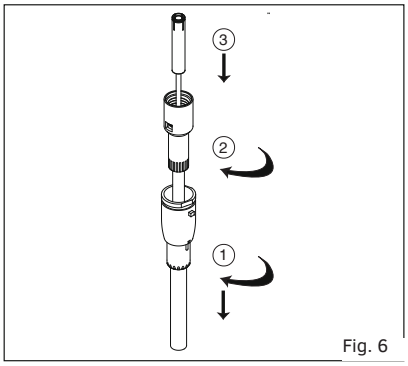


Fig. 6

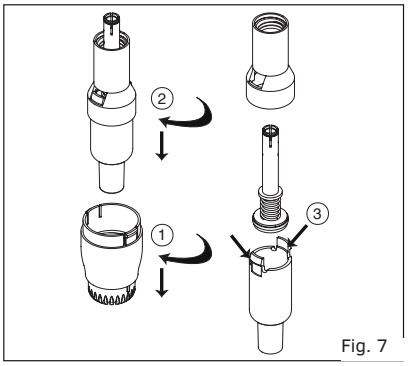


Fig. 7

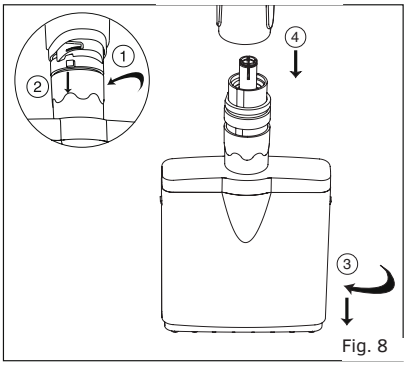


Fig. 8

4.1 Checking the seal

Correct functioning of the instrument is only possible if the air cushion closes tightly. Leakage is shown by droplet formation at the tip or by a different liquid level in the individual tips of a multichannel pipette. In the event of a leak, we recommend that you have the pipette serviced.

4.2 Cleaning

The removed volume unit (lower part) of the pipette can be cleaned with water or alcohol. In cases of heavy soiling, the individual parts can also be immersed in a disinfectant solution. Proper cleaning is necessary if liquid has inadvertently penetrated into the pipette interior. Rinse and dry the instrument before assembly. Remove particularly stubborn residues in the ultrasonic bath. Before assembling the pipette, lightly grease the O-ring (see below).

4.3 Disassembly of the volume unit and replacement of the O-ring, models – 1000 µl (Fig. 6)

4.3.1 Remove the volume unit (lower part):

1. Press the ejection button (2), turn the ejection nut (20) or (24) to the left for 2 mm and remove.
2. Unscrew the cylinder (18).
3. Push the operating button down completely, then pull out the piston.

4.3.2 Replacing the O-ring and PTFE sleeve:

1. After removing the lower part, remove the cylinder (18) and press it onto both mandrels of the ring (14) with the aid of a pipette tip or a pointed object.
2. Release the cylinder ring, pull out the spring (15) to reach the O-ring/PTFE sleeve.
3. Replace defective parts. Remove excess grease from the piston (13).

