Decapper DCMB-10R
User Manual

<u>COMPATIBLE RACKS:</u>

Decapper Rack: DCRK-10

- Able to accept 10 tubes of the same height

Decapper Rack Tray: DCRT-50

- Able to carry 5 DCRK-10 racks
- Easy to carry multiple racks to analyzer

Message from RayStar Health

Welcome, and thank you for choosing this high-quality product.

This technical manual has been provided to ensure you get the most out of your device. Please note that this manual has been translated from its original Mandarin to better serve you. While we have strived for accuracy, some minor translation inconsistencies may occur. If any part of the documentation is unclear, please do not hesitate to contact us for immediate clarification.

As the authorized sales and support agent for this product, RayStar Health is your dedicated partner throughout its lifecycle. We bridge the gap between our international suppliers and you, our valued customer. Our services are designed to provide a seamless experience, which includes:

- **Direct Fulfilment:** Managing order processing and drop-shipping to ensure you receive your product efficiently.
- **Ongoing Support:** Providing continuous technical service and support directly in your local language.
- **Expert Liaison:** Serving as your advocate and translator for any communication with the manufacturer, ensuring all questions and issues are resolved promptly and accurately.

Our role is to ensure that your experience with this product is supported by expert, localized assistance from purchase through to operation.

Should you require any assistance, please do not hesitate to contact our support team.

Sincerely,

The Team at RayStar Health
www.RayStarHealth.com
Support@RayStarHealth.com

Safety Precautions

Please read this manual before using the product. Although this product is designed and manufactured to ensure safe use, improper use or failure to follow instructions may result in personal injury or property damage. To ensure correct usage, please read this manual carefully before operating the product. Do not discard this manual and keep it in an easily accessible location.

Safety instructions in this manual are marked with standardized symbols. For your safety, please strictly follow the instructions associated with these symbols.

Warnings	Interpretation
	**Electric Shock Hazard Warning**: Ignoring instructions marked with this symbol may result in severe injury or death.
	**Do not ignore** instructions marked with this symbol which may result in personal injury or property damage.
	**Biohazard warning:** To avoid biohazards, do not touch contaminated components with bare hands. Handle contaminated parts according to bio-safety standard procedures to prevent adverse consequences.
	**Pinch warning:** Ignoring this warning and placing fingers/hands into moving mechanical parts may cause personal injury.

Contents

1. Overview

1.1 Purpose Description

This decapper is designed for opening vacuum blood collection tubes while effectively reducing aerosol contamination in the laboratory environment during the process. This also reduces repetitive strain injury and improves staff satisfaction.

1.2 Equipment Inspection

To ensure the product was not damaged during purchase or transportation, please inspect the following:

- Visually check for any external damage or scratches;
- Ensure no screws are loose or missing;

If any of the above issues are found, please contact the distributor for resolution.

1.3 Storage Environmental Conditions

- Store in a clean, dry location.
- Ambient temperature must be between 0°C and +45°C.
- Relative humidity must be between 0% and 90%, with no condensation.
- Avoid storage in environments with corrosive gases or liquids.
- Preferably store on a shelf or countertop with appropriate packaging.

1.4 Equipment Installation

- Use a 220V AC power supply.
- Ensure the power outlet is properly grounded.

1.5 Precautions

- Before use, verify that the voltage matches the requirements and ensure the power outlet is properly grounded. Turn off the power when not in use and keep the machine clean.
- Do not insert fingers or other objects into the inlet/outlet while the power is on to avoid injury.

- This machine is designed for opening disposable vacuum blood collection tubes made of PET material. Do not use glass tubes.
- This machine is not suitable for opening threaded caps or film-sealed disposable vacuum blood collection tubes.
- An external air exhaust pipe may be installed if necessary.
- If caps fall inside the machine, turn off the power and clean them promptly.
- If a tube gets stuck, press the emergency stop button. After resolving the issue, rotate the button counterclockwise to release the emergency stop. The device will emit a low hum during this state.
- Tubes **MUST BE** of the same height.
- Do not mix tubes of different lengths for opening.
- The first position of the sample rack must not be empty; other positions may remain empty.
- The height of the samples is defined by the height of the tube on the first position on the rack.

2. Equipment characteristics

2.1 Function Introduction

Disposable vacuum blood collection tubes are prone to generating aerosols during the uncapping process. To prevent the generation of aerosols, a sealed enclosure is set up outside the uncapping mechanism of the uncapping machine. The right front of the enclosure features a vacuum tube inlet, while the left front has another vacuum tube inlet. An air filtration window is installed on the back of the enclosure, with an air high-efficiency filtration membrane inside to isolate the interior from the exterior. An air negative pressure device is mounted outside the air filtration window. When the uncapping machine is in operation, the air negative pressure suction filtration device is activated, creating negative pressure outside the air filtration window. This forms a unidirectional airflow that can only enter the enclosure through the inlet and outlet, pass through the air high-efficiency filtration membrane, and be discharged, effectively preventing the generation of aerosols. Additionally, an ultraviolet generator is installed inside the enclosure to effectively inactivate bioactive particles.

The opener can simultaneously open 10 tubes per cycle, with each cycle taking approximately 10 seconds (maximum speed: 60 tubes per minute). It is compatible with 13mm×100mm and 13mm×75mm disposable vacuum blood collection tubes.

