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# ALUVIS ULTRAVIOLET

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MOBILE DEVICES SANITIZING SYSTEM



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## IMPORTANT SAFEGUARDS


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Read this manual entirely before using the ALUVIS

 **WARNING** – THIS SYMBOL PRECEDES INFORMATION WHICH, IF DISREGARDED, MAY RESULT IN SERIOUS INJURY.

 **PRECAUTION** – THIS SYMBOL PRECEDES INFORMATION WHICH, IF DISREGARDED, MAY RESULT IN SERIOUS OR CATASTROPHIC DAMAGE TO ALUVIS.

 **WARNING** – THIS SYMBOL PRECEDES INFORMATION WHICH, IF DISREGARDED, MAY RESULT IN ELECTRICAL SHOCK.

 **PRECAUTION** – THIS SYMBOL PRECEDES INFORMATION WHICH, IF DISREGARDED, MAY RESULT IN SKIN BURNS OR HIGH TEMPERATURE RELATED INJURIES.

NOTE: These symbols identify information that is NECESSARY to the proper operation and maintenance of the machine.

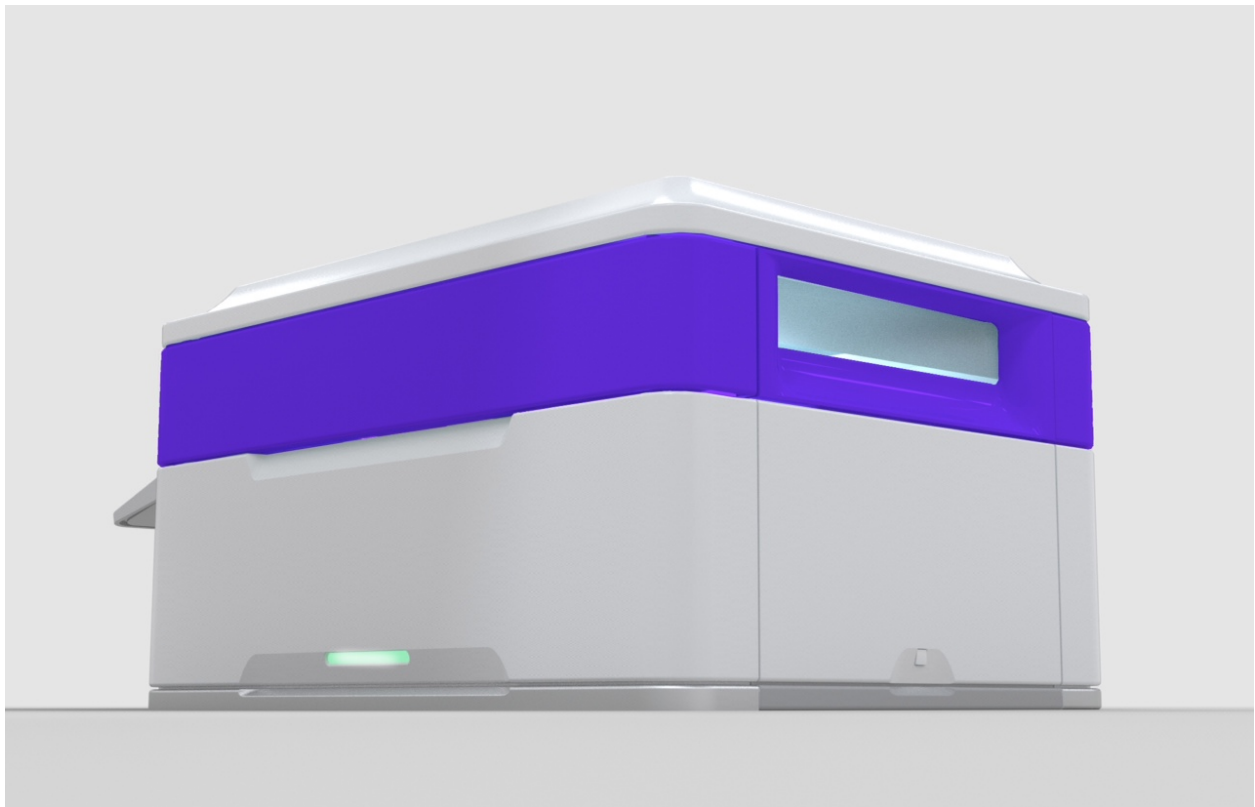
For details on safety rules and regulations in the United States, contact your local office of the Occupational Safety and Health Administration (OSHA).

The following safety precautions are published for your information. Angelini Pharma Inc., does not, by the publication of these precautions, imply or in any way represent that they are the sum of all dangers present near machines. If you are operating a machine, it is your responsibility to ensure that operation is in full compliance with all applicable safety codes and requirements.



ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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## INTRODUCTION

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Bacteria, mold, mildew, and fungi can be discovered in every environment and are part of normal everyday life. Even in clean environments, many kinds of microbes will begin to multiply on surfaces and sometimes reach harmful levels. If these contaminated surfaces are touched by individuals or contact everyday products, the transfer of microbes begins, resulting in cross-contamination. Pathogenic bacteria, such as Staphylococcus Aureus, including methylene resistant Staphylococcus Aureus (MRSA) and Escherichia Coli can be spread via cross-contamination leading to infection and illness in humans and animals.

The increased use, by patients, visitors and healthcare workers, of cell phones, pda's, tablets, and other hand-held devices in healthcare facilities suggests the need to sanitize and prevent pathogen growth on these devices to reduce cross-contamination and possibly the incidence of hospital acquired infections.

ALUVIS is designed to help in reducing contamination of these hand-held devices. The ALUVIS is a sanitizing device based on UV type C lights consisting of a roller based conveyor system. The lights are embedded into the rollers made of quartz sleeves.














## WARNINGS AND PRECAUTIONS

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### WARNINGS

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-  WARNING: Explosion hazard – Do not operate the ALUVIS in the presence of flammable vapors.
-  WARNING: Do not place your hands inside the openings of the ALUVIS before turning off the power.
-  WARNING: The ALUVIS should not be operated by children.
-  WARNING: Disconnect the power supply before servicing to avoid the possibility of electric shock.
-  WARNING: Turn the system off before opening the top lid to avoid the possibility of electric shock.
-  WARNING: High temperature warning – Internal components of ALUVIS may develop temperatures above 110°F.
-  WARNING: All assembly, adjustment, modification, maintenance and/or repair should be carried out by qualified personnel authorized by Angelini Pharma Inc.
-  WARNING: Only ALUVIS approved replacement parts should be used when maintaining the machine.
-  WARNING: The ALUVIS must be connected to a 3-prong grounded electrical outlet to maintain grounding reliability.
-  WARNING: Do not remove any warnings, cautions, or descriptive labeling from the ALUVIS.
-  WARNING: The ultraviolet lights used in the sanitation process contain mercury.













## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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-  **WARNING:** All replaced lamps must be discarded following the manufacturers recommendations.
-  **WARNING:** Never look directly through the input and output openings of the ALUVIS.
-  **WARNING:** UV lamps contain mercury and therefore must be properly disposed of as a hazardous waste in accordance with local, state and federal regulations or the lamps should be recycled.

### PRECAUTIONS







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-  **PRECAUTION:** Do not obstruct the vents.
-  **PRECAUTION:** Placement of the ALUVIS on a cart or stand must have at least 3 inches separation between the back panel and the wall behind it.
-  **PRECAUTION:** Do not place any objects on the top lid.
-  **PRECAUTION:** The product must be used in accordance with this User's Guide.
-  **PRECAUTION:** All assembly, adjustment, modification, maintenance and/or repair should be carried out by qualified personnel authorized by Angelini Pharma Inc.
-  **PRECAUTION:** The electrical installation of the room must comply with the local electrical wiring standards.
-  **PRECAUTION:** Refer to the Care and Cleaning for recommended daily cleaning for the ALUVIS.
-  **PRECAUTION:** Never operate this product if it has a damaged power cord, power supply or plug. If the power cord, power supply or plug is worn or damaged, contact Angelini Pharma Inc at 1-800-726-2308.



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM



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-  PRECAUTION: Never drop or insert any object not indicated for use with the ALUVIS.
-  PRECAUTION: Do not use any attachments not recommended by Angelini Pharma Inc.
-  PRECAUTION: Keep the ALUVIS away from heated surfaces.
-  PRECAUTION: Avoid spilling fluids on any part of the ALUVIS.
-  PRECAUTION: If spills do occur, immediately disconnect ALUVIS from the power source and clean the ALUVIS with an absorbent cloth.
  
-  Additional warnings and precautions may be found throughout this manual when specific procedures are mentioned.



## INDICATIONS AND CONTRAINDICATIONS

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-  The ALUVIS was validated for the purpose of sanitizing mobile hand-held devices. Any subsequent use of a device that has been sanitized by the ALUVIS is the sole responsibility of the user.
- It is recommended to clean the mobile hand-held device of any standing debris before being used in the ALUVIS.
-  The use of ALUVIS for any other type of devices other than those validated is the sole responsibility of the operator.
- ALUVIS was designed to sanitize hand-held devices such as cell phones, tablets and pagers. The use of ALUVIS for other types of devices has not been validated by Angelini Pharma Inc.



ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

**SPECIFICATIONS**


|                                 |   |
|---------------------------------|---|
| Dimensions                      | 43 x 20 x 17 inches (with tray)<br>27 x 20 x 17 inches (without tray)   |
| Input – Output Opening          | 10 x 2 inches   |
| Weight                          | 75lbs   |
| Lamps                           | High output ultraviolet C lamps<br>5 on the top, 5 on the bottom  |
| Lamp Replacement                | Every 36000 cycles or annually (first to take precedence)   |
| Conveyor                        | Roller based, spur gear transmission  |
| Rollers                         | 17 Total - 12 Acrylic (in-output) - 5 Quartz (UV)   |
| Motor                           | 6VDC, 12 RPM, brushed geared  |
| Cycle Time                      | 35 seconds  |
| <b>Environmental Conditions</b> |   |
| Electrical                      | 120 VAC, 50Hz, 500Watts max   |
| Temperature                     | 50°F (10°C) to 95°F (35°C)  |
| Relative Humidity               | 0 to 90% Non-condensing   |
| Noise Level                     | <55dBa  |
| <b>User Interface</b>           |   |
| Status Indicator                | <ul style="list-style-type: none"> <li>• Purple – UV lamps on</li> <li>• Green – System ready</li> <li>• Red – Alarm</li> </ul> |
| Audible Alarm                   |   |
| <b>Materials</b>                |   |




ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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|                                      |                                 |
|--------------------------------------|---------------------------------|
| Enclosure                            | Polyurethane                    |
| Chassis                              | Aluminum                        |
|                                      |                                 |
| <b>Safety Mechanisms and Sensors</b> |                                 |
| Mechanical and Magnetic Switches     | Top lid open detection          |
| Magnetic Latch (80Lbs).              | Top lid lock                    |
| Ultrasonic Sensor                    | Conveyor and lamps start        |
| High Temperature Switch              | Internal temperature monitoring |
| Double Curtain System                | UV Blocking                     |

 **WARNING:** Equipment not suitable for use in presence of flammable anesthetic mixture with air, oxygen or nitrous oxide.

