RHINOSTICS

ELEbot™ Decapper

Automated screw cap decapper

User Manual

RHINOSTICS ELEbot™ Decapper User Manual

This is Version 1.0 of the
RHINOSTICS ELEbot™ Decapper user manual

For use with:

Part Number	Description
AC-SD00001	**RHINOSTICS ELEbot™ Decapper** Standalone automated screw cap decapper. Decaps and caps a full rack of 24 tubes in 35 seconds. Operated by touch screen - no software needed. Includes RHINOSTICS ELEbot™ cassette (AC-SD00002) for use with ELEstic™ Collection Device & ELEcollect™.

Revised: July 2023

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1. NOTICES

This user manual relates to the **RHINOSTICS ELEbot™ Decapper**

1.1 Intended Use

The RHINOSTICS ELEbot™ Decapper is designed to open and close screw caps from tubes in an SBS format rack. Screw caps are referred to as caps in this manual. The instrument is not to be used for any other purpose. If the system is used beyond the limits of the technical specifications without written consent from AltemisLab, it is no longer being used for its intended purpose.

Use of the instrument in a manner not specified by AltemisLab is considered misuse and may impair the safety features and cause personal injury.

1.2 Important Safety Information

Before using this equipment, ensure that you are properly trained in the correct and safe operation of the RHINOSTICS ELEbot™ Decapper. Read the safety instructions in the instructions manual carefully to avoid any danger of accidents while operating the instrument.

The RHINOSTICS ELEbot™ Decapper is CE compliant.

- Read all instructions and safety warnings before use
- There are no known hazards associated with the RHINOSTICS ELEbot™ Decapper when used for its intended use and when following the instructions listed in this user manual
- Failure to follow all warnings and instructions may result in electric shock, fire and/or serious injury
- The RHINOSTICS ELEbot™ Decapper should only be used in the correct operating conditions by trained users
- Always use the correct RHINOSTICS ELEbot™ Decapper cap driver cassette designated for the screw cap tube type(s)
- Do not store the RHINOSTICS ELEbot™ Decapper at temperatures below 15°C
- Do not open the casing, modify, or drop the RHINOSTICS ELEbot™ Decapper
- Personal injury or damage to the equipment may result if the product is operated or serviced by unauthorised personnel
- Only qualified personnel can assemble, operate, or maintain the product
- If the RHINOSTICS ELEbot™ Decapper requires any repair, please contact your supplier before further operation to avoid any additional potential damage

- If the RHINOSTICS ELEbot™ Decapper is used to open or close sample tubes filled with potentially hazardous substances, then users must be trained to manage potential contact due to spillage from such samples and take necessary action as required
- The RHINOSTICS ELEbot™ Decapper must always be kept clean. Please refer to the to the cleaning instructions in this manual
- The manufacturer or supplier will not be liable for any loss or damage resulting from improper use of the RHINOSTICS ELEbot™ Decapper

1.3 Safety Standards

RHINOSTICS ELEbot™ Decapper is CE compliant

1.4 Use limits

The RHINOSTICS ELEbot™ Decapper shall be used according to the Good Laboratory Practices, GLP rules.

The machine must be operated indoors and under the following environmental specifications only.

Do not modify the instrument beyond its original design.

Do not attach other devices or substitute cables as this could cause damage to the system or compromise safety features. Contact AltemisLab before attaching any new cables or accessory to the system.

Surrounding air temperature	5 to 35 °C (41 – 95 °F) Using the instrument in an environment where the temperature is more than 35 °C or higher can cause the screen's contrast to change; there could be a decrease in the brightness of the LCD.
Storage temperature	15 to 40 °C (59 to 104 °F)
Storage lighting	All external surfaces are resistant to UV lighting. LCD might be affected.
Storage humidity	10 to 70% RH Wet-bulb temperature 39 °C (102 °F) max, no condensation
Ambient humidity	10 to 90% RH Wet-bulb temperature 39 °C (102 °F) max, no condensation
IP 30	No protection
Dust	0.1 mg/m^3 and below (non-conductive levels)
Pollution degree	For use in pollution degree 2 environment Decontamination with hydrogen peroxide needs to be avoided as it might damage the electronic parts.

2 UNPACKING

2.1 Included in the box:

- RHINOSTICS ELEbot™ Decapper automated screw cap decapper
- Power adapter
- Power cable
- User manual
- RHINOSTICS ELEbot™ Decapper Cassette pre-installed

WARNING!

- The weight of the ELEbot™ Decapper is approximately 14kg. Please ensure that it is handled safely by at least two people and that appropriate lifting methods are used.

- Check that all tables, safety cabinets, or mounting brackets supporting the equipment have been built to accommodate the respective weight.

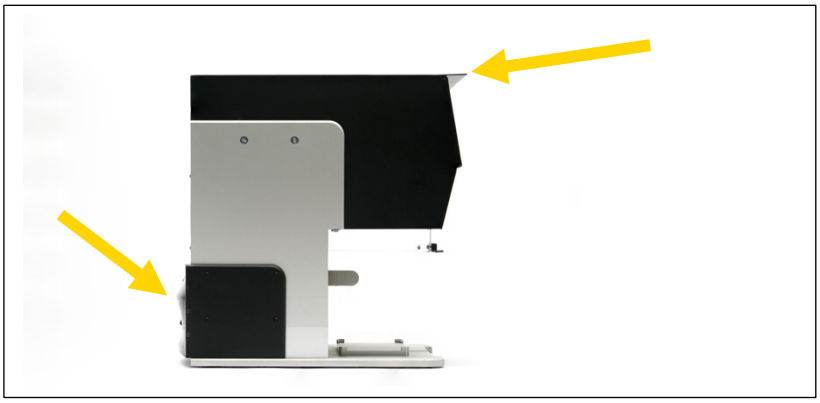
Caution: This equipment requires a protective earth connection. The grounding pin must be connected to an earthed ground. Use the power adapter and power cord supplied with the instrument, or an alternative power cord certified for the country of use.

