Decomatic

"Automated Decontamination and Concentration Device"

Instructions for Use

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Principles of the System

One of the most important steps in the diagnosis of tuberculosis is the isolation and culture of mycobacteria. Clinical samples like sputum contain many microorganisms other than mycobacteria. Samples need to be decontaminated and concentrated before inoculation into culture media. In classical decontamination concentration methods, the sample is significantly diluted when the solutions used in sample processing are added. To increase sensitivity, cells should be concentrated by centrifugation. ***DECOMATIC*** is a device based on absorbent bead technology that removes excess liquids with the help of these beads, eliminating the need for centrifugation and enabling easy and safe decontamination and concentration of samples. Since the pores of the absorbent beads are much smaller than bacteria, mycobacteria cannot enter the beads and concentrate in the surrounding liquid. The beads also facilitate the homogenization of the sample during shaking.

This method allows the selective killing of microorganisms other than mycobacteria in samples contaminated with other organisms, such as sputum, and thus the cultivation of mycobacteria without contaminating the culture media. The pH indicator in the solutions is red at alkaline pH, yellow at acid pH and pink-orange at neutral pH. The pink-orange color of the processed sample indicates that the pH has been adjusted appropriately.

DECOMATIC is an automated decontamination and concentration device that can process 24 samples in 30 minutes. It works with the ***DECOMATIC KIT***, which is the large-scale version of the ***DECOMATIC*** solutions, containing neutralization and decontamination solutions and absorbent beads. It has biosafety level 2 chambers with airtight lids and continuously cleans the air with HEPA filter and ultraviolet light, ensuring safe operation.

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DEVICE SETUP

1. Place the device on a flat surface.
2. Plug the cable into the socket for electrical connection.
3. Place containers with decontamination and neutralization solutions in the compartments at the back of the device and insert the tubes in the containers.
4. The tube labeled as “decontamination” is placed in the container with pink liquid and the tube labeled as neutralization is placed in the container with transparent liquid.
5. Open the lid on the top of the device and place the beads in the bead compartment with the help of a funnel. (The sensors in the bead compartment will give an alarm when the level of the beads is low. In this case, beads should be added to the container.)
6. Turn on the device by pressing the button on the front.
7. To start the device and for each solution change, place at least 3 empty sample containers in the device, start the program by pressing the 'start' button and allow solutions to fill the tubes.

ATTENTION! If step 7 is not done, a sufficient amount of solution will not be poured to process the first 3 samples.

Cautions and warnings:

- FOR IN VITRO DIAGNOSTIC USE.
- Laboratory procedures involving mycobacteria require special equipment and techniques to minimize biohazards. Specimen preparation should be performed in a level II biosafety cabinet. People who apply these techniques are recommended to have special training in this area.
- To reduce the risks of accidental exposure to infectious agents, additional precautions should be taken. At a minimum, specimen manipulations should be done in a contained environment having controlled access, which has a tuberculosis exposure control plan. The locations should have surfaces that can be easily decontaminated using an appropriate topical disinfectant.
- Pathogenic microorganisms including Hepatitis B Virus and Human Immunodeficiency Virus (HIV) may be present in specimens. Universal precautions and local laboratory guidelines should be followed in handling all items contaminated with blood or other body fluids. If a container is found to be leaking or is accidentally broken during collection or transport, use the established procedures in your facility for dealing with mycobacterial spills.

General safety precautions:

- Always wear masks and gloves when working with potential biohazard material.
- Work in a laminar flow cabin, biosafety level II, when transferring, homogenizing and pipetting samples.
- Never use mouth pipetting.
- If spills of the contaminated material occur, disinfect with 2.5% hypochlorite solution.

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- If the decontamination or neutralization solution comes into contact with the eyes, skin or mucosal surfaces, rinse immediately with water and seek emergency medical attention.
- Sample cups should be discarded in an appropriate manner according to biosafety principles.