 **PRECAUTION:** Devices shorter than 3 inches must be placed in an ALUVIS Quartz tray before being used in ALUVIS.

**IEC Classification**


UL 61010-1 Electrical Safety, Equipment for Measurement, Control and Laboratory Use  
FCC 47CFR 15B c1A. Subpart B Unintentional Radiators Class A



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## OPERATING INSTRUCTIONS

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 **WARNING:** Review all ALUVIS WARNINGS and PRECAUTIONS information prior to operation.

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### NORMAL OPERATING INSTRUCTIONS

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#### TURNING ALUVIS ON

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Using the ON/OFF switch turn the system on as shown in figure 1.

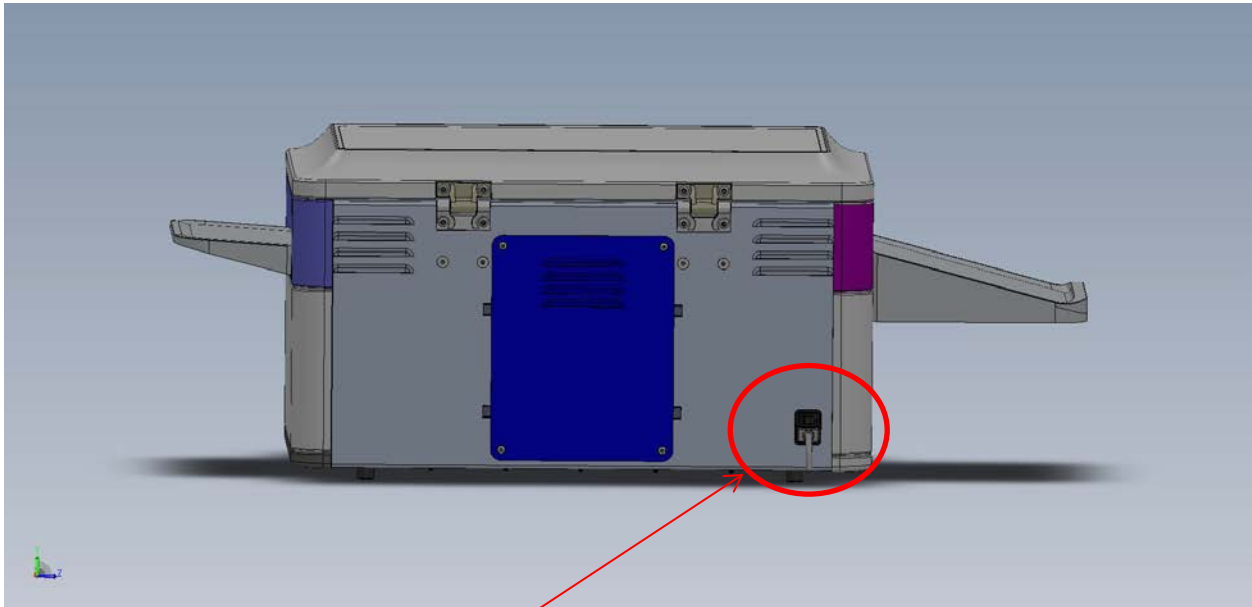


FIGURE 1.ON/OFF SWITCH

ON/OFF switch

Toggle switch in “I” position → ON

Toggle switch in “0” position → OFF



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### ALUVIS START-UP SEQUENCE

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The status indicator (figure 2) will switch from red to blue before displaying green. The green color is an indication that ALUVIS is ready to be used.

*Note: If the status indicator displays a red color, turn the system on and off with the ON/OFF switch. If the red color persists, it may be an indication of a malfunction or that preventive maintenance is required. Refer to the ALARMS DESCRIPTION section for further details.*

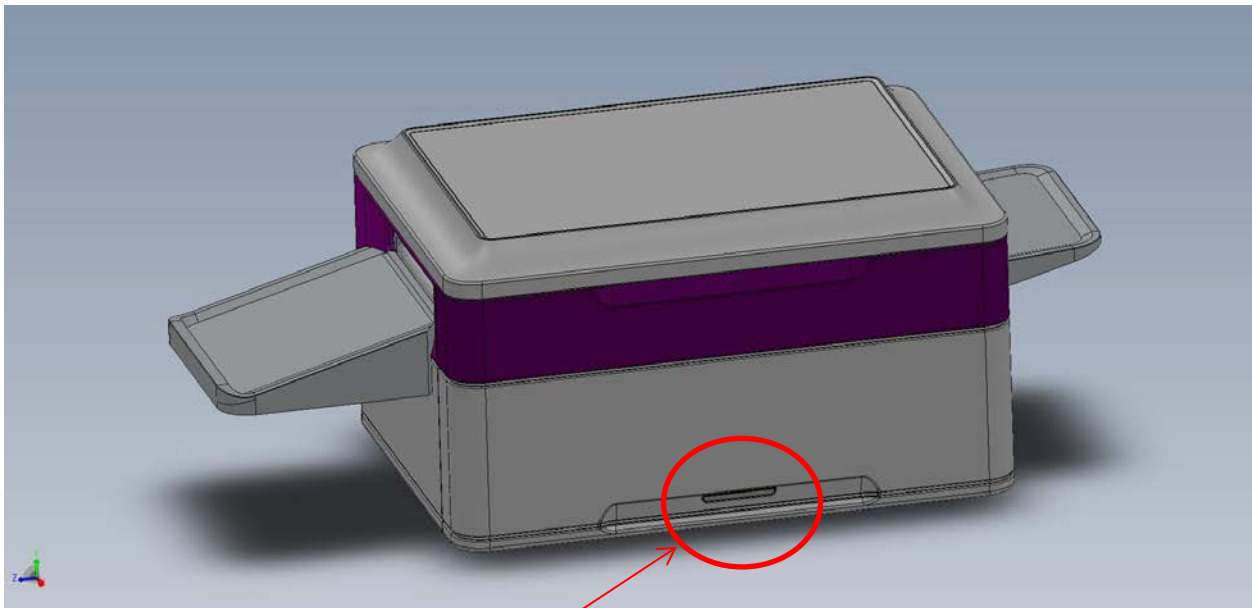


FIGURE 2.STATUS INDICATOR

Status Indicator

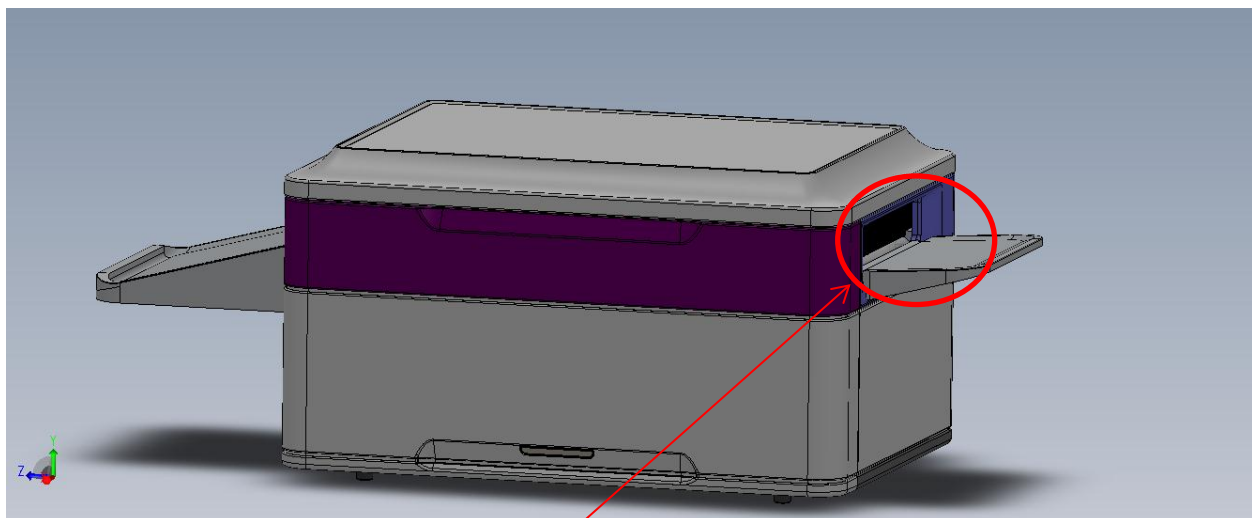


## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

### OPERATING METHOD

*Note: Parts smaller than 3 inches long must be placed on the quartz tray provided with ALUVIS.*

- a) The status indicator should display a green (ALUVIS is ready to use) or purple color. (UV-C lamps are on)
- b) Place the hand held device or quartz tray with the device through the Input Opening of ALUVIS as shown in figure 3.



Input Opening

FIGURE 3.INPUT OPENING






## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

- c) The ultrasonic distance sensor of ALUVIS will detect the device and turn on the internal mechanisms of the roller based conveyor and the UV-C lamps. The status indicator (figure 1) will turn purple indicating that the UV-C lamps are turned on.

