



EARTH CARE

EQUIPMENTS PVT. LTD

KWIK Composter User Manual

Version 1.0



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Warranty Certificate

The warranty certificate is issued separately with the Composter.

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Precautions

- Do not clean or carry-out maintenance activities when the Composter is in operation, or with the live voltage.
- Do not do any tampering or alteration to the Composter.
- Only authorized persons are allowed to carry out maintenance tasks.
- Do not use non-original spare parts or the parts having different characteristics from the original parts to be replaced.
- Do not work with the Composter without Personal Protective Equipments (PPEs). Refer section 6 for more information.
- Do not use a pressurized water jet to clean the Composter.
- Do not operate Composter with overcapacity.
- Excess pressure may break seals. Handle seals with care.
- Usage, other than described in this manual, is prohibited because there cannot be any warning of the danger that could arise.
- Ensure for the earthing. There could be a danger of electrical shock, and damage to electrical components. So, the cabling should be carried out as per the provided circuit diagram and by the authorized person only. The Composter is to be operated with a clockwise rotating electric field.
- There can be a risk of falling, trapping, or serious damage to persons while handling packing units. Always use a hoist with a sufficient lifting capacity. Secure packing units against tripping over, and falling.
- Ensure use of organic waste as described in section 4, and do not use waste as described in section 5.

Fire Safety Equipments List

Compost facilities should consider having following material in their safety equipments list. These equipments should be easy to access and portable.

- Emergency contact list
- Keys to access necessary safety equipments
- Safety equipments operation instructions
- Two ABC – 10 kg fire extinguishers
- One fire hydrant wrench
- Two 1 1/2 inch diameter fire hose nozzles
- One 1 1/2 inch fire hose Y
- Around 400 feet 1 1/2 inch diameter of fire hose

1 Introduction

KWIK Composter is an Organic Waste Converter. It offers a greener and a cleaner alternative to the problem of organic waste disposal. It is the most popular product and works on sustainable microorganism based technology. KWIK Composter converts the organic waste into nitrogen-rich compost. Organic wastes include kitchen waste or anything that comes from plants or animals and is biodegradable.

KWIK Composter is mostly installed in hotels, hospitals, office canteens, societies, and so on. It can be installed in parkings, and basements.

1.1 Features

KWIK Composter is equipped with the following features.

- It has Control Panel which controls the machine operations.
- It has a unique Emergency Stop button. This is a push and release button and is used in case of any abnormality, to avoid accidents.
- Selected models have wheels for mobility.
- It has leachate tray at inlet and outlet.

1.2 Need for Composting

Composting helps in the fertilization of the soil. It gives the soil with a variety of nutrients and microorganisms, which improve the plant growth. Composting also increases soil stability, improves drainage, and helps to retain moisture.

Composting helps us to:

- **Save Money** by reducing the cost of buying additional fertilizers.
- **Save Resources** by retaining soil moisture. The amount of water spent on irrigation is less, and the nutrients from compost are not easily washed away by rainfall.
- **Saves Environment** by reducing the emission of harmful Green House Gases which cause global warming.

Figure 1 shows the composting cycle.

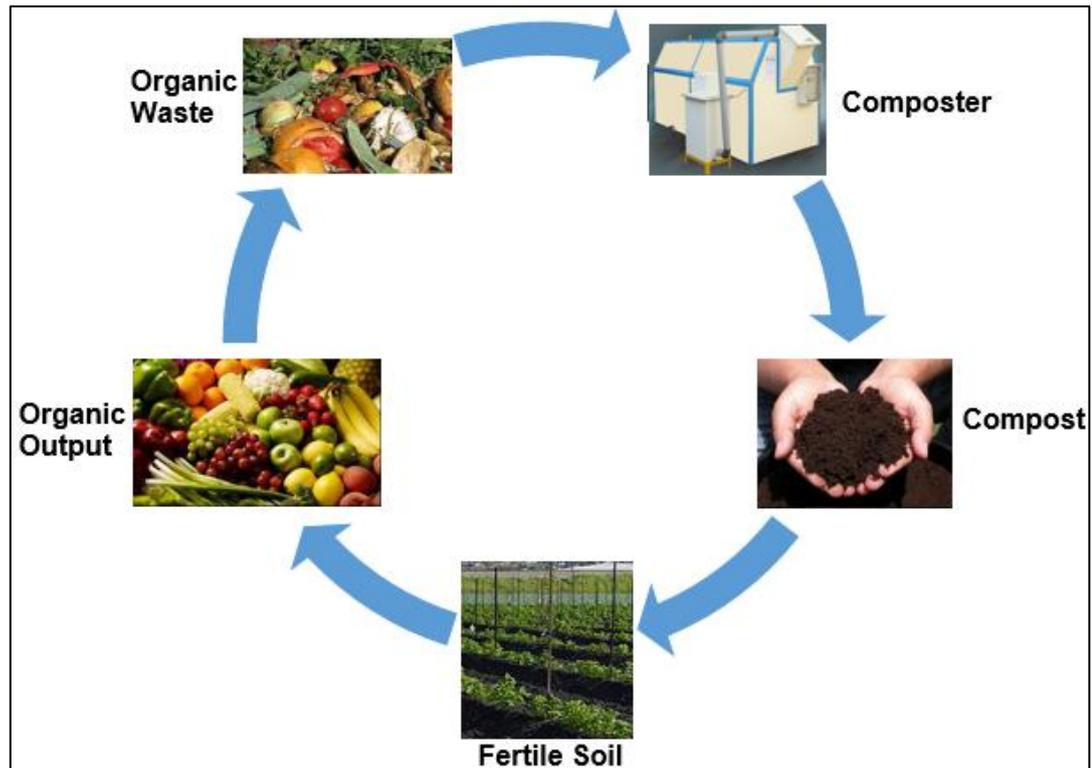


Figure 1: Composting Cycle

1.3 Working Principle

Composting organic waste is either aerobic or anaerobic process.

Aerobic process is a process which occurs in the presence of oxygen. On the other hand, the anaerobic process is a process which occurs in the absence of oxygen.

The composter is an incubator for composting bacterias. Food, water, air, and a mixture of organic waste are made available to them at the appropriate time. These favorable conditions help the bacteria to multiply rapidly, which accelerates the composting process.

