

Pipette Performance Data Sheet



Eppendorf Reference® 2

Choose the Eppendorf Reference 2 mechanical pipette with ergonomic single-button operation and benefit from its high precision and accuracy with reduced operating efforts. Its smooth surface and full autoclavability guarantee efficient decontamination - making it the ideal companion when working under sterile conditions. Available as a single-channel pipette in fixed or variable volume, and as 8- and 12-channel pipettes - all with time-saving single-button operation. Once you have experienced this unique operating philosophy you will not want to change back!

Features

- > Mechanical air-cushion pipette with outstanding precision and accuracy - operated with just one button for volume selection, pipetting and tip ejection
- > With its innovative one-button operation, the Reference 2 allows fast and ergonomic handling with reduced operating efforts and active aerosol reduction. A clear haptic feedback helps to avoid accidental tip ejection
- > 4-digit display with magnifying window for quick and secure volume setting and identification (clearly visible from every angle), incl. volume lock
- > Spring-loaded tip cones improve user-to-user reproducibility and ergonomics by lowering the tip attachment & ejection force
- > The unique smooth surface and full autoclavability guarantee efficient decontamination - making it the ideal companion when working under sterile conditions
- > A temporary adjustment allows for an easy adjustment of your Reference 2 to accurately pipette challenging liquids or in changing external conditions without the need for a full calibration
- > Available as single-channel pipette with fixed or variable volume as well as 8- and 12-channel pipette
- > The Reference 2 multi-channel variants offer high flexibility incl. spring-loaded tip cones which can be switched on/off

Applications

- > Forward pipetting
- > Reverse pipetting
- > Removal of supernatants
- > Sample mixing
- > Phase extraction
- > Filling of plates, gels, and reaction vessels

Technical Specifications

Intended use	Precise micropipettes with fast and ergonomic single-button operation for general laboratory use. Intended for transferring liquids in the specified volume range in combination with matching tips.
Pipetting type	Air-cushion pipette
Channel options	1, 8, 12
Volume range	0.1 µL – 10,000 µL
Volume increments	0.002 µL – 10 µL
Operation	Mechanical (1 button for volume selection, pipetting & tip ejection), 4-digit volume display
Volume lock	Yes
Autoclavable	Fully autoclavable (121 °C, 1 bar, 20 min)
UV resistance	Yes (254 nm)
Consumables	epT.I.P.S.® pipette tips
Open system (3rd party consumables)	Yes
Conforms with	ISO 8655
Temporary adjustment	Easy adjustment for liquid types, elongated tips or altitude
Storage accessories (sold separately)	<ul style="list-style-type: none"> > Pipette Carousel for 6 pipettes > Pipette Stand (with optional holder) > Pipette Holder for Carousel, Stand or wall mounting
Storage & transport conditions	<ul style="list-style-type: none"> > Temperature: -5 °C – 45 °C > Humidity: 10 % – 95 %
Operating conditions	<ul style="list-style-type: none"> > Temperature: 5 °C – 40 °C > Humidity: 10 % – 95 %
Others	<ul style="list-style-type: none"> > Spring-loaded tip cones for easy tip attachment & ejection (up to 1 mL) > High chemical resistance & special lower parts with resistance to different chemicals available > Sturdy housing with smooth surfaces and optimal decontamination properties > Easy maintenance; spare parts, accessories and calibration services available from Eppendorf

Dimensions

Length	251 mm (1-channel, 1,000 µL) 248 mm (8-channel, 300 µL)
Weight	97 g (1-channel, 1,000 µL) 171 g (8-channel, 300 µL)
Packaging (W x H x D)	28 cm x 16 cm x 11 cm (max., depending on model)
Shipping weight	250 g – 770 g (depending on model)

