

User Manual

English V1.2
March 2016

CLEAN CUBE



Please review this manual thoroughly before the installation and use of the Clean CUBE to avoid any injury or product damage.

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[LEGAL NOTICES]

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[CERTIFICATIONS]

This equipment complies with FCC/IC regulations.

FCC: Part 22, Part 24

IC: RSS-132, RSS-133

Furthermore, this equipment complies with FCC/IC radiation exposure limits set forth for uncontrolled environments.

This equipment should be installed and operated with minimum distance 20cm between the radiating element of this device and the user.

Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. Users may lose the authority to operate this equipment if an unauthorized change or codification is made.

Ce équipement est en conformité avec règlements FCC/IC.

Par ailleurs, ce équipement répond aux limites de la FCC/IC sur l'exposition aux rayonnements établies pour un environnement non-contrôlé.

Ce équipement doit être installé et opéré à une distance minimum de 20 cm entre les éléments de radiation et l'utilisateur.

Les changements ou les modifications à cet équipement peuvent causer des interférences nuisibles, à moins que les modifications n'aient été expressément approuvées dans le manuel d'instructions. Les utilisateurs peuvent perdre le droit de faire fonctionner cet équipement si une modification ou une codification non autorisée est effectuée.

Declaration Of Conformity

EMC DIRECTIVE 2014/30/EC
LOW VOLTAGE DIRECTIVE 2006/95/EC

For

Product: **Clean Cube**

Model Name: **STSM240I**

Multiple Model Name: STSM120I, STSM100I

AUTHORIZED

Ecube Labs Co., Ltd.

#406, Ace Techno Tower 5th Bldg, 20, Digital-ro 31-gil,
Guro-gu, Seoul, S. Korea

November 20, 2014

SUMMARY

The equipment complies with the standards:

EN 61000-6-3 (2007 + A1:2011)

EN 61000-6-1 (2007)

EN 301 489-1 V1.9.2:2011

EN 301 489-24 V1.5.1:2010

EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011

Information technology equipment - Safety - Part 1: General requirements

IEC 60529 Ed. 2.2: 2013 Degrees of protection provided by enclosure (IP Code)

Product Characteristics : IP protection class: IP45

Sunbeom, Sean, Guwon (signature)

This is only valid in connection with Test Report: E14WD-015(Y), E14WD-016(Y)

S14WD-008 (Rev. 1), STC-B14-445

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Declaration of Conformity

Ecube Labs Co., Ltd.

**#406, Ace Techno Tower 5th Bdg, 20,
Digital-ro 31-gil, Guro-gu, Seoul, S.Korea**

WE DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE PRODUCT:

PRODUCT : Clean Cube

MODEL : STSM240I, STSM100I, STSM120I

Reference Report No.: CTS-R14-0068

TO WHICH THIS DECLARATION RELATES IS IN CONFORMITY WITH THE
FOLLOWING STANDARDS AND NORMATIVE DOCUMENT:

IEC 62321:2008 (ed.1) and EN 50581: 2012

FOLLOWING THE PROVISIONS OF THE APPLICABLE DIRECTIVES

**Restriction of the use of certain hazardous substances
(RoHS) Directive 2011/65/EU**

Authorized person

Date

10/07/2014

Name

Sun Beom, Gwon

Signature



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#1 [INTRODUCTION]

Welcome to Ecube Labs! As a smart green venture, Ecube Labs is committed to improving environmental sustainability with our smart integrated solutions that increase the operational efficiency of the waste management industry. We constantly develop innovative designs and features for our products to customizable solutions across the world.







Congratulations on purchasing your Clean CUBE. The Clean CUBE is designed to deliver years of reliable operation. In order to assure performance and safety for both the Clean CUBE and its users, each person involved in the installation, operation, and maintenance of the Clean CUBE should review the instructions and warnings in this manual.

The Clean CUBE user manual provides both users and service personnel with general safety and product information, installation procedures, operational instructions, and troubleshooting guidelines.

#2 [GENERAL SAFETY INFORMATION]

2.1 Conventions Used In This Guide

Please refer to the list below of the symbols, terms, and abbreviations used in this guide.

Icon	Meaning	Description
	NOTE	This icon indicates a note for operation or an additional explanation/instruction. Reading these is highly recommended.
	CAUTION	This symbol indicates a caution concerning operations that may lead to injury to persons or damage to property if not performed correctly. In order to use the Clean CUBE safely, always pay attention to these cautions.
	WARNING	This symbol indicates a warning concerning operations that may lead to death or injury to persons if not performed correctly. In order to use the Clean CUBE safely, always pay attention to these warnings.
	TIP	This icon indicates advice for the method of operation. Tips have been designed for the more difficult operations that may require further explanation.
	FIGURE	Refer to the listed figure on the same page for details on the topic of the previous sentence.
	REFER TO	A section and figure number preceded by an arrow and enclosed in parenthesis refers to a section and figure in this manual which contains more information on the topic of the previous sentence.

2.2 Precautionary Safety Reminders

When using the Clean CUBE, these basic precautionary safety reminders should always be followed to ensure user safety:

- Consult Ecube Labs before making modifications to the Clean CUBE or its operating environment. Careless changes could result in death or serious injury to people, and may result in malfunctions or operational failure of the Clean CUBE.
- Never perform any service on the Clean CUBE until both electrical and mechanical power has been shut off so that it cannot be restored without the consent and knowledge of the person who interrupted the power.
- When performing any type of service on this product, follow the appropriate instructions listed in this manual and utilize the required tools and hardware.

#3 [GENERAL PRODUCT INFORMATION]

3.1 Product Description

The Clean CUBE is a smart solar-powered waste compaction system that effectively increases the bin capacity by 500-700% by providing automatic on-site waste compaction. Utilizing intelligent sensors, the Clean CUBE monitors its bin fill-level and operational status in real-time and provides this information to the user via the Clean City Network (CCN) server. CCN can optimize the efficiency of the waste collection process by taking the most economical route to collect only the bins that require collection. Please refer to A.1 in the appendix for the Clean CUBE's technical specifications.

3.2 Key Components

The basic diagrams below will help you understand the key components of the Clean CUBE.

- | | | |
|--------------------------|--------------------------|--|
| 1. Front door lock | 8. LED indicators | 15. Door Sensor |
| 2. Side cover locks | 9. Photo Sensors | 16. Fire Detection Sensor (Temperature Sensor) |
| 3. Top cover locks | 10. Safety Sensors | 17. Main Circuit Board |
| 4. Front door | 11. Advertisement Panels | 18. 2 screws for back cover |
| 5. Ashtray | 12. Mounting Bracket | 19. Antenna |
| 6. Compaction Module | 13. On/Off Switch | 20. GPS module |
| 7. Serial Number Sticker | 14. Control Switch | |

