

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

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

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.

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	±12	±1.2	±3
		1.25 mL	±0.8	±10	±0.2	±2.5
		2.5 mL	±0.6	±15	±0.2	±5
0.5–5 mL	■ violet (for epT.I.P.S.® 5 mL)	0.5 mL	±2.4	±12	±0.6	±3
		2.5 mL	±1.2	±30	±0.25	±6
		5.0 mL	±0.6	±30	±0.15	±7.5
1–10 mL	■ turquoise (for epT.I.P.S.® 10 mL)	1.0 mL	±3.0	±30	±0.6	±6
		5.0 mL	±0.8	±40	±0.2	±10
		10.0 mL	±0.6	±60	±0.15	±15

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	±8.0	±0.04
		1 µL	±8.0	±0.08	±5.0	±0.05
		5 µL	±4.0	±0.2	±2.0	±0.1
		10 µL	±2.0	±0.2	±1.0	±0.1
10–100 µL	■ yellow (for epT.I.P.S.® 200 µL)	10 µL	±3.0	±0.3	±2.0	±0.2
		50 µL	±1.0	±0.5	±0.8	±0.4
		100 µL	±0.8	±0.8	±0.3	±0.3
30–300 µL	■ orange (for epT.I.P.S.® 300 µL)	30 µL	±3.0	±0.9	±1.0	±0.3
		150 µL	±1.0	±1.5	±0.5	±0.75
		300 µL	±0.6	±1.8	±0.3	±0.9

¹⁾ The error data, according to EN ISO 8655, only apply if original Eppendorf tips are used.
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