clivus multrum

WATERLESS COMPOSTING TOILETS

waterless composting toilet systems

Manufacturers of Australia's Leading Commercial Environmental Toilet Systems

INSTALLATION MANUAL

For Models:

CM8 | CM10 | CM14

CM20 | CM40

p 1300 138 182

or

p 07 3889 6144

www.clivusmultrum.com.au

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1. RECEIVING THE SHIPMENT

Your Clivus Multrum toilet system is shipped as an assembled compost tank with most of the Clivus components packed inside. All components can be removed without disassembling the tank. The toilet chute will fit through the inspection door. The pedestal package is usually strapped to the compost tank. With the bales of Wood Shavings still inside the tank; cut and remove the plastic wrap, & then break up the Wood Shavings with the Maintenance Tool.

Please refer to Section 3 and 4 to identify the components and check them against the packing slip supplied. If there has been any damage, please contact Clivus Multrum immediately.

Damage, shortages and discrepancies must be reported to your local representative or Clivus Multrum Australia within 7 days of receiving shipment. Any damage or missing parts not reported within 7 days from receipt of goods will not be the responsibility of Clivus Multrum Australia.

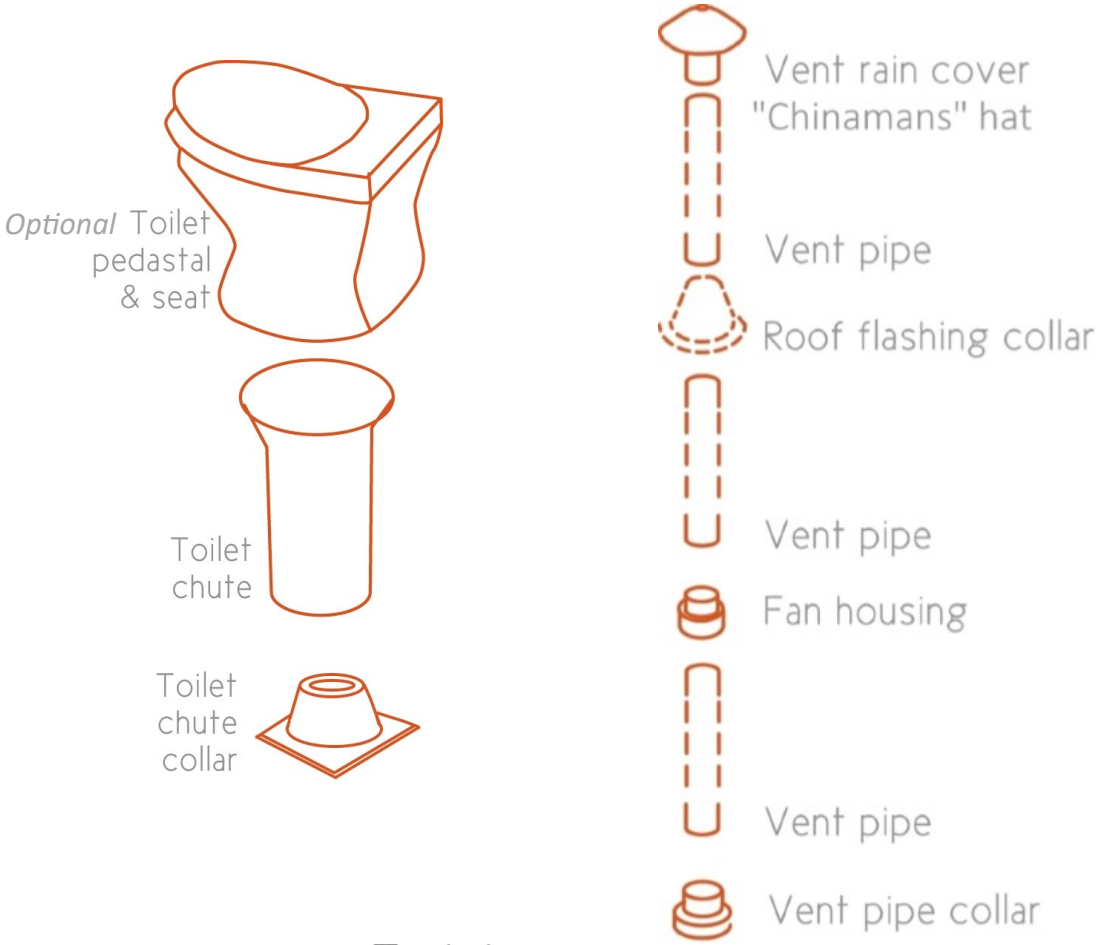
2. INSTALLATION SUMMARY

Read through the entire installation manual thoroughly before commencing assembly.

- Ensure the tank is in a position so that all toilet chutes will be vertical and over the tank in the preferred position/s.
- Ensure the tank is level, stable and supported.
- Mark and cut holes in the floor for the toilet chute(s).
- Mark and cut holes in the tank top.
- Insert toilet chute/s.
- Install pedestal/s.
- Install the vent system.
- Install the liquid end-product drain pipe and absorption/transpiration trench.
- Connect fan to power source.
- Check everything is sealed.
- Place a starter-bed of bulking agent (e.g. wood shavings) in the unit.
- Moisten bulking agent before use of toilet.
- Add starter bacteria after a short period of use.