Measurement Deviations

Eppendorf Reference® 2, single-channel, fixed volume

Volume range	Color code	Volume	Systematic error ¹⁾		Random error ¹⁾	
1 µL	■ dark gray (for epT.I.P.S.® 10 µL)	1 µL	±2.5 %	±0.025 µL	±1.8 %	±0.018 µL
2 µL		2 µL	±2.0 %	±0.04 µL	±1.2 %	±0.024 µL
5 µL	■ medium gray (for epT.I.P.S.® 20 µL)	5 µL	±1.2 %	±0.06 µL	±0.6 %	±0.03 µL
10 µL		10 µL	±1.0 %	±0.1 µL	±0.5 %	±0.05 µL
10 µL	■ yellow (for epT.I.P.S.® 20 µL)	10 µL	±1.2 %	±0.12 µL	±0.6 %	±0.06 µL
20 µL	■ light gray (for epT.I.P.S.® 20 µL L)	20 µL	±0.8 %	±0.16 µL	±0.3 %	±0.06 µL
20 µL	■ yellow (for epT.I.P.S.® 200 µL)	20 µL	±1.0 %	±0.2 µL	±0.3 %	±0.06 µL
25 µL		25 µL	±1.0 %	±0.25 µL	±0.3 %	±0.075 µL
50 µL		50 µL	±0.7 %	±0.35 µL	±0.3 %	±0.15 µL
100 µL		100 µL	±0.6 %	±0.6 µL	±0.2 %	±0.2 µL
200 µL		200 µL	±0.6 %	±1.2 µL	±0.2 %	±0.4 µL
200 µL	■ blue (for epT.I.P.S.® 1,000 µL)	200 µL	±0.6 %	±1.2 µL	±0.2 %	±0.4 µL
250 µL		250 µL	±0.6 %	±1.5 µL	±0.2 %	±0.5 µL
500 µL		500 µL	±0.6 %	±3.0 µL	±0.2 %	±1.0 µL
1000 µL		1000 µL	±0.6 %	±6.0 µL	±0.2 %	±2.0 µL
2 mL	■ red for epT.I.P.S.® 2.5 mL)	100 µL	±0.6 %	±12 µL	±0.2 %	±4 µL
2.5 mL		100 µL	±0.6 %	±15 µL	±0.2 %	±5 µL

¹⁾ The error data, according to EN ISO 8655, only apply if original Eppendorf tips are used. Technical specifications are subject to change. Errors and omissions excepted.

Single-channel pipettes, variable volume

Eppendorf Reference® 2, single-channel, variable volume, incl. epT.I.P.S.® Box 2.0 with 96 pipette tips

Volume range	Color code	Volume	Systematic error ¹⁾		Random error ¹⁾	
0.1–2.5 µL	■ dark gray (for epT.I.P.S.® 10 µL)	0.1 µL	±48.0 %	±0.048 µL	±12.0 %	± 0.012 µL
		0.25 µL	±12.0 %	±0.03 µL	±6.0 %	±0.015 µL
		1.25 µL	±2.5 %	±0.031 µL	±1.5 %	±0.019 µL
		2.5 µL	±1.4 %	±0.035 µL	±0.7 %	±0.018 µL
0.5–10 µL	■ medium gray (for epT.I.P.S.® 20 µL)	0.5 µL	±8.0 %	±0.04 µL	±5.0 %	±0.025 µL
		1 µL	±2.5 %	±0.025 µL	±1.8 %	±0.018 µL
		5 µL	±1.5 %	±0.075 µL	±0.8 %	±0.04 µL
		10 µL	±1.0 %	±0.10 µL	±0.4 %	±0.04 µL
2–20 µL	■ light gray (for epT.I.P.S.® 20 µL L)	2 µL	±3.0 %	±0.06 µL	±1.5 %	±0.03 µL
		10 µL	±1.0 %	±0.10 µL	±0.6 %	±0.06 µL
		20 µL	±0.8 %	±0.16 µL	±0.3 %	±0.06 µL
2–20 µL	■ yellow (for epT.I.P.S.® 200 µL)	2 µL	±5.0 %	±0.10 µL	±1.5 %	±0.03 µL
		10 µL	±1.2 %	±0.12 µL	±0.6 %	±0.06 µL
		20 µL	±1.0 %	±0.2 µL	±0.3 %	±0.06 µL
10–100 µL		10 µL	±3.0 %	±0.3 µL	±0.7 %	±0.07 µL
		50 µL	±1.0 %	±0.5 µL	±0.3 %	±0.15 µL
		100 µL	±0.8 %	±0.8 µL	±0.2 %	±0.2 µL
20–200 µL		20 µL	±2.5 %	±0.5 µL	±0.7 %	±0.14 µL
		100 µL	±1.0 %	±1.0 µL	±0.3 %	±0.3 µL
		200 µL	±0.6 %	±1.2 µL	±0.2 %	±0.4 µL
30–300 µL	■ orange (for epT.I.P.S.® 300 µL)	30 µL	±2.5 %	±0.75 µL	±0.7 %	±0.21 µL
		150 µL	±1.0 %	±1.8 µL	±0.3 %	±0.45 µL
		300 µL	±0.6 %	±1.8 µL	±0.2 %	±0.6 µL
100–1000 µL	■ blue (for epT.I.P.S.® 1,000 µL)	100 µL	±3.0 %	±3.0 µL	±0.6 %	±0.6 µL
		500 µL	±1.0 %	±5.0 µL	±0.2 %	±1.0 µL
		1000 µL	±0.6 %	±6.0 µL	±0.2 %	±2.0 µL