The power supply is connected at the back of unit. Ensure the power switch is off before connecting to or disconnecting from the power cables. The equipment is designed for use with the following mains supplies:

* Voltage: 110-240 VAC
* Frequency: 50-60Hz

2.2 Unpacking instructions:

1. Place the box on a flat surface and open the box
2. Remove the top foam support
3. Remove the manual and the power adapter
4. Remove the ELEbot™ Decapper from the packing material with the help of two people
5. Hold the handles on the back and front of the unit and carefully lift the ELEbot™ Decapper out of the inner foam support

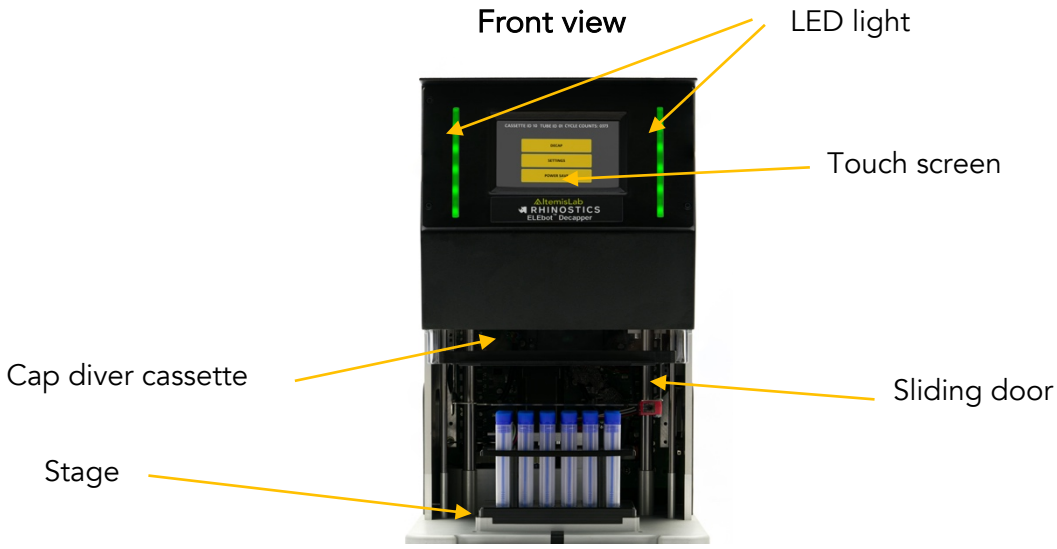


6. Place the unit on to a level surface (e.g., lab bench) that can hold at least 15 kg
7. Remove the anti-static bag
8. Remove the shipping tape securing the door
9. Follow the installation instructions in section 4

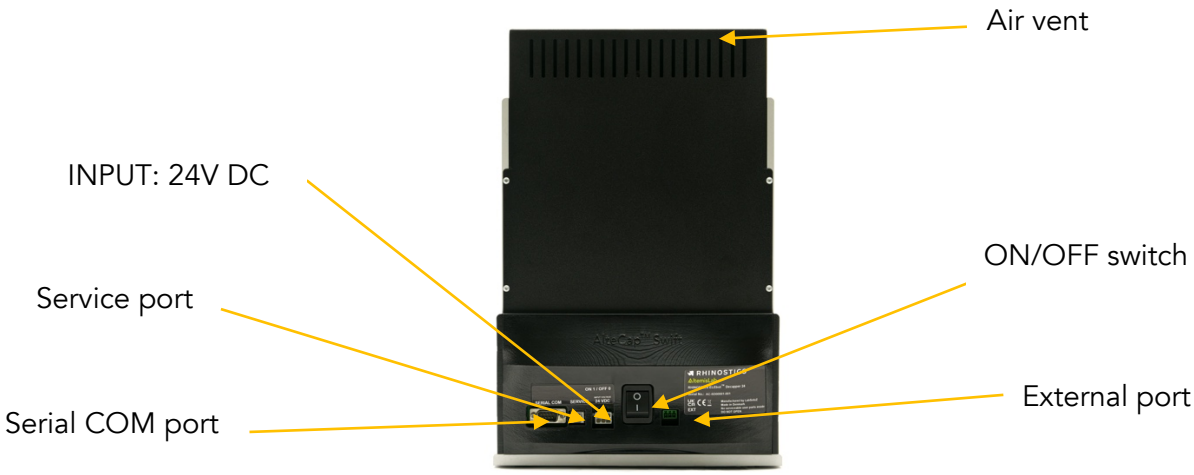
3 PARTS

The ELEbot™ Decapper contains no user serviceable parts, and the following diagrams summarise the major elements of the ELEbot™ Decapper.

Front view



Back view



Side view

4 INSTALLATION

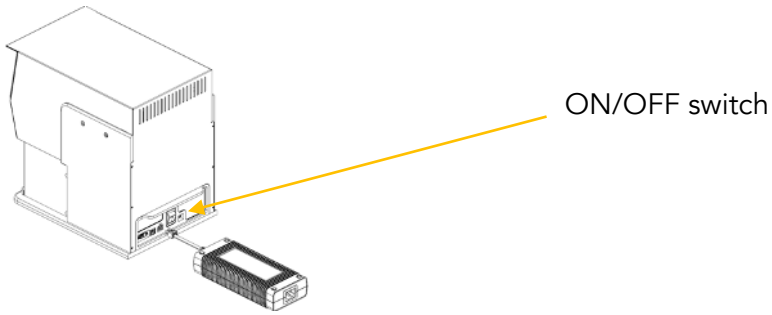
4.1 Positioning

Ensure the ELEbot™ Decapper is positioned in a well-ventilated area with enough space surrounding the unit for comfortable working. Place the unit on an even surface suitable for the weight of the unit.

Do not use the instrument in a potentially explosive environment or with potentially explosive chemicals. Avoid placing the unit in direct sunlight.