 **WARNING: DO NOT LOOK DIRECTLY THROUGH THE INPUT OR OUTPUT OPENINGS OF ALUVIS.**

 **WARNING: ALUVIS SHOULD NOT BE OPERATED BY CHILDREN.**

 **WARNING: TO AVOID FINGERS GETTING TRAPPED INSIDE THE CONVEYOR MECHANISMS, DO NOT INTRODUCE YOUR HANDS INSIDE ALUVIS.**

 **WARNING: DO NOT ATTEMPT TO OPEN THE TOP LID ALUVIS WHEN THE SYSTEM IS TURNED ON.**

- d) The device will be processed through ALUVIS and delivered to the Output Opening as shown in figure 4

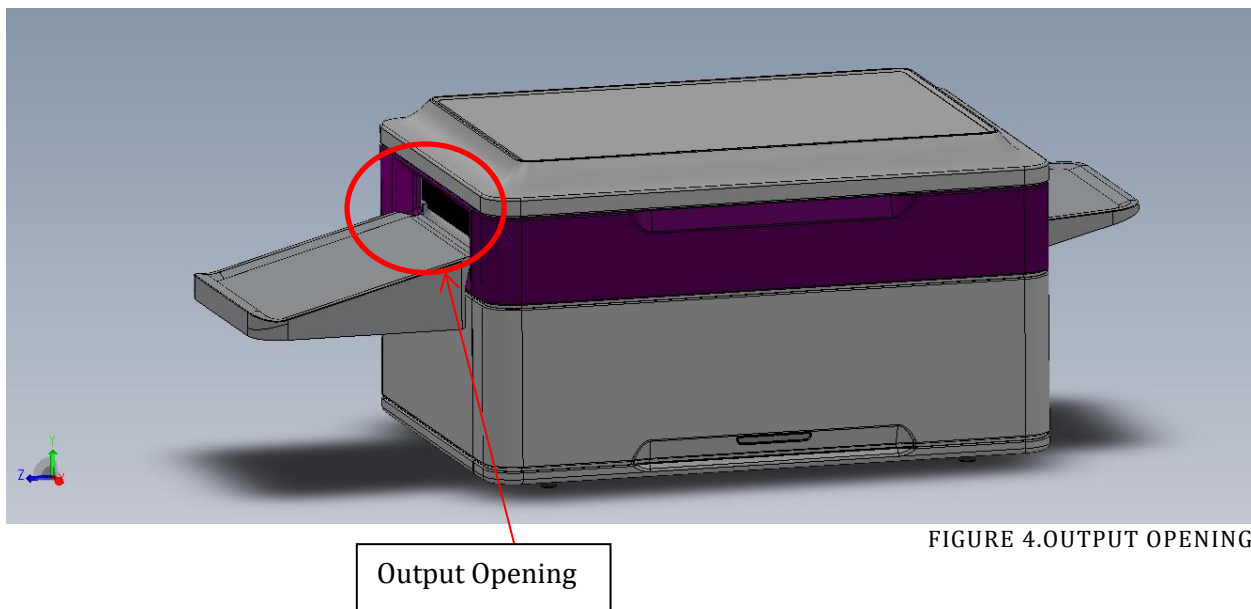


FIGURE 4.OUTPUT OPENING



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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- e) At any time a new device can be introduced into ALUVIS without having to wait for the prior one to complete the process.
- f) Thirty five (35) seconds after the last device was detected by the ultrasonic sensor the ALUVIS roller based conveyor and the UV-C lamps will be turned off.
- g) The status indicator (figure 2) will turn green.

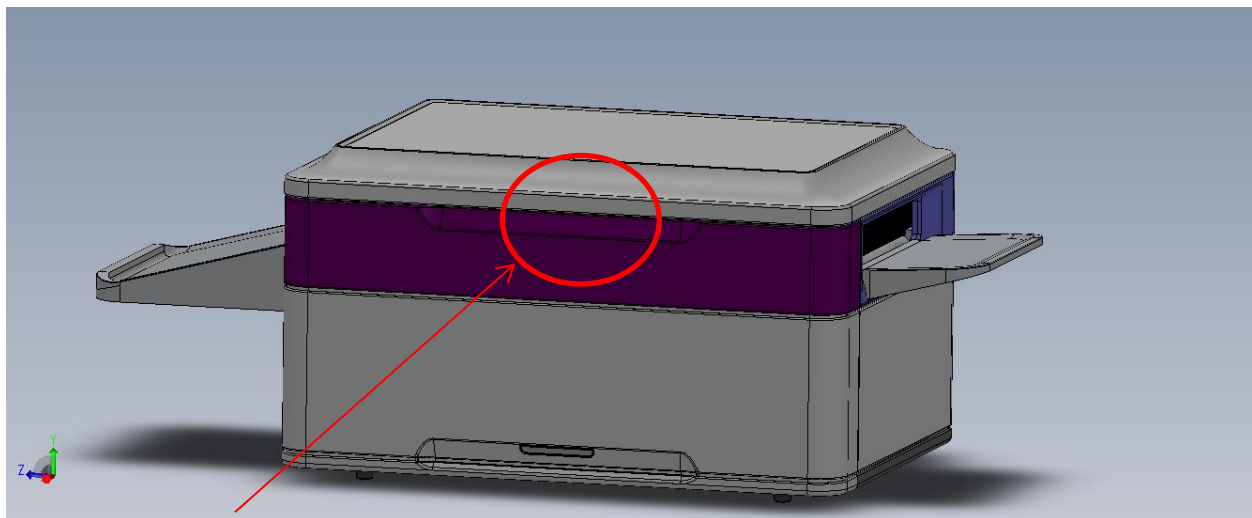


## TROUBLESHOOTING

*Note: Refer to the Alarm section for detailed explanations on the different failure modes of ALUVIS*

If the status indicator is green and the device being processed by ALUVIS does not appear through the Output Opening, proceed as follows:

- a) Using the ON/OFF switch, turn the system off as shown in figure 1.
- b) This will disable the magnetic latch that holds the top lid in a closed position.
- c) The status indicator (figure 2) will not display a color and the internal fans will shut off.
- d) If this does not happen, close the top lid and contact the technical department or ALUVIS technical service for help.
- e) Open the top lid as shown in figure 5.



Top Lid Opening

FIGURE 5.TOP LID OPENING

 WARNING: SOME INTERNAL SURFACES OF ALUVIS CAN BE HOT. CARE MUST BE TAKEN WHEN OPENING THE TOP LID.

 WARNING: DO NOT TOUCH ANY WIRE OR ELECTRICAL CONNECTIONS.

 WARNING: DO NOT ACTIVATE THE SAFETY MECHANICAL SWITCH WHEN THE TOP LID IS OPEN. (FIGURE 6)

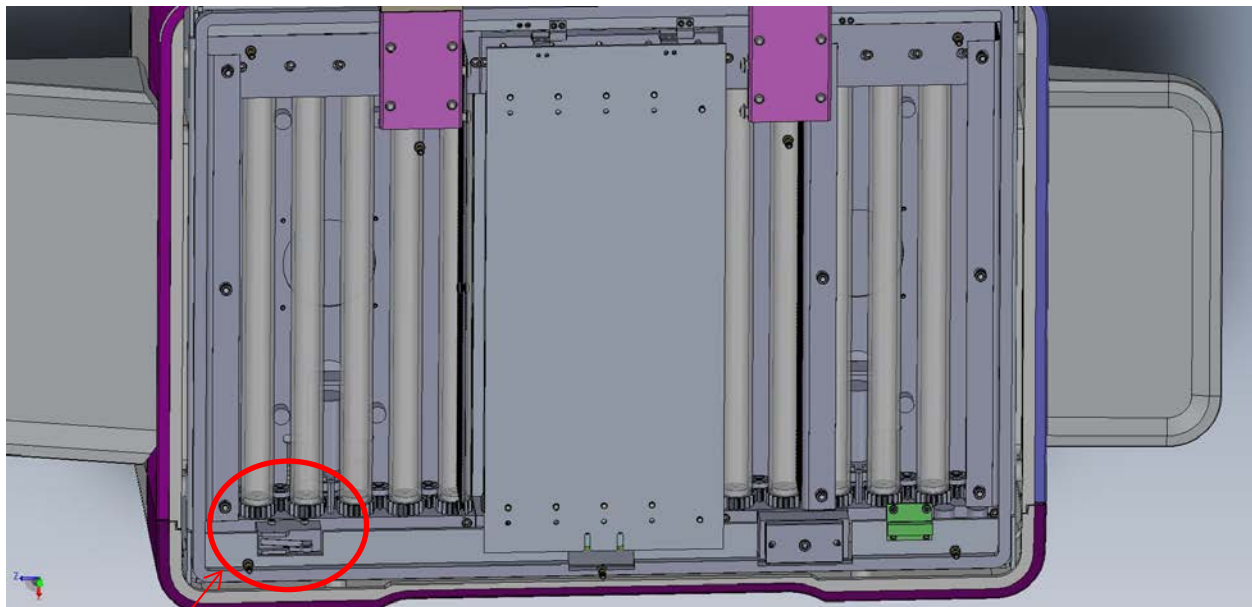


FIGURE 6.MECHANICAL SAFETY SWITCH

Mechanical Safety  
Switch

f) If the hand-held device can be seen in the input or output sections, remove it from the conveyor

g) If the hand-held device is inside the UV section as shown in figure 7, open the UV lid as shown.

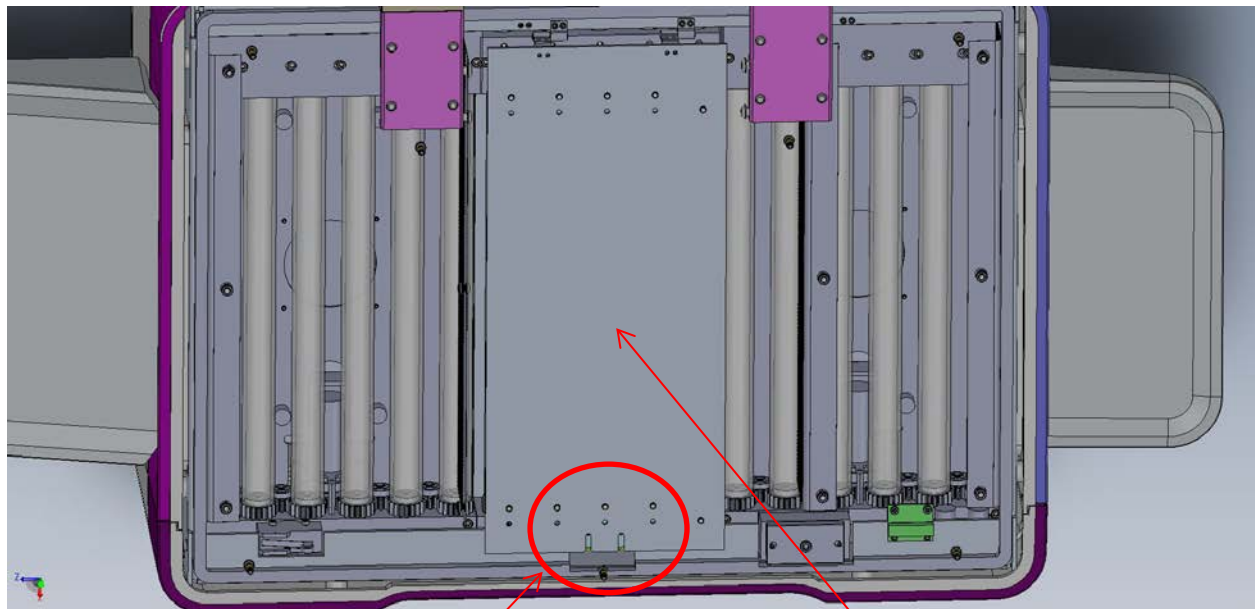


FIGURE 7.UV MODULE DETAILS

UV Lid

UV section



WARNING: SOME INTERNAL SURFACES OF ALUVIS CAN BE HOT. CARE MUST BE TAKEN WHEN OPENING THE TOP LID.



WARNING: DO NOT TOUCH ANY WIRE OR ELECTRICAL CONNECTIONS.