SAMPLE PREPARATION

Sputum and other liquid respiratory samples:

1. Transfer a maximum volume of 5 mL of samples such as sputum, broncho-alveolar washing fluid, gastric fluid, pleural, pericardial or peritoneal fluids in the sample processing cup.

Urine samples:

1. Transfer the urine sample into a 50 mL centrifuge tube up to the 50 mL line.
2. Spin the tube in a centrifuge for 15 minutes at 2000 x g.
3. Discard the supernatant according to the safety rules of your laboratory, leaving approximately 1-3 mL of concentrated sample.
4. Transfer the concentrated samples into the sample processing cup.

USE OF THE DEVICE

1. Place the cups containing the sample in the device starting from position 1. Close the door of the device.
2. Press long to the 'System Reset' button on the main screen of the device.
3. Enter the container number as 1 in the 'Cup Setting' section.
4. Press the 'Start' button on the screen.
5. After the process is completed, the containers are removed from the device starting from position 1.
6. During this time, most of the liquid will be absorbed by the beads and the sample will become more concentrated. The color of the liquid will first turn from pink to yellow and then pink-orange, which indicates the adjustment of neutral pH.

ATTENTION! No culture should be performed before the color of the liquid turns pink-orange.

7. The sample container is tilted sideways so that the beads in the container are collected on one side. Then, the sample container is slightly tilted in the opposite direction so that the liquid accumulates on the other side. The accumulated liquid is taken with a pipette and inoculated into culture tubes. It can also be placed directly on a slide to prepare a smear for microscopy and can be used for other diagnostic methods.

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Device Settings

Work Page

- System reset. 

It is used to initialize the system and reset operating settings.

- Start: 

It is used to start the process.

- Stop: 

It is used to terminate the ongoing process.

- Block rotate CCW 

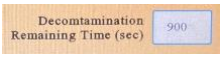
It is used to rotate the platform on which the sample containers are placed counterclockwise.

- Block rotate CW 

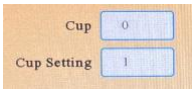
It is used to rotate the platform on which the sample containers are placed clockwise.

- Container 1 (mL) and Container 2 (mL) 

It shows the volume of the decontamination and neutralization solutions in the containers.

- Decontamination time 

It shows the time to wait for decontamination after decontamination solution is added to the samples.

- Cup and cup settings 

It shows the cup number and cup setting. Cup number indicates which number of cup the device is being processed. On the other hand, cup setting is the number of cup at which the device will start processing the samples.

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Manuals

- Cap up

It is used to lift the cap opening part.

- Block rotate CCW

It is used to rotate the platform on which the sample containers are placed counterclockwise.

- Block rotate CW

It is used to rotate the platform on which the sample containers are placed counterclockwise.

- Liquid filling 1 up

It is used to lift the liquid filling 1 pump.

- Liquid filling 2 up

It is used to lift the liquid filling 2 pump.

- Cap down

It is used to lower the cover opening mechanism.

- Cap unlock

It is used to open the cap of the sample cup.

- Cap lock

It is used to close the cap of the sample cup.

- Liquid filling 1 down

It is used to lower the liquid filling 1 pump.

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- Liquid filling 2 down

It is used to lower the liquid filling 2 pump.

- Cap rotate CW

It is used to rotate the cap of the sample containers clockwise.

- Liquid pump 1

It is used to start the liquid filling 1 pump and fill the container with the liquid 1.

- Liquid pump 2

It is used to start the liquid filling 2 pump and fill the container with the liquid 2.

- Bead filling open

It is used to open device mechanism that fills beads into the sample cups.

- Bead filling close

It is used to close the mechanism that fills beads into the sample cups.

- Cap rotate CCW

It is used to rotate the caps of sample containers counterclockwise.

- Liquid pump 1 reverse

It is used to reverse the liquid 1 pump operation to prevent dripping.

- Liquid pump 2 reverse

It is used to reverse the liquid 2 pump operation to prevent dripping.

