

Compost Tea System25 *Operating Manual*



Growing Solutions
INCORPORATED

Distributed by

Martin Lishman

PLEASE READ COMPLETE INSTRUCTIONS BEFORE ASSEMBLY AND REFER TO THEM REGULARLY TO ENSURE OPTIMAL PERFORMANCE AND SAFETY.

CAUTION

Special care should be taken when operating any equipment using electricity. To avoid possible electric shock or risk to personal safety, please observe all electrical safety rules and tips:

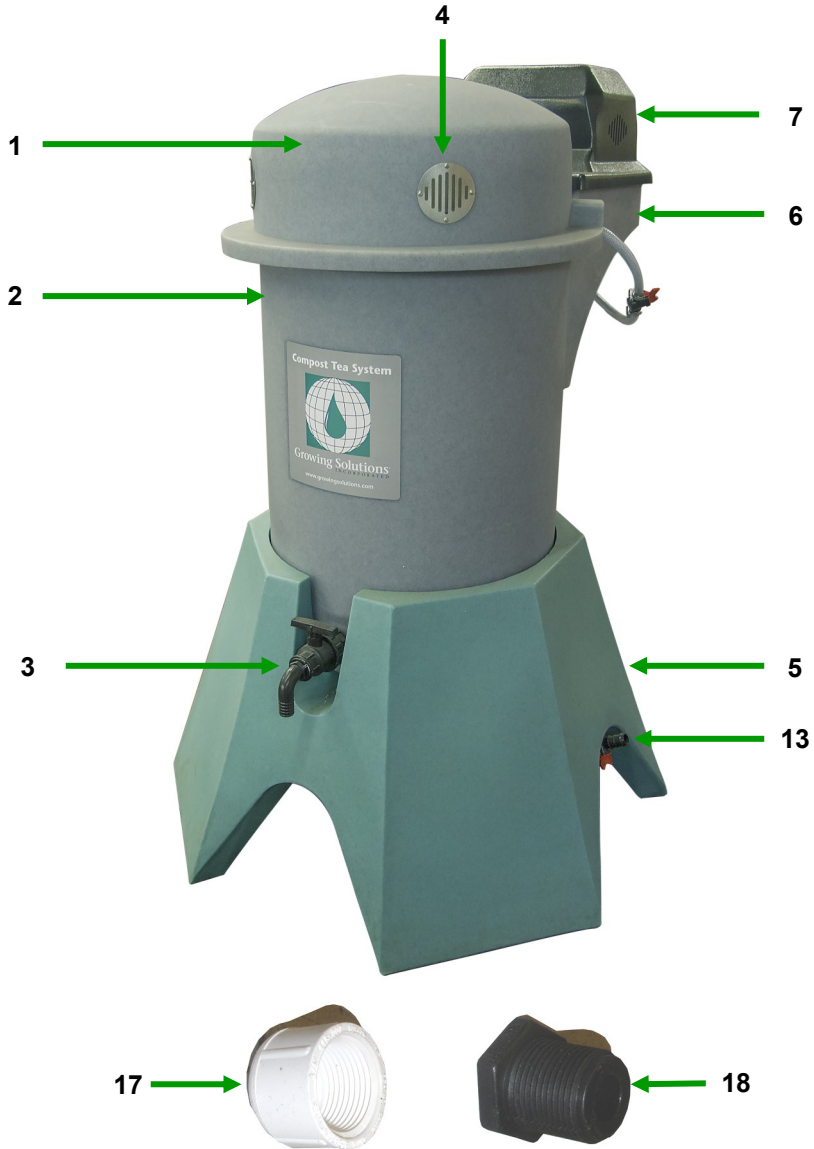
- The System25 is designed solely for producing compost tea. Use of the System25 for any other purpose may cause damage to it, injury or death and is not covered by the product warranty.
- Do not expose the System25 to excessive sun, moisture or rain.
- Do not operate the System25 if it has a damaged electrical cable or plug, if it is not working properly, or if it has been damaged or dropped.
- To prevent any personal injury, or damage to the System25, operate it only in its fully assembled state.
- Close supervision is required when operating the System25 in the vicinity of children.
- The use of attachments not recommended or sold by Growing Solutions Inc. or Martin Lishman Ltd may cause unsafe operating conditions and voids warranty.
- Always unplug your System25 prior to cleaning or maintenance. Grasp plug to remove power cord from electrical outlet. Do not unplug by pulling on the power cord.
- Only use your System25 with a Residual Current Device (RCD) connected to a 230V 13amp power supply to prevent risk of electrical shock or equipment damage.
- Compost tea is not intended for human consumption.
DO NOT DRINK. KEEP AWAY FROM CHILDREN.
- The Electricity at Work Regulations 1989 require that any electrical equipment that has the potential to cause injury is maintained in a safe condition.