WARNING: DO NOT TOUCH THE UV-C LAMPS. (FIGURE 7)



WARNING: DO NOT TOUCH THE UV ROLLERS. (FIGURE 7)



WARNING: DO NOT ACTIVATE THE SAFETY MECHANICAL SWITCH WHEN THE TOP LID IS OPEN. (FIGURE 6)



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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- h) Remove the device from the UV section.
- i) Close the UV lid until the mechanical latch locks the UV lid.
- j) Close the top lid turn the system on with the ON/OFF switch.
- k) The status indicator will switch from red to blue before turning to green.



WARNING: ONLY AUTHORIZED PERSONNEL MAY DISASSEMBLE INTERNAL PARTS OF ALUVIS



## ALARMS DESCRIPTION

### HIGH TEMPERATURE ALARM

|            |   |
|------------|---|
| Cause      | Internal temperature exceeds 150°F  |
| Action     | Lamps will not operate<br>RED light will stay on<br>Constant audible alarm will sound while conveyer is running |
| Resolution | Turn system off for 2 minutes and retry   |

### STALLED MOTORS

|            |  |
|------------|--|
| Cause      | Motors are stalled   |
| Action     | Power to all 3 motors will be halted<br>RED light will appear with long blinks |
| Resolution | Turn the system off and restart the ALUVIS                                     |

### LAMP FAILURE

|            |   |
|------------|---|
| Cause      | System detects that at least one of the UV-C lamps is not operational   |
| Action     | Lamps will not operate<br>RED light will stay on<br>Constant audible alarm will sound while conveyer is running |
| Resolution | Contact Technical Support (Refer to Questions and Information)  |

### TOP LID OPEN

|            |   |
|------------|---|
| Cause      | Magnetic sensor is not detecting that the top lid is closed   |
| Action     | Lamps will not operate<br>RED light will stay on<br>Constant audible alarm will sound while conveyer is running |
| Resolution | Close the top lid   |



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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### NUMBER OF CYCLES (75%)

---

|            |   |
|------------|---|
| Cause      | Number of runs exceeds 75% (27000 cycles) of maximum number of cycles (36000) |
| Action     | Red light will blink 3 times every time the UV lamps turn on                  |
| Resolution | Contact Technical Support (Refer to Questions and Information)                |

### NUMBER OF CYCLES (80%)

---

|            |  |
|------------|--|
| Cause      | Number of runs exceeds 80% (28800) of maximum number of cycles (36000) |
| Action     | Red light will appear for 5 seconds every time the UV lamps turn on    |
| Resolution | Contact Technical Support (Refer to Questions and Information)         |

### NUMBER OF CYCLES (100%)

---

|            |   |
|------------|---|
| Cause      | Number of runs exceeds 100% (36000) of maximum number of cycles (36000)         |
| Action     | Red light will appear and a constant audible signal will sound during operation |
| Resolution | Contact Technical Support (Refer to Questions and Information)                  |

### EXTERNAL FUSE

---

|            |  |
|------------|--|
| Cause      | Peripherals fuse is open   |
| Action     | Lamps will not operate<br>Status indicator will not operate<br>Constant audible alarm will sound |
| Resolution | Contact Technical Support (Refer to Questions and Information)                                   |

IF THE ALARM CONDITION PERSISTS AFTER TRYING THE ATTEMPTED SOLUTION, PLEASE REFER TO QUESTIONS AND INFORMATION SECTION FOR FURTHER ASSISTANCE.





## DISPOSAL OF UV LAMPS

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UV lamps contain mercury therefore must be properly disposed of as a hazardous waste in accordance with local, state and federal regulations or the lamps should be recycled.

Contact a local recycling company or Angelini Pharma Inc for further assistance with recycling programs.



**WARNING:** In case of a lamps breakage avoid direct skin contact with the elements of the broken lamps. Contact your Environmental Services Department or Angelini Pharma Inc for specific instructions.



## CARE AND CLEANING

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### EXTERNAL CLEANING

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NOTE: AVOID LIQUID SPILLS ON THE SURFACES OF ALUVIS. SHOULD ANY SPILL OCCUR, PROCEED AS FOLLOWS:

- TURN THE SYSTEM OFF IMMEDIATELY.
  - DRY THE LIQUID SPILLS.
  - CONTACT THE TECHNICAL DEPARTMENT BEFORE TURING THE SYSTEM ON AGAIN.
- a) Using a 1:50 Bleach Wipe, (Alcavis 1:50 Bleach Wipes) periodically clean all exterior surfaces of ALUVIS.

NOTE: IT IS RECOMMENDED THAT ALUVIS EXTERIOR SURFACES ARE KEPT CLEAN AT ALL TIMES

### INTERNAL CLEANING

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NOTE: THIS PROCEDURE CAN ONLY BE PERFORMED BY PERSONNEL THAT HAVE BEEN TRAINED IN THE PROPER MAINTENANCE OF ALUVIS.

NOTE: IT IS RECOMMENDED THAT THIS PROCEDURE BE PERFORMED ONCE EVERY 3 MONTHS.

- a) Turn ALUVIS off.
- b) Open the top lid.
- c) Open the UV lid.
- d) Remove any objects from the base of the conveyor.
- e) Using compressed air, blow any debris that can be found inside the conveyor.
- f) Press and keep pressed the mechanical safety switch.
- g) Activate the ultrasonic sensor by placing an object in front of it.



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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WARNING: IF THE UV LIGHTS TURN ON, RELEASE THE MECHANICAL SAFETY SWITCH IMMEDIATELY. CONTACT THE TECHNICAL DEPARTMENT FOR ASSISTANCE. REFER TO QUESTIONS AND INFORMATION FOR FURTHER DETAILS.

- h) Using a 1:50 Bleach Wipe, thoroughly clean ALL the rollers.
- i) Depress the mechanical safety switch.
- j) The surfaces under the UV rollers and on top of the top UV lamps should be kept very clean and free of stains. If needed, clean those surfaces with a dry cloth until all stains are removed.
- k) Close the UV lid.
- l) Close the top lid.



## MAINTENANCE

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### PREVENTIVE MAINTENANCE

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ALUVIS will monitor the number of cycles that are run in order to inform the operators when the preventive maintenance is approaching or recommended.

ALUVIS will inform the operators when the 75%, 80%, and 100% of the maximum recommended number of cycles has been achieved. Refer to ALARMS DESCRIPTION for further information.

**ALL LAMPS (top and bottom) should be replaced annually or once the 100% usage is achieved, depending on the event that takes precedence.**

Replace LAMPS ONLY with ALUVIS approved replacement lamps. The use of a different type of lamp may cause different issues that range from under performance of the system to severe system malfunction.

The use of unapproved spare parts will void the warranty of ALUVIS.



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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### TOP LAMPS REPLACEMENT

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WARNING: DISCONNECT THE POWER SUPPLY BEFORE SERVICING TO AVOID THE POSSIBILITY OF ELECTRIC SHOCK.



PRECAUTION: ALL ASSEMBLY, ADJUSTMENT, MODIFICATION, MAINTENANCE AND/OR REPAIR SHOULD BE CARRIED OUT BY QUALIFIED PERSONNEL AUTHORIZED BY ANGELINI PHARMA INC.



WARNING: SOME INTERNAL SURFACES OF ALUVIS CAN BE HOT. CARE MUST BE TAKEN WHEN OPENING THE TOP LID.

- a) Disconnect ALUVIS from the power outlet.
- b) Open the top lid.
- c) Open the UV lid.
- d) Disconnect the 5 top lamps electrical connections by gently pulling from the connector while holding the lamp in place.
- e) Remove the lamps from its holders.
- f) Replace the old lamps with the new ones.
- g) Reconnect the lamps to the electrical connections.



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BOTTOM LAMPS REPLACEMENT

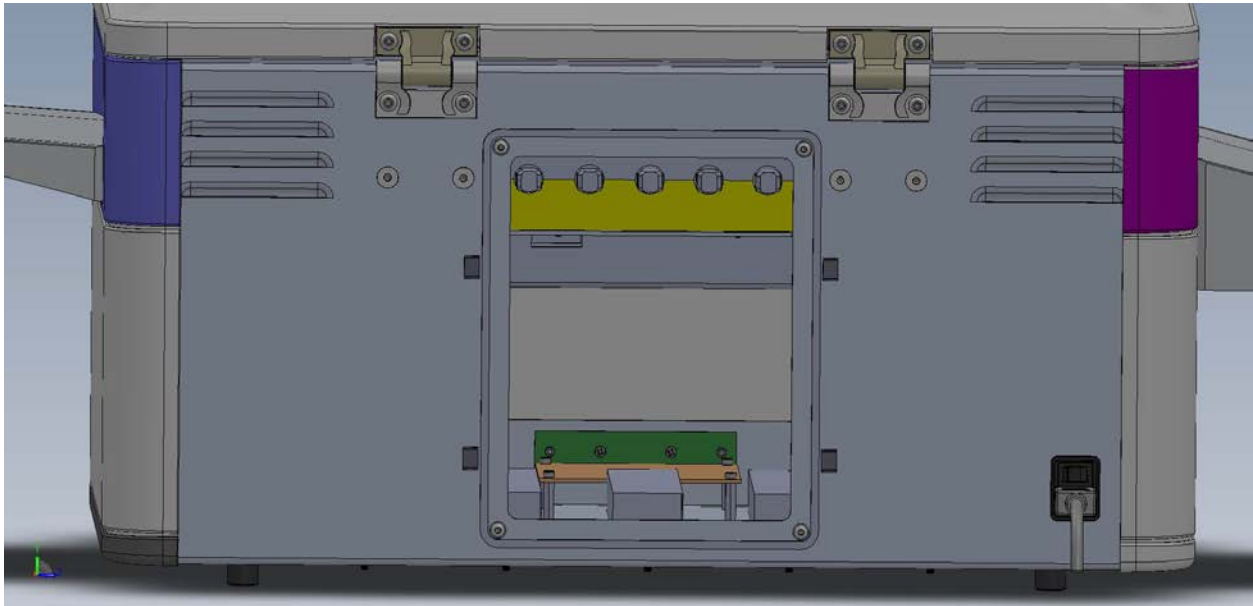
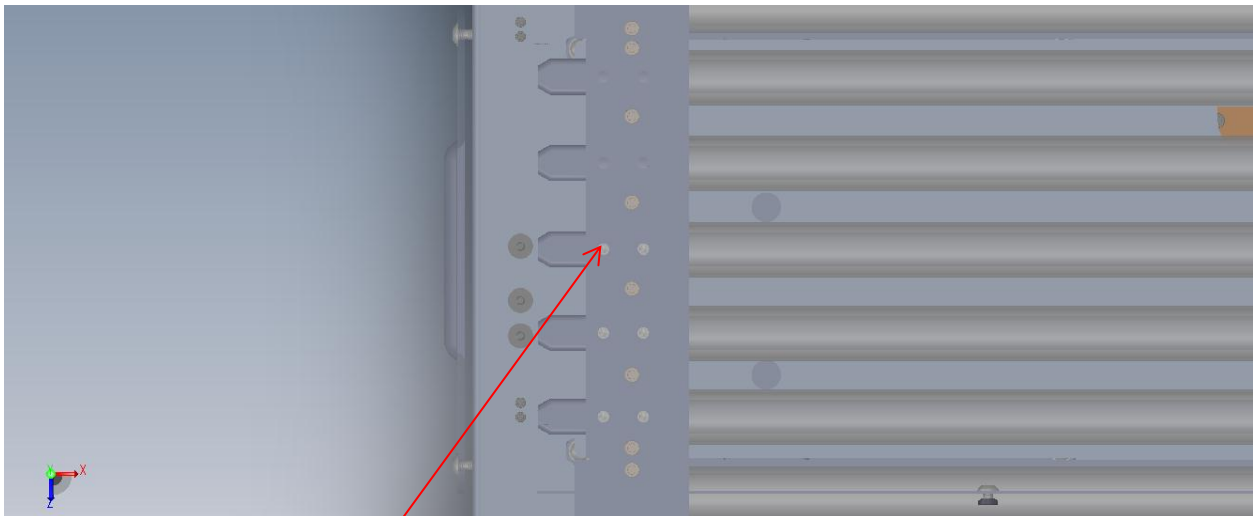


FIGURE 8.BACK PANEL ACCESS



UV lamp screw

FIGURE 9.BOTTOM LAMPS REPLACEMENT



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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WARNING: DISCONNECT THE POWER SUPPLY BEFORE SERVICING TO AVOID THE POSSIBILITY OF ELECTRIC SHOCK.