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Measurement Deviations

Eppendorf Reference® 2, single-channel, variable volume, incl. epT.I.P.S.® sample bag with 10 pipette tips

Volume range	Color code	Volume	Systematic error ¹⁾		Random error ¹⁾	
0.25–2.5 mL	■ red (for epT.I.P.S.® 2.5 mL)	0.25 mL	±4.8 %	±1 µL 2	±1.2 %	±3 µL
		1.25 mL	±0.8 %	±10 µL	±0.2 %	±2.5 µL
		2.5 mL	±0.6 %	±15 µL	±0.2 %	±5 µL
0.5–5 mL	■ violet (for epT.I.P.S.® 5 mL)	0.5 mL	±2.4 %	±12 µL	±0.6 %	±3 µL
		2.5 mL	±1.2 %	±30 µL	±0.25 %	±6 µL
		5.0 mL	±0.6 %	±30 µL	±0.15 %	±7.5 µL
1–10 mL	■ turquoise (for epT.I.P.S.® 10 mL)	1.0 mL	±3.0 %	±30 µL	±0.6 %	±6 µL
		5.0 mL	±0.8 %	±40 µL	±0.2 %	±10 µL
		10.0 mL	±0.6 %	±60 µL	±0.15 %	±15 µL

8- & 12-channel pipettes, for 96 well plates

Eppendorf Reference® 2, 8- or 12-channel, variable volume, incl. epT.I.P.S.® Box 2.0 with 96 pipette tips

Volume range	Color code	Volume	Systematic error ¹⁾		Random error ¹⁾	
0.5–10 µL	■ medium gray (for epT.I.P.S.® 20 µL)	0.5 µL	±12.0 %	±0.06 µL	±8.0 %	±0.04 µL
		1 µL	±8.0 %	±0.08 µL	±5.0 %	±0.05 µL
		5 µL	±4.0 %	±0.2 µL	±2.0 %	±0.1 µL
		10 µL	±2.0 %	±0.2 µL	±1.0 %	±0.1 µL
10–100 µL	■ yellow (for epT.I.P.S.® 200 µL)	10 µL	±3.0 %	±0.3 µL	±2.0 %	±0.2 µL
		50 µL	±1.0 %	±0.5 µL	±0.8 %	±0.4 µL
		100 µL	±0.8 %	±0.8 µL	±0.3 %	±0.3 µL
30–300 µL	■ orange (for epT.I.P.S.® 300 µL)	30 µL	±3.0 %	±0.9 µL	±1.0 %	±0.3 µL
		150 µL	±1.0 %	±1.5 µL	±0.5 %	±0.75 µL
		300 µL	±0.6 %	±1.8 µL	±0.3 %	±0.9 µL

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Your local distributor: www.eppendorf.com/contact
Eppendorf SE · 22339 Hamburg · Germany
eppendorf@eppendorf.com · www.eppendorf.com

www.eppendorf.com

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