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Compost Tea System 25 Parts Identification

No.	Description	Qty
1	Tank Lid	1
2	100 litre (25 Gallon) Tank	1
3	System Drain Valve	1
4	Tank Lid Vent	1
5	Tank Stand	1
6	Air Pump Shelf	1
7	Air Pump Shelf Cover	1
8	Aeration Disk	1
9	Compost Basket	1
10	Compost Basket Tray	1
11	Air Pump	1
12	Power Supply Lead	1
13	Air System Purge Valve	1
14	Basket Airstone Valve	1
15	Basket Airstone Connector	1
16	Basket Airstone	1
17	Plastic Cap	1
18	Plastic Plug	1

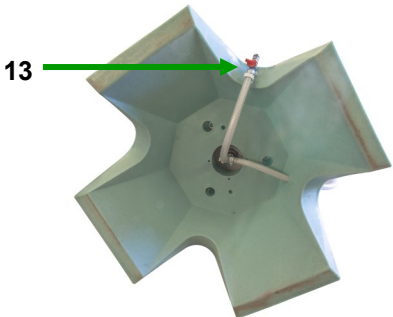
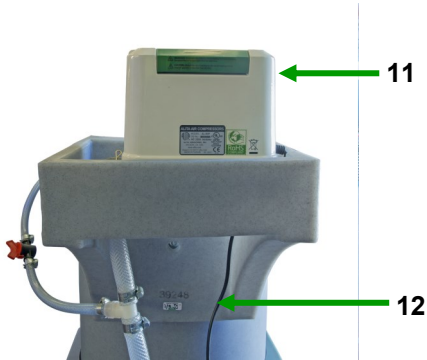
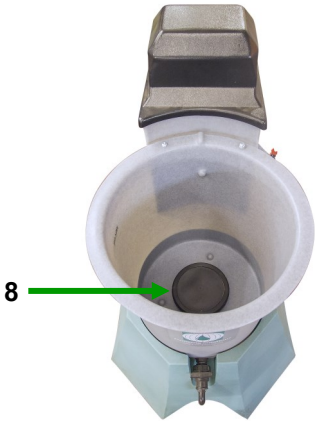
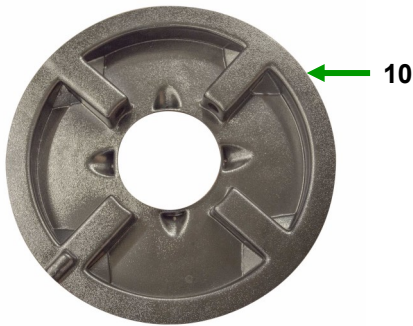
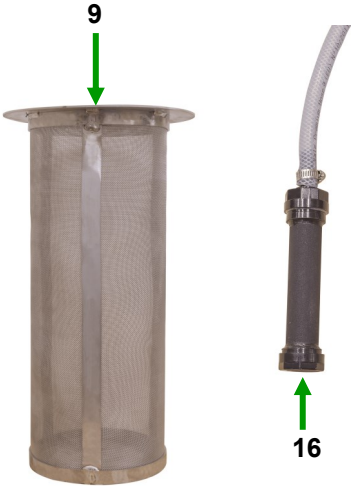
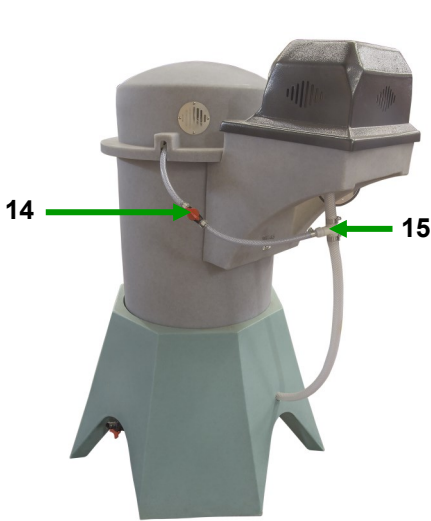
Compost Tea System 25 Parts Identification



Also supplied:

- Nylon mesh bag for straining fine particles from compost tea when emptying tank through drain valve

Compost Tea System 25 Parts Identification



Compost Tea Production

Please see diagrams on pages 4-5 for component identification.