With the help of Composter organic waste is converted into usable compost within the 30 to 45 days of timeframe.

1.4 Compost Chemistry

Composter uses the aerobic process of composting. Carbon to Nitrogen ratio (C:N) of the composting mass for the aerobic process should be 30:1. Generally, C:N ratio of food waste is within the range of 12:1 to 18:1. Hence, it requires the addition of carbonaceous materials such as sawdust, dried leaves, rice husk, and so on.

Composting bacteria consume carbon and water. They give out carbon dioxide (CO₂) and water vapor. This gradually reduces carbon in composting mass and the C:N ratio rises to 20:1. Carbon and Nitrogen gases are also used as building blocks for bacterias.

Generation of CO₂ from carbon is an exothermic process. The evolution of heat in the process is preserved in Composter by providing insulation.

The temperature of the composting mass increases up to 45 °C. This temperature kills most of the bacterias from the organic waste, which is dangerous to human health and accelerates the composting process.

1.5 Composter Construction

Figure 2, Figure 3, Figure 4, and Figure 5 show the Composter construction and some components/parts of Composter.

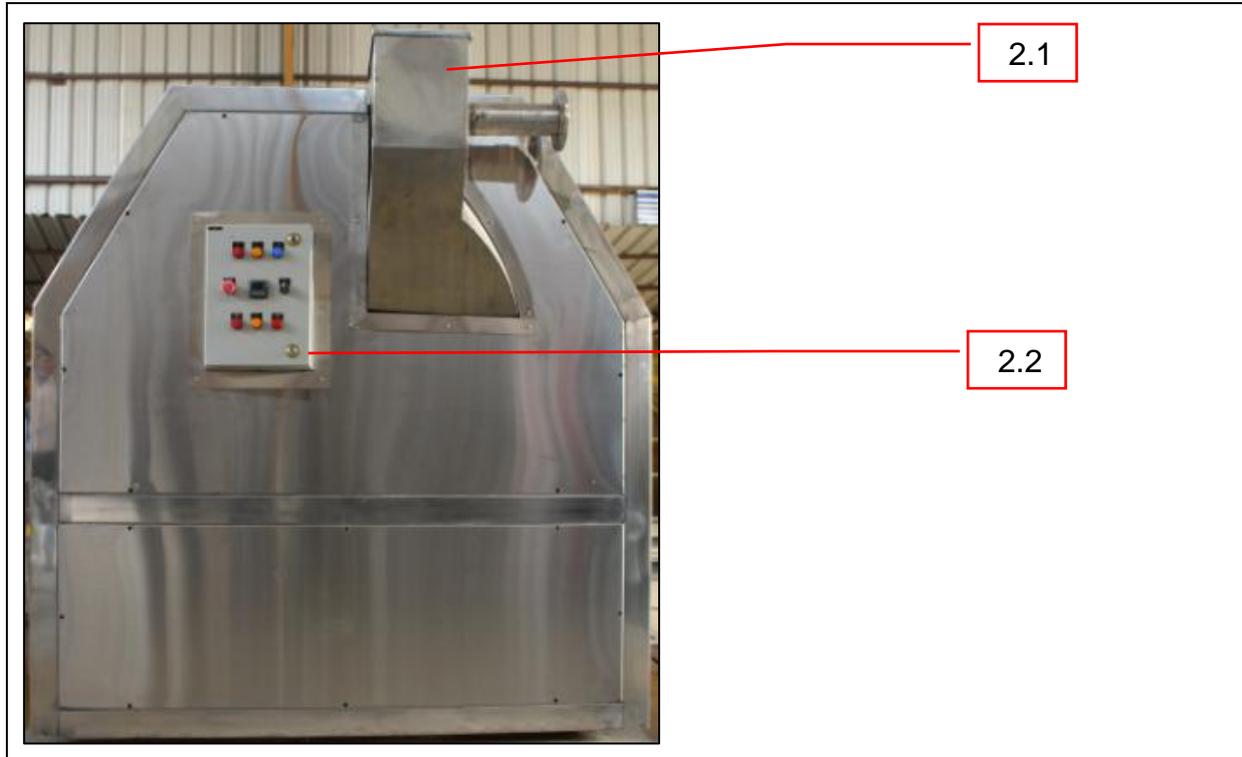


Figure 2: KWIK Composter Front View

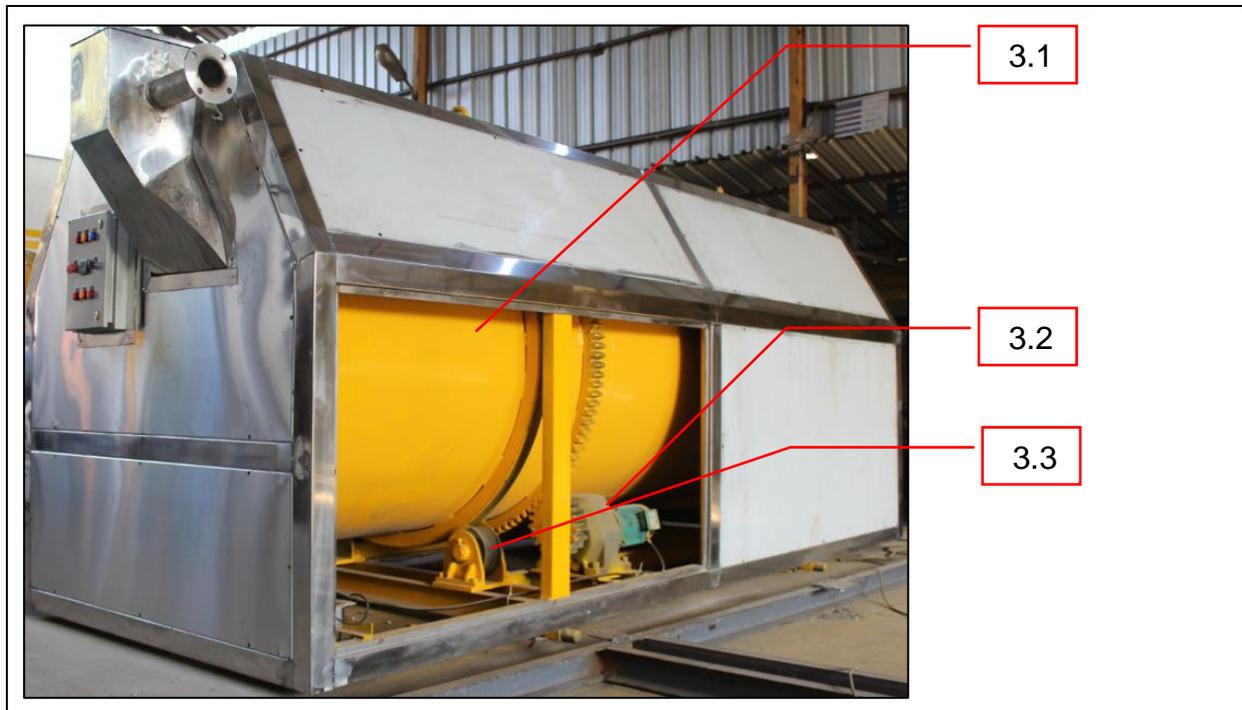


Figure 3: KWIK Composter Right Side View



Figure 4: KWIK Composter Left Side View

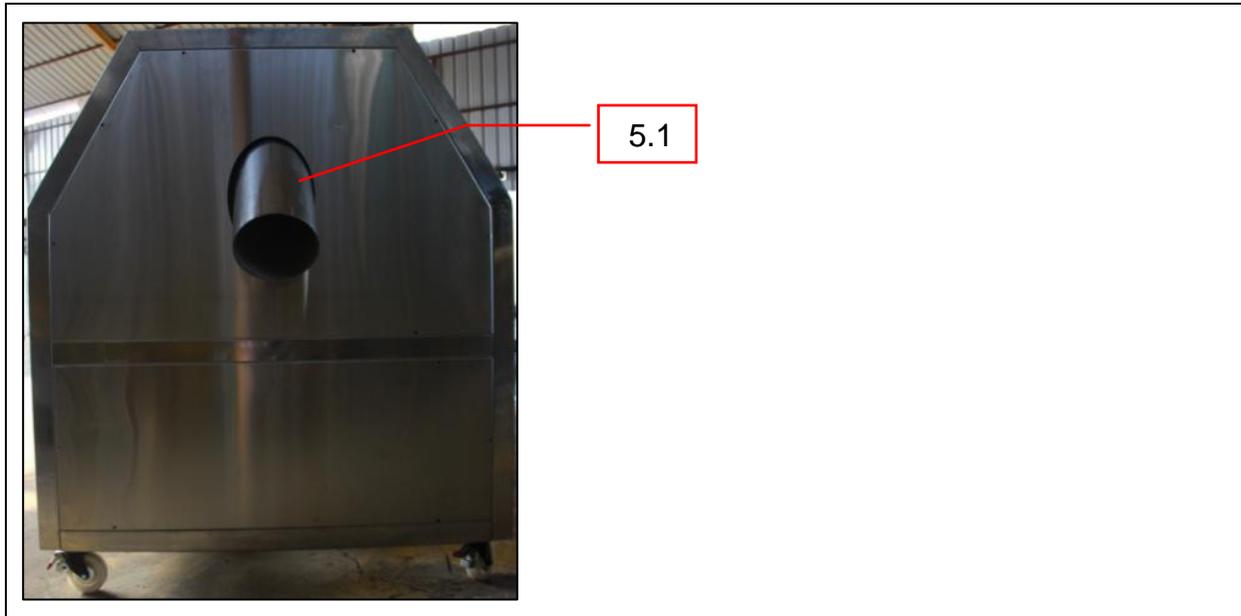


Figure 5: KWIK Composter Rear View

Table 1 provides brief description of main components/parts of Composter.

Table 1: Description about Main Components/Parts

Ref. No	Component/Part	Description
2.1	Inlet	Organic waste is added into the Composter.
2.2	Control Panel	The composter is operated with the help of Control Panel.
3.1	Insulated Drum	Organic waste is stored in the Insulated Drum. It rotates as per the time setting. The setting is done in two modes; Auto and Manual. The setting can be changed as per the requirement.
3.2	Gearbox	Insulated Drum rotates with the help of Gearbox attached to the motor.