3. TYPICAL CONFIGURATION OF COMPONENTS

Note : CM8 & CM10 use 100mm PVC Vent Pipe. CM14 & CM20 & CM40 use 150mm



N.B: Items above shown in dotted lines are Optional

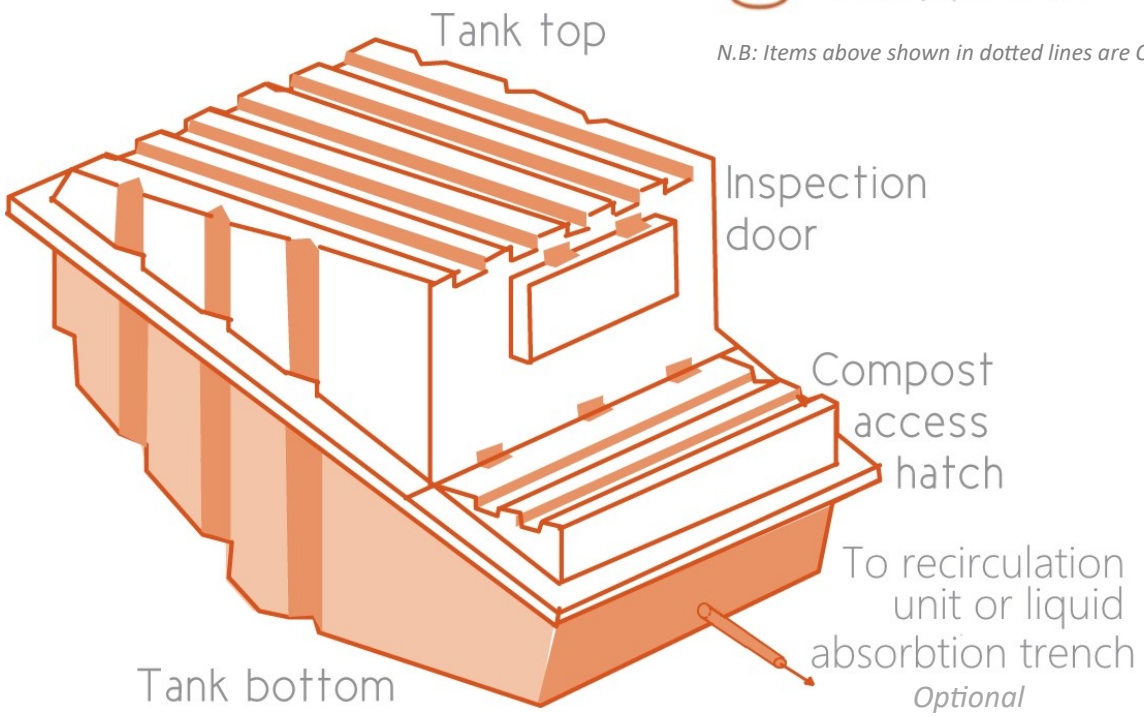
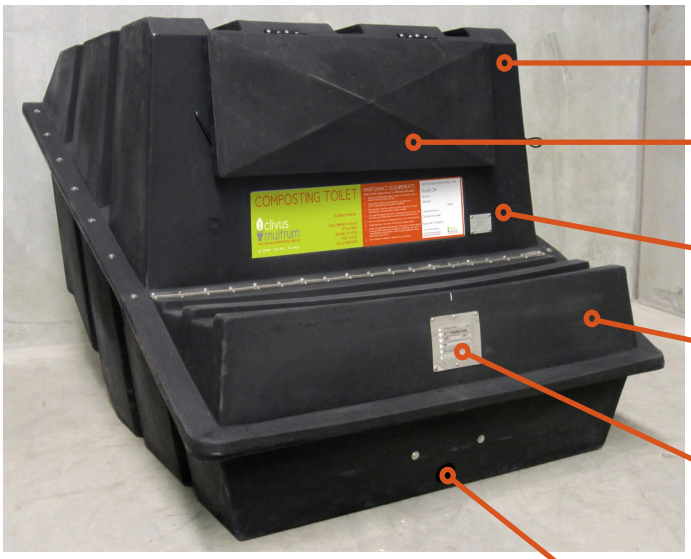


Diagram not to scale

4. COMPONENT IDENTIFICATION

(CM8 Tank shown as sample only)



TANK

INSPECTION DOOR

NAMEPLATE

ACCESS DOOR TO FINISHED COMPOST

INLET AIR GRILLE

LIQUID DRAIN

VENT SYSTEM ITEMS

Fan in housing
Transformer
Chinamans hat rain cover
Dektite Seal
Turbovent (**optional*)

MAINTENANCE RAKE

STARTER BULKING MATERIAL

PEDESTAL PACK (OPTIONAL ITEMS)

PEDESTAL & SEAT

VENT KIT (OPTIONAL ITEMS)

VENT PIPE SECTIONS

ROOF FLASHING

VENT SUPPORT BRACKETS

DRAIN KIT (OPTIONAL ITEMS)

DRAIN PIPING

DRAIN CONNECTOR & BENDS

TRENCHING ARCH

TRENCHING END CAPS

Note : CM8 & CM10 use 100mm PVC Vent Pipe.
CM14 & CM20 & CM40 use 150mm Vent Pipe

