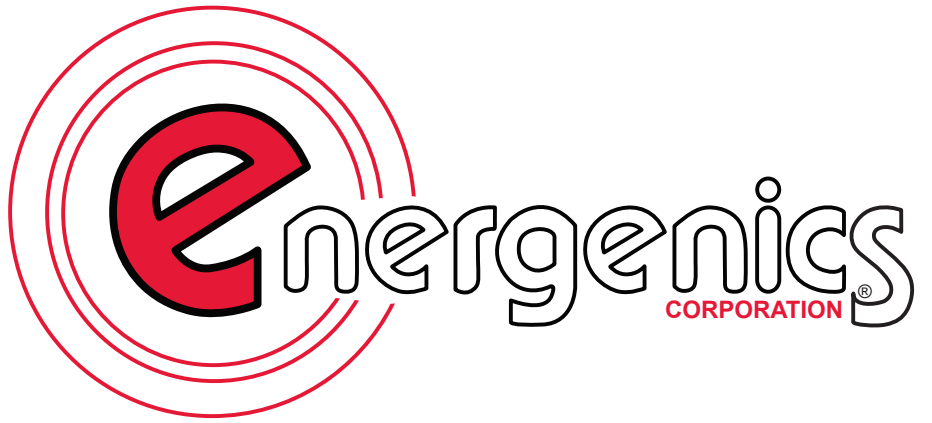
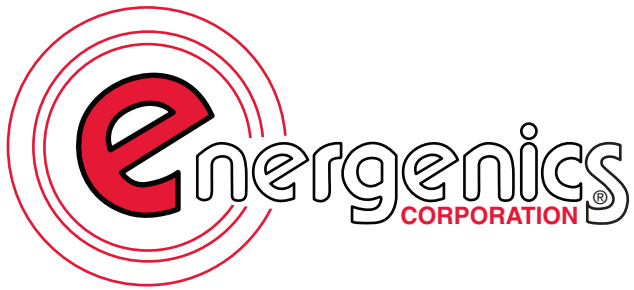


ULTRAVIOLET (UVC) KART DISINFECTION CHAMBER

Installation and Operation Manual



**ADVANCED DISINFECTION
TECHNOLOGY**



1470 Don Street
Naples, FL 34104
(800) 944.1711
www.energenics.com

PART 1:

**INSTALLATION & UTILITY CONNECTION REQUIREMENTS
UVC KART DISINFECTION CHAMBER**

PART 2:

**OPERATING AND PROGRAMMING INSTRUCTIONS
UVC KART DISINFECTION CHAMBER**

PART 1

1470 Don Street • Naples, Florida 34104

Customer Service: (800) 944-1711
Fax: (239) 643-6081

INSTALLATION & UTILITY CONNECTION REQUIREMENTS UVC KART DISINFECTION CHAMBER

TABLE OF CONTENTS

Unloading the Chamber	4
Chamber Installation	5
Chamber Overall Dimensions	6
Dimensions with Loading Ramps	7
Utility Requirements	8
Placement of Controls	9

UVC KART CHAMBER UNLOADING

Your Energenics UVC Kart Chamber (Chamber) is shipped fully assembled and ready for your predetermined floor placement.

Follow these directions:

DO NOT SIGN BILL OF LADING UNTIL INSPECTED

1. The on-pallet Chamber should be picked up with a forklift using long forks (60" minimum). If this type of forklift is not available, the Chamber should be carefully removed from the truck by other means. **Use caution not to damage/puncture Chamber floor.**
2. Unwrap the Chamber and **INSPECT FOR DAMAGE DURING SHIPPING.**
3. Unfasten the lag bolts securing the Chamber to the shipping pallet. Carefully remove the pallet and any other shipping materials.
4. Slowly lower the Chamber onto the floor.

UVC KART CHAMBER INSTALLATION

Floor Installation

1. Ensure the Chamber is facing desired direction before sliding into final position.
2. Floor MUST be level as not to inhibit opening and closing of chamber doors. (clearance is less than 1/4")
3. Ensure Chamber is level and door operation is unobstructed (both sides) prior to securing unit to floor.
4. Secure to the floor using same holes where lag bolts were utilized for shipping. Use appropriate fasteners per floor type.