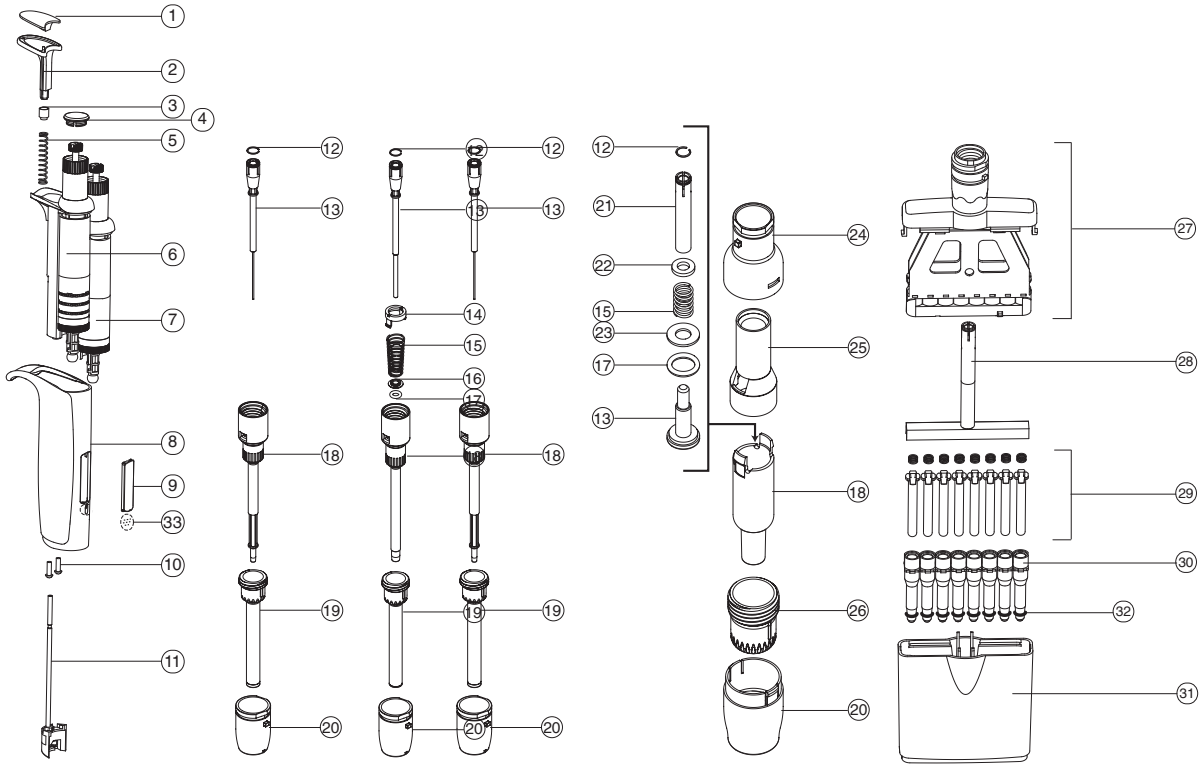
To avoid possible damage to the PTFE sleeve, place it on the piston (13) and only then attach the O-ring (17).

4. Lightly grease the piston, PTFE sleeve and O-ring and reassemble the volume unit.

4.3.3 Replacing the O-ring:

1. Unscrew the piston rod (21), remove the spring positioners (22, 23) and the spring (15).
2. If necessary, replace defective parts. Grease the O-ring (17) and cylinder (18) evenly.

4.4 Disassembly of the volume unit and replacement of the O-ring, models 5 and 10 ml (Fig. 7)



1. Ejector cushion
2. Ejection button
3. Spring washer
4. Smartie Cap
5. Ejection spring
6. Counter unit (adjustable)
7. Dosing unit (fix)
8. Handpiece
9. Window
10. Screws, handpiece (2x)
11. Ejection rod
12. Circlip
13. Piston
14. Ring
15. Spring
16. PTFE sleeve
17. O-Ring (piston)
18. Cylinder
19. Ejector
20. Ejection nut
21. Piston rod
22. Top spring positioner
23. Bottom spring positioner
24. Ejection cap
25. Ejection sleeve
26. Ejection screw
27. Cover assembly
28. Arm
29. Piston assembly
30. Cylinder unit
31. Housing
32. O-ring (cone, 200 and 300 µl)
33. Calibration slide

4.4.1 Remove the volume unit (lower part):

1. Turn the ejection nut (20) and separate it from the ejection cap (24).
2. Unscrew the cylinder (18), press the operating button, then pull out the piston.

4.4.2 Changing the O-ring:

1. Press down both clips of the cylinder (18) simultaneously and without exerting force and separate them from the ejection sleeve (25). Remove piston assembly.
2. Unscrew the piston rod (21), remove the spring positioners (22, 23) and the spring (15).
3. If necessary, replace defective parts. Grease the O-ring (17) and cylinder (18) evenly.
4. Reassemble the piston assembly, cylinder and ejection sleeve.
5. Screw the cylinder onto the pipette, press the operating button (B) down fully and lock the piston rod.

4.5 Piston change, multi-channel Sarpette® M

A piston change in multi-channel pipettes, as well as the replacement of other defective parts, should always be carried out by their local service partner.