3.3	Rollers	Insulated Drum is mounted on four Rollers. These Rollers help drum to rotate.
-	Blower	The air from Insulated Drum is passed through the Activated Carbon Filter and then released into the environment through the Blower.
4.1	Activated Carbon Tank (Filter Unit)	The odour generated during the composting process is filtered in the Activated Carbon Tank.
5.1	Outlet	Compost comes out from the Composter.

2 Accessories & Consumables

Table 2 provides the list of accessories. Accessories can be purchased separately from ECEPL. For more details refer website www.ecepl.com. For Customer Care refer http://www.ecepl.com/services/customer_care.

Table 2: List of Accessories

Sr. No.	Image	Accessory (Based on Models)
1		Segregation table
2		Bin lifter and tiller
3		Food and garden waste Shredder
4		Feeder
5		De-waterer

Table 3 provides the list of consumables. Use consumables as described in Standard Operating Procedure (SOP).

Table 3: List of Consumables

Sr. No.	Image	Consumable	Availability
1		Sawdust	Local Market
2		Composting Culture	Order from ECEPL. Refer Appendix B for ordering procedure.
3		Activated Carbon	Order from ECEPL. Refer Appendix B for ordering procedure.

3 Installation

ECEPL person installs the Composter. Under no circumstances, the client is required to do the installation. If it is observed, it might cancel the warranty claim for the product.

3.1 Prerequisites

Following are the prerequisites for installing the Composter.

- **Surface**

A tremix flooring with zero ground level is required as a platform for the Composter.



Note

A Tremix flooring is required as a platform for the Composter weighing 600 kg and above.

- **Power**

Table 4 provides the power requirement for the Composter.

Table 4: Power Requirements

Parameter	Value
Phase	3 with neutral
Voltage	440 V
Frequency	50 Hz
Electric Wire	Flexible, 3 core, 4 mm square, suitable length



Note

Ensure for the earthing. The cabling should be carried out as per the provided circuit diagram, and by the authorized person only.