- STEP 1** Place the System25 in a location that has a level surface and that allows for easy access to electric controls and plumbing valves. Location should be well ventilated and protected from weather, especially sunlight.
- STEP 2** Plug the power supply lead (12) into a 230 volt 13 amp power supply. If needed, an extension cable of suitable diameter should be used. **Use only with a Residual Current Device (RCD).**
- STEP 3** Confirm that the System drain valve (3) is closed. Fill the tank (2) to the 25 gallon (100 litre) mark indicated on the side of the tank. Be aware that when compost is placed in the baskets the water level will rise. *See page 10 for information on water quality and temperature.*
- STEP 4** Adjust the airstone valve (14) to the off position.
- STEP 5** Turn on the air blower (11) at the power source.
- STEP 6** Using the scoop provided, add 1 scoop (250ml) of Compost Tea Catalyst directly into the water in the tank and allow it to disperse within the moving water.
- STEP 7** Fill the compost basket (9) about 3/4 full. You will need about 3-5 litres. Compost should be filled loosely; compacting the compost will not allow adequate flow of water through the compost basket resulting in lower quality extraction. *See page 10 for more information on selecting compost.*
- STEP 8** Place the compost basket tray (10) onto the top of the tank and insert the compost basket (9) in the basket tray.
- STEP 9** Open the basket airstone air valve (14). Insert the basket airstone (16) into the bottom of the compost basket (10). Adjust the basket airstone valve (14) so that there is a low level of agitation and aeration in the compost and water in the basket.
- STEP 10** Place the Lid (1) on the tank and leave the System to run for 24 hours. If foaming occurs during brewing add a few drops of vegetable oil to the water. When the lid is removed, to avoid the risk of distortion ensure it is placed on a flat surface.

Compost Tea Removal Procedure

- STEP 1** After the brewing has completed, turn off the power to the air blower and allow the compost tea to stand for 30-60 minutes. This is to allow suspended particles in the compost tea to settle to the bottom of the tank before the tea is removed.
- STEP 2** Attach a hose to the System drain valve (3) and place the outlet end of the hose in the destination container.
- STEP 3** To discharge the tank, start by opening the System Drain Valve slowly. Check that sediment from the bottom of the tank is not being sucked out during emptying. If this is happening, reduce the flow by closing the valve until there is less turbulence generated. Allow the compost tea to flow freely until the tank is empty or until only sediment is being removed, then close the valve.
- Important:** See page 12 for information on additional filtration techniques.
- STEP 4** When compost tea removal is complete, disconnect the power supply to the air blower. You should then begin the cleaning procedure as soon as possible.

System25 Cleaning Procedure

Proper cleaning is essential to maintaining your System25 and making quality compost tea. It is normal for biologically active compost tea to produce *biofilm*, a thin, slimy film of bacteria that adheres to a surface. Routine cleaning is necessary to prevent an accumulation of biofilm within your System25. Never use soaps, bleach, harsh chemicals or abrasives.

ALWAYS unplug your System25 before cleaning.
NEVER submerge the air pump shelf assembly.
DO NOT spray water near the air blower and shelf or the power cord.

CLEANING (after every use)

STEP 1: Remove and clean the compost basket (9)

Carefully remove the compost basket (9) from the tank. Tilt the opening of the compost basket slightly facing down and allow the compost to gradually slide out of the basket. The used compost can be added to your soil as a soil conditioner.

Do not squeeze the sides of the basket or bang the end of basket to remove the compost as it may damage the mesh material.

System25 Cleaning Procedure

Rinse the basket thoroughly with water and allow to dry. Some particles may remain in the mesh material and can be removed with a soft brush after the material has been allowed to dry.

NOTE: If it is necessary to disinfect the basket, spray it with 3% hydrogen peroxide (or similar) and allow to sit for one hour. Rinse the basket when finished.