Auto-Eject Model Installation

1. Ensure the Chamber is facing desired direction before sliding into final position.
2. Chamber MUST sit level on floor for proper ramp installation.
3. Mount entrance and exit ramps using factory drilled holes in door opening floor and factory supplied hardware. Ensure ramps are level for smooth entry/exit of carts.
4. Ensure unobstructed door operation (both sides) prior to securing Chamber to floor.
5. Secure to the floor using same holes where lag bolts were utilized for shipping. Use appropriate fasteners per floor type.

UVC KART CHAMBER OVERALL DIMENSIONS

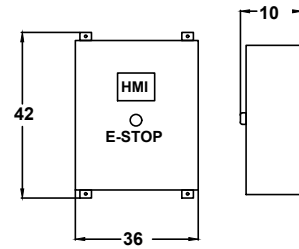
CLEAN-SIDE VIEW

(w/ Pass-Through Doors)

SOIL-SIDE VIEW

3

CONTROL PANEL

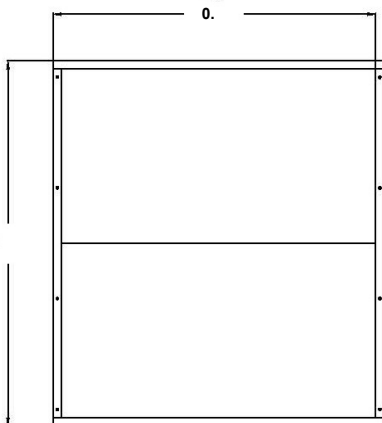


SATELLITE PANEL

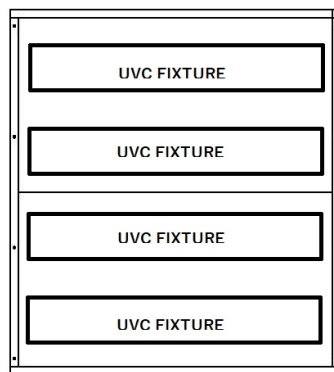
(36 H X 30 W X D)

4

4



EXTERIOR WALLVIEW



INTERIOR WALL VIEW

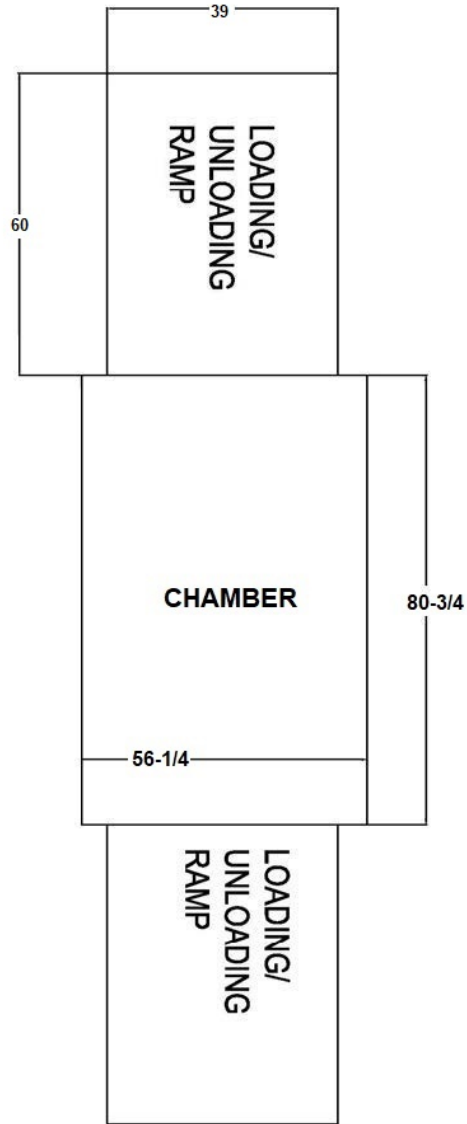
TOP VIEW

0.

4

11 .