- **Sawdust**

Sawdust is a high carbonaceous rich material and is easily available in the local market. It is used to reduce moisture content in the wet organic waste and also to maintain the C:N ratio in the composting cycle. It is mandatory to use carbonaceous material to ensure proper composting.

However, other carbonaceous material like a dried garden waste, rice husk, bagasse, dry cow-dung, and so on can also be used.

Table 5 provides the sawdust requirement.

Table 5: Sawdust Requirement

Parameter	Value
Sawdust	1000 kg (minimum stock)

- **Compost Culture**

Composting Culture contains bacterias and is an essential component of the composting process.

Table 6 provides the composting culture requirement.

Table 6: Composting Culture Requirement

Parameter	Value
Composting Culture	10 kg in stock

- **Water**

Water connection with ½ inch flexible pipe arrangement is required. This water is used to clean Composter and surrounding area.

- **Drain**

Drain point is required to remove excess/used water during cleaning of Composter.

3.2 Layout/Floor Plan

Figure 6 shows recommended layout/floor plan for Composter installation.

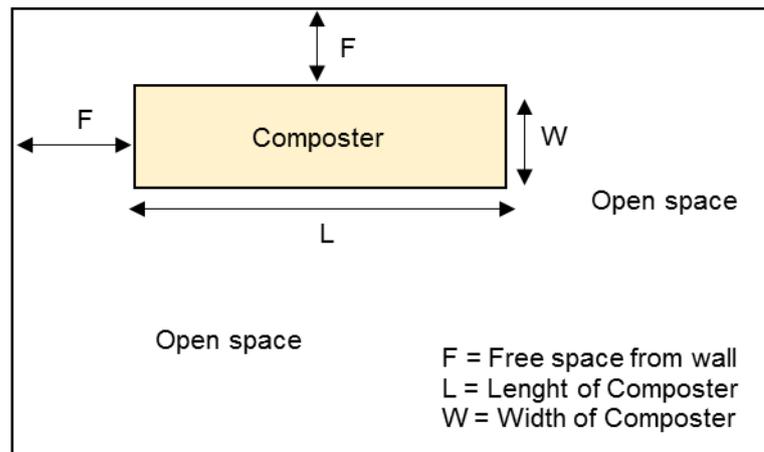


Figure 6: Layout/Floor Plan



Note Free space, F= 1.5 meter, should be left from all sides of Composter.

3.3 Installation Procedure

Depending on the location and contractual agreements, the Composter can be delivered covered in bubble paper wrap on pallets, in boxes, or in crates, whichever is suitable for shipping.

- Check the number of delivered packing units against the packing list.
- Check packing units for external damage.

Depending on the size and weight of the packing units, they must be handled on a low lift platform truck or forklift truck or hydra with sufficient lifting capacity.

Refer packing list given in Appendix A.

Handling should be done with minimum vibrations and shocks to prevent damage to the Composter.



Notes

- There can be a risk of falling, trapping, or serious damage to persons while handling packing units.
 - Always use a hoist with a sufficient lifting capacity.
 - Secure packing units against tripping over, and falling.
-

The following installation sequence is recommended. Depending on the customer-specific space situation at the site, it may differ.

1. Remove side walls of the crate.
 2. Remove the remaining packing material.
 3. Use forklift/crane/hydra to lift the Composter carefully from the base pallet, and set it down.
 4. Open the remaining packing units and remove the packing material.
 5. Check all parts for transport damage. In case of any damage, make entry at Delivery Challan, and LR copy. Mail the copy with photographs to ECEPL at info@ecepl.com. This is to assert claim to the transport insurance company.
-



Note

Store the Composter within a dry area to prevent damage especially to the control system. Communicate transit damage, if any, to ECEPL at the earliest.

6. Before installing the Composter, check all fasteners such as screws, clamps, and so on, are tightened.
7. Remove wheels attached to the Composter before putting it in the mounting place.
8. Position the Composter in the allocated space as per layout. Refer section 3.2 for more information.
9. Check for the Composter level.
10. Check for the power requirement as mentioned in section 3.2.

11. Connect Composter earthing to the main earthing point.



Notes

- The wiring should be carried out by an authorized electrician according to the provided circuit diagram.
 - The Composter is to be operated with a clockwise rotating electric field.
 - There can be a danger of electrical shock, and damage to electrical components.
 - Use necessary Personal Protective Equipments (PPEs).
-

12. Connect the main power cable to the Composter as per provided circuit diagram.

13. Check the direction of the rotating electric field.



Note

The installation of the Composter is to be performed carefully and correctly. ECEPL persons will do the installation.

3.4 Initial Try Run

Make sure that the Composter is installed and connected as per the procedure described in Section 3.3.

After installation, check for the following.

1. Electrical
 - i) Composter neutral, and earthing supply
 - ii) Specified voltage (440 V), current, and frequency (50 Hz) for three phase
 - iii) Red Yellow Blue (RYB) indicators' sequence
2. Activated Carbon Tank
 - i) Electrical connections
 - ii) Piping with machine inlet
 - iii) Tightness for nuts and bolts

The Composter is ready to use only after checking above-mentioned points.

4 What You CAN Compost

Table 7 provides the list of organic waste that CAN be composted in the Composter.

Table 7: What You CAN Compost

Image	Name
	Vegetables
	Spoilt Vegetables
	Fruit skins and Spoilt fruits
	Raw and cooked meat
	Eggshells
	Bread and bakery products
	Food waste
	Dry garden waste
	Dry temple waste

5 What You CANNOT Compost

Table 8 provides the list of organic waste that CANNOT be composted in the Composter.

Table 8: What You CANNOT Compost

Image	Name
	Coconut shell
	Plastic bags, and bottles
	Glass
	Metal
	Dog and cat droppings (Animal waste)
	Napkins or sanitary waste
	Pharmaceuticals
	Cosmetics



Notes

- Shredded coconut shell can be composted.
 - Animal waste can be composted. However, the compost will have an odor.
-

6 Personal Protective Equipments (PPEs)

Table 9 provides Personal Protective Equipments (PPEs). Use PPEs while working with Composter.

Table 9: Personal Protective Equipments (PPEs)

PPE	Description
	Safety shoes Always wear safety shoes to protect your feet.
	Hand gloves Always wear hand gloves to protect your hands.
	Mask Always wear a mask to protect your respiratory system.
	Safety goggles Always wear safety goggles to protect your eyes.
	Apron Always wear an apron to protect your skin and clothes.
	Washing hands Wash your hands frequently.