4.2 Turning on for the first time

1. Connect the supplied or a suitable power cable to the 280W AC-DC Adapter and connect the 6 pin Molex 39-01-2060 connector to the instrument



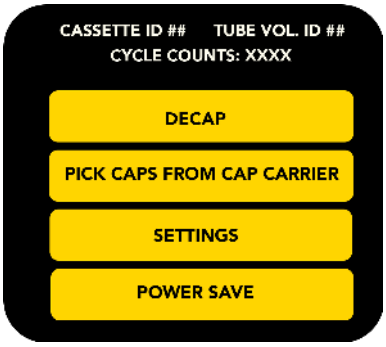
2. Turn the ELEbot™ Decapper on using the ON/OFF switch on the back of the unit

3. The instrument starts up and begins the initialisation process

4. If the door is open a prompt to close the door will appear. Close the door and the initialising process continues

5. The GREEN LED light pulses indicating the initialising is in process. DO NOT INTERRUPT THIS OPERATION

6. The ELEbot™ Decapper initialises, and the **HOME MENU** screen will appear:



The ELEbot™ Decapper features a Cycle Counter, which counts every time a capping cycle is completed. The Cycle Counter will already display several counts when the unit is first installed. This is due to the capping cycles completed during quality control testing. If you contact RHINOSTICS regarding your ELEbot™ Decapper, you may be asked to provide the cycle count number on the display.

a. Opening and Closing the door

The ELEbot™ Decapper features a manual sliding door on the front of the unit. The door can be opened by sliding it upwards, to allow access to the stage and the head when installing or changing a cassette.

WARNING! Operation automatically stops if the door is opened during the de/re-capping cycle. The manual override function is designed to be used in case of an error. The operator risks jammed/crushed fingers from moving parts if access through the door is attempted via the manual override function.

b. LED light definitions

- GREEN PULSE: Initialising, setup menu, cartridge change, power save
- GREEN CONSTANT: Standby and ready for command
- BLUE CONSTANT: DECAP, RECAP, WASTE or STORE sequence is activated
- RED PULSE: Manual override functions are activated
- RED CONSTANT: Error or STOP has been activated

c. POWER SAVE

The ELEbot™ Decapper features a power save mode. Select **POWER SAVE** to turn off the home screen. Power Save mode will automatically initiate after 30 minutes of no use. The unit will not initiate Power Save mode when caps remain on the cap drivers after a Decap cycle.

5 INITIAL SET UP

CAUTION!

The following sections detail how to set up and operate the ELEbot™ Decapper and the safety instructions described in this instruction manual must be observed carefully.

The ELEbot™ Decapper must only be used to remove and replace screw caps on tubes in SBS footprint rack types compatible with the unit and the cap driver cassette installed. Only authorised personnel with proper training should operate the instrument.

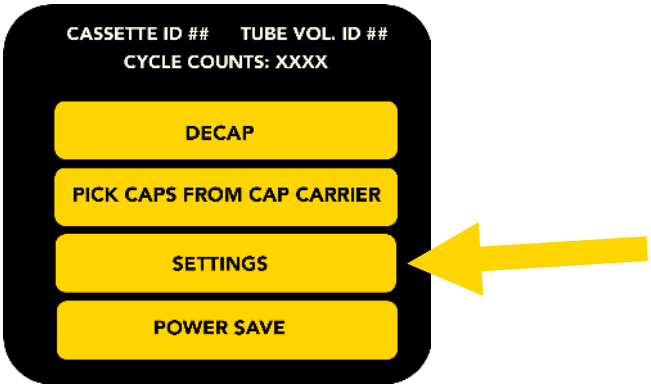
5.1 Loading a cassette for the first time

1. Turn on the ELEbot™ Decapper following the instructions in section 4 of this manual

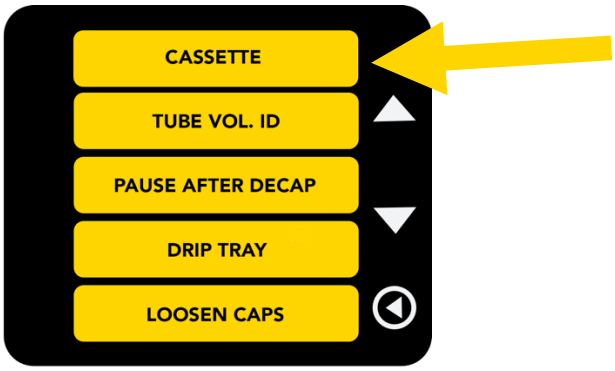
2. Wait for the instrument to complete the initialisation process

3. If a cassette is not installed, **CASSETTE ID 00** will show on the menu screen.

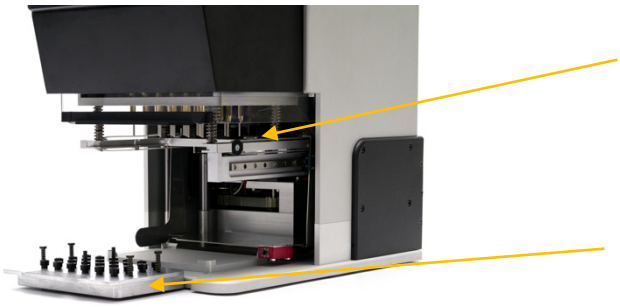
4. Select **SETTINGS** from the home menu screen:



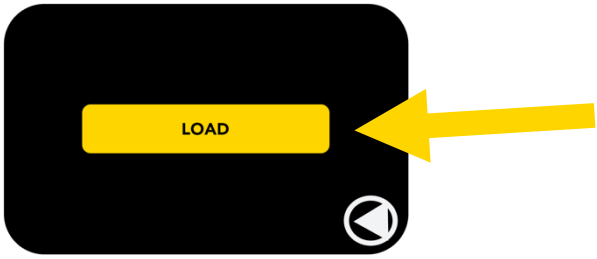
5. Select **CASSETTE**



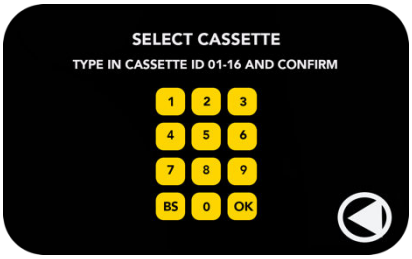
6. Open the door. The head will now be in a lower position to allow access. Slide the cassette into the unit



7. Close the door and select **LOAD**



8. The select cassette screen will appear



9. Input the **CASSETTE ID** (01 to 16). *The cassette ID is a unique number to identify the cassette and cap type. The cassette ID number can be found on the cassette

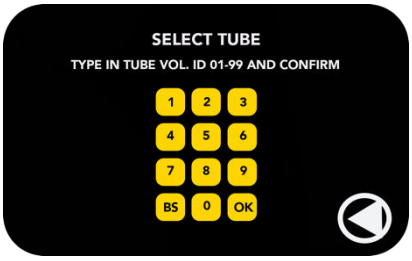
10. Press **OK** to confirm

The ELEbot™ Decapper loads the cassette and continues the homing process depending on the type of cassette installed.

Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.

Once the ELEbot™ Decapper has completed the homing process the GREEN LED light turns on, indicating the unit is in standby mode and ready for use.

11. The select tube screen will appear



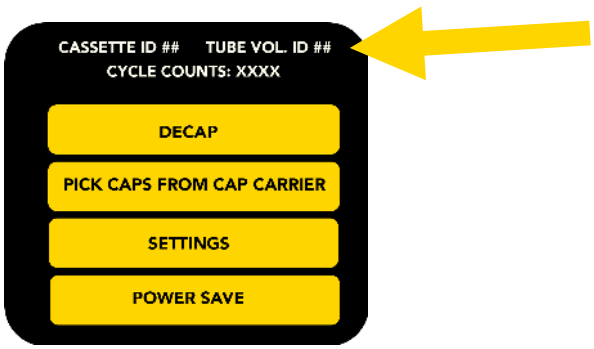
12. On the SELECT TUBE screen enter the **TUBE VOL. ID 01-99.** * The Tube ID is a unique number allocated to the specific cap, tube, and rack type. Please refer to the Tube ID reference sheet included with the ELEbot™ Decapper.

CAUTION!
Ensure the correct TUBE **VOL. ID matches the caps, tubes, and racks to be processed.** Using an incorrect TUBE VOL. ID could cause damage to the ELEbot™ Decapper.

13. Press **OK** to confirm

14. Press the **BACK** button to return to the home menu screen

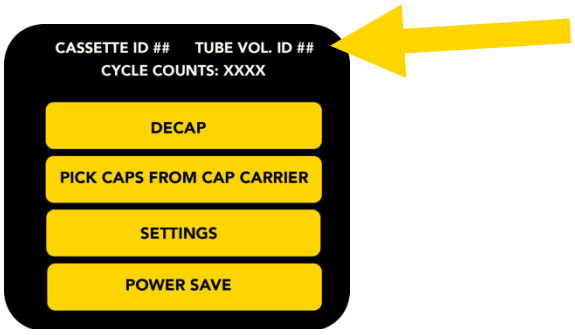
15. The **TUBE VOL. ID** will now show at the top of the home menu screen



6 OPERATION

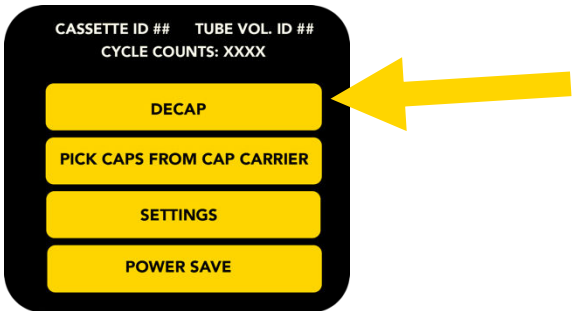
6.1 Decapping tubes

1. Ensure the correct Cassette ID and Tube ID for the tubes are showing



2. Open the door of the ELEbot™ Decapper and place a capped rack of tubes onto the stage

3. Select **DECAP**



Please wait while the ELEbot™ Decapper decaps the tubes. The BLUE LED light turns on indicating the unit is decapping the tubes.

Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.
A prompt will display if a cassette or tube type has not been installed or selected. Press continue and follow the instructions on installing a cassette and selecting a tube type.

4. When the decapping has finished the GREEN LED will be constant

5. The option display will appear.

6. Open the door and remove the uncapped rack of tubes

6.2.1 Recap the same rack of tubes

i. Place the rack of tubes onto the stage

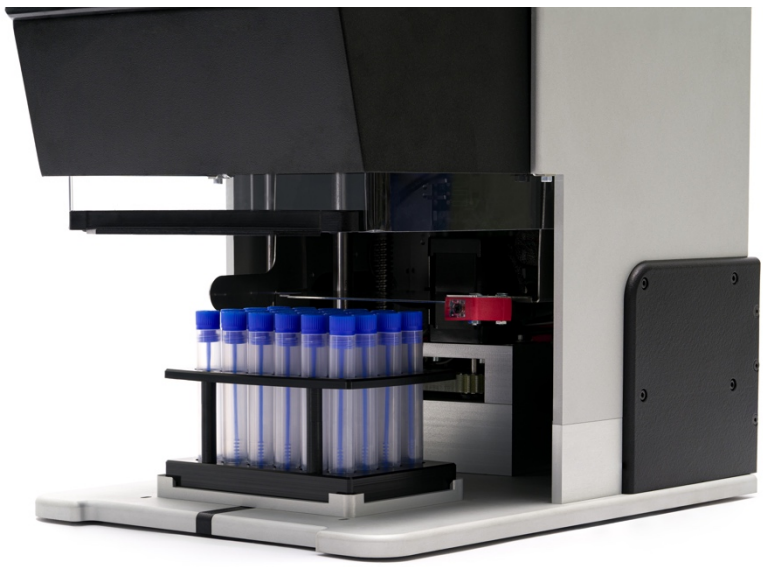
ii. Close the door and select **RECAP**

iii. Please wait while the ELEbot™ Decapper recaps the tubes. The BLUE LED light turns on indicating the unit is capping the tubes.

Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.

iv. Once completed the home screen will appear

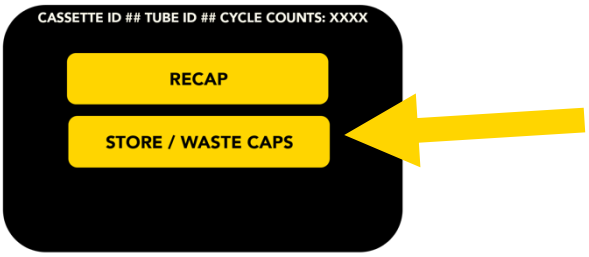
v. Open the door and remove the rack of capped tubes from the stage



6.2.2 To store caps in a cap carrier

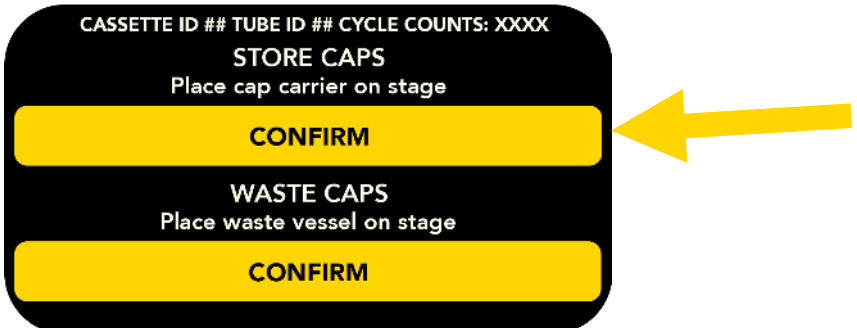
i. Place the empty cap carrier onto the stage

ii. Close the door and select **STORE / WASTE CAPS**



iii. The store or waste cap option screen will appear.

iv. Select confirm for storing the caps



Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.

v. Once the caps have been placed into the cap carrier the home screen will appear

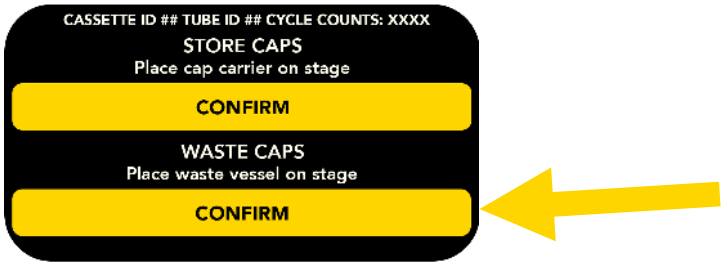
vi. Open the door and remove the cap carrier from the stage

6.2.3 To discard caps into a waste vessel

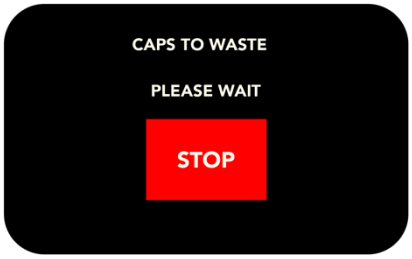
i. Place the waste vessel onto the stage

ii. Close the door and select **STORE / WASTE CAPS**

iii. Select **WASTE CAPS**



Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.

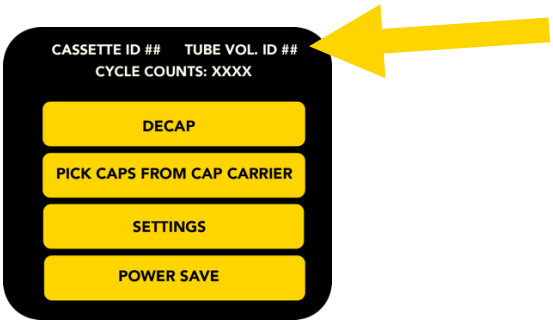


iv. Once the caps have been placed into the waste vessel the home screen will appear

vii. Open the door and remove the waste vessel from the stage

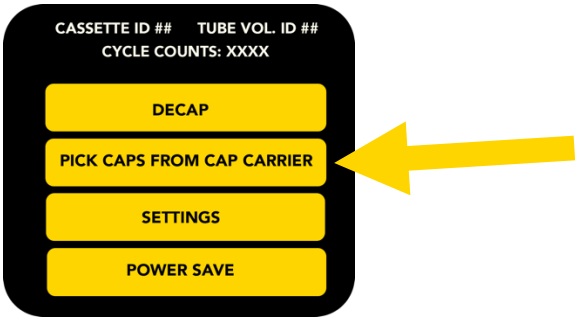
6.3 Capping tubes from a cap carrier

1. Ensure the correct Cassette ID and Tube ID for the cap type and tubes to be capped is showing on the home screen

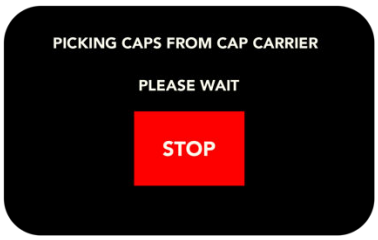


2. Open the door and place a pre-filled cap carrier onto the stage

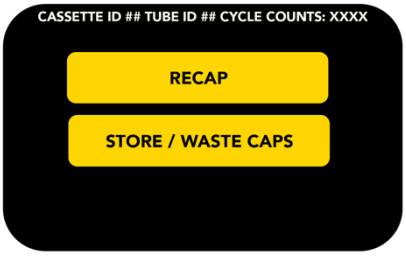
3. Select the **PICK CAPS FROM CAP CARRIER** option



Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.