FIGURE 1A

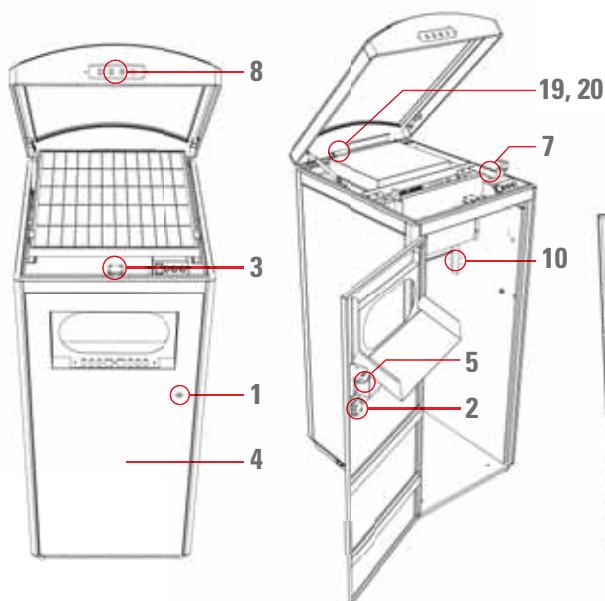
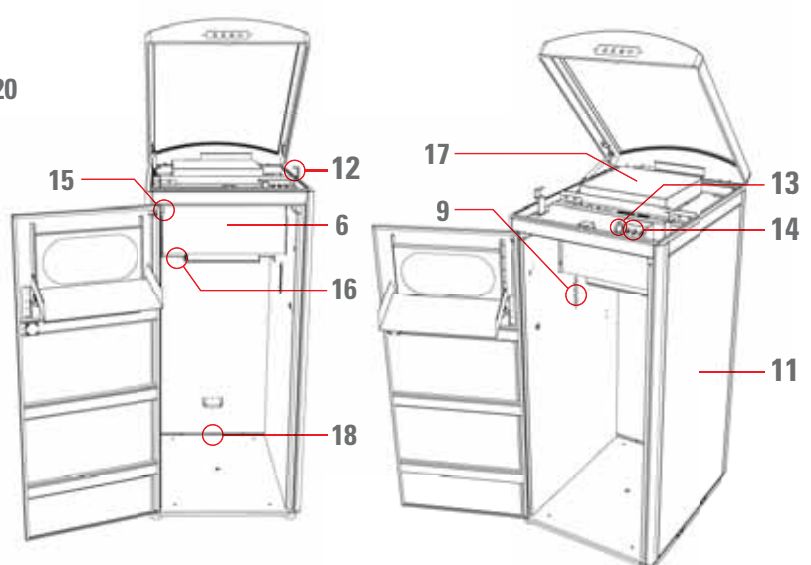


FIGURE 1B



3.3 Safety Features

The Clean CUBE has been designed with several safety features to keep the users and service personnel safe:

- **Safety sensors (Hand detection)**

These sensors detect objects passing through the bin opening. Compaction will stop immediately if any objects are detected during a compaction cycle.

- **Temperature sensor (Fire Detection)**

This sensor detects a sudden change in the internal temperature of the unit. If a fire occurs, the unit will attempt to put out the fire by fully extending the compaction module.

Furthermore, the unit will alert the user of the fire via the Clean City Networks (CCN).

- **Door sensors**

These sensors can sense whether the front door is opened or closed. Compaction will stop immediately if the door is opened during a compaction cycle. When the door is opened, compaction can only be performed manually.

- **Front door, top cover, and side cover access locks**

The front door, top cover, and side covers can only be accessed by authorized personnel with the appropriate keys. Access locks share the same key for each unit, making unit maintenance convenient.

- **Off switch and manual operation buttons**

The On/Off switch and the manual operation buttons are safely located inside the top cover. Authorized service personnel must unlock the front door access locks and then the top cover access locks in order to operate the unit manually.

- **Mounting bracket**

The mounting bracket can be secured to the ground, which allows the user to secure the unit onto the mounting bracket. This prevents the unit from falling over and prohibits unauthorized movement of the unit.

- **GPS module**

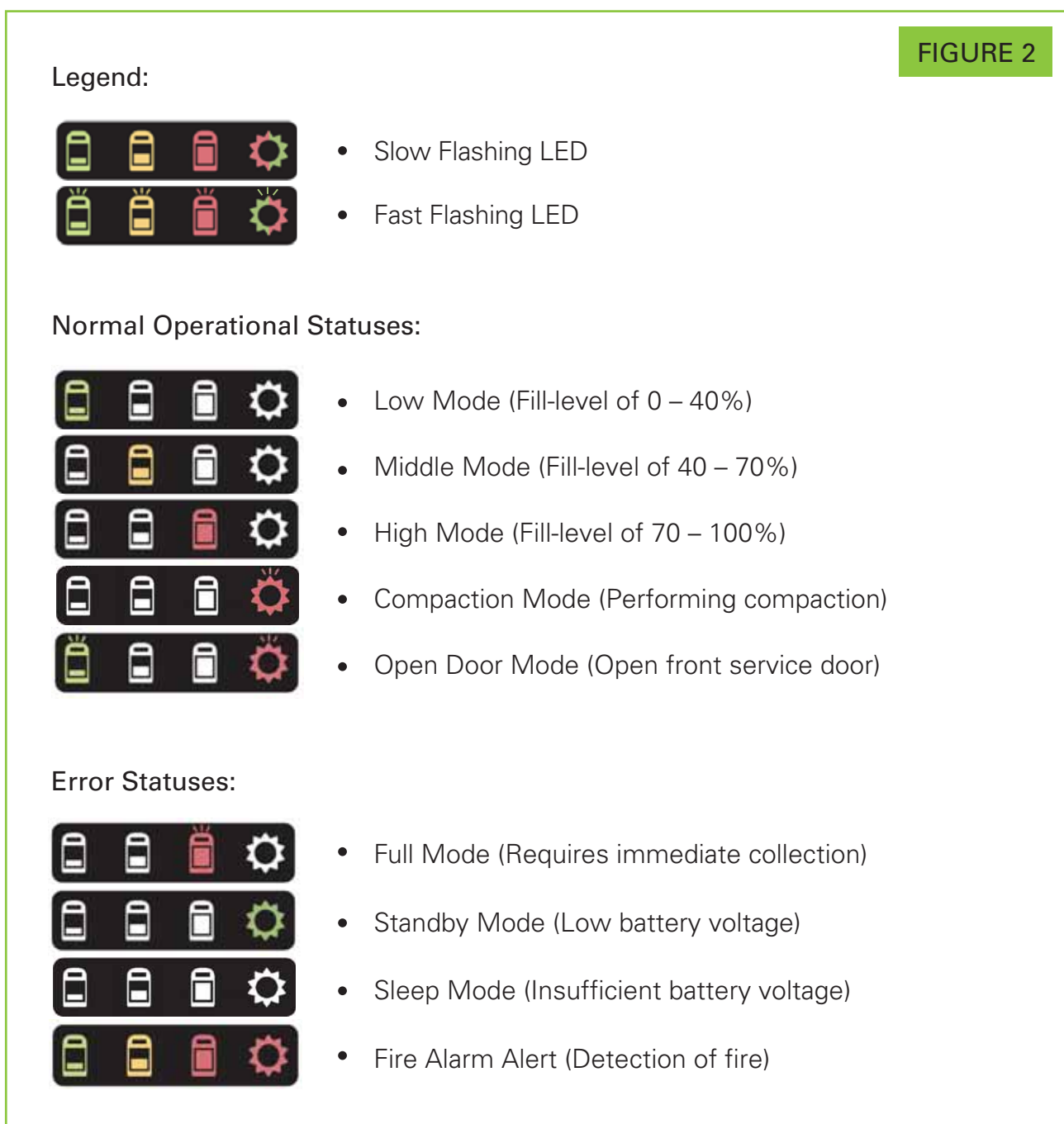
The GPS module can track the location of the unit and provide the unit's GPS coordinates. If the unauthorized transportation of the unit occurs, the user will be able to determine the unit's location via the Clean City Networks.

