

Ergaspira200 pipetting aspirator

Instruction manual



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Introduction

The patent pending Ergaspira200 pipetting aspirator is an aspiration device used for the removal of liquids from a variety of cell culture dishes, tubes, and lab vessels.

It is compatible with 3 party vacuum systems and most non-filtered P200 pipette tips. This pipetting aspirator uniquely allows volumetric liquid removal and controlled aspiration for liquid handling applications where liquids must be removed carefully or rapidly or both e.g., supernatant removal from fragile pellets.

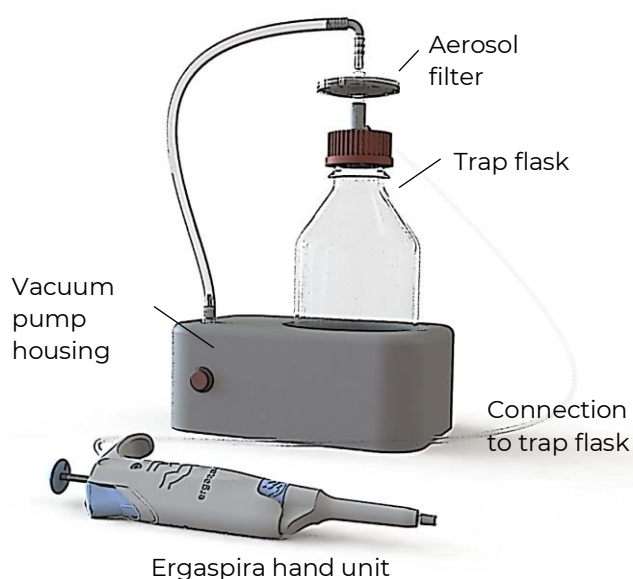
The Ergaspira200 has a drawing volume of 200 µL±5% and a blowout volume of 100 µL±5%. The total travel of the piston thus provides controllable and reversible drawing of 300 µL.

The design is ambidextrous and fits in the hand like a conventional micropipette rather than a conventional aspirator. The weighting and faceted shape of the hand unit ensures that, if put down on the tabletop, the attached tip will stay horizontal.

Set Up

Scope of delivery

1. Ergaspira200 hand unit
2. Connection hose (Ø9 mm, L500 mm) with attached hose reducer and Luer lock connector



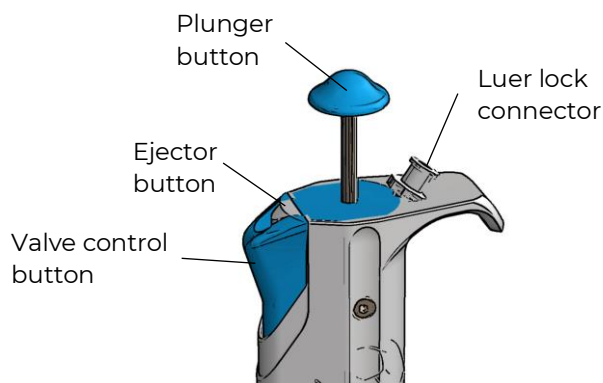
The aspirator must be coupled to a vacuum pump or an in-house vacuum source and a suitable

collection vessel. It is very highly recommended that the collection and vacuum system downstream of the Ergaspira200 complies with current hygiene standards and work safety regulations.

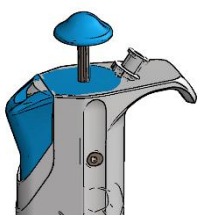
The hand unit connects to the collection vessel through the female Luer lock connector above the finger hook. Depending on the pre-existing vacuum system and hoses, the male Luer lock connector may be detached from the supplied connection hose and inserted into existing tubing.

The aspirator has three control points

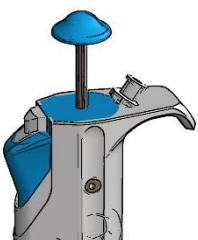
1. A plunger button
2. A valve control button for aspiration
3. An ejector button enveloped by the valve control button



Depressing the **plunger button** will move the piston down and displace air from the tip holder. The first tactile stop indicates an expelled volume of 200 $\mu\text{L} \pm 5\%$. Further pressing will be done against a noticeably increased spring force and the last stop indicates an expelled volume of further 100 $\mu\text{L} \pm 5\%$. Lifting the plunger button will draw up liquid accordingly.



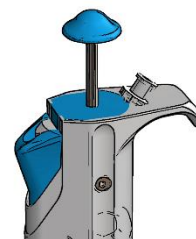
The **aspiration valve control button** modulates the opening of the aspiration valve and thus the suction strength of the aspirator. The stroke length of 8 mm, the valve transitions from closed to fully open to closed. The final closed state is a feature to reflexively and rapidly close off suction in case of inadvertent unexpected aspiration e.g. aspiration too close to the pellet



The fully open state is reached at approx. 4 mm of travel.

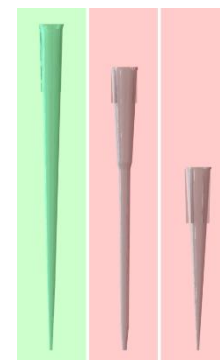
NOTE: FULLY DEPRESSING THE VALVE CONTROL BUTTON CUTS OFF SUCTION.

Pressing the **ejector button** ejects the pipette tip. In general, it is unnecessary to avoid pressing the valve control along with the ejector button. It is good practice to empty residual liquid from the tip before disposal of the tip.



Recommended tip types

Aspiration of liquids with decreased surface tension e.g., media with high serum content, surfactant solutions, alcohols etc. is compounded by reduced droplet formation and downstream transport by the airflow in the tip and tip holder. Instead, a liquid film will adhere to the inner wall of the tip in regions where the airflow separates. This prevents complete aspiration of the tip content.