7 Working with Control Panel

Control Panel controls the operation of Composter. It is shown in Figure 7.



Notes

- Only authorized persons can open the Control Panel.
 - There is a risk of an electric shock.
 - Operate Composter in Auto Mode.
 - Refer section 10 in case of any trouble
-



Figure 7: Control Panel

Table 10 provides brief description of parts/buttons on the Control Panel.

Table 10: Control Panel Parts/Buttons

Ref. No	Part/Button	Description
4.1, 4.11	Key Knob	Key Knob is to open or close the Control Panel. To open the door, rotate key in an anti-clockwise direction and to close the door, rotate key in the clockwise direction.
4.2, 4.3, 4.4	R, Y, & B Indicators	Red, Yellow, Blue (RYB) indicators indicate the phases.
4.5	EM STOP	EM STOP is an emergency stop button. It is used In case of abnormal conditions to stop the composting process.
4.6	Timer Setter	Time intervals are set here during the installation. The ECEPL is the only authorized entity to set the time intervals.
4.7	AUTO/MANUAL	AUTO/MANUAL switch is a three-way selector switch. You can select AUTO, OFF or MANUAL mode of operation. The knob at left side indicates the AUTO mode. The knob in the middle indicates OFF condition, and the knob at the right side indicates the MANUAL mode.
4.8	MOTOR 1 ON	Motor 1 ON glow condition indicates that the Rotor motor is in ON condition.
4.9	TRIP	TRIP indicator glow condition indicates that either of the motor (Rotor or Blower) is tripped. The trip condition remains for approximately five seconds. Trip reset is auto, and the motor starts again within five seconds.
4.10	MOTOR 2 ON	Motor 2 ON glow condition indicates that Blower motor is in ON condition.

Auto Mode:

In this mode, Composter is controlled automatically. Blower and Rotor motors run continuously, as per set time intervals.



Notes

- Only authorized persons can access the Composter setting parameters.
- ECEPL sets the Composter setting parameters during installation.

Manual Mode:

In this mode, Composter is controlled manually. Blower and Rotor motors run as per your requirement.

8 Standard Operating Procedure (SOP)

Figure 8 shows the composting process flow diagram.

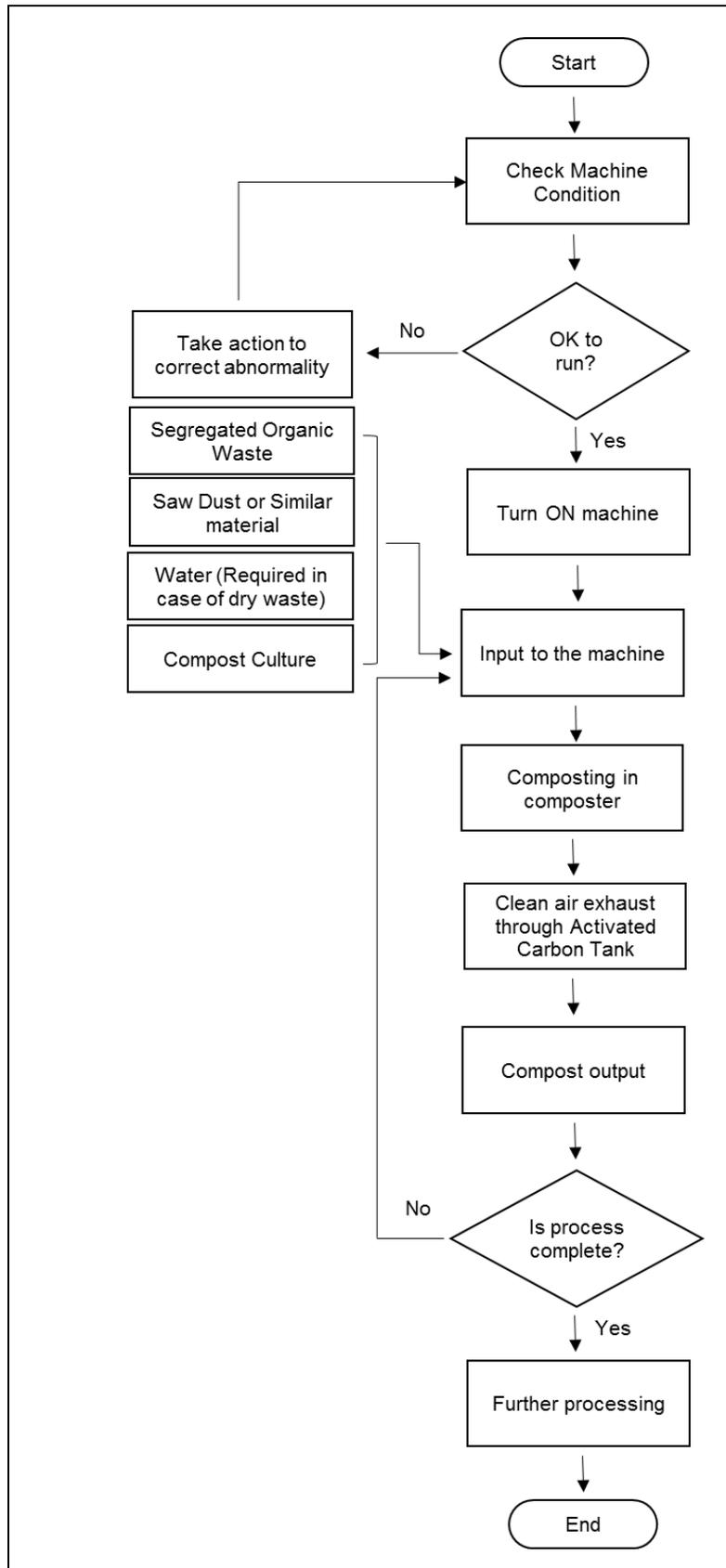


Figure 8: Composting Process Flow Diagram



Notes

- For your safety, make use of PPEs, as described in section 6.
 - Ensure Composter is ready for use.
 - Ensure use of organic waste as described in section 4.
 - Ensure not to use waste as described in section 5.
-

Following is the Standard Operating Procedure (SOP).