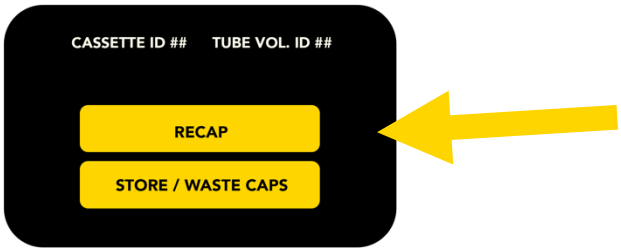


4. The following screen will appear

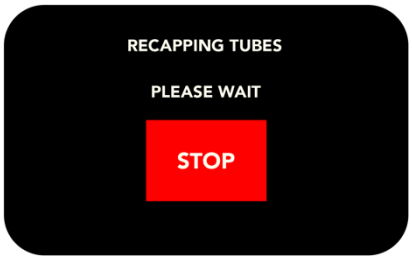


5. Open the door and remove the empty cap carrier and replace with a rack of uncapped tubes. *Ensuring the correct TUBE VOL. ID is showing for the tube type to be capped.

6. Close the door and select **RECAP**



Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.

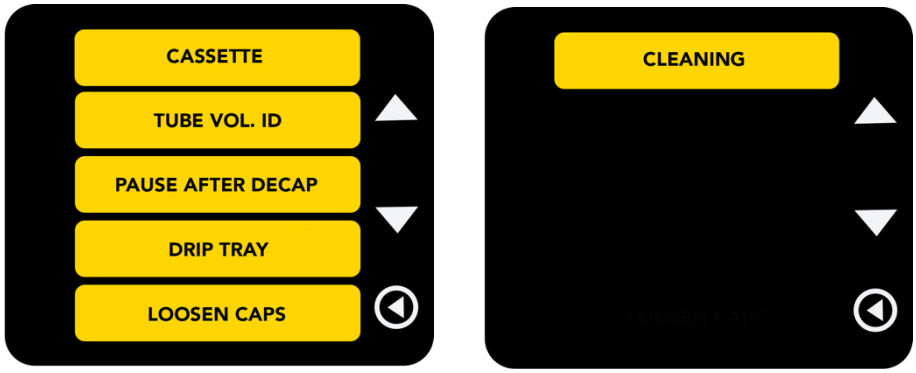


7. Once the tubes have been capped the home screen will appear

8. Open the door and remove the capped rack of tubes from the stage

7 SETTINGS

On the home screen select **SETTINGS** to access the settings menu. Use the up and down arrows to scroll between the two settings screens



7.1 Changing the CASSETTE

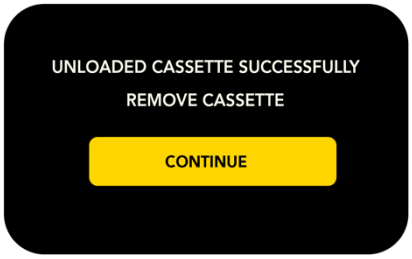
1. Select **CASSETTE** on the settings menu

2. Select **UNLOAD**

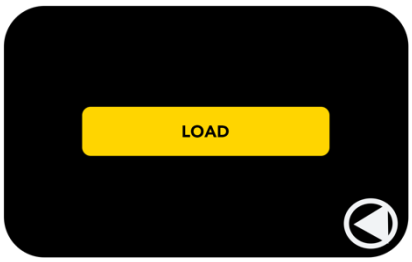
3. Wait while the ELEbot™ Decapper proceeds with the unloading sequence indicated by the GREEN LED light in pulse mode

4. Open the door. The head will be in a lower position to allow access. Slide the cassette out of the unit

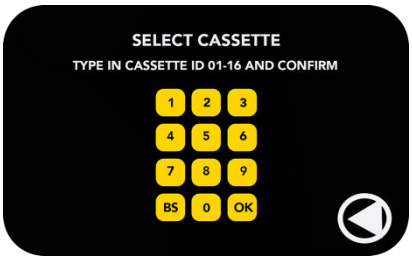
5. Press **CONTINUE**



6. Select **LOAD** to load a new cassette, or if a new cassette is not to be installed press the back button to go back to the home screen



7. The select cassette screen will show



8. Input the **CASSETTE ID** (01 to 16). *The cassette ID is a unique number to identify the cassette and cap type. The cassette ID number can be found on the cassette.

9. Press **OK** to confirm

10. The insert cassette screen will show

11. Slide the new cassette into the unit and press **CONTINUE**

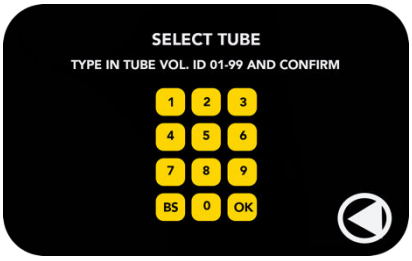
12. Close the door when prompted on the screen

The loads the cassette and continues the homing process depending on the type of cassette installed.

Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.

Once the ELEbot™ Decapper has completed the homing process the GREEN LED light turns from pulsing to solid, indicating the unit is in standby mode/ready for operation.

13. The select tube screen will show



14. On the **SELECT TUBE** screen enter the **TUBE VOL. ID 01-99.**
    The Tube ID is a unique number allocated to the specific cap, tube, and rack type.

    Please refer to the Tube Vol. ID reference sheet included with the ELEbot™ Decapper.

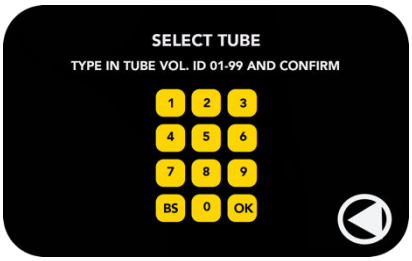
CAUTION!
Ensure the correct **TUBE VOL. ID matches the caps, tubes, and racks to be processed.** Using an incorrect TUBE VOL. ID could cause damage to the RHINOSTICS ELEbot™ Decapper.