2.2 Structure Description

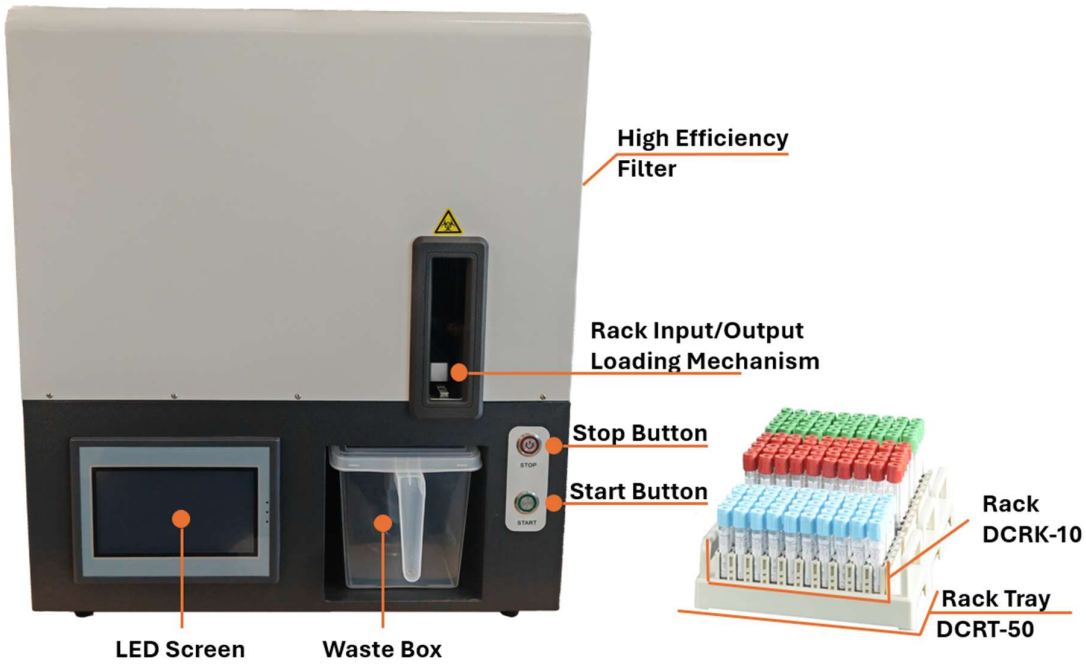
This lid-opening machine consists of a dedicated sample rack, an infeed and outfeed mechanism, a lid-opening mechanism, an efficient air filter, a sealed cabinet, an air negative pressure suction filtration device, and an ultraviolet disinfection device.

3. Technical Specification

Product	**DCMB-10R**	**Tube Diameter**	**13mm**
Model	**Benchtop**	**Tube Length**	**75mm, 100mm**
Depth	**54cm**	**Tube Material**	**PET**
Width	**36cm**	**Accepted Rack Type**	**DCRK-10**
Height	**60cm**	**Throughput/Hr**	**3,000/hr**
Weight	**65kg**	**Throughput/Rack**	**12 secs**
Accepted Height	**Identical**	**Voltage**	**AC 220V 50HZ**
WARNINGS	**Physical Hazard / Biological Hazard**		

- Filtration Efficiency: ≥ 99.999% for 0.3μm particles; ≥ 99.999% for 0.12μm particles
- Noise Level: ≤ 60dB

4. Operation Instructions



*4.1 **Operation Instructions***

- Plug in the power and turn on the switch; the device will enter standby mode.
- Press “START” bottom to begin the Operation; If no samples are loaded within 40 seconds, the device will return to standby mode.
- Place centrifuged sample tubes (with caps) into the sample rack. Lightly press the latch to release the rack, then place it on the rack input/output loading mechanism. The machine will automatically pull the rack into the cap-opening mechanism. After opening, the caps will be ejected into the waste bin, and the rack will be conveyed to the output area for retrieval.

*4.2 **Button Functions***

STOP Button: Press in emergencies to halt all operations. The red light indicates the power is on.
START Button: Press to initiate self-check. Once completed, the indicator light will turn on, signaling readiness for operation. If no samples are loaded within 40 seconds, the device will return to standby mode.

5. Daily Maintenance

Replacing High-Efficiency Particulate Air (HEPA) Filters: After a certain period of use, the filtration efficiency of HEPA filters may decrease, depending on the cleanliness of the surrounding air. It is generally recommended to replace them once a year. Use the special tool (provided with the HEPA filter) to extract the old HEPA filter and place it in a biohazard bag. Insert a new HEPA filter. During the replacement process, ensure biosafety precautions are taken, and dispose of the old HEPA filter in a harmless manner.

- Store and use the device in suitable environmental conditions.
- Regularly clean the exterior to prevent dust accumulation.
- Do not disassemble mechanical parts during cleaning.
- Periodically check for loose screws in mechanical and connection areas.

6. Troubleshooting

Issue	Possible Cause	Solution
Racks are not being loaded in the loading mechanism	Loading mechanism motor running	Reposition the sample rack correctly
	Loading mechanism motor not running	Check if the device is powered on
System is not de-capping tubes	Motor fault alarm	Power off for 30 seconds, then restart
	Dirty sensor probe	Power off and clean with alcohol swap
	Sample rack not aligned	Power off for 30 seconds, then restart
Tall tubes are not being de-capped	First rack position empty	Reload tubes. Ensure there is a tube in front of the rack
No power on startup	Power cord disconnected	Replace the power cord
	Fuse blown	Replace the backup fuse

7. Packing List

Default system comes with the following. Your system may come with additional racks / rack trays that were purchased separately.

No.	Item	Quantity
1	Main Decapper DCMB-10R unit	1 unit
2	Sample Racks DCRK-10	50 units
3	Sample Racks Tray DCRT-50	10 units
4	Power cord	1 cable
5	Waste bin	1 piece
6	Online User Manual	1 copy
7	HEPA Filter Certificate	1 piece

Maintenance Department

E-mail: support@raystarhealth.com