1. Segregate plastics and other non-biodegradables from the waste.
 2. Cut large size fruits and vegetables. Approximate size of loading material is up to 1 inch -1.5 inch.
 3. Ensure large quantity of inorganic material like plastic and so on, is not loaded in Composter.
 4. Store organic waste in a perforated vessel for about four hours to remove excess moisture from the organic waste, and then dump it in Composter.
 5. Add 10% to 30% sawdust in the organic waste depending on moisture level at the outlet.
-

**Note**

The % of sawdust may increase depending on the moisture content of organic waste (like curry, sambhar, gravy, and so on).

6. Add 0.1% (of feeding capacity) composting culture in the Composter.
7. Close the inlet door.
8. Ensure the outlet is not blocked.
9. Confirm, Composter is in AUTO MODE.
10. Put bin/collector at outlet. Compost is automatically collected in the bin/collector.
11. Segregate large un-composed organic material from the compost and reload.
12. For excellent results, the output should be moist and not wet. If the output is wet, increase sawdust quantity and reload it.

9 Maintenance



Notes

- Only authorized persons are allowed to carry out maintenance tasks.
 - Use necessary Personal Protective Equipments (PPEs).
-

Like every machine, Composter also requires maintenance at regular intervals of times. Following are few guidelines for the smooth functioning of Composter.

9.1 Daily Maintenance

Perform following checks daily for the trouble-free functioning of the Composter.

- Abnormal noise - Check for any abnormal noise.
 - Wiping and cleaning - Wipe Composter daily with a clean cloth. Keep Composter surrounding area clean.
-



Note

If Composter surrounding area is not clean then there will be odour. The odour is not from the Composter but from the Composter surrounding area.

- Damage and leakage - Check for any damages and leakages. Contact ECEPL immediately.
 - Scratches - Avoid feeding sharp objects as they may cause scratches.
 - Exhaust fan - Check, if any object is blocking the exhaust fan area.
-

9.2 Preventive Maintenance

- Gearbox should be refilled with grease every five years. Contact ECEPL to arrange an authorize person.
- Rollers need greasing once in every 6 months.
- Blower needs to be free from obstacles.
- Blower pipe should be checked for sawdust clogging regularly. If clogged, remove and clean the pipe and reassemble the same.
- Activated Carbon Filter should be changed every five years. Contact ECEPL to buy.

9.3 Shutdown Maintenance

Follow the shutdown maintenance procedure as given below.

1. Switch OFF Composter.
2. Disconnect main power supply and remove the plug.

10 Troubleshooting

The useful information for troubleshooting is as follows.

1. Unpleasant smell

In case of unpleasant smell from Composter, ensure that the input and output are moist. If it is wet, then add sawdust through inlet. Increase the composting culture by 0.2%. Continue until you get desired results of no smell and moist compost.

2. No output

- Ensure that the outlet is not blocked. Remove blockages to flow compost freely.
- Usually, there is no output if the Composter is not operated as per its capacity.

For example, the Composter with 100 kg/day capacity delivers output in 15 days for an input of 100 kg/day organic waste. The input of an organic waste below 100 kg will take more time for the output.

3. Leakages

In case of leakages ensure tightness of bolts for front and rear cover.



Note Handle seals with care. Excess pressure may break seals.

4. Overloaded drum

If the inlet is blocked and no further organic waste can be added in the Composter then this indicates that the drum is overloaded. If the organic waste overloads the drum, select the MANUAL MODE in HMI/Control Panel, remove overloaded compost from outlet manually. Run the Composter in Auto Mode and continue the operation.

5. Main Motor stopped working

Ensure the following.

- Organic waste does not overload drum.
For overloaded drum, refer point 4.
- Electrical connections
- Door is closed properly

6. Blower stopped working

Ensure the following.

- Clogging. If clogged, remove, clean, and reassemble pipe.
- Capacitor working condition. If capacitor is not in working condition, get it checked from an authorized person.
- Electrical connections
- Door is closed properly
- For any other problems, contact ECEPL.

7. Abnormal noise during process

Push Emergency Stop button, check Composter, check HMI/Control Panel, and take countermeasures on the same.

Contact ECEPL, for more information and the severity of the problem.



Note Refer Appendix E for daily recording of operations.

11 Emergency Stop Conditions

Figure 9 shows Emergency Stop button. It is a push and release type of button. It is used during abnormal conditions.

Some of the abnormal conditions can be as follows.

1. Abnormal noise during the process.
2. In case of accidents.

Such conditions can be handled by pushing an EMERGENCY STOP.

For above conditions, follow the procedure given below.

1. Push **EM STOOP**.
Composter stops immediately.
2. Resolve the abnormal condition.
3. Pull the knob out to release it.
4. Start the Composter again.



Figure 9: Emergency Stop Button

12 Technical Specifications

12.1 General Parameters

Table 11 shows general parameter of the Composter.

Table 11: General Parameters

Parameter	Value
Temperature (Inside Composter)	45 °C to 65 °C
Noise	68.81 dB

12.2 Electrical Specifications

Table 12 shows electrical specifications of the Composter.

Table 12: Electrical Specifications

Parameter	Value
Phases	3
Voltage	440 V
Frequency	50 Hz

12.3 Components Specifications

12.3.1 Motor Specifications

Table 13 provides the specifications of the motor.

Table 13: Motor Specifications

Parameter	Value
Rating	1 HP to 15 HP
Voltage	420 V
Frequency	50 Hz
Power supply	3 Phase
Ambient temperature	50 °C

12.3.2 Blower Specifications

Table 14 provides the specifications of the blower.

Table 14: Blower Specifications

Parameter	Value
Rating	180 W at 240 VAC
Capacity	450 CFM to 500 CFM under ideal temperature, and pressure conditions
Frequency	50 Hz
Maximum Static Pressure	740 Pa

13 Engineering Drawing

Figure 10 shows engineering drawing for Composter.