PRECAUTION: ALL ASSEMBLY, ADJUSTMENT, MODIFICATION, MAINTENANCE AND/OR REPAIR SHOULD BE CARRIED OUT BY QUALIFIED PERSONNEL AUTHORIZED BY Angelini Pharma Inc.



WARNING: SOME INTERNAL SURFACES OF ALUVIS CAN BE HOT. CARE MUST BE TAKEN WHEN OPENING THE TOP LID.

- a) Disconnect ALUVIS from the power outlet
- b) Remove the back panel access as shown in figure 8.
- c) Gently disconnect the electrical connections of the bottom lamps.
- d) Using an Allen wrench size 1/16, release the bottom UV lamps screws shown in figure 9.
- e) Carefully remove the old lamps from the interior of the rollers.
- f) Carefully place the new lamps in the rollers.
- g) Once in position, adjust the UV lamps screws to secure the lamps. **DO NOT OVERTIGHT THE ALLEN SCREW.**
- h) Reconnect the electrical connections.
- i) Close the UV Lid.
- j) Close the Top Lid.

NOTE: CONTACT ANGELINI PHARMA INC FOR ENTIRE UV MODULE REPLACEMENT OPTIONS



## SYSTEM COMPONENTS

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### INPUT TRAY

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The Input Tray is intended to allow the users to safely place the hand-held device into a tray while being sanitized by ALUVIS before it enters the Input Opening.

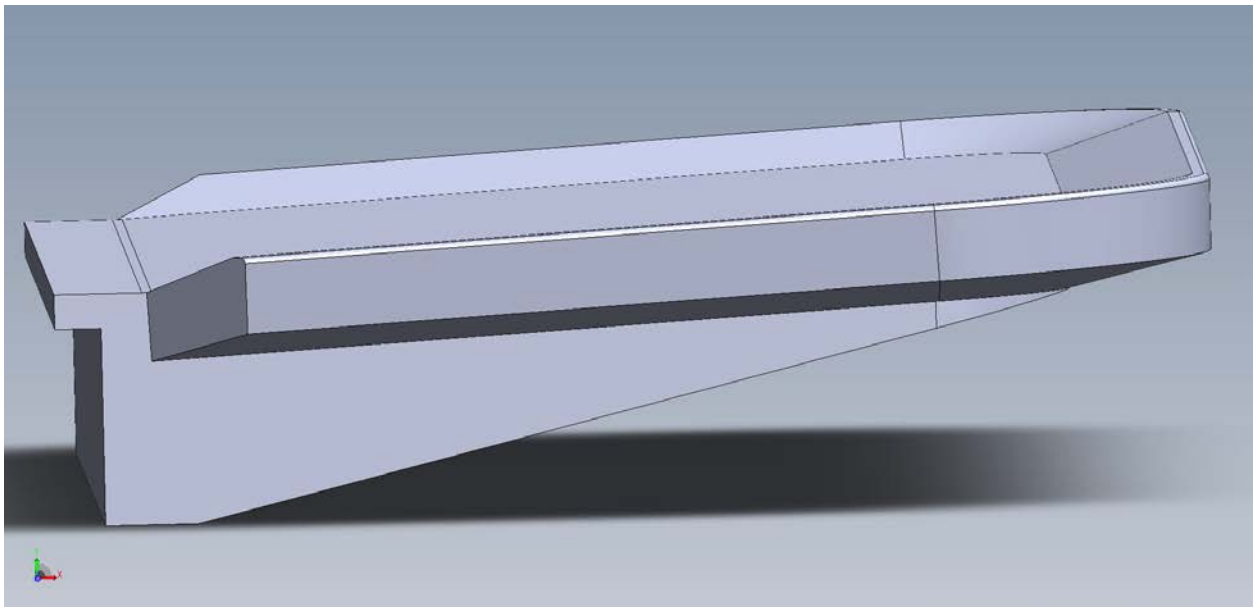


FIGURE 10.INPUT TRAY





### OUTPUT TRAY

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Upon completion of the sanitizing process ALUVIS will convey the device through the Output Opening. The output tray will prevent the device from falling onto the floor.

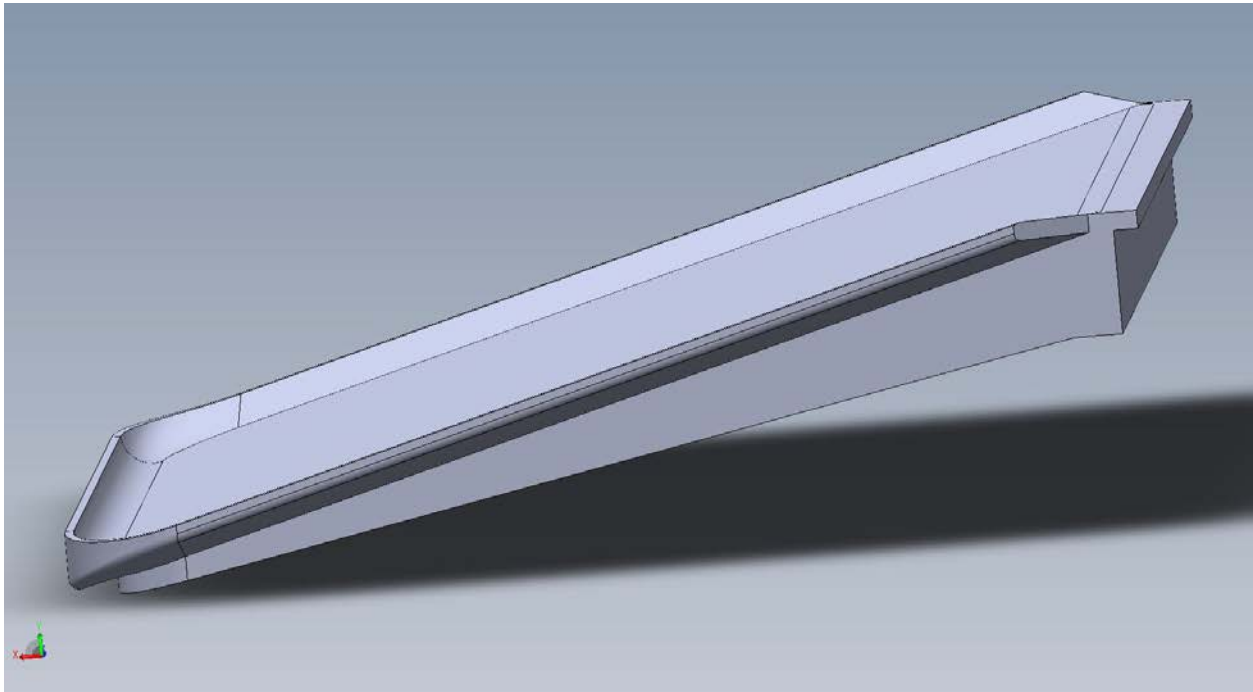


FIGURE 11.OUTPUT TRAY

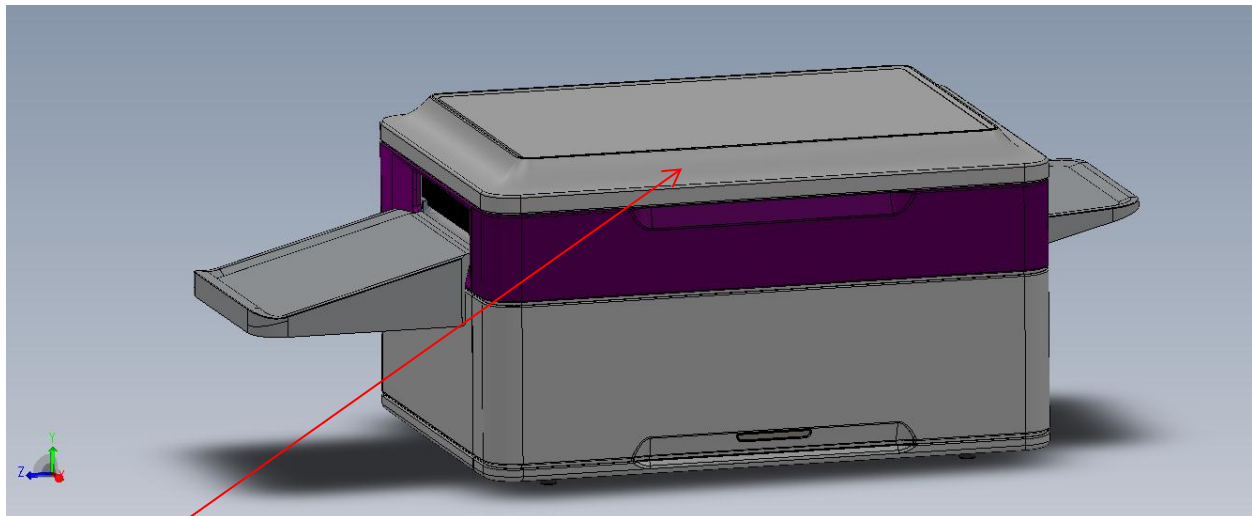


### TOP LID

The top lid prevents the operator from being directly exposed to UV light. It has a 3-level safety mechanism that prevents the top lid from being opened while the system is turned on. Refer to Mechanical Switch, Magnetic Switch and Magnetic Latch for further details.

Once the system is turned off it can be opened by pulling up the edge as shown in (figure 5).