7.2 Changing the TUBE VOL. ID

Most cassettes are compatible with different tube volume sizes from the same manufacturer. Please check the **TUBE VOL. ID** reference sheet to ensure the correct Cassette Cap/Tube/Rack ID is compatible with the cassette installed.

1. Select **TUBE** on the settings menu

2. The select tube screen will show



3. On the SELECT TUBE scree enter the **TUBE VOL. ID 01-99.** * The Tube ID is a unique number allocated to the specific cap, tube, and rack type. Please refer to the TUBE VOL. ID reference sheet included with the ELEbot™ Decapper.

CAUTION!
Ensure the correct **TUBE VOL. ID matches the caps, tubes, and racks to be processed**. Using an incorrect TUBE VOL. ID could cause damage to the ELEbot™ Decapper

4. Press **OK** to confirm

5. The home menu screen will appear and the GREEN LED light will be constant

7.3 PAUSE AFTER DECAP (optional)

This setting will pause the decap sequence when the caps are approximately 10-15mm above the open tubes. This is to allow for inspection of the tubes and caps for any swab sticks that may cause an obstruction

1. Select **PAUSE AFTER DECAP** on the **SETTINGS** menu

2. **i.** Select **DISABLE** to turn **off** the pause after decap feature

   ii. Select **ENABLE** to turn **on** the pause after decap feature

3. Press the BACK button twice to return to the home menu screen

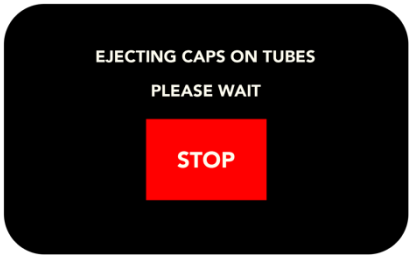
4. If **PAUSE AFTER DECAP** is **enabled** the following screen will appear during the decapping sequence

5. **i.** Selecting **CONTINUE** completes the decap sequence and the RECAP / STORE / WASTE screen will appear

   ii. Selecting **DRIP TRAY OUT AND CONTINUE** moves the drip tray out and completes the decap sequence (even if the drip tray setting is disabled) and the RECAP / STORE / WASTE screen will appear

   iii. Select **EJECT CAPS ON TUBES** if swab sticks are stuck to the cap. The head moves down and ejects the caps back on to the tubes

Pressing stop at this stage activates the manual override functions where the cassette can be unloaded again, see section 8. for further details.



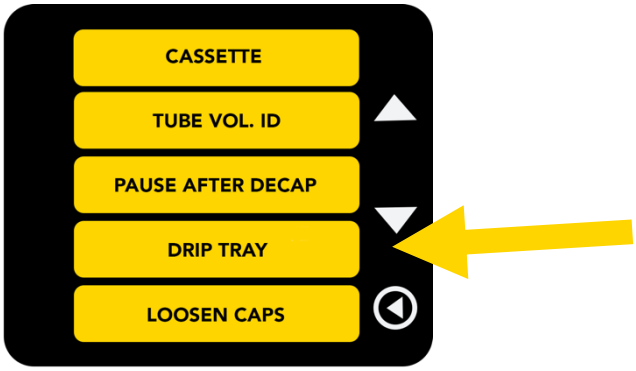
CAUTION!
Make sure that the swab sticks are not stuck to the caps before continuing the sequence.

7.4 DRIP TRAY (optional)

To reduce the likelihood of cross contamination, caused by drops of liquid on the decapped caps falling into neighbouring tubes, the ELEbot™ Decapper features an automatic drip tray.

The drip tray feature can be turned on or off and is NOT necessary for the correct operation of the ELEbot™ Decapper, but it may be useful for some applications.

1. Select **DRIP TRAY** on the **SETTINGS** menu



2. i. Select **DISABLE** to turn **off** the drip tray feature

   ii. Select **ENABLE** to turn **on** the drip tray feature

3. Press the back button twice to return to the home menu screen

4. If enabled the drip tray will automatically move out during the decap sequence

7.5 LOOSEN CAPS (optional)

This setting loosens the caps in the tubes. If enabled the DECAP function will only loosen and eject the caps. The caps are still engaged in the thread of the tube.

1. Select **LOOSEN CAPS** in the **SETTINGS** menu

2. i. Select **DISABLE** to turn **off** the Loosen caps feature

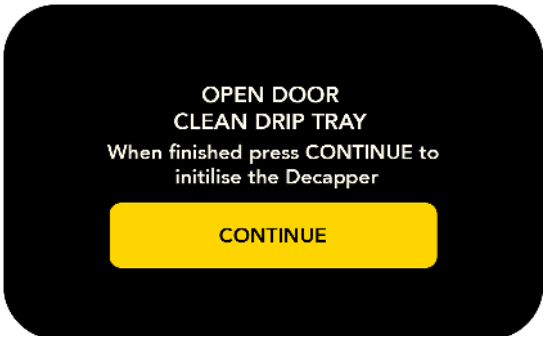
   ii. Select **ENABLE** to turn **on** the Loosen caps feature

3. Press the **BACK** button twice to return to the home menu screen

7.6 CLEANING (optional)

To clean the drip tray, it is necessary to unload the cassette and move the drip tray forward to allow access. Refer to section 7.1 in this manual for instructions on how to remove the cassette.