5. TOOLS & MATERIALS REQUIRED

5.1 TOOLS REQUIRED:

- Spirit level
- Scissors or cutting knife
- Screwdriver (Philips head and plain)
- Jigsaw
- Drill
- Tape measure
- Caulking gun
- Felt tip or crayon marker
- Masonry drill and bit (if installing onto concrete floor)
- Spade
- Ladder
- PPE: safety glasses, gloves, etc

5.2 MATERIALS REQUIRED:

- Starter bulking material (if not supplied). See Section 14.
- Water for wetting starter material.
- Timber for tank rear support if required.
- Additional 50 mm PVC pipe, couplings and bends if absorption trench is to be located some distance away from tank.
- In poor soil conditions, extra length of trenching arch may be required (500 x 230mm)
- Pipe bends if needed for vent pipe.

In addition, if the Vent & Drain Kit was not purchased with your unit you will need:

- 150mm or 100mm vent pipe lengths to suit CM Model* (DWV class is recommended).
- Vent pipe supports and wall/roof flashings to suit.
- 50mm DWV pipe and fittings to connect to a sullage disposal system. (To local authority approved)

Note : CM8 & CM10 uses 100mm PVC Vent Pipe.

CM14 & CM20 & CM40 uses 150mm Vent Pipe

6. PREPARATION

» Climate Considerations.

Any decomposition process works better where temperatures are warmer rather than in cold temperatures, this is also true of composting toilet. The compost pile will generate its own heat, but is cooled by exposure to its surroundings and ventilation air drawn through the tank.

Over the winter months the composting process slows or can even temporarily stop where temperatures in the pile drop below 4°C. Once the warmer weather comes again the rate of decomposition increases to normal levels. The nominal capacity of your Clivus Multrum system is based on an annual mean ambient temperature of 18°C. In Australia this usually means that in colder weather if the daily mean temperature is less than 13°C for an extended period of time steps may need to be taken to ensure that the tank can handle its full nominal use capacity.

Assuming that you have already purchased your composting toilet tank and that you have chosen the size tank that will take into account the above factors, the composting process can be further improved through the use of natural or passive heating.

As the composting tank is black, it will absorb heat from the sun. Simply by installing the compost bin on the north side of the house will make a dramatic difference to the composting process by increasing daytime temperatures inside the tank. In addition, a translucent hatch and enclosure can be installed around the compost bin. In really cold areas another successful method of heating the composting tank is to duct warm air from another source such as a green house or a solar air heater, or to locate a hot water storage tank in the same room. In extreme alpine conditions it may be necessary to insulate the tank itself in addition to the above.

» Positioning the system components.

After fully reading this manual and before starting the installation roughly position all the major components. It is always a good idea to have an overall picture of the project before starting and do the following:

» Position the compost tank.

NOTE : ***A fall of up to 100mm, sloping down to the Liquid Drain must be observed when positioning the tank to ensure surplus liquid is evacuated.***
Check the position planned for the toilet chute (refer Section 9). The toilet chute must be positioned over the top of the compost tank. For less maintenance of the compost pile, the optimum location for the chute/s to enter the tank is mid-width, in the rear half of the tank. A clearance of at least 150mm from edge of chute to edge of tank-top is desirable to avoid rapid build up of the pile against the sides.
Check there are no major support beams or pipes or wires that are in the way of the toilet chute.

Locate where the vent pipe is to run (refer Section 11).

Where mains power is to be used, check that a power point has been installed near the location for the ventilation fan.

Locate where the excess liquid drainpipe and trench is to go.

If there is very little room between the top of the tank and the floor of the building, the order of the installation can be changed as follows: Firstly, cut the pedestal hole in the floor of the building (refer Section 9) and then mark the hole position on the tank when the tank is in position, but before the tank is secured into the ground. After the tank has been marked, it can be removed from under the building and then cut the hole in the tank and fit the chute collar before replacing the tank.

7. TANK SUPPORT

The composting tank must be supported by either packed earth with the tank placed on a base of sand, or a wooden frame on a solid base; e.g. a concrete slab. Insulation between the tank and the concrete slab will reduce heat loss and aid the composting process.

NOTE: The tank and enclosure should be protected from surface and floodwater.

7.1 EARTH SUPPORT [SEE FIGURE 2]

The surface must be rock free and smooth to prevent possible puncture of the tank. Stand the tank on a 50-75 mm thick bed of sand, crusher dust fines or similar. To avoid excessive soil pressure on the tank, the CM8 and CM10 can be buried only up to the tank join line, and the larger tanks should only be buried to a maximum depth of 500mm.