Do not place any objects on the top lid.



Top Lid

FIGURE 12.TOP LID



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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### BACK PANEL

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The back panel, as shown in (figure 13), contains the ON/OFF switch and the temperature vents.

Do not obstruct the vents.

Placement of the ALUVIS on a cart or stand should allow for at least 3 inches separation between the back panel and the wall behind it.

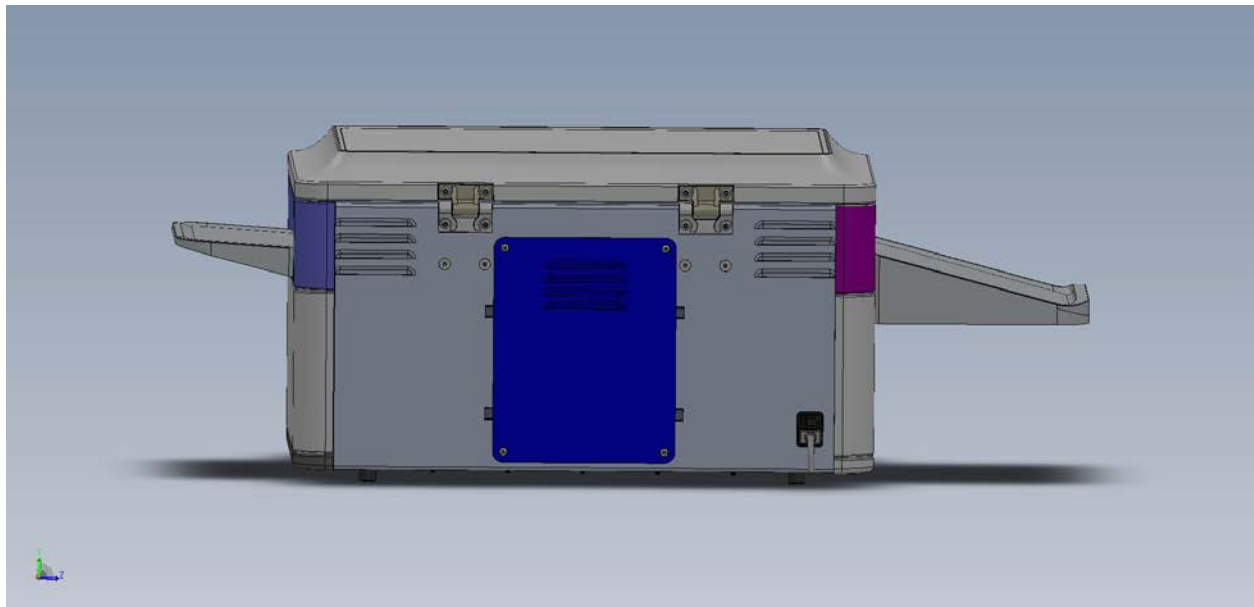


FIGURE 13.BACK PANEL VIEW

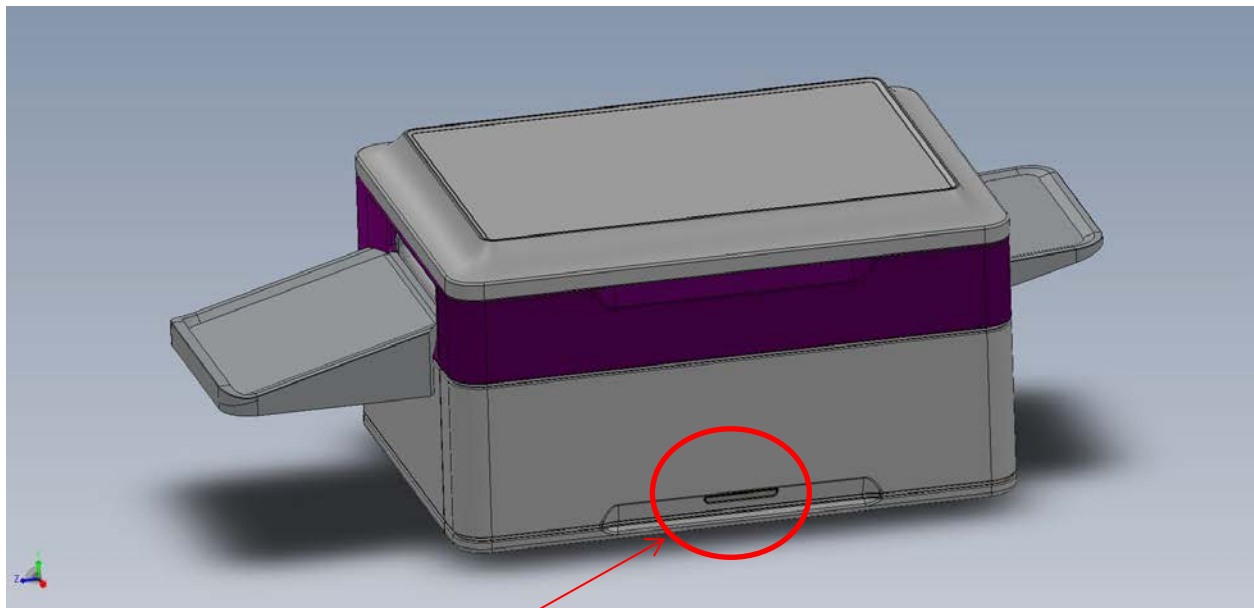


## STATUS INDICATOR

ALUVIS will indicate the status of the system operations by means of a Tricolor LED. This Tricolor LED is called the Status Indicator. It functions as follows:

- Green: Ready to operate
- Purple: System running
- Red: Alarm status

Note: The red status light might be on or blink depending on the alarm. Refer to Alarms section for further details.



Status Indicator

FIGURE 14.STATUS INDICATOR



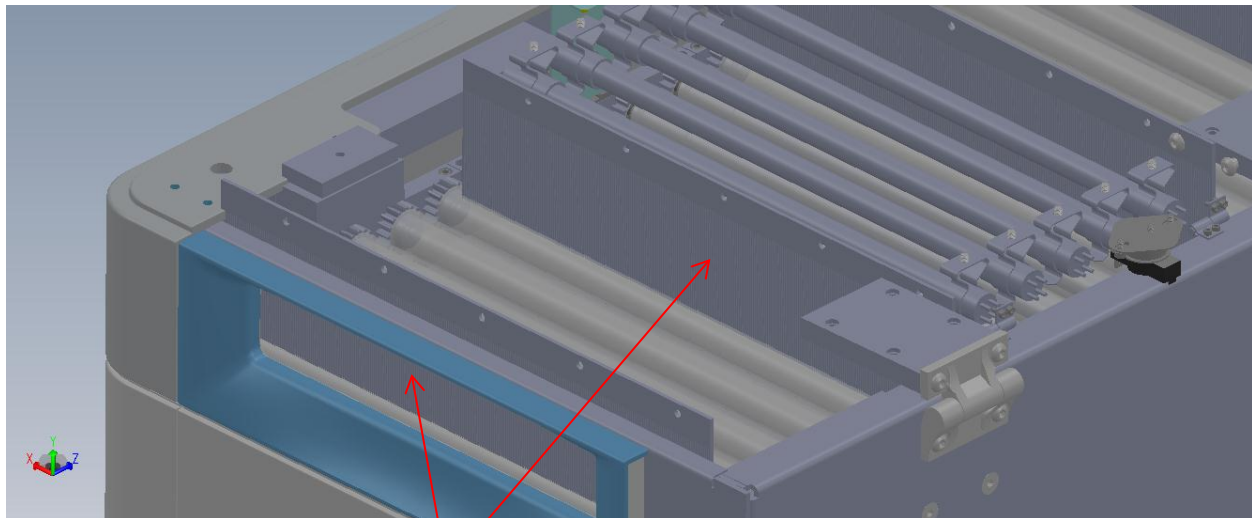
### UV BLOCKING CURTAINS

ALUVIS has 2 double curtain systems to minimize the possibilities of UV light escaping the system. The first set is located at the proximities of the Input and Output openings and the second set immediately after and before the UV lamps.

This configuration is designed for when a device enters the UV section, the Input curtain is already closed. The curtain design will cover the device so that only a minimum UV light can escape when a device is moving through the curtains and when there is no device.



**WARNING: NEVER LOOK THROUGH THE INPUT OR OUTPUT OPENINGS WHEN ALUVIS IS TURNED ON**



UV Blocking curtains

Figure 15.UV Blocking Curtains



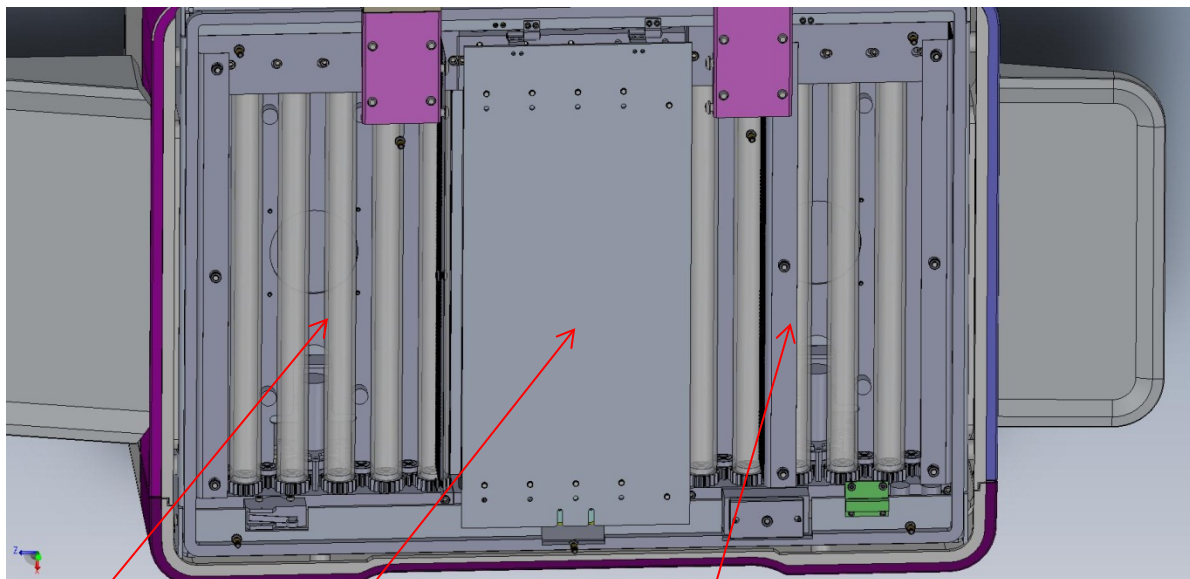
### INPUT - UV - OUTPUT MODULES

The ALUVIS conveyor is divided into three (3) independently driven sections or modules, a) Input, b) UV and c) Output.