3.4 LED Indicator Information

The Clean CUBE has four LED indicator lights located in the front center of the top cover that indicate the unit's approximate fill-level and its operating status. The first three LED indicator lights primarily indicate the unit's fill-level and the fourth LED indicator light primarily indicates the unit's status. The LED indicator lights have two modes of flashing: slow flashing (two flashes per three seconds) and fast flashing (two flashes per one second).

The Clean CUBE will normally have a single LED indicator light flashing either green, yellow, or red to indicate the unit's current fill-level and that the unit is operating properly. For a detailed explanation of the LED indicator lights and possible status scenarios, please refer to the following diagram:

LED indicator lights located in the front center of the top cover



#4 [TRANSPORTATION AND SITE SELECTION]

4.1 Initial Inspection upon Receiving

The Clean CUBE will be delivered either on a pallet, with the unit covered with a plastic shell and protective bubble wrap and enclosed in cardboard packaging, or in a wooden crate. Upon receiving the Clean CUBE, perform a visual inspection of the packaging before accepting the delivery from the shipping company. If the packaging appears to be damaged or in poor condition, unpack the unit from the packaging and inspect the unit for damage. Be sure to perform this process with a representative from the shipping company. If there is any visible damage, mark "damaged" on the freight receipt. After inspecting the unit itself for any damage, check to see if all separate parts and components have been delivered with the unit.

Standard parts and components include:

- Two sets of keys attached to the top cover of the unit
- An ashtray packaged separately and placed inside of the unit

Optional parts and components include:

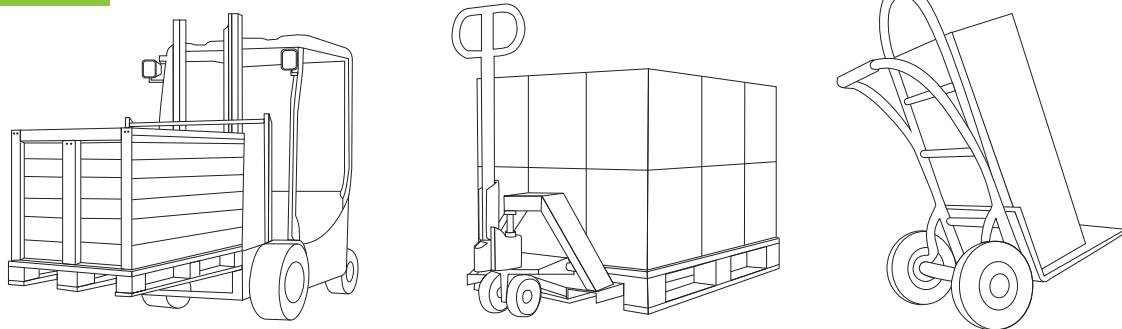
- A mounting bracket kit packaged separately and placed inside of the unit
- A mounting bracket drilling kit packaged separately and placed inside of the unit
- A unit connector kit packaged separately

4.2 Transportation of the Clean CUBE

If the Clean CUBE is on a pallet or in a wooden crate, it can be transported using either a forklift or pallet. The pallet can be lifted from any side. When using a forklift, be sure to adjust the forks so that they are as wide as possible while in the pallet. To ensure the safety of the unit while transporting, refer to the following directions:

- Ensure that the forks are placed fully through the pallet before lifting.
- After lifting the unit, do not make any sudden movements that may cause the unit to fall off the forklift.
- After transporting the unit to the target location, gradually lower the unit to the ground.

FIGURE 3



If the Clean CUBE is not on a pallet, it is recommended to transport the unit using a hand truck. Given the weight of the Clean CUBE, ensure that only hand trucks with load capacities of at least 250 kilograms and equipped with safety straps be used in the transportation of the unit. To ensure the safety of the unit while transporting, refer to the following directions:

- If the original protective shell has been removed from the unit, cover the unit with protective padding or material before transporting. This will prevent scratches and other physical damage that may occur while transporting the unit.
- Ensure that the load plate of the hand truck is entirely placed under the base of the unit before lifting.
- Place the hand truck's safety straps around the circumference of the unit. The straps should be around the bin aperture.
- Tighten the safety straps until the unit is properly secured onto the hand truck.
- Use wheel chocks to prevent accidental movement of the hand truck.
- After transporting the unit to the target location, gradually lower the unit to the ground.

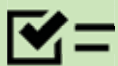


Never lift the unit from the front of the unit. The back of the Clean CUBE is heavier than its front. Lifting from the front will make the transportation of the unit more difficult and unsafe.

4.3 Site Selection

For ease of installation, it is recommended that a site for the unit be selected prior to the delivery of the unit to minimize the setup time required. When selecting a site for the Clean CUBE, take into consideration the following factors to optimize the performance of the unit:

The sky should be directly above the unit. There should be no obstructions that would prevent the unit from receiving sunlight. The unit should be installed on solid ground such as concrete, cement, wood, etc. The unit's adjustable feet should be adjusted so that the unit is perpendicular to the ground. (→ 5.2 , "6") Both the front and back of the unit should have adequate space of at least one meter so that both waste collection and unit maintenance can be performed.



- The unit can receive sunlight most effectively when the sun is directly above it. For most sites, the sun is in this position around 10AM – 2PM. Selecting a site during this time can ensure optimal access to sunlight.

- Do not select an indoor installation site unless the unit is a hybrid model. For outdoor installation sites, avoid locations with thick tree covers or any other entities that would obstruct the sunlight. Insufficient access to the sunlight will result in the draining of the unit's battery.

FIGURE 4

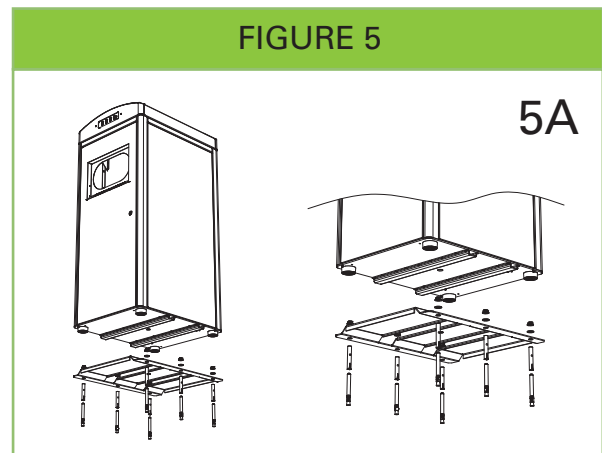


#5 [INSTALLATION]

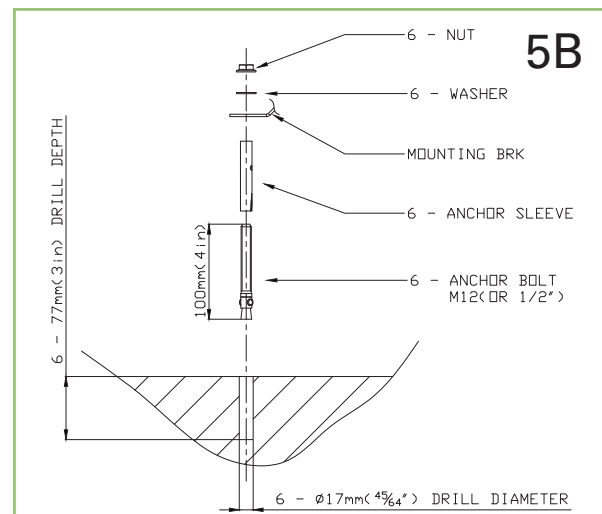
5.1 Installing the Mounting Bracket

The mounting bracket is an optional feature designed to secure the Clean CUBE to the ground. The mounting bracket must be installed to the ground before mounting the Clean CUBE. In order to install the mounting bracket, the installation site must be drilled for the placement of anchor bolts. To ensure the safety of both the user and the unit, refer to the following directions:

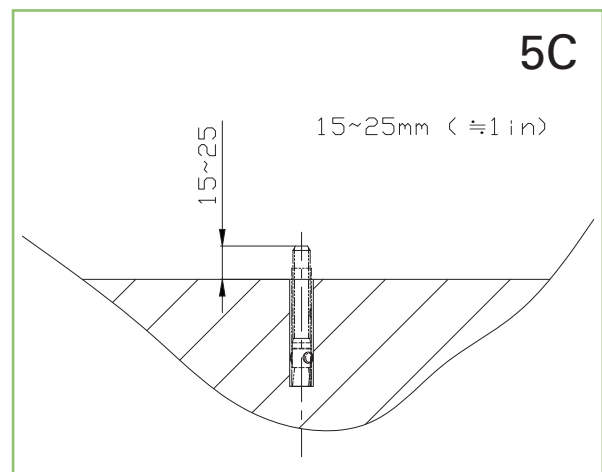
1. Place the mounting bracket on the desired installation site. Using a pen or a pin punch, mark the six (6) holes to be drilled into the ground as indicated in "5A".



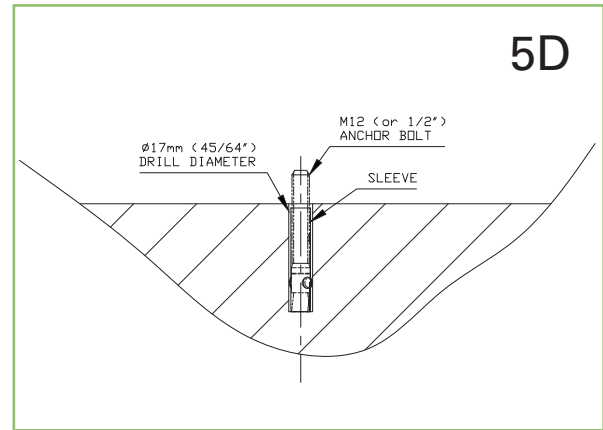
2. Set the mounting bracket aside on a secure surface, and drill the six (6) holes using a hammer drill. The diameter of the drill bit should be the same as the external diameter of the anchor bolts as shown in "5B". The depth of the drilled hole should be shorter than the length of the anchor bolt.



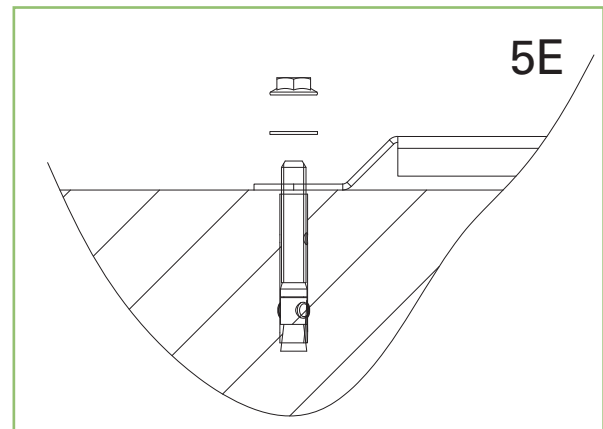
3. After thoroughly cleaning the drilled hole, place the six anchor bolts into the six drilled holes. The visible part of the anchor bolt should be in between 15mm and 25mm as showing "5C".



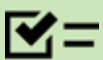
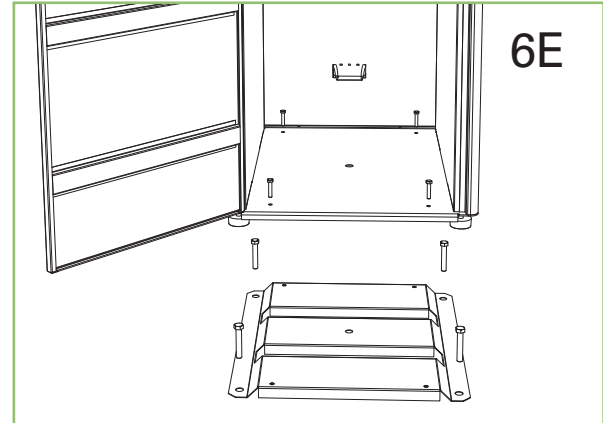
4. Place the anchor bolt sleeves on each of the anchor bolts. Using a setting punch and a hammer, drive each of the anchor bolt sleeve until the anchor bolts are properly secured as shown in "5D".



5. Place the mounting bracket onto the installed anchor bolts. Place the washers and nuts as shown in "5E". Tighten the nuts using a wrench.



6. Place the unit onto the mounting bracket so that the two homes on the bottom of the unit are conjoined. Then, fix the unit onto the mounting bracket by installing four bolts to each corners of the unit.



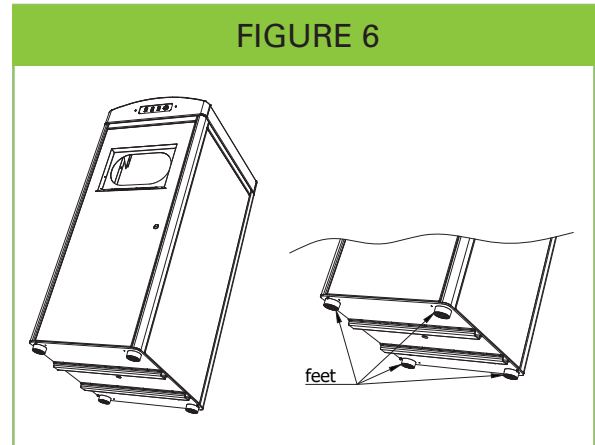
- Use drill bits designed for the installation site. If the installation site is concrete, be sure to use drill bits designed for concrete.

- In order to drill into concrete, it is recommended to use a hammer drill (also referred to as vibrating drills or impact drills). General drills with a hammer function can also be used to drill into concrete.
- Ensure that the anchor punch has the same external diameter as the anchor sleeve.

5.2 Adjusting the Adjustable Feet

The Clean CUBE has four adjustable feet that can be used to level itself on slightly uneven or sloped installation sites. After installing the Clean CUBE, if the unit is tilted or slightly leaning to one side, use the adjustable feet to stabilize the unit in an upright position. To ensure the safety of both the user and the unit, refer to the following directions:

1. Determine which of the four adjustable feet requires adjustment.
2. To adjust adjustable feet located on the front (back) half of the unit, have one person tilt the unit towards the back (front) door and have the other person support this tilted position.
3. Turn the adjustable feet clockwise or counter-clockwise to level the unit.
4. Gradually lower the tilted unit to the ground.



Two people are required to perform this procedure.