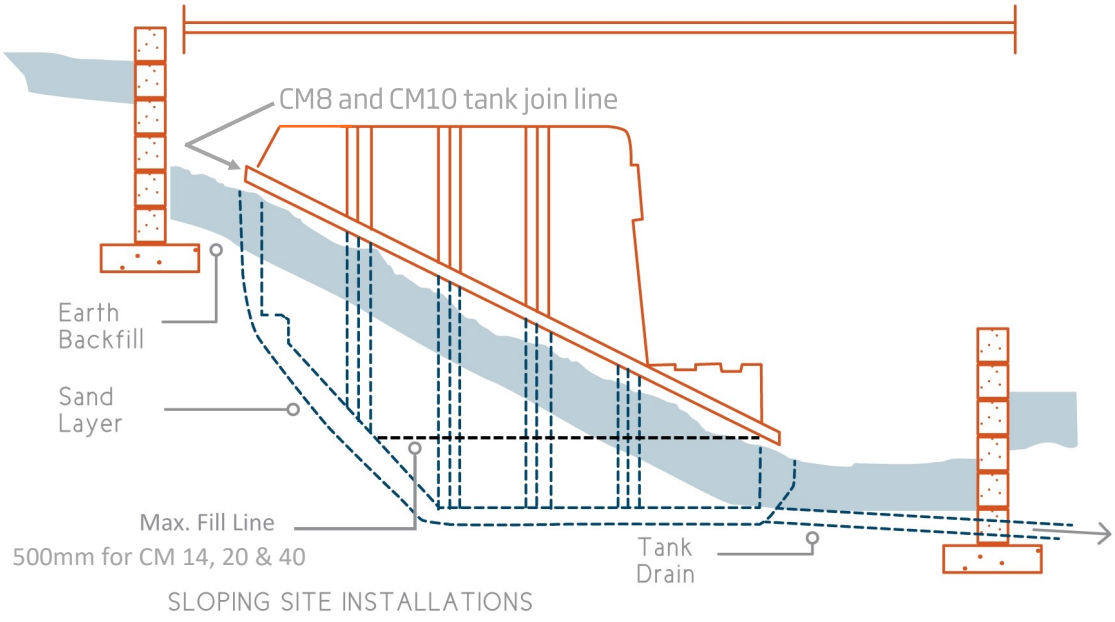


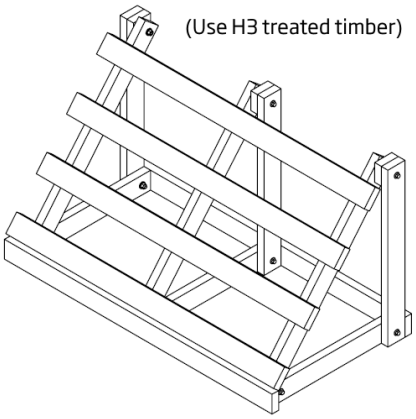
FIGURE 2 *

In order to ensure stability of the surrounding earth, a retaining wall may be required. All back fill a round the tank should be rock free. When the tank is partially dug into the ground, take steps to ensure that heavy rain will not cause a build up of surface water in the area around the tank. Ensure the tank cannot slide forward by mounding sand or gravel around the front of the tank as in Figure 2 above. Note the position of the Liquid Drain and The Drain Pipe trench has been marked.

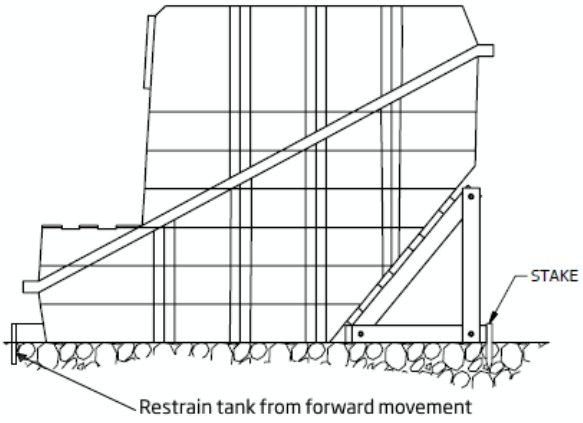
* NOTE : ***Position the tank sloping down to the Liquid Drain to ensure surplus liquid is evacuated. A fall of up to 100mm is acceptable.***

7.2 WOODEN SUPPORT

This is required only for the CM40 tanks, in installation where the sloping rear wall is not buried or supported by a soil mound. Build a wooden full-width support for the sloping bottom of the tank. Ensure the stand cannot move backwards and that the tank cannot move forward. Attach wooden locks to the floor in front of the tank, or connected back to the rear frame so the tank will not move away from the rear support.



Rear support



Wooden support on a solid base

8. EXCESS LIQUID DRAIN INSTALLATION.

The excess liquid fittings are to be installed after the tank is in final position.

Screw on the male iron liquid drain pipe adapter.

The tank is now ready to have the 50mm PVC excess liquid drain pipe connected. The optional vent and drain kit available from Clivus Multrum provides a length of trenching arch, end-caps, 1meter of 50mm waste pipe and 2 x 45° elbows. (Shown on page 5.)

EXCESS LIQUID ABSORPTION TRENCH

This is the normal method for disposal of excess liquid, but refer to council permit for any specific requirements. These instructions apply to installation of the drain kit items available from Clivus Multrum. In some locations it may be desirable or necessary to connect the excess liquid drain to a grey water system or an alternative disposal method complying with AS/NZS 1546:2012.

Dig a trench in a position located in front of the liquid end product drain. The trench is to be located in soil of good permeability and in a position where ground water will not flood the unit. If there is some doubt as to the permeability of the soil extra trenching length may be required especially if a hand basin or other fittings will also drain to the same trench. The liquid leaving the compost unit when in use is not expected to exceed 1 litre per day per resident. In many domestic installation there is no excess liquid at all in public-use facilities, the liquid disposal system should be sized to allow for up to 25 litres per 100 toilet uses.