5 Faults

Problem	Possible causes	Solution
Tip is not fixed on cone	Tip ejector incorrectly positioned	Adjust the position of the tip ejector
	Unsuitable tips	Use original or compatible tips
Piston sticks, moves irregularly	Soiled piston	Disassemble and clean piston (also grease 5 and 10 ml pipettes and multi-channel pipettes)
Liquid is not aspirated	Blocked cone	Dismantling and cleaning
	Volumetric unit of pipette incorrectly assembled	Assemble the lower part according to the instruction manual
	Contaminated protective filter for 5 and 10 ml pipettes	Replace protective filter
Different liquid level in tips of multi-channel pipettes	Lack of tightness	Check the fit of the pipette tips
		Replace defective cone, PTFE sleeve or O-ring
Instrument does not perform as required	Lack of tightness	Check whether cone, PTFE sleeve or O-ring is defective
	Unsuitable tips	Check compatibility and fit of pipette tips
	Contaminated protective filter for 5 and 10 ml pipettes	Replace protective filter
	Instrument calibrated incorrectly	Perform recalibration
	Use of the instrument with viscous, volatile or extremely temperature-controlled liquids	Re-calibrate with appropriate liquid

6 Sterilisation

The design of the Sarpette® M takes into account repeated sterilisation in an autoclave at 121 °C. (20 minutes). For models 5 and 10 ml, remove the protective filter before autoclaving. Place the instrument horizontally in the autoclave, avoid direct contact with metal. Before use, check that the pipette is dry and completely cooled. For model 5 and 10 ml, install new protective filter. Check the sealing and performance data regularly, but at least after 50 autoclaving cycles. Re-tighten the volume unit if loose. A change in the colour of the material as well as more difficult rotation of the coloured cap may occur after repeated autoclaving. Correct autoclaving and resulting sterility are the responsibility of the user.

7 Calibration

Each Sarpette® M was calibrated after production and individually tested. The control certificate supplied with the pipette contains all data as well as its serial number. The performance data are checked with distilled water at a constant (± 0.5 °C) room temperature between 19 and 23°C, in accordance with ISO 8655-2022.

7.1 In-lab calibration

With the Swift-Set calibration system, the pipettes can be quickly and safely adjusted to the correct volume as follows:

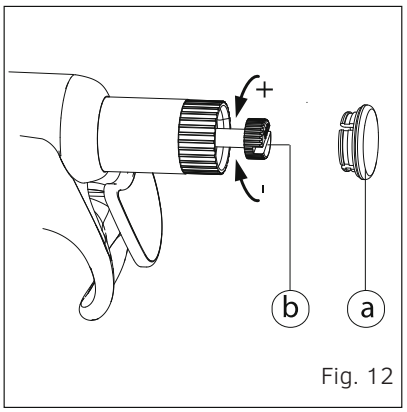


Fig. 12

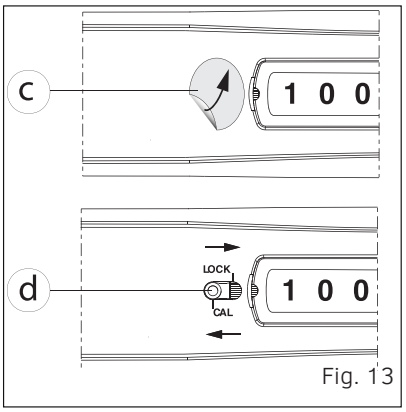


Fig. 13

- Remove the coloured cap (a) from the push button and remove the calibration screw (b).
- Pull off the calibration seal label (c) and set the calibration slide (d) to the position cal using a pipette tip or pointed object.
- Turn the calibration screw until the average measured volume appears on the digital display without holding the push button.
- Move the calibration slide back into the lock position and while maintaining this position, press the push button all the way down to the second stop.
- Release and place the coloured cap on the push button.
- After a few piston movements, check the result.
- Stick the recalibration seal label to the calibration slide.

8 Warranty

The Sarpette® M is guaranteed against any manufacturing and material defects for the period of time mentioned in the inspection certificate. Damage resulting from disregard of the operating and safety instructions or autoclaving at improper temperature as well as colour deviations of the materials are excluded from the warranty. Repairs and replacement of spare parts do not extend the warranty period. If there are malfunctions that cannot be rectified according to the above instructions, contact your SARSTEDT contact person.