DIMENSIONS WITH LOADING / UNLOADING RAMPS



***Configuration for Chamber with auto-eject option.**

UTILITY REQUIREMENTS

Failure to comply with utility requirements may result in:

- Damage to the machine
- Incurred travel expenses of factory technician(s)
- Voided warranty

Electrical

1. Dedicated **120/60/1 (20 AMP)** wiring (per panel) from building power source.

***Breaker size to be determined by local electrical codes and installers.**

Compressed Air

1. 1/2" - Air supply line providing:
 - a. Filtered and dried air
 - b. Pressure consistently between 80 psi and 100 psi

PLACEMENT OF CONTROLS

1. Electrical work should only be performed by qualified, licensed professionals.
2. Install Power Shutoff (supplied by others) and Control Panel on Entry side of the unit and within operator view of the disinfection chamber.
3. Connection between the Control Panel and the Chamber will be made through the entry side roof, right hand corner.

INSTALLATION IS NOW COMPLETE

**TO OPERATE AND TO SELECT OR
CHANGE CYCLE SETTINGS, PLEASE
REFER TO ENERGENICS' OPERATION
MANUAL, PART 2**

PART 2

1470 Don Street • Naples, Florida 34104

Customer Service: (800) 944-1711
Fax: (239) 643-6081

OPERATING AND PROGRAMMING INSTRUCTIONS IDEC DISPLAY UVC KART DISINFECTION CHAMBER

SAFETY, CYCLE START, & SEQUENCE OF OPERATION

Prior to Start-Up	2
Advisories	3
Safe Operation Procedure	4
Safety Guidelines	5
System Description	6
Operation Overview	7
Load Sequence	8
Start Sequence	9
Disinfect Sequence	10
Treatment Cycle Interruption	11
Cycle Completion	12
Reset Sequence	13

DIAGNOSTIC, INPUT / OUTPUT STATUS SCREENS

Sequence Programming Procedures	13-14
Door Sensor Diagnostic Indicators	15
Emergency Stop (E-Stop)	16
Alarm Log	17
Clearing Alarms	18
Maintenance	19
Warranty Terms and Conditions	20
Avoiding Incurred Service Costs	21
Trouble Shooting / FAQs	22

Safety Guidelines

Exposure to UV-C light is dangerous. The adverse health effects that may occur are erythema (sunburn) and photokeratitis (a feeling of sand in the eyes). These effects are considered transient. UV-C may also be carcinogenic but since it has very limited penetrating ability, it is unlikely to cause damage to anything beyond the outer layer of skin or other exposed surfaces. Unfortunately, there are no immediate warning symptoms to indicate overexposure to UV radiation and adverse effects typically appear hours after exposure has occurred.

The Energenics UV-CHAMBER is designed for zero user exposure to UV-C; however, we will review safety factors regarding UV-C for better knowledge and understanding.

Protective Clothing and Eye wear

It is not recommended that any personnel be subject to direct UV-C exposure. Personnel that may be exposed to harmful amounts and wavelengths of UV must take adequate steps to shield themselves and in some cases limit the duration of exposure.

If there is any potential for the eyes and face to be exposed to UV radiation, a polycarbonate face shield stamped with the ANSI Z87.1-1989 UV certification must be worn to protect the eyes and face. Ordinary prescription eyeglasses may not block UV radiation. UV certified goggles and safety glasses will protect the eyes, but workers may suffer facial burns in the areas not covered by the goggles or glasses.

OSHA Guidelines for Ultraviolet Exposure

There is no Occupational Safety and Health Administration (OSHA) standard regarding exposure to ultraviolet light, but the OSHA general duty clause states the employer must provide a workplace free of recognized hazards that may cause death or serious physical harm.

System Description

The Energenics UV-CHAMBER is designed for maximum disinfection through the shortest exposure time. More UV-C wattage output allows shorter exposure times to surfaces. Exposure time based on furthest distance from the UV-C source. The system design provides the optimum in:

- UV dose output to footprint served
- Rugged design build
- Ease of use controls
- User safety protection



Operation Overview

The UV-CHAMBER is designed to operate in the following manner:

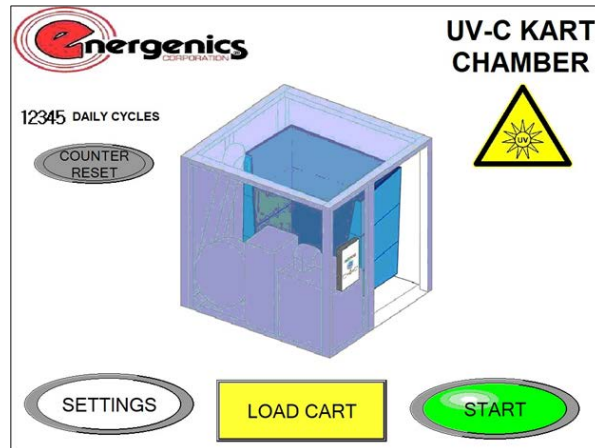
Operating Sequence

1. Locate unit in space positioned for operation
2. Plug system into power supply
3. Observe home "LOAD CART" screen
4. Initiate system cycle
5. Evacuate cart following cycle completion