Please refer to APPENDIX 1 for detailed trench installation guide.

9. TOILET CHUTE & PEDESTAL (OPTIONAL)

Note: The following instructions are applicable to pedestal and chute supplied by Clivus Multrum. If not supplied by Clivus Multrum, please note the requirements of AS1546 Part 2 Clause 2.5.2. "Opening at the toilet base shall not exceed 190mm."

READ ALL STEPS BEFORE STARTING!

IF WORKING ACCESS UNDER THE FLOOR IS VERY LIMITED YOU MAY NEED TO CHANGE THE SEQUENCE OF THE FOLLOWING STEPS TO SUIT.

STEP A
Packed with this manual there is an A3 paper template for cutting the chute hole to correct size. Front and back are marked on the template to assist with placement from wall.

STEP B
Place the template on the floor where the pedestal will be installed. The minimum clearance needed from chute hole to the back wall is 120mm. Trial the pedestal in position by placing it over the template. Allow sufficient clearance from the rear of the pedestal to the back wall of the toilet room to ensure the seat will stay up when in the raised position. Also allow at least 200mm from the side walls. Note: greater clearances are required if access is required for disabled persons.

Fix template to floor, or mark through it where the hole is to go on the floor. Check there are no under-floor support joists, pipes or wiring that may be damaged by cutting the hole. Extra braces in the floor may be needed if a joist must be cut - check with a builder if necessary.

Check the chute will drop vertically into suitable location on compost tank, and is not too close to posts, walls or other obstructions for the tank.

STEP C
Cut the floor hole closely along the template or mark. This will allow a sliding fit for the chute and provide the correct support shoulder for it.

STEP D
Slide the toilet chute down through the hole in the floor (flanged end of the chute is the top end). Ensure the chute sits vertical and has no more than 5mm of sideways play in the hole.

Note: If the floor of the building is high above the top of the tank a chute extension piece/s may be needed. Extra lengths are available from your supplier, and will fit into each other. Joints should be screwed with short self-tapper screws, and sealed with silicon. If more than 2 chutes are joined then additional support straps or brackets are needed to support their weight from the building frame, instead of hanging only by the top chute.

STEP E
Once the compost tank has been correctly positioned, using the outside of the toilet chute as a template mark and cut the toilet chute hole in the top of the tank. This need not be a close fit, as the chute collar will provide the seal.

STEP F
Enlarge the hole in the rubber chute collar so it will stretch snugly around the toilet chute without gaps. A good pair of scissors will do this, or a cutting blade.

STEP G Cutting the toilet chute to length:

Place the toilet chute into the floor hole and through the compost tank top. Open the tank inspection door and from inside the tank mark the cut-off length on the toilet chute, allowing 80-100mm drip edge below the lowest part of the tank top. Remove chute and cut off at mark.

STEP H Fix the toilet chute and collar in place:

- Having cut the toilet chute at the correct length, push the toilet chute back through the hole in the floor, through the toilet chute collar and into the compost bin. The top shoulder of the toilet chute should sit flush against the floor. Left the toilet chute slightly and put sealant between the toilet chute and the floor then press chute down again to seat firmly onto the floor.
- Bend and work the metal edging strip of the chute collar to match the shape of the tank top for a good seal. (This step may be easier to do after the pedestal is fixed and holds the chute in place)
- Run a bead of silicon sealant around the underside edge of the collar.
- Using the 1/2 stainless screw provided, secure the collar of the tank top by screwing through the metal edging strip.

STEP I Fix the toilet pedestal:

- With the chute in final positon, place the pedestal in position by matching the groove in its base to the upturned flange lip of the chute.
- Carefully drill small screw-starter holes into floor through the 4 pedestal fixing holes, taking care not to scratch or move pedestal. If your drill is too large to access these holes then mark the hole locations, remove the pedestal to avoid damage, and drill suitable floor holes for fasteners. Remove the pedestal to apply sealant as follows.
- For sealing of the chute to the pedestal, place a large bead (8-10mins) of silicon sealant around the inside corner of the chute.
- On underside of pedestal, place a large bead (5mm) of silicon sealant along the bottom of the V-groove in the pedestal. Also run a small bead of sealant around the outer edge of the pedestal base, to seal it to the floor and prevent ingress of liquids and grime from the outside.
- Carefully place the pedestal into its final position over the chute and fixing holes, then fasten the base to the floor with appropriate fasteners (screws if wooden floor, concrete anchors if concrete slab).
- Smooth sealant at the two exposed joints (on inside and exterior) and wipe off excess. Do not use solvents to clean excess sealant from the pedestal as it may damage surface.
- Attach the toilet seat to the pedestal top using the supplied fixings.

10. SIGNAGE

- Affix user plaques within easy view i.e. near the toilet paper holder.
- Apply the "No Smoking/Please close lid" sticker to the inside of the toilet lid.

11. INSTALLATION OF VENTILATION SYSTEM

Note: As air flow is essential to the operation of the unit, the fewer bends that are used when installing the vent system the better.

The following instructions relate to use of the vent pipe sections available from Clivus Multrum in the optional Vent & Drain Kit. If this kit is not used, installer must provide a length of 150mm or 100mm pipe to suit CM Model*. We recommend PVC pipe, grade DWV for its strength and long life.