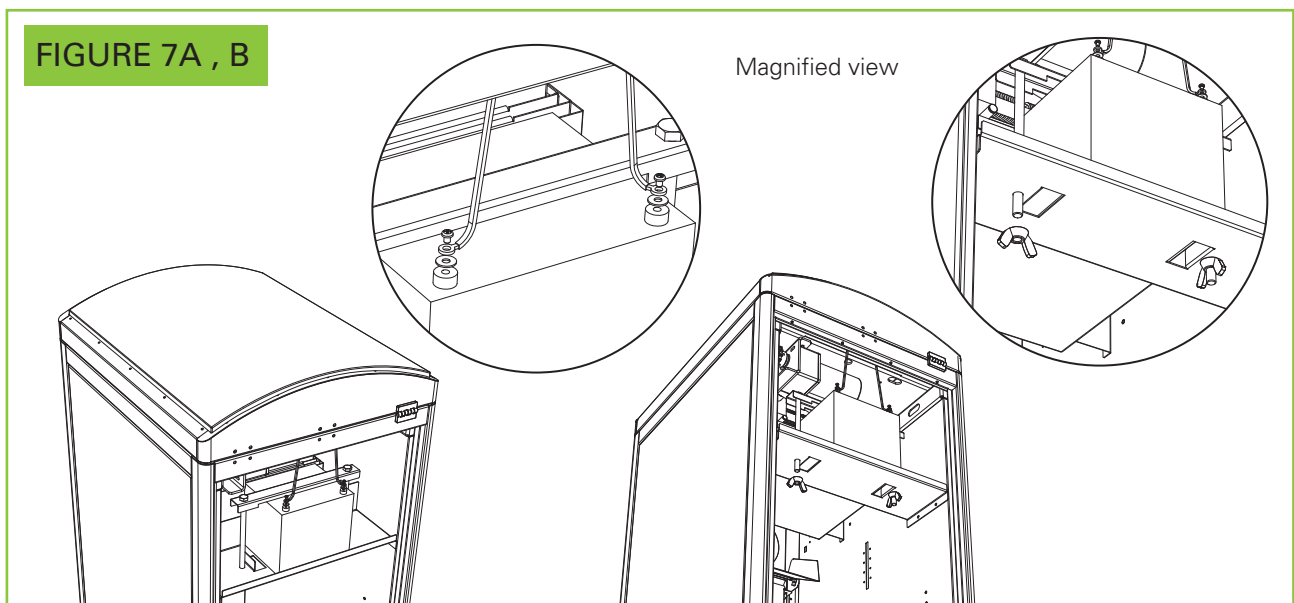
Using excessive force to tilt the unit may make it difficult to support the tilted position and cause it to tip over.



Failure to level the Clean CUBE may result in an unstable unit, which may potentially lead the unit to tip over and cause injury or damage.

5.3 Installing (or Replacing) the Battery

The Clean CUBE is shipped with its power off and battery installed but disconnected from the unit. Once you have installed the Clean CUBE in the desired location, you will need to connect the battery to the Clean CUBE in order to turn it on. To ensure the safety of both the user and the unit, refer to the following directions:



1. Use your key to unlock and open the front service door of the unit.
2. Remove the two screws located in the interior of the unit and along the back cover.
(→ 3.2, "1A/1B")



These screws will be needed to reinstall the back cover.

3. Remove the back cover by pulling the handle located on the back cover frame and place the back cover on a secure surface.
4. Remove the two bolts and washers installed on the battery bracket and remove the battery bracket.
5. Unscrew the bolt on the battery's terminal just enough to fit the positive and negative cables located in the battery compartment.
6. Place the positive (red) cable on the positive (red) battery terminal and the negative (black) cable on the negative (black) battery terminal. Fasten the bolts on the battery's terminal to fix the cables in place
7. Place the battery bracket back onto the unit and fasten the washers and bolts to fix it in place.
8. Reattach the back cover of the unit, and install the two screws to secure it in place.
9. Open the top cover, locate the On/Off switch and turn the unit on.



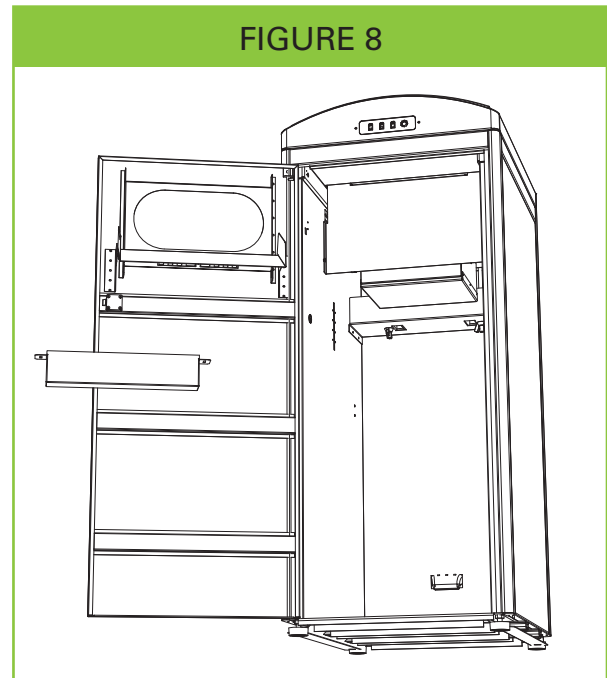
Pushing the battery upwards with your fingers through the hole located on the bottom of the battery compartment will help when removing the battery.



Mixing the positive and negative cable terminals when securing to the battery terminals will result in damage to the battery and possibly the unit.

5.4 Installing (or Replacing) the Ashtray

1. Use your key to unlock and open the front service door of the unit.
2. When replacing an existing ashtray, remove by lifting the ashtray from the ashtray bracket as shown in "8"
3. Place the new ashtray onto the ashtray bracket. Ensure that it is properly aligned.
4. Close the front service door.



#6 [INITIAL ACTIVATION]

6.1 Inspection upon Initial Activation

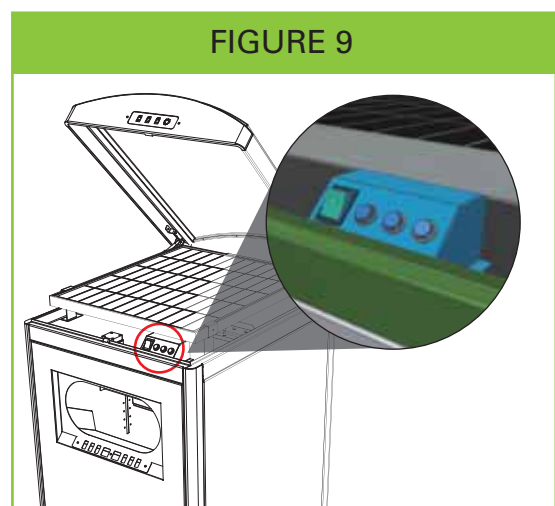
After installing the battery, the Clean CUBE is ready to be turned on for the first time. To turn on the unit, refer to the following directions:

1. Use your key to unlock and open the front service door of the unit.
2. Open the top cover, locate the On/Off switch and turn the unit on.
3. Verify that the LED indicator lights located on the front of the top cover are flashing to indicate the "Open Door" status. (→ 3.4 , "2")
4. Close the top cover and close the front door.
5. Verify that the LED indicator lights are flashing to indicate the "Low Mode" status. (→ 3.4 , "2")
6. If the unit is displaying the proper LED indications, perform a manual cycle. (→ 6.2)
7. If the unit has successfully performed a manual cycle, perform an automatic cycle. (→ 6.3)
8. If the unit has successfully performed an automatic cycle, the unit is fully operational.