We therefore recommend using long (>85 mm) P200 tips, which have small divergence angles AND have a constant taper along their length.

Use scenarios

The Ergaspira200 can completely substitute a conventional aspirator in single channel configuration. Used with extended length P200 tips for simple aspiration tasks, waste from glass pipettes can be reduced.

Removing supernatant

For volumes larger than 1 mL, removing as much supernatant as possible requires repeated draws and blow outs with a micropipette or a switch from using an aspirator to a micropipette. The Ergaspira200 allows a seamless transition from continuous aspiration to accurate drawing of the last microliters of supernatant. With no tool change, consumption of glass pipettes and micropipette tips is drastically reduced.

Controllably removing up to 300 μ L media from multi-well plates

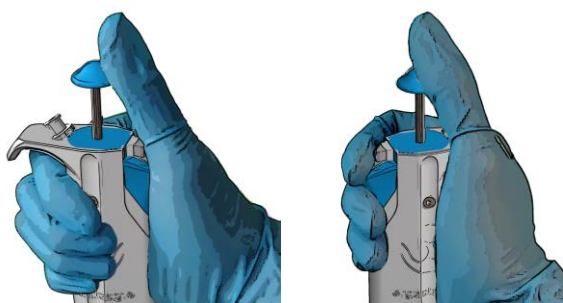
The Ergaspira200 pipette aspirator lets you reversibly draw up 300 μ L of liquid into the tip like you would do with a P200 micropipette. However, rather than moving the tip to the waste container and blow out tip content, a gentle push on the ejector button will empty the tip backwards and ready it for the next well.

Strenuous blowouts and sweeping arm motions are avoided while the eyes can remain on the well-plate.

Working with low surface tension media

When repeated cycles drawing up and aspiration of low surface tension media are necessary, we recommend following sequence:

1. Depress aspirator button
2. While aspiration is on, depress plunger button to the first or last stop. Note that there is no additional backflow from the tip holder to the tip.
3. Release the aspirator button while keeping the plunger button depressed. You are now ready to draw up
4. Draw up media
5. Repeat.



The aspirator and plunger buttons can be operated simultaneously in several ways e.g., by using the different parts of the thumb or by using the thumb and index finger. Scan QR codes to see video demonstrations on www.ergasta.com using dyed PBS with Triton X-100 (PBT).

With a little practice, above sequence will become second nature.

Washing samples

Porous materials including cell culture matrices can wick a large amount of residual liquid during media change or fixation procedures. Combined drawing up and aspiration around the perimeter of the sample is a fast, gentle, and safe approach to removing residual liquid without damaging the matrix or stressing the cultured cells.

After use

After use, fully open the aspirator valve for a few seconds without the tip attached to purge the tip holder and valve with air. Following, the liquid line can be flushed by aspirating isopropyl alcohol or ethanol.

For sterilization, detach the aspirator from the vacuum source and autoclave it. This should especially be observed if the Ergaspira200 has been used with biohazardous material.

NOTE: Do not rest the aspirator on the tip holder nor should the tip holder touch the autoclave wall or other items in the autoclave chamber. Loads on the tip holder during steam sterilization may cause permanent deformation.

Over time, the action of the plunger may exhibit increasing stiction from loss of lubricant. A lubrication port is located in the base of the tip holder and is accessible without disassembly by depressing the tip ejector.

To access the plunger O-ring

1. Fully depress the valve control button.
2. Loosen the set screw in the ejector button.
3. Pull out tip ejector.
4. Unscrew the clear polypropylene tip holder.

Further disassembly is possible but should only be done with technical assistance.

Chemical compatibility

As a company, we are committed to minimizing the environmental impact of our products and we deliberately avoid using fluoroelastomers and fluoropolymers, which are PFAS substances. One will commonly find high performance materials such as FKM and PVDF in liquid handling instruments as they are chemically resistant.

In the Ergaspira200 construction, the materials are the following:

Casing:

1. Polybutylene terephthalate (PBT)
2. 316L stainless steel rods
3. 304L stainless steel springs
4. 316 stainless steel set screws
5. Silicone O-ring, FDA
6. (Lubrication) MOLYKOTE G-1502FM NSF H1 approved PAO based grease

Wetted components:

7. Polypropylene
8. 316L stainless steel
9. Silicone O-ring, FDA
10. Silicone tubing, FDA, USP Class VI
11. (Lubrication) MOLYKOTE G-1502FM NSF H1 approved PAO based grease

Accordingly avoid prolonged contact with:

- concentrated inorganic acids
- sodium hypochlorite
- methylene chloride
- concentrated aldehydes
- other halogenated hydrocarbons

Resistant to:

- DMSO
- ethanol/methanol
- dimethylformamide
- acetone

We are also discouraging the use of lubricants based on perfluoropolyether (PFPE) oils or PTFE-fortified lubricants.

After life

The Ergaspira200 is highly repairable even after the warranty period expires. However, if at some point the device must be discarded, make the effort reuse or recycle the steel components and properly dispose the plastic and silicone rubber components for incineration.

Technical Information

For technical assistance, send an email to info@ergasta.com.

Ergasta ApS Limited Warranty

Ergasta ApS warrants this product against defects in material or workmanship for a period of one year after receipt by the Purchaser.

ERGASTA APS DISCLAIMS, WITHOUT LIMITATION, ALL OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, THE WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

The only obligation of Ergasta ApS shall be to, at its option, replace or repair any product or part thereof that proves defective in material or workmanship within the warranty period, provided the Purchaser notifies Ergasta ApS of any such defect.

Ergasta ApS shall in no event be liable for consequential damages from property damage or economic loss sustained by any Purchaser from the use of Ergasta ApS products.