Audio and Visual Indicators

1. Audio Alarm
 - a. Once Started: short warning beeps with countdown
2. Visual Indicator
 - a. Red Lights over UV-CHAMBER doors warn of treatment in process
3. Display of System
 - a. Operations
 - b. Controls
 - c. Indication of System Functions

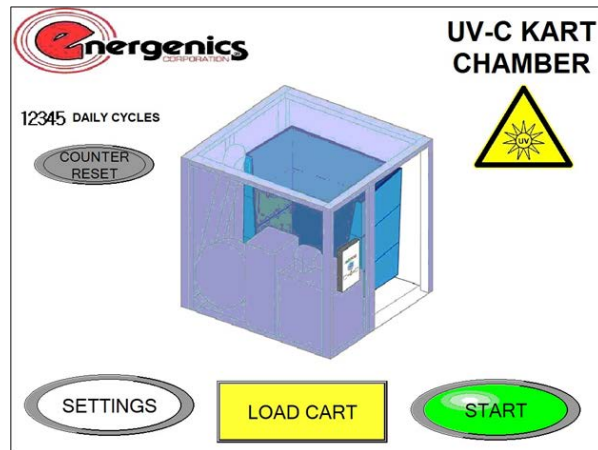
LOAD SEQUENCE



The UV-CHAMBER is prepared to operate. Operator should:

1. Ensure exit door ("Clean Door") is fully closed
2. Completely load the cart into the disinfection chamber
3. Ensure UV-CHAMBER is free of all forms personnel

START SEQUENCE

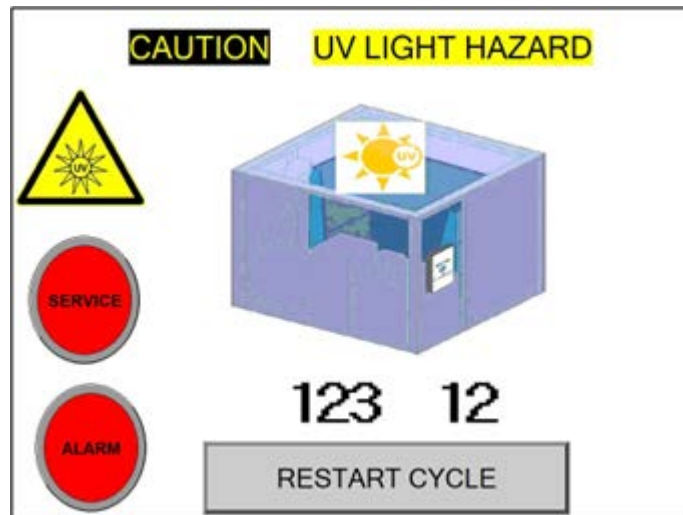


A cart has been loaded into the UV-CHAMBER and is ready for disinfection.

1. Press green "START" button to begin cycle
2. Observe countdown screen and audible beeps

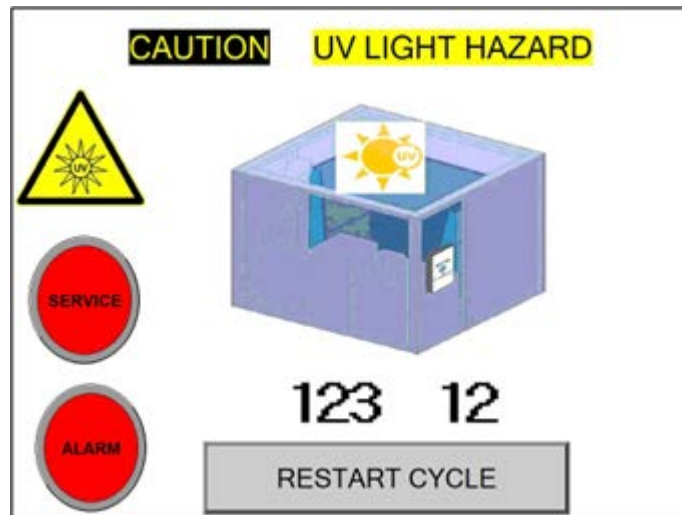
Note: Unit will not start with door(s) open.