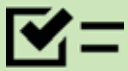
6.2 Performing a Manual Cycle

A manual cycle should always be performed upon initial activation, as a part of any scheduled maintenance, and after any repairs or replacement procedures. To perform a manual cycle, refer to the following directions:

1. Use your key to unlock and open the front service door of the unit.
2. Open the top cover, locate the On/Off switch and turn the unit on.
3. Press the down button (green). This will trigger the compaction module to move down. The compaction module will automatically stop once it is fully extended.
4. Press the up button (blue). This will trigger the compaction module to move up. The compaction module will automatically stop once it is in its original resting position.



5. Once the compaction module is in its original resting position, press the down button again to trigger the compaction module to move down.
6. Instead of letting the compaction module stop automatically, press the stop button (red) when the compaction module is roughly halfway down.
7. Press the up button to move the compaction module back up to its original resting position.
8. Close the top cover and close the front door.



Release the up or down buttons after pressing it. Do not hold the buttons down for an extended period of time.



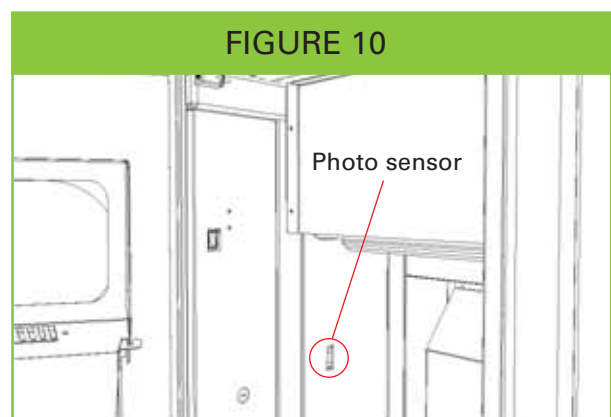
- When the compaction module is not in the original resting position, do not press the down button. This will cause the compaction module to attempt to extend past its fully extended position.

- When the compaction is in the original resting position, do not press the up button. This will cause the compaction module to retract past the original resting position.

6.3 Performing an Automatic Cycle

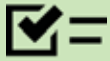
An automatic cycle should be performed upon initial activation and when specifically instructed to after certain repairs or replacement procedures. To perform an automatic cycle, refer to the following directions:

1. Use your key to unlock and open the front service door of the unit.
2. Cover the photo sensor by attaching a piece of paper over the photo sensor as shown in "10".
3. Close the door.
4. Within one minute, verify that the photo sensor is automatically activated, indicated by a bright red light.
5. After the photo sensor is automatically activated, the unit will automatically perform a compaction cycle.
6. After the automatic compaction cycle is completed, open the door and remove the piece of paper that was used to cover the photo sensor and close the front service door.





A sticky note or a post-it is recommended to cover the photo sensor.

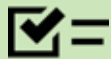


- It is recommended to test the safety sensor by placing an object through the bin aperture during automatic compaction. If the compaction halts, you have verified that the safety sensor is functioning properly.

6.4 Telecommunication Inspection

A telecommunication inspection should be performed upon initial activation, when reinstalling the unit in a new location, and when specifically instructed to after certain repairs or replacement procedures. To perform a telecommunication inspection, refer to the following directions:

1. Perform an automatic cycle (→ 6.3).
2. Sign onto either the web or application version of Clean City Networks (CCN) using the login information provided to you by Ecube Labs or its agent.
3. Within five minutes of performing the automatic cycle, you should see that the data for this unit has been updated.



In certain areas, the telecommunication process may take up to fifteen minutes.

#7 [OPERATION]

7.1 Compaction Cycle Overview

After the Clean CUBE has been successfully installed and activated, it is ready for public use. During public use, the photo sensor will check in one-minute intervals to see if the waste inside of the unit reaches a programmed height. When the photo sensor detects that the accumulated waste has reached the programmed height-limit, it will automatically trigger a compaction cycle.

Once a compaction cycle is triggered, the unit actuates its motor, which uses spiral bevel gears to move a single chain. This chain controls the drive shaft to lower and raise the unique X-framed compaction module. During an automatic compaction cycle, the compaction module will compact the waste, stopping only when it reaches the maximum compaction force, or when it is fully extended. After stopping, the compaction module will return to its original position resting position. It stays in this resting position until the photo sensor triggers another compaction cycle.

If either the front door is opened or the safety sensor is triggered during a compaction cycle, the compaction module will immediately halt to prevent any type of injury. It will remain in fixed position until either the front door is closed or the safety sensor does not detect any objects near the bin aperture.

7.2 Waste Collection (Bin Removal)

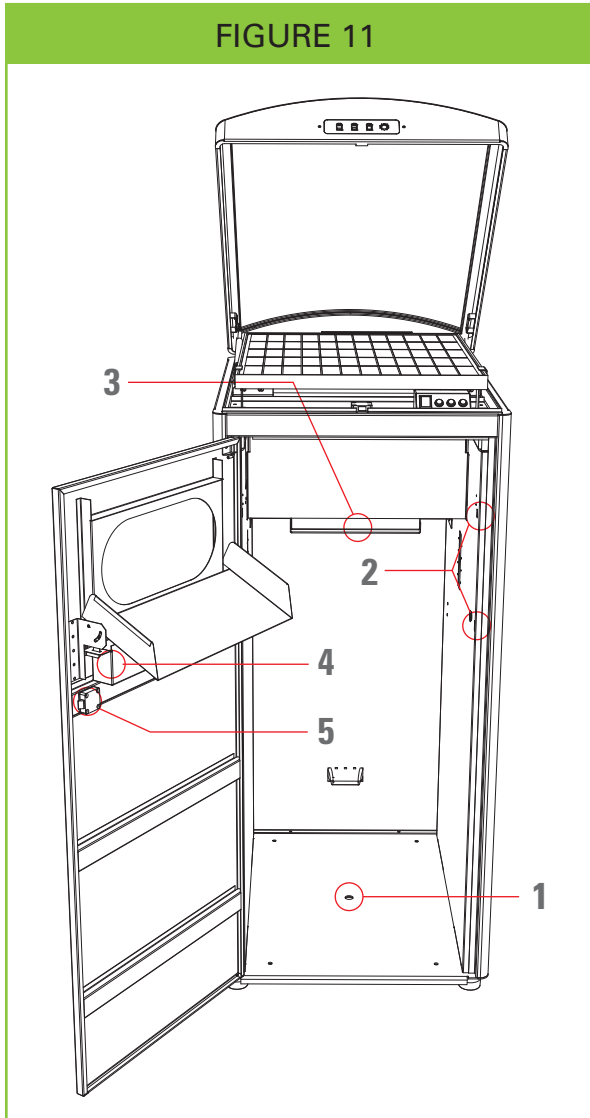
The flashing LED indicator lights will indicate the fill-level of the Clean CUBE. A slow yellow flashing light indicates that the bin has accumulated approximately 40-70% of the bin's capacity and a slow red flashing light indicates that the bin has accumulated approximately over 70% of the bin's capacity, both of which means that the bin should be emptied. (→ 3.4, "2"). When collecting the waste from the Clean CUBE, refer to the following directions:

1. Use your key to unlock and open the front service door of the unit. Make sure that the unit is not performing a compaction cycle when opening the door.
2. Unlock and open the side cover locks located on each side walls of the unit.
3. Remove any loose waste inside of the unit.
4. Unload the waste contents of the bin directly into the waste collection vehicle. Be sure to practice safety if this unloading process does not utilize waste bin lifters. A bin full of compacted waste can weigh up to six to eight times the weight of non-compacted waste.