1. Plan the vent pipe layout.
   - The hole for the vent pipe should preferably be at the side of the tank towards the front of the unit near the inspection door, as far as practical from the nearest chute entry. This is so fresh air is drawn up the back vent and over the fresh material before it is drawn up the vent pipe.
   - The vent pipe may enter the tank vertically through the top, or horizontally through the side wall near the tank top.
   - To avoid wood shavings build-up, fan location is better the higher it is positioned, though it still needs to be accessible so a good place to put the fan housing is at the top end to the first length of pipe. The wiring junction box should be protected from the weather.
   - The vent pipe should project approximately 1000mm above roof line.

2. Using the 150mm or 100mm vent pipe* as a template mark and cut a hole in the appropriate position of the compost bin.
3. Position the dektite over the hole and silicone and screw into position.
4. Insert vent pipe 50mm into the tank and support in position and seal around the collar.
5. Check that the arrow on the fan housing is pointing up the vent pipe and not back towards the compost bin, now mount the fan housing onto the vent pipe. Note the two screws that hold the cover of the fan housing on. Twist the fan housing around so a screw driver can reach the screws should the fan need to be checked or changed over.
6. Connect upper sections of vent pipe. There is no need to glue joints, however you may do so if desired. The vent pipe should be supported against the wall of the building with the brackets provided, (or suitable alternatives) to carry the weight of the complete vent system. The tank must not carry any weight from the vent systems.
7. It may be necessary to cut through the roof or eaves of the house. Before cutting through the roof use a spirit level to ensure that the vent pipe is vertical. A vertical vent pipe is not necessary for the operation of the system but aesthetically it looks much better.
8. Once the vent pipe is in place, cut the roof flashing to size, slip it over the exterior vent pipe and seal to roof sheeting with sealant and self-tapping screws or rivets. A tile roof may require an alternative type of flashing to suit.
9. Install the 'china hat' rain cap or optional turbo vent with 3 self-tapping screws on to the top of the vent pipe. (A turbo vent is usually only required when the fan is run off Daylight Solar, or with a 'passive' ventilation system).
10. Run some small beads of silicone around the joints on the vent pipe and especially around the join of the fan housing.

Note : CM8 & CM10 use 100mm PVC Vent Pipe. CM14 & CM20 & CM40 use

12. POWER TO THE FAN

The 240 / 12 volt transformer normally provided by Clivus Multrum plugs straight into a normal 240 volt power point (GPO) to provide low voltage power for the fan.

Due to the low voltage and current from the transformer it is not necessary to have an electrician install the fan and wiring from the transformer to the fan, however, the 240v power point MUST be installed by a licensed contractor. Note: The vent fan should normally be wired for 24 hour operation.

The 12 volt wires from the transformer must be connected to the junction box on the fan housing. At first glance the wire coming from the transformer looks like two black wires joined together. A closer inspection will reveal that one of the black wires has a fine white line on it.

Remove the cover of the small white junction box that is fixed to the fan housing. Under this white cover there are two wires from the fan. Join the wire from the transformer that has a fine white line on it to the red wire (positive) of the fan: join the plain black wire from the transformer to the plain black wire (negative) of the fan. Check that the fan operates, then replace the cover on the white junction box. If the wiring is done in reverse the fan will simply not work.

There is a switch on the power transformer to change the output voltage from 12 volts. Use of a lower voltage will still give adequate airflow for the system in most cases, however, a setting of less than 6 volts may not operate the fan. We recommend the fan is initially run at 12v.

13 VENTILATION SYSTEM ALTERNATIVES

There are two basic alternatives for ventilation:

- Solar - where a 12-volt or 24-volt fan in the vent pipe is run by solar equipment either 24hr or Daylight operation.
- Passive - where there is no electrical fan in the system

13.1 SOLAR POWER OPTION

A separate sheet showing how the solar panel is connected to the fan has been included with this manual if you have chosen this option. Use of a wind driven turbo vent is recommended to assist ventilation when no power is available from the solar supply. Other installation details are unchanged.

13.2 PASSIVE VENTILATION OPTION

It should be noted, that with a passive vent system, a continuous odour-free operation cannot be guaranteed. If a passive system is to be installed it is important to keep the toilet room separate from the main house and encourage as much natural draft through the vent as possible.

This option is normally used only where the location is remote and/or has no power source available, or if you are installing your toilet in a weekender that is visited infrequently.

With this option, no electric fan is installed to draw air through the unit and therefore it is not necessary to install the fan housing. If for some reason you do wish to install the fan housing, then the fan should be removed so that the fan is not a restriction to the airflow. If possible, the vent pipe should be straight without any bends in it.

To help maintain good airflow, a turbo vent can be fastened on top of the vent pipe to draw air when there is wind blowing outside. The pipe's natural chimney effect is improved by painting the vent pipe black to absorb more heat from the sun, heating up the air inside the pipe and enhancing the drawing efficiency

14. STARTER-BED OF ORGANIC MATTER

Note : this is a crucial part of the installation process and must be completed before the unit is used.

We recommend wood shavings as the starter-bed material or bulking agent. In some cases due to supply problems or personal preference it is not practical to use wood shavings. The reason we recommend them is because they are high in carbon and are of a good texture so as to trap oxygen.