9 Performance data Sarpette® M

9.1 Single-channel Sarpette® M

Volume		Inaccuracy (E%)			Imprecision (CV%)			Order no.
Volume range	Graduation	Min. vol.	Med. vol.	Max. vol.	Min. vol.	Med. vol.	Max. vol.	
0.1 – 2 µl	0.002 µl	<+/– 6.0 %[1]	<+/– 4.0 %	<+/– 2.0 %	< 5.0 %[1]	< 3.3 %	< 1.5 %	90.3100.002
0.5 – 10 µl	0.01 µl	<+/– 2.5 %[2]	<+/– 1.8 %	<+/– 1.0 %	< 1.8 %[2]	< 1.2 %	< 0.5 %	90.3100.010
0.5 – 10 µl	0.01 µl	<+/– 2.5 %[2]	<+/– 1.8 %	<+/– 1.0 %	< 1.8 %[2]	< 1.2 %	< 0.5 %	90.3100.012* NEW
1 – 10 µl	0.01 µl	<+/– 2.5 %	<+/– 1.8 %	<+/– 1.0 %	< 2.5 %	< 1.6 %	< 0.7 %	90.3100.011 NEW
2 – 20 µl	0.02 µl	<+/– 2.5 %	<+/– 1.8 %	<+/– 1.0 %	< 1.7 %	< 1.0 %	< 0.5 %	90.3100.020
5 – 50 µl	0.1 µl	<+/– 1.5 %	<+/– 1.3 %	<+/– 1.0 %	< 1.0 %	< 0.7 %	< 0.4 %	90.3100.050 NEW
10 – 100 µl	0.1 µl	<+/– 1.5 %	<+/– 1.2 %	<+/– 0.8 %	< 1.0 %	< 0.6 %	< 0.2 %	90.3100.100
20 – 200 µl	0.2 µl	<+/– 1.5 %	<+/– 1.1 %	<+/– 0.6 %	< 0.6 %	< 0.4 %	< 0.2 %	90.3100.200
100 – 1,000 µl	1 µl	<+/– 1.5 %	<+/– 1.0 %	<+/– 0.5 %	< 0.5 %	< 0.4 %	< 0.2 %	90.3100.000
0.5 – 5 ml	0.01 ml	<+/– 1.5 %	<+/– 1.1 %	<+/– 0.6 %	< 0.6 %	< 0.5 %	< 0.3 %	90.3100.555
1 – 10 ml	0.01 ml	<+/– 1.5 %	<+/– 0.7 %	<+/– 0.5 %	< 0.5 %	< 0.3 %	< 0.2 %	90.3100.111

The performance values were determined using distilled water at a constant temperature (± 0.5 °C) between 19 and 23°C in accordance with ISO 8655-2022.
1) measured at 0.5 µl 2) measured at 1 µl *with short pipetting shaft