1. Select **CLEANING** in the **SETTINGS** menu. The ELEbot™ Decapper starts the UNLOAD CASSETTE sequence and moves the drip tray forward



2. Open the door

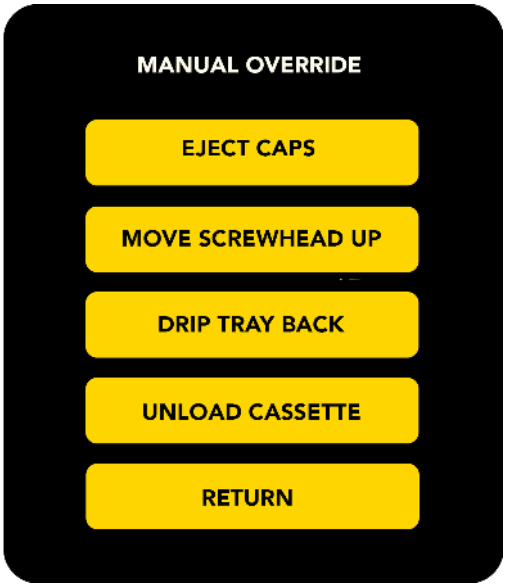
3. Wipe the drip tray with isopropanol on a lint free cloth to disinfect and clean the surface

4. Press **CONTINUE**. This will initialise the instrument and automatically perform a **LOAD CASSETTE sequence**

8 MANUAL OVERRIDE (RECOVERY)

If the door is forced open during any sequence or if the **STOP** button has been activated the ELEbot™ Decapper goes into manual override mode. From here it is possible to recover most common errors.

Select **MANUAL OVERRIDE** and select the most appropriate option to resolve the error.



Recommended steps for manual recovery:

Press **EJECT CAPS** to remove caps

Press **MOVE SCREW HEAD UP** to move the head to its home position

Press **DRIP TRAY BACK** (if enabled) to move the drip tray back to its home position

Press **RETURN** to initialise the unit

WARNING! The manual override function is designed to be used in case of an error. The operator risks injury from moving parts if access via the door is attempted through the manual override function.

9 CLEANING AND MAINTENANCE

For cleaning tasks, follow safe work practices. These include personal protective equipment, and that machinery and components are put in a safe condition before the task is initiated.

The machine requires no user maintenance other than cleaning with any 70% alcohol solution and a lint free cloth. Do not spray cleaning fluid directly in or on the unit.

Keep a logbook or a similar sheet to document the cleaning schedules. If regular cleaning of the machine cannot be shown, the manufacturer's warranty may lapse.

On a regular basis clean the drip tray following the instructions in section 7.6 of this manual.

CAUTION!
Before cleaning the ELEbot™ Decapper ensure the power supply to the unit is disconnected.

1. Switch the unit off and disconnect the power supply to avoid any risk of personal injury

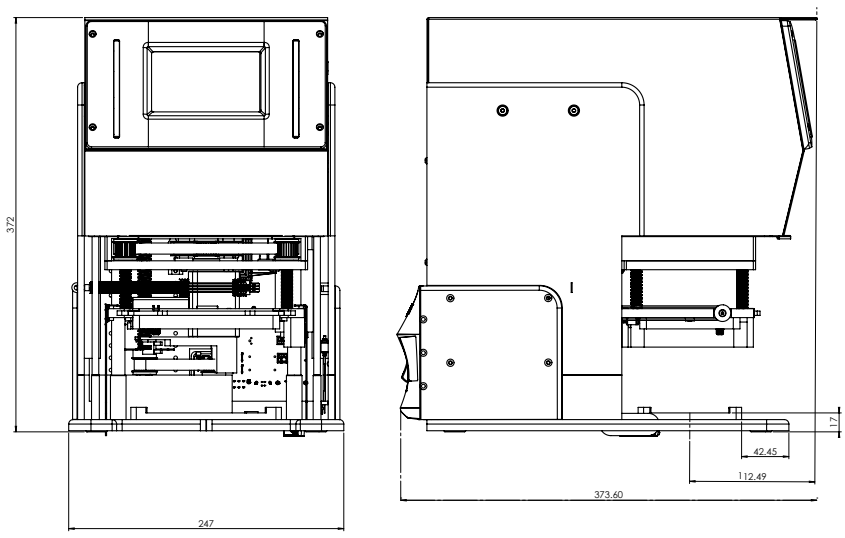
2. Wipe the outer surface with a lint-free cloth

3. Wipe the stage to remove any plastic debris from the cap drivers or tubes
   (A new cassette can produce minor amounts of plastic dust when first used)

4. Use a 70% alcohol solution to disinfect and further clean surfaces

10 SPECIFICATIONS

a. ELEbot™ Decapper Dimensions (mm)



b. ELEbot™ Decapper Information

Description	Values
Noise level	The machine does not emit a high level of noise during operation: < 70 dB
Dimensions (L X W X H)	364 x 247 x 332
Weight	Approx. 14 kg
Opening torque	12 – 15 cN.m
Closing torque	Min. 7 cN.m
Input	3 pole AC inlet IEC 320-C14, Class I power unit AC 100/240 VAC, 50-60Hz, 4.5 A CAUTION !: USE IEC 320 PLUG ONLY. CAUTION !: GROUND MUST ALWAYS BE CONNECTED.
Fuse	Two fuses on the PCB. • 250 V, 5A (5X20 mm) WARNING !: DO NOT ATTEMPT TO REPLACE THE FUSE ON YOUR OWN. CONTACT YOUR SALES REPRESENTATIVE FOR SERVICE.
Operation time	Approx. 20 seconds to de-cap and approx. 25 seconds to re-cap a rack of tubes. **NOTE**: The de-cap re-cap time can vary depending on the tubes.

11 DISPOSAL

11.1 WEEE Compliance

The ELEbot™ Decapper is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC, and is marked with the following symbol:

AltemisLab (and its agents) have contracted with one or more recycling or disposal companies in the European Union (EU) and these companies will dispose of or recycle this product. Please contact AltemisLab for further information on compliance with these Directives and the recyclers in your country.

12 TECHNICAL SUPPORT

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14 WARRANTY

Model: ELEbot™ Decapper
One-year factory warranty