DISINFECT SEQUENCE



1. The Disinfect Sequence has started and will process the inside and outside of the cart
2. Total time remaining for disinfection cycle is observed on this screen and measured in seconds

TREATMENT CYCLE INTERRUPTION



Note: If a cycle needs to be prematurely ended or started over:

1. Press "RESTART CYCLE." Lamps in the chamber will shut-off
2. HMI will revert to the Cycle Completion screen
3. Press the Red Button to go to the Home/Start screen
4. To resume the disinfection process, press the green "START" button from the home screen

SYSTEM RESTART AFTER DOOR INTERRUPTION

Door Cylinder Sensors - If any of the sensors positioned within the cylinders of the doors are triggered during a treatment cycle, the system will automatically deactivate, and the HMI will display the Cycle Completion screen. To return the system to normal mode, simply press the red button on the HMI screen.

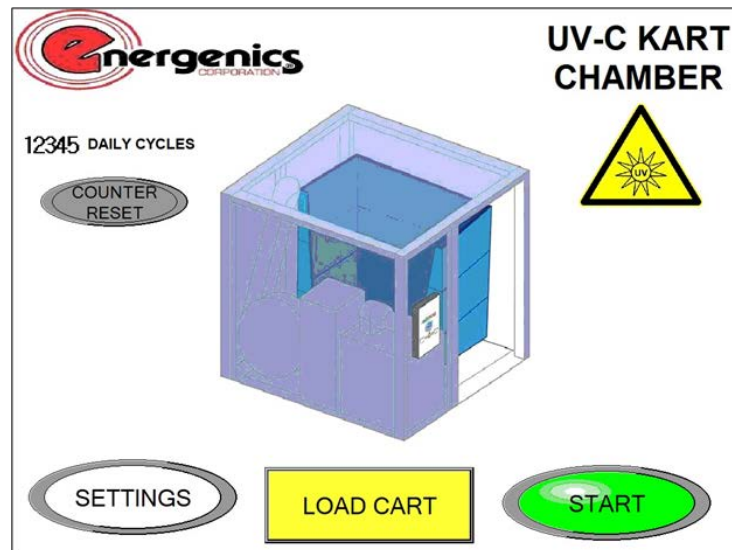
CYCLE COMPLETION



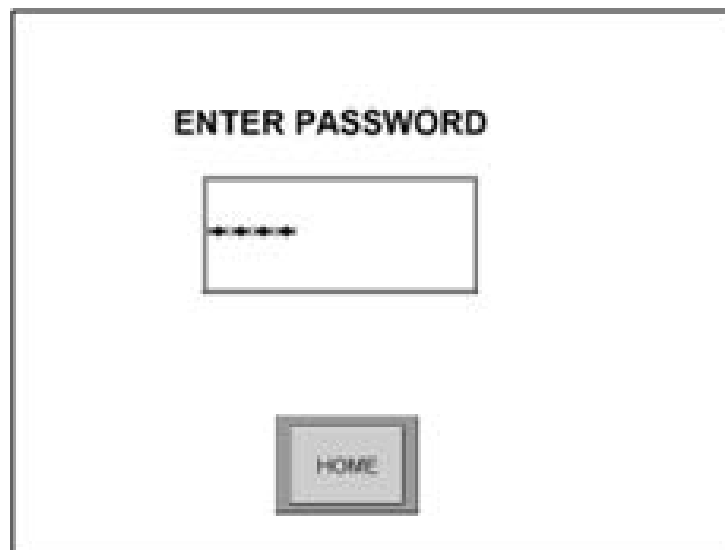
1. Treatment cycle has finished
2. Operator removes the cart
3. Operator must press "Close Door" button to reset system for next cycle
4. Home "Start" screen will appear on the touchscreen control

Note: Chambers with auto-eject option will have only "Clean Door" open at end-of-cycle. Cart automatically rolls out of chamber with auto-eject option at cycle completion and "Soil Door" remains closed. Once cart passes exterior photo-eye sensor, Clean Door will close and Soil Door will open for next cart. **Operator pushes the Red Button on screen to close the exit door and open entry door in preparation for new cycle.**