7.3 Visual Inspection

A visual inspection should always be performed whenever the front service door is opened to perform waste collection. To perform a visual inspection, refer to the following directions:

FIGURE 11



1. After the front door is opened and after removing the bin, check for any loose waste inside the unit.
2. Verify that both the photo sensor and the safety sensors are not obstructed by any loose waste or objects.
3. Verify that there is no loose waste or object stuck in or near the compaction module.
4. Clean off the ashtray cover.
5. Close the front service door and verify that it is securely locked.
6. Clean off the ashtray cover.
7. Close the front service door and verify that it is securely locked.

7.4 LED Indicator Settings

The LED indicator lights that indicate the fill-level and status of the Clean CUBE can be remotely monitored either with Clean CUBE Network's web or mobile solutions. Please refer to the CCN user manual that came with the Clean CUBE for information and directions on how to adjust the LED indicator display.

7.5 Advertisement Panel

1. Use your key to unlock and open the front service door of the unit.
2. Open the side cover door by pulling on the latches located along the upper and lower side of the side walls of the unit.
3. Remove the protective acrylic panel from the advertisement frame.
4. When replacing an existing advertisement poster, remove by pulling the poster through open slot located at top of the protective panel.
5. Insert the new advertisement poster.
6. Reinstall the protective acrylic panel onto the advertisement frame.
7. Close the side cover door and verify that it is securely locked.
8. Close the front service door.

FIGURE 12A

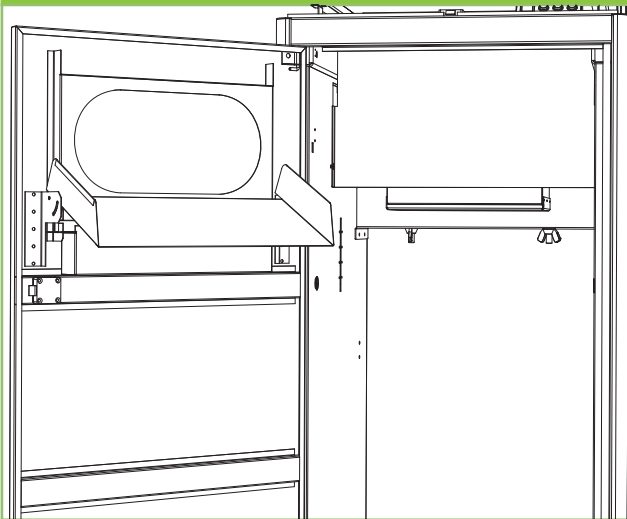
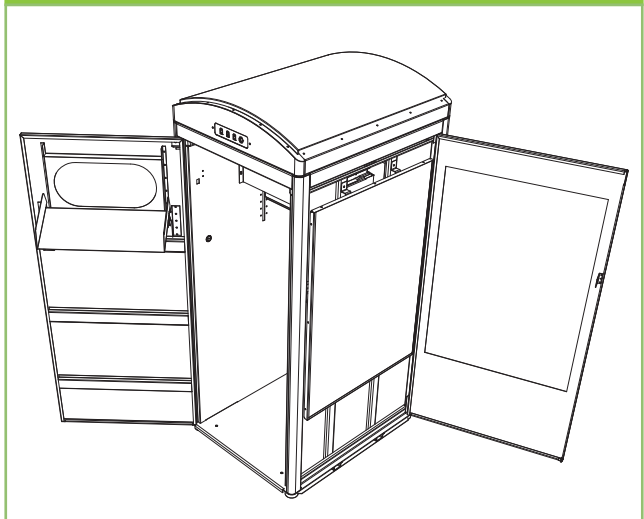


FIGURE 12B



7.6 LED Backlight Operation (Advertisement Panel)

Clean CUBE's equipped with the optional LED backlight feature for the advertisement panel allows the user to illuminate an advertisement poster using a LED backlight. The LED backlight for the advertisement panel can be controlled either remotely through CCN or manually on-site. Please refer to the CCN user manual that came with the Clean CUBE for information and directions on how to adjust the LED backlight. To manually control the LED backlight for the advertisement panel, refer to the following directions:

1. Use your key to unlock and open the front service door of the unit.
2. Open the top cover, locate the On/Off switch and turn the unit on.
3. If the LED backlight is currently on, press and hold the stop button (red) for 9-10 seconds to turn the light on.
4. Close the top cover and close the front door.

#8 [MAINTAINANCE]

8.1 Routine Cleaning

Water-based detergents or organic solvents are recommended for routine cleanings of the Clean CUBE's exterior. Avoid using detergents or solvents containing ammonia as it will damage the integrity of the Clean CUBE's powder coated steel and polycarbonate cover.

When cleaning the polycarbonate cover protecting the solar panel, use a soft cloth or sponge with an up and down motion to prevent minor scratches and abrasions. For a comprehensive cleaning, a pressure washer can be used on both the interior and exterior of the Clean CUBE. Ensure that the top cover is securely closed and locked before using a pressure washer.

8.2 Three Month Maintenance

For the first year after installing the Clean CUBE in public, it is recommended to perform extra maintenance every three months to ensure that the unit is operating properly. To perform the quarterly maintenance, please refer to the following directions:

1. Use your key to unlock and open the front service door of the unit.
2. Verify that both the photo sensor and the safety sensors are not obstructed by any loose waste or objects
3. Verify that there is no loose waste or object stuck in or near the compaction module.
4. Check the interior for signs of corrosion or other damage.
5. Check to see that the mounting brackets are securely installed.
6. Verify that the front service door lock is securely attached and close the door.
7. Check the polycarbonate top cover for any scratches, fractures, or damage.
8. Check the exterior for paint chipping, scratches, or rust.
9. Check the leveling of the unit and use the adjustable feet to make the necessary adjustment

8.3 Scheduled Annual Maintenance

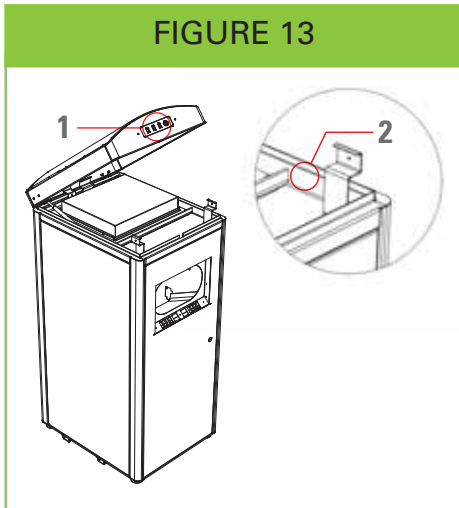
In addition to this scheduled annual maintenance, replace the Clean CUBE's battery every four years with a new 12V sealed lead-acid battery (35Ah for the 100L model and 55Ah for the 120L and 240L models).

After the initial year, an annual maintenance should be performed on the Clean CUBE every twelve months. To perform the scheduled annual maintenance, please refer the following directions:

1. Perform the three month maintenance procedures. (→ 8.2)
2. Check the battery terminals for signs of corrosion. (→ 5.3 , "7A/7B")
3. Using a multimeter, check to see that the battery voltage is above 12 volts.
4. Verify that the photo, safety, and door sensors and the reflecting plate are not obstructed by any loose waste or objects and clean the surface of each the sensors and the reflecting plate with a clean cloth or sponge.
5. Open the top cover of the Clean CUBE and check for signs of corrosion.