STEP 2: Rinse the tank thoroughly

Open the drain valve (3). Use a hose with a spray nozzle to thoroughly rinse the inside of the tank until any remaining sediment has drained and the discharge water is clear. Be sure to spray the area around and underneath the aeration disk. Use a non-abrasive sponge or soft brush to wipe away any remaining biofilm or residue and rinse again. Store the System with valves open.

STEP 3: Remove and clean the aeration disk (9)

Remove the aeration disk by turning it anticlockwise. To avoid water getting into the air line and the disk, fit the threaded plug and cap provided. With a spray nozzle and non-abrasive sponge, thoroughly clean and rinse the underside of the aeration disk until any visible biofilm or residue is removed. Let any water present drain out of the tank, remove the plug and cap, **carefully** re-thread the aeration disk onto its location and hand tighten clockwise.

STEP 4: Clean the basket airstone (16)

The basket airstone (16) will absorb liquid if left without sufficient airflow. To remove this fluid, first lift the diffuser out of any liquid. Next, turn off the aeration disk air valve (17) and open the main basket diffuser air valve (15). Turn on the air blower (12). Allow the air blower to force air through the basket airstone until you no longer observe liquid bubbling from it.

The basket airstone may be removed by unscrewing the basket airstone connector (15). The diffuser can be cleaned in a dishwasher to avoid a build up of biofilm. This should be followed by the above procedure to force any absorbed liquid from the diffuser. Reassemble the fitting tightly when finished to prevent air leakage (make sure the rubber washer is in place for a proper airtight seal).

STEP 5: Empty the air line drain

After every compost tea production cycle, empty the air line drain of any moisture. This is controlled by the Air System Purge Valve (13). After the machine has been cleaned, turn the air blower back on and open the purge valve. Any water that has entered the air system, will be blown out through this valve.

Tips for Making and Using Compost Tea

What is compost tea?

Compost tea is a biologically active liquid extract of compost that contains three essential components: Micro-organisms (active and inactive), Plant nutrients (macro and micro-nutrients) and Organic compounds (plant-growth compounds). The System25 is designed to provide optimal conditions for extracting these three components from compost.

Factors affecting the quality of compost tea

Water quality and temperature

Chlorine: The ideal water for making compost tea is harvested rain water. This will be at or near ambient temperature and should be free of chemicals and additives. Chlorinated drinking water will inhibit microbial growth. If this is used, dissipate the chlorine by aerating the water in the tank for approximately an hour prior to adding the compost. Check if the chlorine has been driven off by smelling the aerating water.

Temperature: The optimum water temperature range for compost tea production is 21° - 24°C (70° - 75°F). Lower temperatures result in slower microbial growth. Higher temperatures result in lower dissolved oxygen levels in the tea.

Microbial food source (Compost Tea Catalyst)

Growing Solutions Compost Tea Catalyst, a microbial food source, contains soluble kelp, fulvic acid, rock powder and a blend of botanical ingredients formulated for optimal microbial growth and diversity. Other ingredients can be added to compost tea, such as liquid seaweed extract or single species microbe additives, but these should be tank mixed with compost tea when production is finished.

Compost quality and type

Although any type of compost can theoretically be used to make compost tea, a number of important factors should be remembered:

- The compost must be properly prepared to ensure all harmful pathogens have been destroyed. Different countries have different standards, but typically the compost must have reached a temperature of 65°C sustained for 7 days. Anaerobic material must be completely absent, pH should be in the neutral range and salinity should be low.
- The balance of raw material used to make the compost will affect the microbial content and diversity of the compost tea. A balance of green and woody waste will usually produce the greatest diversity of bacteria and fungi and other microbes in the compost tea.
- The texture of the compost should be slightly coarse and not too fine so that it floats freely in the compost basket during the production cycle.

Tips for Making and Using Compost Tea

- If fine material such as Vermi-compost is used, additional filtration may be required to avoid blocking application equipment. See p.12 for guidance.

Compost Tea Compost is available from Martin Lishman Ltd. This is compost specially for compost tea production. It is a balanced, high quality compost, rich in bacteria, fungi and protozoa.

Using compost tea

There is no single recommended method of use of compost tea. It can be used at any frequency or rate to suit the growing situation. Compost tea can be applied as a soil drench, a foliar application or through irrigation systems. There is no risk of over-application because compost tea is completely natural and organic. Each grower will find the best application regime to suit their situation. Some typical examples are:

Application frequency

Apply compost tea throughout the growing season. It can be applied continuously at low concentration via irrigation systems or once a week at full strength in times of plant stress (known disease conditions, environmental stress, etc); but is more commonly applied at diluted strength every 3 or 4 weeks. Do not apply less than 7 days before harvesting edible produce. To minimise leaf run-off, avoid applying during very wet weather.