SEQUENCE PROGRAMMING PROCEDURE

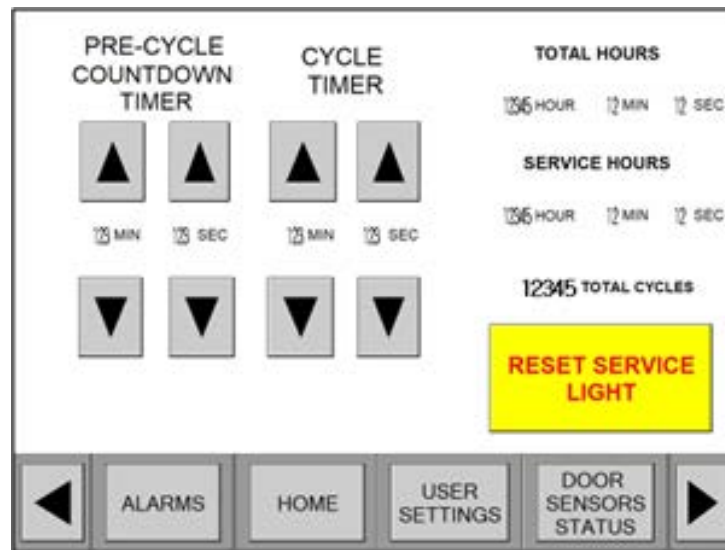


1. Press "Settings" on home screen



2. Enter password (1470) and press "ENT"

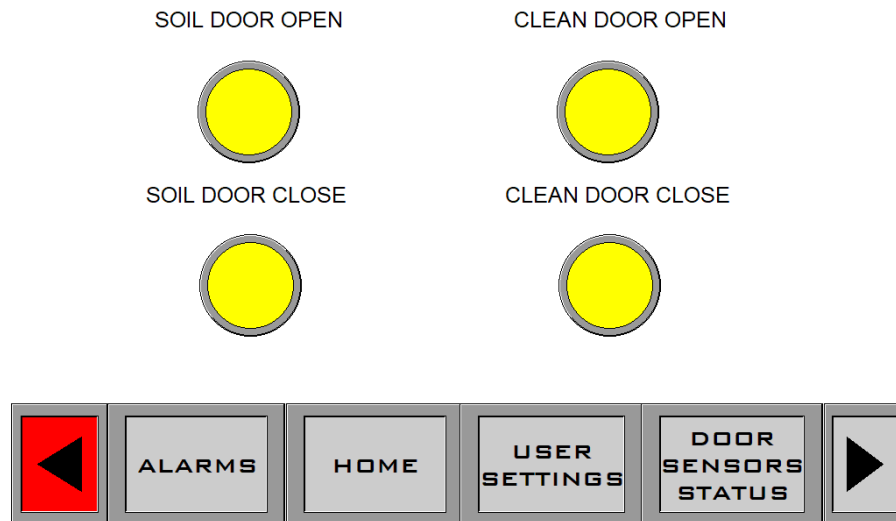
SEQUENCE PROGRAMMING PROCEDURE



1. Adjust system Pre-Cycle Countdown, Cycle (treatment) Time, and Post-Cycle Countdown by using the up/down arrows for the corresponding sequence
2. Observe UV-CHAMBER Total Hours and Total Cycle counts on this screen
3. Observe UV-CHAMBER Reset Service Light button on this screen
4. To exit this screen, press "Home" button

Note: The Energenics UV-CHAMBER KART DISINFECTION SYSTEM has been calibrated for optimal performance using the factory settings. Modification of sequence times is not recommended.

DOOR SENSORS DIAGNOSTIC INDICATORS



1. **Soil Door Open** - Illuminates during "Loading" stage, during Exit Stage, and when any E-Stop buttons are depressed
2. **Soil Door Closed** - Illuminates when Soil Door is closed
3. **Clean Door Open** - Illuminates when clean door is open during Exit Stage and when any E-Stop buttons are depressed
4. **Clean Door Closed** - Illuminates when clean door is closed

Note: If the Start Cycle fails to initiate, open the Door Sensor Diagnostic Indicators screen and observe whether or not the indicators are illuminated appropriately. Slight realignment of the sensors may be required to return the status indicators to the correct readout. Unit will not operate with door sensor(s) off-line.