#9 [TROUBLESHOOTING]

If the Clean CUBE has a problem, please refer to the following directions for simple troubleshooting and repairs. If these procedures do not solve the problem, please have the following information ready before contacting Ecube Labs or your designated distributor for service:



1. The current status of the LED indicators (→ 3.4 , “2”)
2. Serial number of the Clean CUBE located along the frame when you open the top cover as indicated in “13”.
3. Unit location (e.g. Street address or GPS coordinates)

9.1 LED Indicator Error Statuses

When performing regular collections of the Clean CUBE, you will be able to notice problems by recognizing the LED indicator error statuses. Please refer to 3.4 for a detailed explanation of the LED indicator error statuses. Clean CUBE Networks will also notify the user of these error statuses. For the following error statuses, please refer to the following directions to correct the problem:

• Full Mode

The Clean CUBE will enter the full mode once it has performed consecutive automatic compactions due to a high amount of waste. In the full mode, the Clean CUBE will not perform any further compaction. If the unit is in the full mode, perform a collection of the unit’s waste.

• Standby Mode

The Clean CUBE will enter the standby mode if the unit’s battery voltage has fallen below 11.4 volts. In the standby mode, the Clean CUBE will not perform compactions and the LED backlight for the advertisement panel will be off. Only the unit’s telecommunication capability will be operational. If the unit is in the standby mode, please refer to the following directions:

1. Check to see if there has been any changes to the unit's surrounding that would hinder its access to sunlight. (e.g. trees, stands, signs, etc.)
2. Using a multimeter, check the unit's battery voltage. If the battery voltage is below 11.4 volts, the battery will require either manual or natural recharging.
3. If the unit reenters the standby mode after recharging or replacing the battery, please contact Ecube Labs or your designated distributor.

• Sleep Mode

The Clean CUBE will enter the sleep mode if the unit's battery voltage has fallen below 11.0 volts. In the sleep mode, the Clean CUBE will essentially be turned off. If the unit is in the sleep mode, please refer to the following directions:

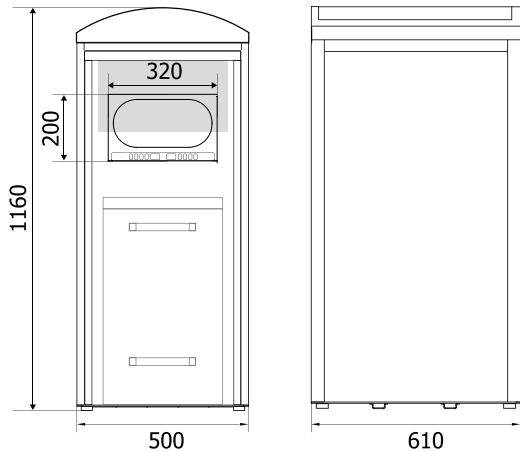
1. Check to see if there has been any changes to the unit's surrounding that would hinder its access to sunlight. (e.g. trees, stands, signs, etc.)
2. Using a multimeter, check the unit's battery voltage. If the battery voltage is below 11.0 volts, the battery will require replacement.
3. If the unit reenters the sleep mode or enters the standby mode after recharging or replacing the battery, please contact Ecube Labs or your designated distributor.

• Fire Alarm Alert

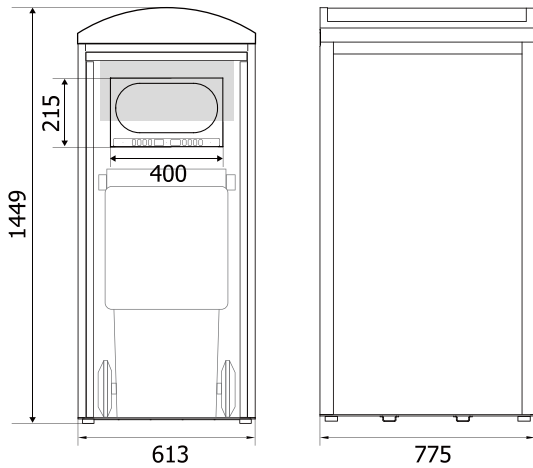
The Clean CUBE will send a fire alarm alert through Clean CUBE Networks and display the LED indicator error status if it detects a fire inside of the unit. In the event of a fire, the unit will perform an automatic compaction in an attempt to extinguish the fire and the compaction module will stay in its fully extended position until the unit is reset. In the event of a fire alarm alert, please refer to the following directions:

1. Contact the proper authorities about the situation.
2. Once the situation has been deemed safe by the authorities, Use your key to unlock and open the front service door of the unit.
3. Perform the initial activation procedures to verify the unit's operational status.
4. Perform a final visual inspection.

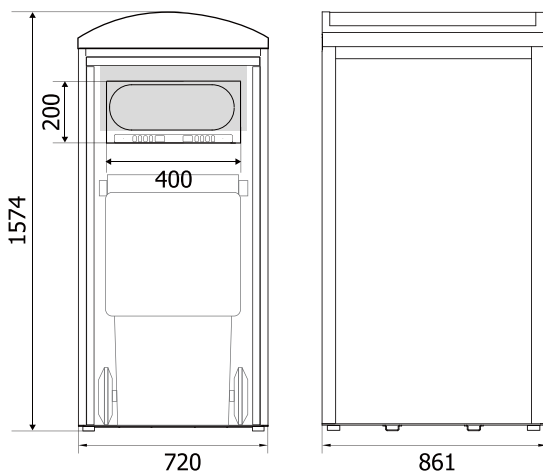
#A.1 [TECHNICAL SPECIFICATIONS]



100L Model



120L Model



240L Model

Product Dimensions

Model	Size (W*L*H)	Net Weight (Kg)
• STSM-100	500 * 610 * 1160mm	140
• STSM-120	613 * 775 * 1449mm	155
• STSM-240	720 * 861 * 1574mm	190

Materials

- ROHS compliant
- Acrylic cover for advertisement panels
- Galvanized steel sheet metal construction for both interior and exterior structures
- TGIC-free polyester powder coating for optimal durability and weatherability

Compaction Features

- Compaction Force: Up to 720kgf
- Cycle Time: Approximately 40 seconds
- Motor Size: 1/6-HP DC geared motor
- Drive System: Geared motor with unique X-frame drive
- Control System: Smart microcontroller-based automated system
- Communication System: WCDMA or GSM module
- Location System: GPS module

Power & Electronic Control

- System Voltage: 12 Volts DC
- Power Consumption: 15Wh/day
- Battery: Spill-proof, sealed lead-acid storage
 - STSM-100: 12V 35Ah battery
 - STSM-120: 12V 55Ah battery
 - STSM-240: 12V 55Ah battery
- PV panel: Crystalline silicon solar module
 - STSM-100: 30W PV panel
 - STSM-120: 50W PV panel
 - STSM-240: 60W PV panel
- Polycarbonate protective cover for PV panel
- 3-color LED status indicator lamps
- Alternative Hybrid-powered (solar + plug-in) model

Safety Features

- CE approved
- Hand detection safety sensor
- Fire detection temperature sensor
- Access locks for front door, top cover and side covers
- Optional bin aperture chute
- Optional mounting brackets

Design Features (Optional)

- LED backlight advertisement panel
- Acrylic cover advertisement panel
- Various default colors
- Customizable silk screen wraps

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#A.3 [CONTACT DETAILS FOR APPOINTED DISTRIBUTOR/SERVICE AGENT]