Application timing

Apply compost tea in early morning or late afternoon to minimise the harmful effects of UV rays on the micro-organisms. Early morning application can take advantage of dew on the leaves. If morning dew is present, as it evaporates the compost tea is more readily drawn into the plant.

Application and dilution rate

Application and dilution rates depend on the growing situation and the application equipment. Compost tea can be used undiluted in situations of extreme disease pressure or diluted to provide adequate coverage or to suit the size of the sprayer. A typical application rate might be 250 litres/ha with a dilution of 1 part of compost to 3 parts of water, but in drip irrigation or dosing systems the dilution can be as high as 1 to 100. Users tend to find a rate and frequency to suit both their operation routines and the beneficial outcomes in terms of plant growth and disease suppression.

Compost tea shelf life

Compost tea should be used as soon as possible after the 24 hour production cycle, ideally within 12 hours and certainly within 48 hours. Exceeding this time will potentially allow the compost tea to become anaerobic and the diversity of

Tips for Making and Using Compost Tea

micro-organisms will decrease. If not used immediately, keep your compost tea cool, out of sunlight in an open container and stir frequently until used. Do not store in a sealed container for an extended period of time.

Filtration

Compost tea can contain a varying degree of suspended particles and may require additional filtration after brewing has finished. The compost basket is designed with a mesh size (734 microns) that will allow fungal hyphae to pass from the compost into the water. There should not be any smaller size mesh restriction at this stage, but if vermi-compost is being used, a bag with the same size mesh can be placed inside the basket. Additional filtration can be used as the compost tea is being removed from the tank and in application equipment. Below is a table of recommended filter sizes that can be used:

Filtration point	Mesh size	Micron equivalent	Notes
Compost Basket	24	734	As supplied with the System
Filter bag	24	734	Place over System Drain Valve
Sprayer lid filter	18	1000	Use 2 filters, one on top of the other
Sprayer pump filter	50	297	
Nozzles	None	None	05 brown nozzles without filters

Application equipment and procedure

Any conventional type of crop sprayer, overhead glasshouse applicators, drip irrigation systems, backpack sprayers and even watering cans can be used to apply compost tea. Some changes to filtration and nozzle type may be required as detailed in the table above. A maximum spray pressure of 2-2.5 bar should be used to ensure microbes (especially fungi) are not damaged during application. If the application equipment has been previously used with chemical pesticides, these can be harmful to the micro-organisms contained in compost tea, so ensure that it has been thoroughly cleansed beforehand. If fungicides or other pesticides do need to be applied, follow up as soon as possible with an application of compost tea to help to restore the beneficial micro-life that may be destroyed by the chemical.

Application types

If compost tea is used as a foliar spray, thorough leaf coverage is important in order to maximise a disease suppression effect. Compost tea may also be used to accelerate the decomposition of plant litter. Soaking plug plants in compost tea prior to planting can also help in early growth stages. As a soil drench, apply compost tea with enough water to ensure it reaches the root zone.

SERIAL NUMER: _____

**DATE
PURCHASED:** _____

LIMITED WARRANTY

Growing Solutions Incorporated (“GSI”) guarantees that for the period beginning on the date of purchase and ending 12 months after that date, this System25 (the “Product”) will be free from defects in material and workmanship. If a defect in material or workmanship is discovered during a period of this limited warranty, GSI, in its discretion, may either provide a new Product to the customer or repair the customer’s Product. If the Product is to be shipped for repair, shipping arrangements and expense shall be borne by GSI.

In order for this limited warranty to remain in force, the Product must be used only for agricultural purposes and related purposes and it must not be modified or altered in any way.

GSI does not warrant the suitability of the Product for the customer’s particular purposes. This warranty is limited to the repair or replacement of the product and in no event shall GSI’s liability be greater than the purchase price of the Product. GSI shall not be liable for consequential or special damages, for any damages relating to the use of the Product or any damages resulting from use of, or a customer’s inability to use the Product, including damages to plants, animals, persons or property. There are no warranties, express or implied, extending beyond those stated here.

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