Alternative bulking agents are discussed in the Operating Manual.

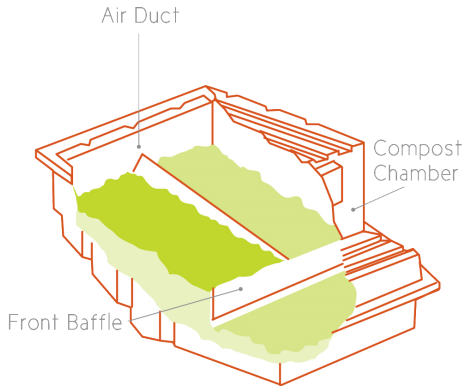
Unsatisfactory materials for the starter-bed include: large quantities of lawn clippings, fine sawdust, large wood chips and long stemmed grasses. These materials decompose but in your Clivus may have a tendency to form solid "clumps".

Spread the bulking material in the tank bottom so as to cover the lower edge of the air ducts as shown in the diagram below.

Approximate volume required is:

- CM8 0.25 m^3 / 3 bales
- CM10 0.30 m^3 / 4 bales
- CM14 0.40 m^3 / 6 bales
- CM20 0.50 m^3 / 7 bales
- CM40 1.20 m^3 / 8 bales

The bottom of the air ducts must be covered and wood shavings should come up above the inside of the front stainless steel air duct.



15. STARTING THE COMPOSTING PROCESS

Once the wood shavings have been added, dampen down well with water (spray with a hose through the top inspection door). This breaks the surface tension and allows the bulking material to begin absorbing the urine that will enter the tank. If this is not done liquid can simple run off the organic material without slowly leaching through.

Clivus Multrum provide a packet of starter bacteria with your new system. For this to be effective it is necessary to have some waste in place to provide nutrients before the bacteria added to your unit. We therefore suggest that the toilet is used in the normal way for say 7–10 days (depending on usage level) before the bacteria is added.

Hydrate the supplied Clivus compost starter bacteria in a bucket of warm water for 10 minutes or longer, then add the bacteria to the toilet. An alternative source of bacteria is to add several bucketful of well composted garden material or commercial compost humus and mix into the top of the pile. This can be repeated as often as you wish.

CONGRATULATIONS! You have now completed the installation of your new composting toilet. Now you can sit back and admire your handiwork and enjoy the knowledge that from now on you will be saving your valuable water supply and doing your bit in keeping our waterways free of pollution.

IT IS NOW ESSENTIAL THAT YOU FAMILIARISE YOURSELF THOROUGHLY WITH YOUR OPERATING AND MAINTENANCE MANUAL. You will quickly learn how you should look after your Clivus to ensure it operates reliably and efficiently for years to come.

RETURN POLICY

According to Australian Consumer Law, If a product is purchased from this website which satisfies one or more of the following cases we will gladly arrange a refund or replacement of the effected part:

- Component is proven to be faulty within the warranty period
- Product does not match its description as provided when sold
- Product received is not the product ordered
- Product or component proven to have been damaged in transit
- Unused product may be returned at the buyer's risk and cost during the 30 day cooling off period (plus 5 days for delivery) less a 20% restocking fee if the product is in original condition. If the product is in less than original condition Ecoflo reserve the right to reduce the amount of the refund.
  Please contact us immediately if any of the above occurs to arrange a return. Products returned without prior notice will be rejected.

  Please ensure that returned products are safely packed in their original packaging. We will not be held liable for damage to products incurred during return shipping.

  Refunds will be issued to the extent required by the Trade Practices Act 1974 (Cwth) and Sale of Goods Act 1896 (QLD). No part of these terms of use is to be taken as an express or implied repudiation of our obligations under these pieces of legislation.

WARRANTY

Ecoflo is to furnish new parts to a customer whose toilet fails within the allotted warranty period for the particular component, provided that our inspection shows that such failure is due to defective material or workmanship. Any part supplied is warranted for the balance of the original warranty period.

The warranty period for a part begins from the date the original product was dispatch (plus 5 day additional days for transportation).

Warranty Period:
Any electrical component incl solar - 1 year
Any rotomoulded component- 10 years
Any fibre glass component - 3 year
Toilet seats - 1 year
Any other component - 1 year

This warranty does not cover:
· Damage resulting from neglect, abuse, accident or alteration; or damage caused by fire, flood, acts of god or other causality.
· Damage resulting from failure of the purchaser to follow normal installation and operating procedures outlined in the manual or in any other printed instructions supplied with the system.
· Labour and service charges incurred in the removal and replacement of any parts found defective under this warranty.

APPENDIX 1

INSTALLING EVERTRENCH LINERS FOR SULLAGE - WASTE WATER DISPOSAL

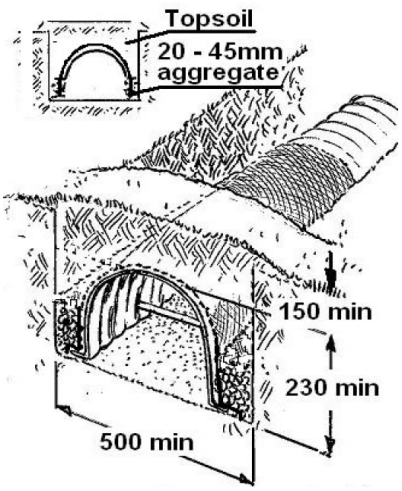
AS/NZS 1547:2012 provides basic information for the design and construction of many on-site waste-water disposal systems. This manual also includes information offered by EVERHARD, which has found to be of value. EVERTRENCH injection moulded polypropylene Arched Liners is used for "Conventional" evapotranspiration-seepage (ETS) and evapotranspiration-adsorption (ETA) layouts described in the standard.