E-STOP ENGAGEMENT



If any of the E-Stop buttons are engaged:

1. UV-C lamps shut-off immediately
2. Entry and Exit doors will open
3. Treatment cycle is terminated

To proceed:

1. Dis-engage all E-Stops buttons (you will not be able to proceed until this is done)
2. Press Home
3. Restart Treatment Cycle by pressing Start on Home screen

VIEWING ALARM LOG

ALARM LOG		
E-STOP	10/24	18:10:50
DOOR OPEN	10/24	18:10:50 18:10:50
RESTART WITH	10/24	18:10:50
SERVICE MACH	10/24	18:10:50 18:10:50
L1 FAULT	10/24	18:10:50
L2 FAULT	10/24	18:10:50 18:10:50
L3 FAULT	10/24	18:10:50
L4 FAULT	10/24	18:10:50 18:10:50
L5 FAULT	10/24	18:10:50
L6 FAULT	10/24	18:10:50 18:10:50
L7 FAULT	10/24	18:10:50
L8 FAULT	10/24	18:10:50 18:10:50
E-STOP	10/24	18:10:50
	10/24	18:10:50 18:10:50

Navigation buttons: ◀ ALARMS HOME USER SETTINGS FACTORY SETTINGS ▶

1. Press "Alarm" button or use left/right arrows to bring "Alarms" button into view from the Sequence Programming screen
2. Observe system faults on this screen

CLEARING ALARMS

ALARM LOG	
E-STOP	09/12 15:04:56
CYCLE STOPPED BY SENSOR	09/12 15:04:56 15:04:56
MC1 DOOR SENSOR ACTIVATED	09/12 15:04:56
SERVICE MACH	09/12 15:04:56 15:04:56
E-STOP	09/12 15:04:56
CYCLE STOPPED BY SENSOR	09/12 15:04:56 15:04:56
MC1 DOOR SENSOR ACTIVATED	09/12 15:04:56
SERVICE MACH	09/12 15:04:56 15:04:56
E-STOP	09/12 15:04:56
CYCLE STOPPED BY SENSOR	09/12 15:04:56 15:04:56
MC1 DOOR SENSOR ACTIVATED	09/12 15:04:56
SERVICE MACH	09/12 15:04:56 15:04:56
E-STOP	09/12 15:04:56
	09/12 15:04:56 15:04:56

Navigation buttons: ◀ ALARMS HOME USER SETTINGS FACTORY SETTINGS ▶

System deactivating faults listed below will require the following action(s) before a treatment cycle can resume:

Cylinder Sensor Alarm (Cycle Stopped by Sensor)

Press the Red Button on Cycle Completion (Clean Door Open) screen to return to the Home/Start screen

Door Sensor Alarm (MC1 Door Sensor Activated) (If Equipped)

Engage, then disengage the E-Stop button on the control panel. Press Home, then press the Red Button on the Cycle Completion screen to return to the Home/Start screen

Motion Sensor Alarm (Cycle Stopped by Sensor) (If Equipped)

Press Home on the alarm screen and then press the Red Button on the Cycle Completion screen to return to the Home/Start screen

Emergency Stop Alarm (E-Stop)

Disengage the engaged E-Stop. Press Home on the alarm screen and then press the Red Button on the Cycle Completion screen to return to the Home/Start screen

Service Machine (Service Mach)

In User Settings, press the Reset Service Light Button to reset the lamp service cycle

LIMITED WARRANTY & DISCLAIMER STANDARD CONDITIONS OF SALES

Energenics Corporation (herein called Energenics) warrants to the original purchaser, & to the original purchaser alone, its products to be free from defects in material and workmanship under normal use & service for a period of twenty-four (24) months from the date of shipment. Energenics' obligations under this warranty shall be limited solely to the repair or replacement of such parts, which Energenics examination shall disclose to Energenics satisfaction to have been thus defective & to the shipment of the repaired or replacement part or parts to the original purchaser F.O.B. point of shipment. In no event shall Energenics be liable for any consequential, incidental or special damages of any kind caused by the defect. The Warranty set forth shall not apply to & Energenics shall not be responsible for any equipment or part, which has been repaired or altered in any way, regardless of how or why the part was altered or repaired nor for any equipment or part, which has been subjected to the negligence or accident, improper use or care, nor for equipment or part with respect to which Energenics instructions relating to installation, maintenance, or use have not been followed. This limited warranty is expressly made in lieu of all other warranties, expressed or implied, and in lieu of all other obligations or liabilities on the part of Energenics.

