

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 | | 5 µL | ±1.2 | ±0.06 | ±0.6 | ±0.03 |
| 10 µL | | 10 µL | ±1.0 | ±0.1 | ±0.5 | ±0.05 |
| 10 µL | ■ yellow (for epT.I.P.S.® 20 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 |

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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 | ±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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