The Input module receives the device being sanitized and conveys it to the UV Module. There are 6 rollers in this module and they are made of acrylic.

The UV module is where the actual sanitizing process takes place. It has 5 quartz rollers with a UV-C lamp inside each of them. Since quartz allows UV-C to pass through it the bottom surface of the conveyed device will have full exposure without any shadows. Also in this module, there are 5 lamps on top to allow the top surfaces to be exposed to UV-C as well. The bottom and top surfaces are made of aluminum with a mirror finish to allow UV-C to be reflected thus increasing the system's efficacy.

Once the conveyed device exits the UV module, it will be processed to the Output module that will in place move it to the Output Opening. The Output module is identical to the Input module in construction.



Output Module

UV Module

Input Module

FIGURE 16. MODULAR CONVEYOR



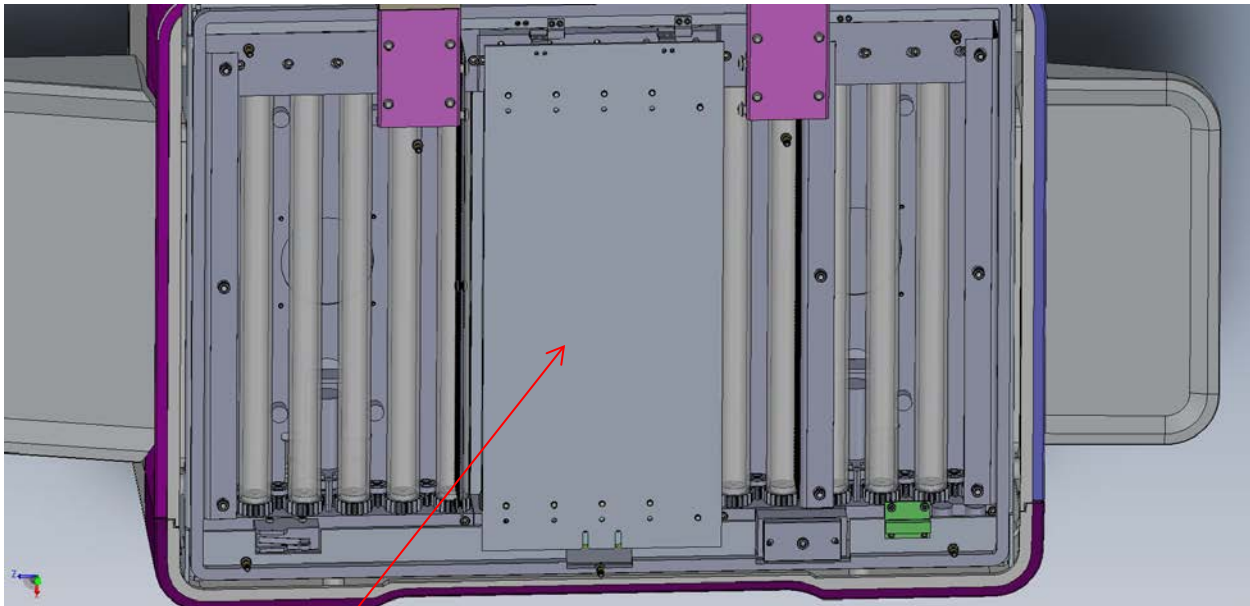
### TOP UV LID

The Top UV-C lamps are mounted on a hinged panel that can be opened to replace the top lamps or to remove a device that has been stopped in the UV module.

The lid will be held in position by a mechanical latch. When closing the lid, apply some pressure on the lid until the latch engages. A sound will be heard when the latch is holding the lid in place.



**WARNING: THE TOP UV LID MAY BE HOT. USE CARE WHEN OPENING THE LID.**



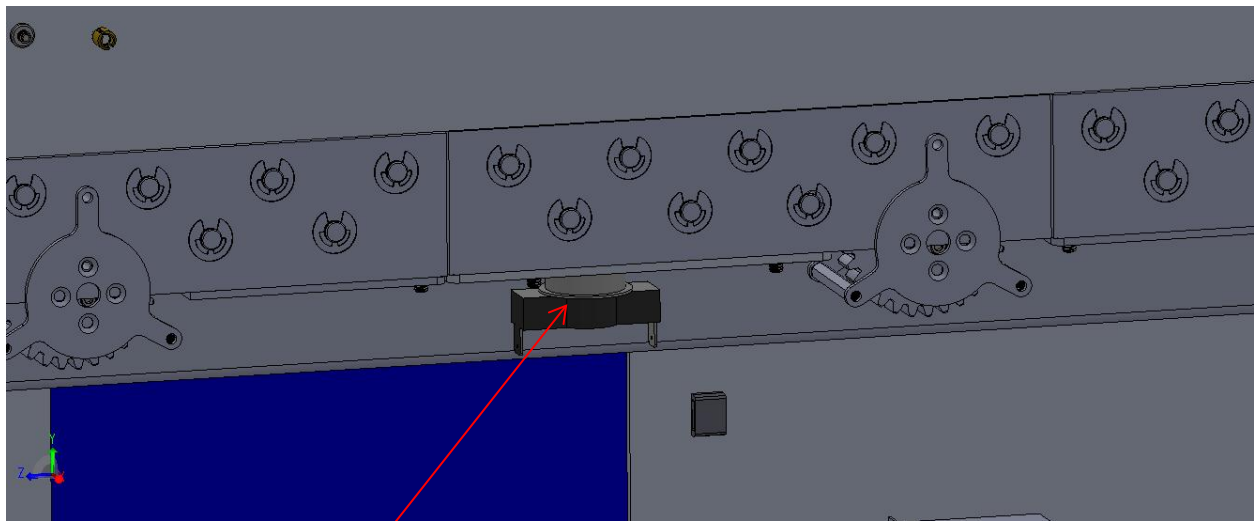
Top UV Lid

FIGURE 17.TOP UV LID



### High TEMPERATURE SWITCH

The UV Module contains a temperature switch (Figure 18) that will interrupt the power being applied to the UV-C lamps in case the temperature exceeds 150°F. Refer to the Alarms sections for further details.



Temperature Switch

FIGURE 18. TEMPERATURE SWITCH



### ULTRASONIC SENSOR

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ALUVIS uses an ultrasonic sensor (Figure 19) to detect that a device is present at the Input opening and ready to be sanitized. This sensor will inform the control board that the UV-C lamps and the conveyor needs to be turned on.

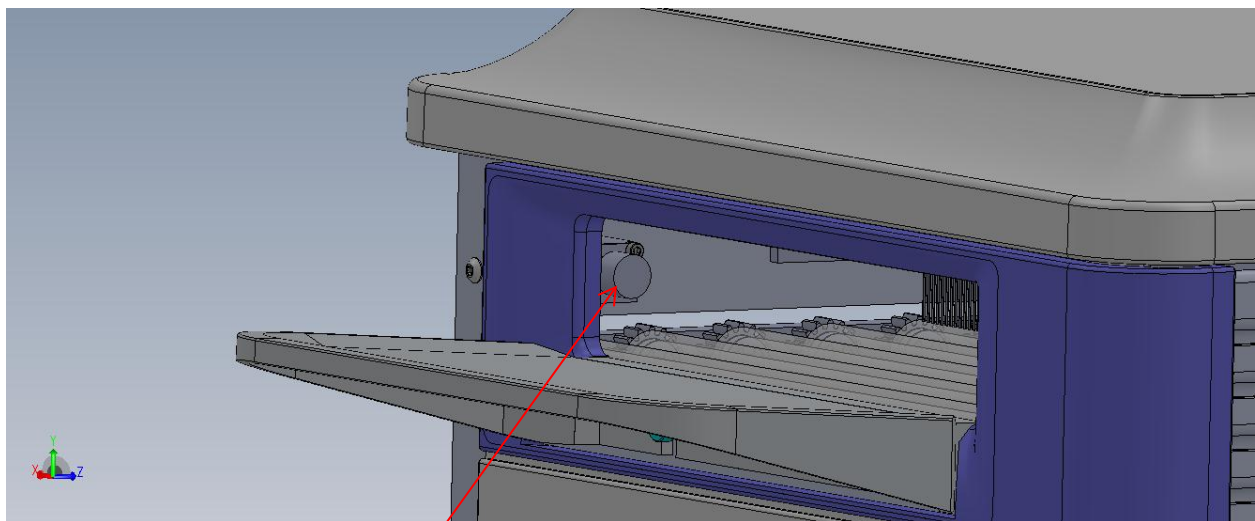


FIGURE 19.ULTRASONIC SENSOR

Ultrasonic Sensor  
(Blocking curtains not shown)



### MECHANICAL SAFETY SWITCH

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The top lid has a mechanical switch as part of the 3-level safety mechanism. This switch will interrupt the power to the control board as soon as the top lid is opened. When this switch is depressed, ALUVIS will be turned off automatically. This safety mechanism will prevent the user from being exposed to UV-C light.



WARNING: DO NOT TAMPER WITH THE MECHANICAL SAFETY SWITCH

### MAGNETIC SAFETY SWITCH

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The top lid has a magnetic switch as part of the 3-level safety mechanism. This switch will interrupt the DC power to the UV relays on the control board as soon as the top lid is opened. This safety mechanism will prevent the user from being exposed to UV-C light. The UV lights cannot operate if the magnetic switch does not detect that the Top Lid is closed.



WARNING: DO NOT TAMPER THE MAGNETIC SAFETY SWITCH

### MAGNETIC SAFETY LATCH

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The Top Lid will be latched in the closed position by a magnetic latch. This latch has 80lbs force to keep the top lid closed. To open the top lid, ALUVIS has to be turned off in order to demagnetize the latch.