- FAN & UV Lamp

It is used to turn on the UV lamp and the fan of the device.

- Vibration

It is used to vortex the sample cups.

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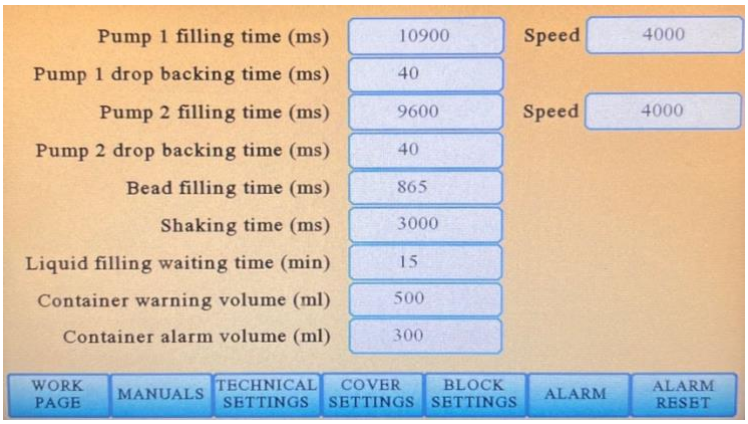
Technical settings



- Pump 1 filling time

It is the total time for pump 1 to fill adjusted volume of fluid to the cup.

- Pump 1 drop backing time

It indicates the liquid withdrawal time of the liquid pump 1 to prevent dripping.

- Pump 2 filling time

It is the total time for pump 2 fill adjusted volume of fluid to the cup.

- Pump 2 drop backing time

It is the liquid withdrawal time of the liquid pump 2 to prevent dripping.

- Bead filling time

It is the total time for the mechanism to fill the adjusted amount of beads into the cup.

- Shaking time

It is the device's vortexing time of the samples.

- Liquid filling waiting time.

It is the total duration of time for decontamination.

- Container warning weight

It is the selected container weight for the device to give a warning for low level of fluid.

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- Container alarm weight

It is the selected container weight for the device to activate the alarm for low level of fluid.

Cover settings

It is used by technical service.

Block Settings

It is used by technical service.

Alarm

This is the section where the reason for the alarm is displayed.

Alarm Reset

It is used to reset the alarm.

PROCEDURES FOR TROUBLESHOOTING

In case of an error, the alarm will start and the reason for the alarm can be seen by pressing the **'Alarm'** button. Once the cause of the alarm is understood, the alarm can be silenced by pressing the **'Alarm Reset'** button.

If an error occurs while opening the sample container cap (if the sample container cap is closed too tightly), take the necessary safety precautions, press long to the **'cap up'** button in the **'manuals'** section until the cap opening device is completely up. Loosen the cap of the sample container, close the cap of the device, press the **'start'** button and continue processing the samples.

If an error occurs while closing the sample container cap (if the sample container cap is stuck in the cap opening device), take the necessary safety precautions, open the front cover of the device, remove the cap from the cap opening device, close the sample cup, press the **'start'** button and continue the process.

If there is an error of not being able to find a position, press long to the **'system reset'** button on the main screen, enter the number of the cup with the position error in the **'Cup Setting'** section on the main screen and press the **'Start'** button on the main screen. The device will continue processing the samples from this sample. If an error occurs in the second cycle of the system, continue the process by entering 24+the sample cup number of the container, in the container setting section.

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If a contaminated liquid is spilled, it should be cleaned with a 2.5% hypochlorite solution. After removing the sample cups and thoroughly disinfecting the inside of the device with a 2.5% hypochlorite solution, turn on the UV lamp by pressing the **'Fan & UV lamp'** button in the **'Manuals'** section.

If decontamination or neutralization liquids are spilled into the device, the spilled liquids should be cleaned by wiping with a cloth moistened with water.

Manufacturer:
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Decomatic Kit: DCK 24

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