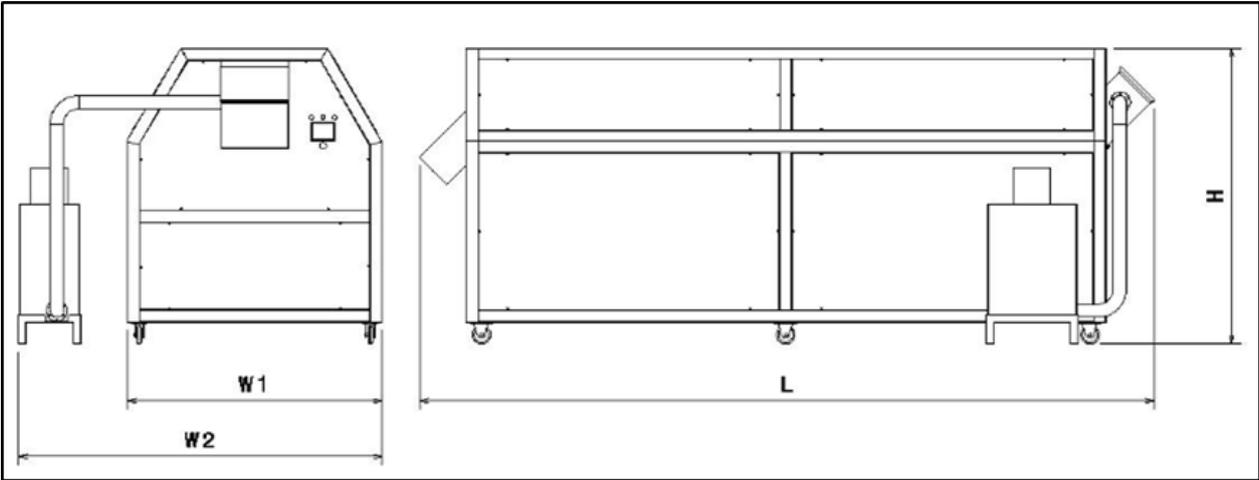


Figure 10: Engineering Drawing

14 Circuit Diagrams

Figure 11 and Figure 12 show Control, and Power diagram respectively of the Composter.