9.2 Multi-channel Sarpette® M8/M12

Volume			Inaccuracy (E%)			Imprecision (CV%)			Order no.
Volume range	Graduation	Number of channels	Min. vol.	Med. vol.	Max. vol.	Min. vol.	Med. vol.	Max. vol.	
0.5 – 10 µl	0.01 µl	8	<+/– 3.5 %[1]	<+/– 2.5 %	<+/– 1.5 %	< 3.0 %[1]	< 2.0 %	< 1.0 %	90.3108.010
2 – 20 µl	0.01 µl	8	<+/– 2.5 % [1]	<+/– 1.8 %	<+/– 1.2 %	< 2.0 %[1]	< 1.4 %	< 0.7 %	90.3108.020 NEW
5 – 50 µl	0.1 µl	8	<+/– 1.0 % [1]	<+/– 0.9 %	<+/– 0.8 %	< 1.0 %[1]	< 0.7 %	< 0.4 %	90.3108.050 NEW
20 – 200 µl	0.2 µl	8	<+/– 0.9 %[1]	<+/– 0.8 %	<+/– 0.7 %	< 0.6 %[1]	< 0.5 %	< 0.3 %	90.3108.200
30 – 300 µl	0.4 µl	8	<+/– 1.0 %[1]	<+/– 0.9 %	<+/– 0.8 %	< 0.6 %[1]	< 0.5 %	< 0.3 %	90.3108.300
0.5 – 10 µl	0.01 µl	12	<+/– 3.5 %[1]	<+/– 2.5 %	<+/– 1.5 %	< 3.0 %[1]	< 2.0 %	< 1.0 %	90.3112.010
0.5 – 50 µl	0.1 µl	12	<+/– 1.0 %[1]	<+/– 0.9 %	<+/– 0.8 %	< 1.0 %[1]	< 0.7 %	< 0.4 %	90.3112.050 NEW
20 – 200 µl	0.2 µl	12	<+/– 0.9 %[1]	<+/– 0.8 %	<+/– 0.7 %	< 0.6 %[1]	< 0.5 %	< 0.3 %	90.3112.200
30 – 300 µl	0.4 µl	12	<+/– 1.0 %[1]	<+/– 0.9 %	<+/– 0.8 %	< 0.6 %[1]	< 0.5 %	< 0.3 %	90.3112.300

The performance values were determined using distilled water at a constant temperature (± 0.5 °C) between 19 and 23°C in accordance with ISO 8655-2022.
1) measured at 10 % nominal volume

10 Ordering information

Sarpette® M ordering information

Description	Volume range [µl]	Packaging	Compatible SARSTEDT pipette tips	Order no.
Sarpette® M single-channel	0.1 – 2 µl	1 pc. / case	70.3010.xxx	90.3100.002
	0.5 – 10 µl	1 pc. / case	70.3010.xxx 70.3020.xxx	90.3100.010
	0.5 – 10 µl	1 pc. / case	70.3010.255 70.3020.275	90.3100.012* NEW
	1 – 10 µl	1 pc. / case	70.3030.265 70.3031.200	90.3100.011 NEW
	2 – 20 µl	1 pc. / case	70.3030.xxx 70.3031.xxx	90.3100.020
	5 – 50 µl	1 pc. / case	70.3030.255 70.1189.215	90.3100.050 NEW
	10 – 100 µl	1 pc. / case	70.3030.xxx 70.3031.xxx	90.3100.100
	20 – 200 µl	1 pc. / case	70.3030.xxx 70.3031.xxx	90.3100.200
	100 – 1,000 µl	1 pc. / case	70.3050.xxx 70.3060.xxx	90.3100.000
	0.5 – 5 ml	1 pc. / case	70.1183.102 70.1183.002	90.3100.555
	1 – 10 ml	1 pc. / case	70.1187.102 70.1187.002	90.3100.111
Sarpette® M 8-channel	0.5 – 10 µl	1 pc. / case	70.3010.xxx 70.3020.xxx 70.3021.xxx	90.3108.010
	2 – 20 µl	1 pc. / case	70.3020.255	90.3108.020 NEW
	5 – 50 µl	1 pc. / case	70.3030.255 70.1189.215	90.3108.050 NEW
	20 – 200 µl	1 pc. / case	70.3030.xxx 70.3031.xxx	90.3108.200
	30 – 300 µl	1 pc. / case	70.3030.xxx 70.3031.xxx 70.3040.xxx	90.3108.300
Sarpette® M 12-channel	0.5 – 10 µl	1 pc. / case	70.3010.xxx 70.3020.xxx 70.3021.xxx	90.3112.010
	5 – 50 µl	1 pc. / case	70.3030.255 70.1189.215	90.3112.050 NEW
	20 – 200 µl	1 pc. / case	70.3030.xxx 70.3031.xxx	90.3112.200
	30 – 300 µl	1 pc. / case	70.3030.xxx 70.3031.xxx 70.3040.xxx	90.3112.300

*with short pipetting shaft

Sarpette® M ordering information

Description	Packaging	Order no.
Filter, for 5 ml macro pipette	50 pcs. / bag 2 pcs. / case	95.3105.220
Filter, for 10 ml macro pipette	50 pcs. / bag 2 pcs. / case	95.3105.221

If you have any questions,
we'll be happy to help!

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