WARNING: DO NOT ATTEMPT TO OPEN THE TOP LID WHEN THE ALUVIS IS OPERATING



WARNING: DO NOT TAMPER THE MAGNETIC SAFETY LATCH

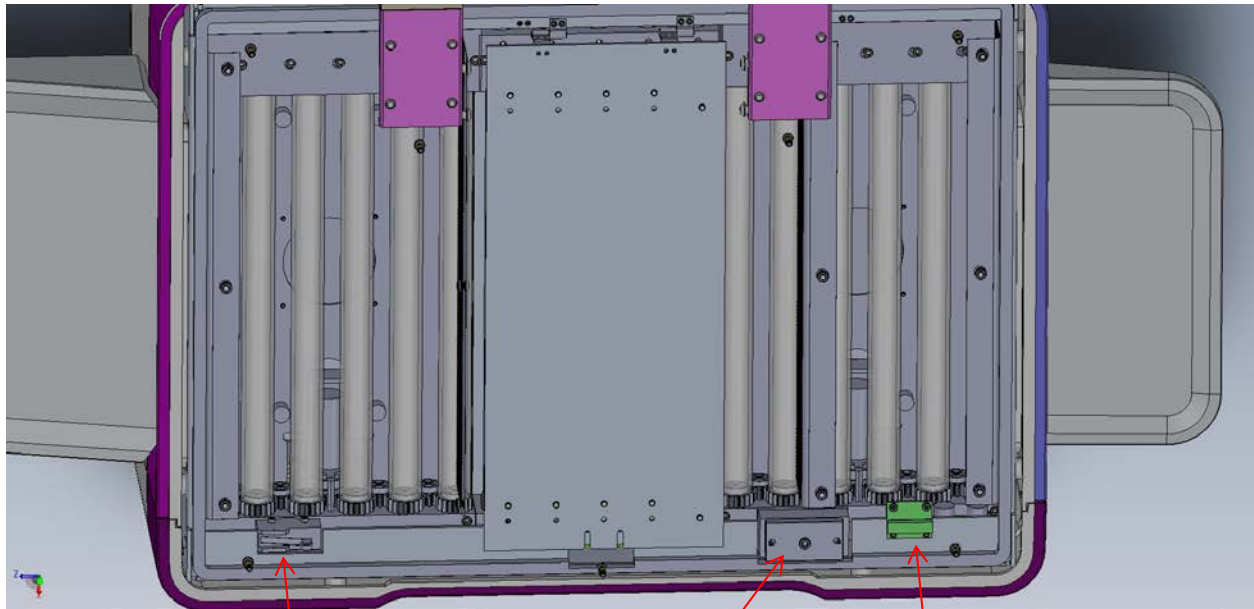


FIGURE 20.SAFETY MECHANISMS

Mechanical Safety Switch

Magnetic Safety Latch

Magnetic Safety Switch



## BALLASTS

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The UV-C Lamps are controlled by 5 electronic ballasts. The ballasts also monitor the efficacy of the lamps and will inform the control board when the lamps are not functioning correctly.



PRECAUTION: ONLY USE BALLASTS APPROVED BY ALCAVIS HDC

## CONTROLLER BOARD

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ALUVIS main operations are controlled by a microprocessor based control board.

The following functions are controlled with software:

- When a device has been placed at the Input opening.
- Controls the conveyor modules.
- Controls the UV-C lamps.
- Controls the status indicator.
- Controls the ballast feedback for proper lamp operation.
- Monitor the number of cycles run.

The following functions are controlled by hardware and are not dependent on software:

- Mechanical Switch
- Magnetic Switch
- Magnetic Latch
- High Temperature Switch

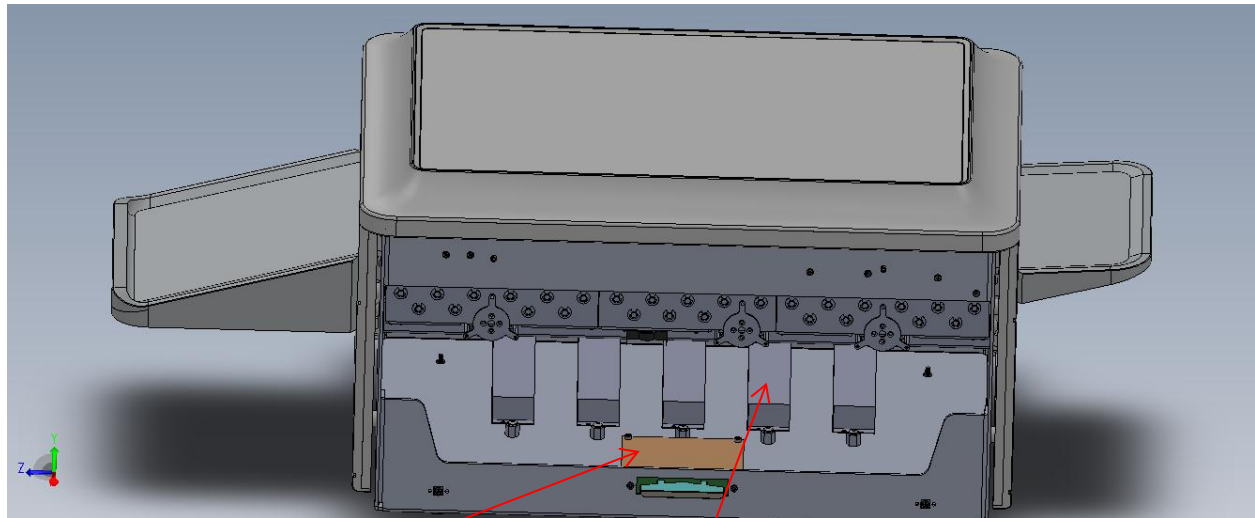


FIGURE 21.BLLASTS AND CONTROL BOARD

Control Board

Ballasts



## LIFTING AND CARRYING INSTRUCTIONS

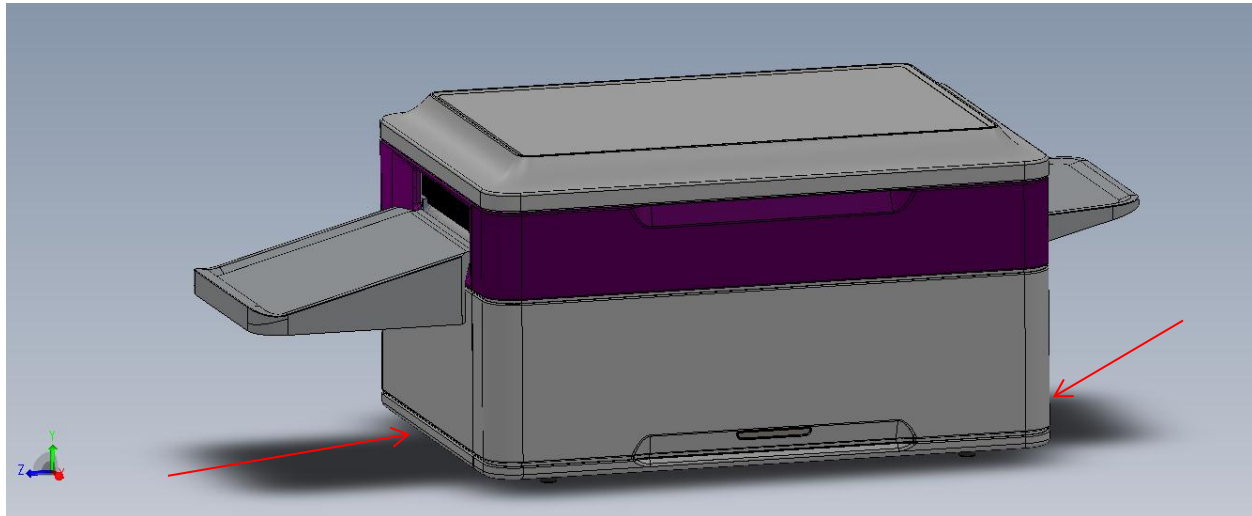


FIGURE 22.LIFTING AND CARRYING INDICATIONS

Always follow the following instructions when lifting or carrying ALUVIS:

- a) Remove the Input and Output trays from ALUVIS
- b) Place your hands under ALUVIS in the areas shown in figure 22
- c) Bent your legs before lifting ALUVIS
- d) Keep your back as straight as possible at all times
- e) Keep ALUVIS close to your body

NOTE: Consult the facility supervisor about specific instructions and limitations regarding lifting and carrying heavy objects that may apply.



## INSTALLATION INSTRUCTIONS

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READ THE WARNINGS AND PRECAUTIONS SECTION BEFORE INSTALLING THE ALUVIS



DO NOT CONNECT THE POWER CORD OF THE ALUVIS UNTIL IT IS INDICATED IN THE INSTALLATION INSTRUCTIONS

- a) Remove ALUVIS from its original package
- b) Place ALUVIS on a cart that has the following minimum dimensions:

**27” wide x 22” deep**

- c) Allow at least 3 inches of separation between the wall and the ALUVIS back Panel
- d) Open the top lid
- e)  PRECAUTION: Verify that there are no broken rollers or lamps inside the unit
- f)  PRECAUTION: If there are signs of broken lamps please refer to the DISPOSAL of UV LAMPS sections for further details
- g)  WARNING: The ALUVIS must be connected to a 3-prong electrical outlet to maintain grounding reliability
- h) If there are no signs of damage, close the top lid
- i) Refer to OPERATING INSTRUCTIONS for further details



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## QUESTIONS AND INFORMATION

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### FREQUENTLY ASKED QUESTIONS

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1) What is the efficacy of ALUVIS against the most common pathogenic organisms?

Angelini Pharma Inc has data on file that shows the ALUVIS can achieve the following efficacy:

- >99.9% reduction of Staphylococcus Aureus, Klebsciella pneumoniae, Acinetobacter baumannii, Methicillin Resistant Staphylococcus Aureus (MRSA), Vancomycin Resistant Enterococci (VRE), Geobacillus stearothermophilus (spores), and Clostridium Difficile (CDiff)<sup>1</sup>

2) What type of devices can be sanitized in ALUVIS?

ALUVIS has been validated for sanitizing mobile devices such as cell phones, tablets, and pagers. UV light may affect exposed materials differently so the use of ALUVIS in other types of devices is the sole responsibility of the operator.

Devices that are at least 3 inches long can be placed in the conveyor. Smaller devices have to be placed on specifically designed quartz trays.

3) Why does the process take 35 to 40 seconds?

In order to achieve the performance mentioned in question 1, the devices being sanitized must be exposed to UV-C light for a predetermined period of time. Reducing that time may results in lower performance values.

4) What technology does ALUVIS use?

ALUVIS uses UV-C light to sanitize devices. A patented method, the devices are conveyed through the UV-C sections so there is no shadow effect and the entire surface of the device is exposed to UV-C at all times.





5) How safe is ALUVIS?

ALUVIS has a double curtain mechanism that minimizes the possibility of UV light escaping. It is highly recommended that the operator does not look directly into the Input and Output openings of ALUVIS.

There is a triple safety mechanism that will prevent the operator from being directly exposed to UV-C light in the event that ALUVIS is operated with the top lid open.

6) Can ALUVIS be used by children?

It is highly recommended that children DO NOT USE ALUVIS.

7) What type of maintenance does ALUVIS require?

Depending on usage, internal UV-C lamps will have to be replaced annually or every 36,000 uses. Refer to the Preventive Maintenance section for further details.

8) How are the UV-C lamps disposed?

UV lamps contain mercury therefore must be properly disposed of as a hazardous waste in accordance with local, state and federal regulations or the lamps should be recycled.

Contact a local recycling company or Angelini Pharma Inc for further assistance with recycling programs.



**PRECAUTION:** In case a lamp breaks avoid direct skin contact with the elements of the broken lamp. Contact your Environmental Services Department or Angelini Pharma Inc for specific instructions.



## ALUVIS ULTRAVIOLET – MOBILE DEVICES SANITIZING SYSTEM

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### CONTACT INFORMATION

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1.) Data on File