The purchaser by acceptance of the delivery of any part or product from Energenics agrees to indemnify Energenics & to hold it harmless against any liability, which may arise if the part or product received is mis-applied, improperly installed, improperly maintained, misused or abused, altered or rendered partially or totally inoperative due to any cause.

RETURNS: Merchandise may not be returned unless a RMA is obtained from Energenics. A copy of the RMA must accompany the returned item as the packing Slip. Energenics will assume no responsibility for merchandise returned neither without such prior approval nor for any charges or expenses incurred therewith.

CANCELLATIONS: Any order may be canceled by the purchaser only upon written notice & upon payment to Energenics of reasonable & proper cancellation charges.

SALES & SIMILAR TAXES: Energenics prices do not include sales, use, gross receipts, excise or similar taxes, license fees & export or import duties. All taxes or other charges assessed to Energenics by reason of a transaction with the Purchaser must be paid by the Purchaser.

PRICE POLICY: All sales are made F.O.B. point of shipment and all prices are subject to change without notice.

DESIGN CHANGES: Energenics reserves the right to make changes in the design & changes or improvements in its products without notice or without imposing any obligation upon Energenics to install the same upon products heretofore manufactured.

GENERAL: No alteration, modification or extension of the foregoing conditions shall be binding upon Energenics unless made in writing & signed by an officer of Energenics.

AVOIDING UNNECESSARY SERVICE COSTS

Any alterations performed on the UV-CHAMBER system after its initial factory startup, without prior written authorization from Energenics Corp., will lead to the termination of the warranty agreement. This encompasses any changes to system controls, lamp fixtures, door operation, UV light containment, as well as all connected sensors and fittings. Any travel expenses incurred by Energenics for repairs arising from unauthorized modifications will be the sole responsibility of the end user.

Troubleshooting

The below statements are listed as troubleshooting guidelines. Further information is available through Energenics support.

Q: What should I do if the unit will not turn on?

- A: Verify there is power to the system
- A: Verify the display reads correctly
- A: Verify the Emergency Stop is not engaged
- A: Verify door cylinder sensor positions
- A: Verify all Alarms are cleared
- A: Contact Energenics Support for further information

Q: Why does the unit turn off mid cycle?

- A: Safety features turn off lamps based on detection of door / motion sensors
- A: Lost air pressure has created a door cylinder sensor fault
- A: E-Stop has been engaged

Q: My system is running fine, how do I verify the lamp UV output?

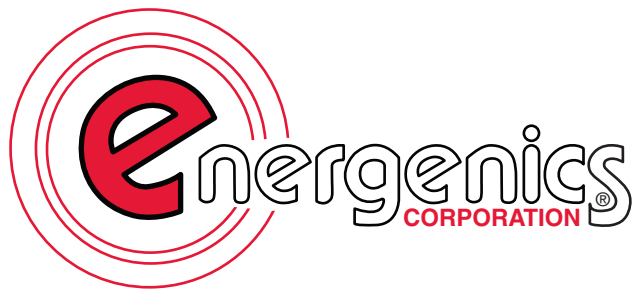
- A: Check output with dosimeter cards or a radiometer device

Q: The E-Stop "Home" button will not work on the E-Stop screen.

- A: Ensure all E-Stop buttons are dis-engaged

Q: Why do my ATP readings sometimes come up high?

- A: Exposure to ultraviolet germicidal irradiation (UVGI) disrupts the DNA of microorganisms, inhibiting their ability to replicate and ultimately leading to their demise. Even after rendering microorganisms sterile through UVGI, organic remnants detectable in ATP tests may persist both within these sterilized microorganisms and in the residual "skeletons" of deceased microorganisms left on the testing surface. The ATP readings will decline as the exposed/sterilized microorganisms perish, as these "skeletons" are eliminated from the surface through regular activities, or by simply rinsing with water.



Energenics Corp.

1470 Don Street
Naples, FL 34104
energenics.com
1.239.643.1711