All waste-water poses a health hazard. All layouts for Wastewater disposal land application areas must be designed by competent and authorised persons, taking the following factors into account:

- The Volume of wastewater, based on household size and appliances.
- The rate of absorption of the surrounding soil.
- Limits imposed by site conditions, such as slope, contours, prevailing wind and permanent shade etc..

Before beginning design and construction of wastewater disposal system, check State and local authorities for requirements for your area. Conventional trenches and beds may not be permitted.
Plants should be selected from approved lists for disposal areas, to minimise root intrusion problems.

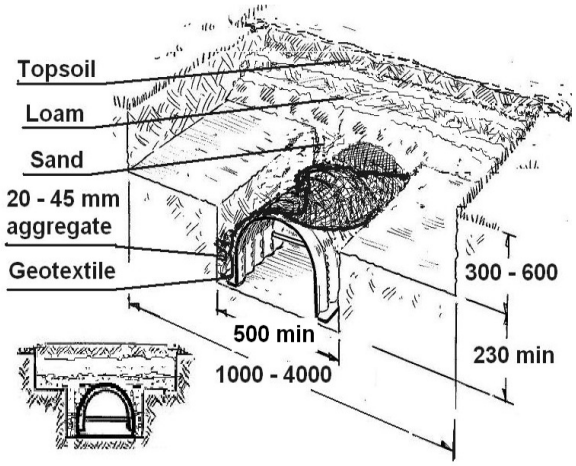
Method 1: Trenches: These are generally used in sites where soil is permeable enough to allow projected amounts of wastewater to drain freely into the trench floor. Trench should be wide enough for the EVERTRENCH Liner and deep enough for the selected Liner to be not less than 150mm below the surface.



1. Excavate the trench along a level site contour, with the floor not less than 50mm deeper than the invert of the pipe from the Septic Tank or sullage distributor, with at least 150mm cover over the top of the Liner.
2. The trench floor should be level, evenly raked, and have no low spots which would allow “ponding”.
3. Allow at least 75mm overlap for each length of EVERTRENCH Liner.
4. Fit Three Brace Bars into each Standard EVERTRENCH Liner, the first 220mm from the inlet end, then equally spaced along the excavation.
5. Cut the pipe entry hole in one Trench Liner End Cap, and fit the Caps to the Liner. Connect piping from the Septic Tank or Sullage Distributor.
6. Lay geotextile fabric over the full length of Trench Liner.
7. Place a 150mm layer of 20 - 45mm aggregate material along both sides of the Trench Liner, and at both ends to secure the End Caps. Rake level.
8. Cover the installation with a layer of topsoil, less permeable than the parent soil to help prevent stormwater entering the trench. Leave a slight mound for natural compaction. Turf may be laid over the trench area.

DO NOT COMPACT the trench area or expose it to traffic.

Method 2: Beds: These are generally used where soil conditions do not allow the planned volume of wastewater to drain freely from normal trench systems. Evapotranspiration beds encourage treated wastewater to be taken up by plant roots over a wide area, as well as draining into the soil, offering additional safety for seepage systems. Beds consist of standard width trenches, deeper than normal, with the area above the selected Trench Liner of much greater width, and filled with material allowing easier penetration of roots and transfer of moisture. Bed designs may vary widely, depending on soil conditions.



1. Excavate a bed area between 1000mm and 4000mm wide, at least 300mm deep along a level site contour.
2. Excavate a central trench along the full length of the prepared bed, to take a selected Liner. The top of the Liner should be level with the bottom of the prepared bed, and the trench floor not less than 50mm below the pipe from the Septic Tank or sullage distributor. The floor should be level, evenly raked, with no low spots.
3. Allow at least 75mm overlap for each length of EVERTRENCH Liner.
4. Fit Three Brace Bars into each Standard EVERTRENCH Liner, the first 220mm from the inlet end, and then equally spaced along the excavation.
5. Cut the pipe entry hole in one Trench Liner End Cap, and fit the Caps to the Liner. Connect piping from the Septic Tank or Sullage Distributor.
6. Lay geotextile fabric over the full length of the Liner.
7. Place a 150mm layer of 20 - 45mm aggregate material along both sides of the Trench Liner, and at both ends to secure the End Caps, and rake level.
8. Cover the Liner and the floor of the excavated bed with 100mm of coarse sand, then with sandy loam.
9. Lay a final 150mm layer of topsoil less permeable than the parent soil, to help prevent stormwater entering the bed.
10. Leave a mound for natural compaction. Turf may be laid over the area.

DO NOT COMPACT the bed area or expose it to traffic

EVERHARD INDUSTRIES Pty Ltd recommends a non-woven needle punched Geotextile designed for waste-water disposal land applications