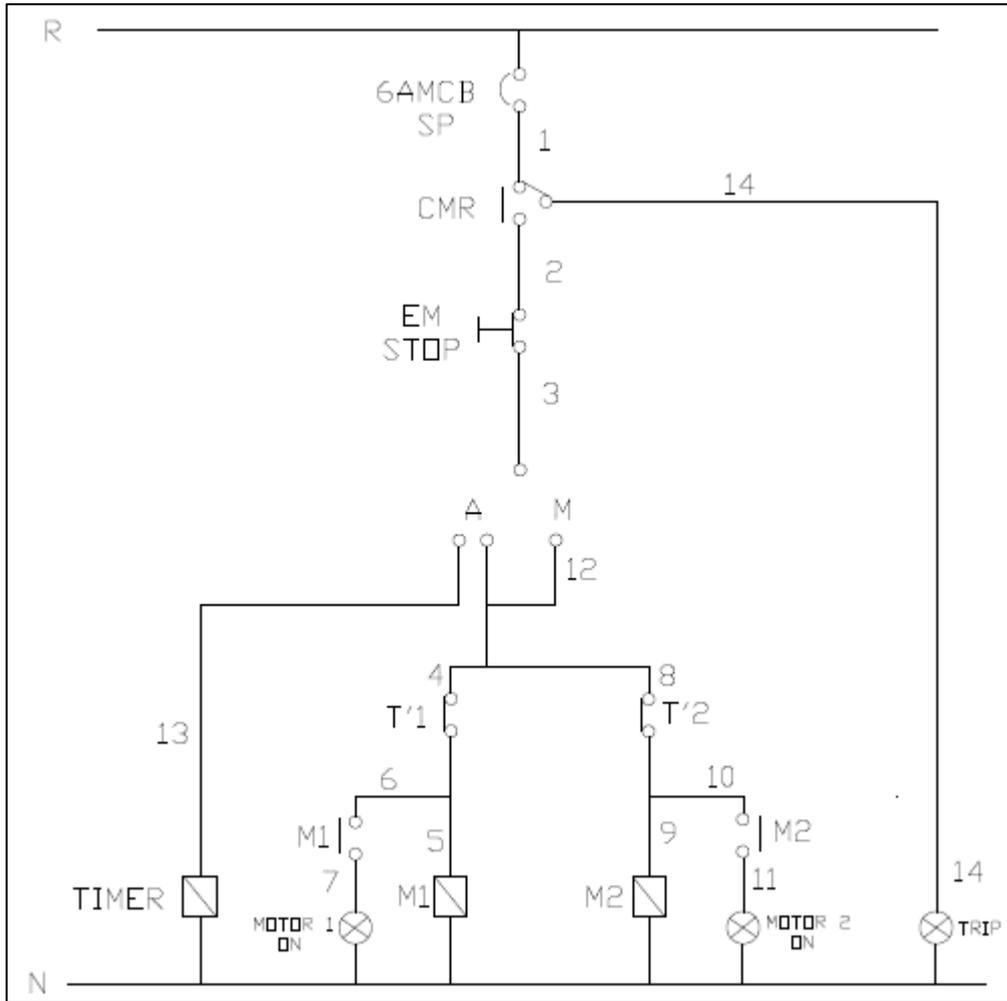


Figure 11: KC DRG ITA Control Diagram

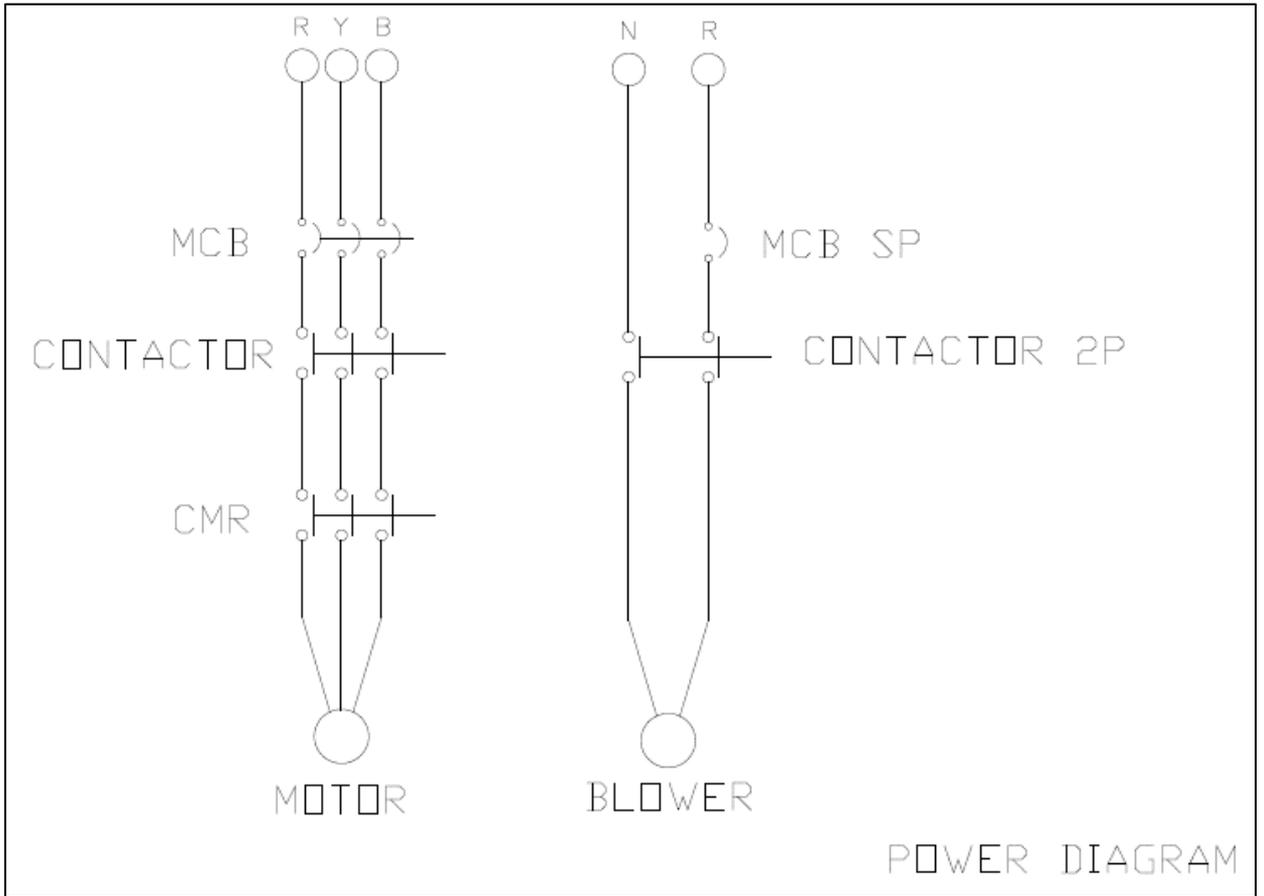


Figure 12: KC DRG ITA Power Diagram

15 FAQs

1. **What are the different capacities of the Composter?**

At present, ECEPL offers Composters ranging from 50 kg/day to 3000 kg/day.

2. **What are the consumables required to convert organic waste into manure?**

Sawdust and culture are required for the conversion.

3. **Is there any alternative for sawdust?**

Dry garden waste can also be used as an alternative to sawdust.

4. **What happens if there is no power?**

The composting culture inside the Composter can sustain around three to four days even without power.

5. **What are the major maintenance tasks?**

A detailed preventive maintenance guide is provided with the Composter. Negligible maintenance is required. Refer section 9 more details.

6. **Can the output of the Composter be directly used for plants?**

No. The output of the Composter cannot be used directly. The output needs to be kept for maturation, for about 30 to 40 days. Then only after lab testing it can be used.

7. **Which grease grade is used in Gear Box?**

Grease grade 320 is used in Gear Box.

16 Glossary

Compost Culture

Compost Culture consists of bacterias (Thermophilic and Mesophilic) which help in the composting process. It is used to stimulate the composting process.

Data Logging

Data logging is a collection of data from HMI/Control Panel/PLC over a period.

Exothermic Process

Exothermic Process describes a process or reaction that releases energy from the system to its surroundings, usually in the form of heat.

Sawdust

Sawdust is a waste of woodworking operations such as sawing, milling, planing, routing, drilling, and sanding. It is composed of fine particles of wood. It is a consumable powder used to make the organic waste moist with proper content.

Static IP

A static Internet Protocol (IP) address (static IP address) is a permanent number assigned to a computer by an Internet service provider (ISP).

Tremix Flooring

Tremix flooring is a special type of flooring used in the industrial sector for rigid machine foundation. It provides better wearing and tearing properties.

17 Appendices

Appendix A: Packing List

Table 15 provides the packing list.

Table 15: Packing List

Sr. No.	Description	Quantity
1	Name of product as per Purchase Order	1
2	Excise Invoice	2
3	Delivery Challan	2
4	Warranty Certificate	1
5	User Manual	1
6	Activated Carbon Filter (25 kg)	1 bag
7	Carbon tank (FRP/ SS) with blower/ capacitor	1
8	SS/PVC pipe ϕ 90 mm cut as per size	1
9	SS/PVC elbow ϕ 90 mm	2
10	Panel key	1
11	CI with split pin for selected models only	4
12	Carbon tank stand	1
13	Culture	5 kg
14	Sawdust for initial operations only	20 kg

Appendix B: Spare Parts List & Consumables List

The recommended list of spare parts is as below.

1. Blower
2. Pinion
3. Rollers
4. Bearing
5. Rubber bidding

The list of Consumables is as below.

1. Sawdust
2. Compost Culture

Spare Parts/Consumables Ordering Procedure

Procedure to order Spare Parts/Consumables is as follows.

1. Go to the website <http://www.ecepl.com>
2. On Homepage, Click **SERVICES**, and then click **SPARE PART ORDER FORM/CULTURE ORDER FORM** from drop-down list.
3. SPARE PART ORDER FORM/CLUTURE ORDER FORM appers.
4. Fill the required information and click **SEND**.
5. Payment should be by **NEFT**.
Refer http://www.ecepl.com/services/culture_order_form for NEFT details.
6. Once ECEPL gets this form, the service team will approach you.
7. Spare Parts/Consumables will be delivered to the delivery address.

For more information, please contact info@ecepl.com or call +917755912527.

Appendix C: Quality Certifications

Quality Certificates will be issued along with the Composter.

Appendix D: Warranty Certificate

Warranty Certificate will be issued along with the Composter.

