



GREEN LOO

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DRY COMPOSTING TOILET

Owners – Installation – Operation

Manual

for the

GL 90

INSTALLATION PLANNING

It's all in the planning!

For proper operation of the toilet you should consider a number of issues during the building design stages to enable the natural composting processes the best chance to give trouble-free operation.

The design of the site and building needs to allow for:

- The location of the toilet pedestal in the building and any structures that may be required to have the composting container below floor level.
- Space for the composting container and a firm, dry and sheltered base for it to sit.
- Adequate access to service and maintain the toilet.
- Good ventilation to provide oxygen and evaporate liquids.
- Electrical supply (240VAC or 12VDC) to the fan location (unless the whirlybird option is selected).

The GL 90 is supplied as a kit containing most of the components required and can be installed using basic building tools and materials available at plumbing suppliers or hardware shops.

Installation of the GTs involves:

1. Assembly of the GL 90 composting containers
2. Positioning the Pedestal and composting container to ensure a vertical drop from the pedestal to the waste bins
3. Preparing a flat, level and firm base for the composting container to sit
4. Connecting the Pedestal, waste chute and composting container
5. Installing the ventilation pipe-work, including fan and vent cowl
6. Preparing the excess liquids dispersal trench
7. Final checks before use.

Assembly of the GL 90 System's Composting Containers

For transport reasons, the GL 90 system arrives semi assembled. Assembly is a very quick and simple affair. The top container is fully assembled except for the camlock excess liquids fitting & seal.

Simply lift the bin out and hand tighten the fitting and seal supplied.

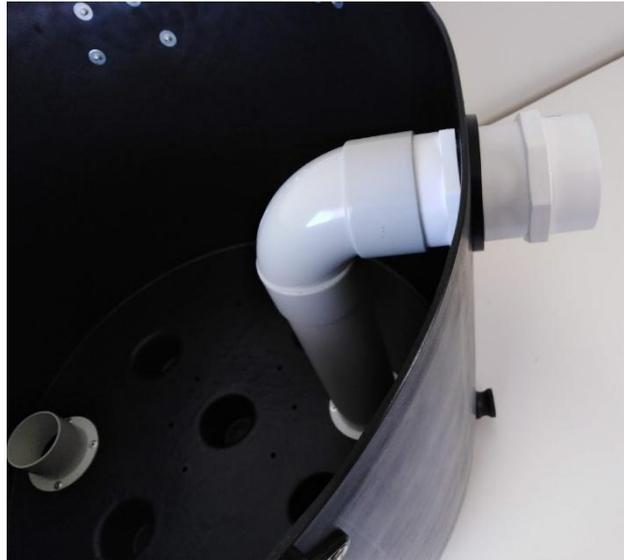


Next lift the second bin out. You will see that the excess liquids fitting is fastened in place already with this bin - so no need to do anything there. There are 2 pipes - the 'Breather' pipe marked 'B' and the 'Vent' pipe with elbow and fitting, marked 'V'.

There are corresponding marks on the sockets that are fastened on the bottom tray, the capillary tray.



Align the socket in the tray marked 'V' with the vent hole cut in the side. Slide the Vent pipe marked 'V' into the socket. Slot fully in, until the pipe reaches the bottom, and the threaded part of the fitting slides out through the vent hole. From the outside, slide on the supplied seal, and hand tighten the supplied female fitting to the thread. Make sure the seal stays reasonably central whilst doing this.



Next slide the pipe marked 'B' onto the socket marked 'B' until fully inserted. Fasten the pipe against the chamber wall using the pipe clip & the 2 bolts, 4 washers and 2 nuts supplied. Insert bolts from the outside in, to avoid sharp external objects. Voila, you have 2 chambers ready for installation!



Space Required

There is no ideal set of measurements which will suit all applications but you do need to provide enough space to locate and install the composting container, enough space to fit and maintain the air vent piping and fan and enough space to access and exchange the containers, so allow space to maneuver the bins. The GL 90 has been designed to achieve this with a 450mm minimum space requirement. However, the multi-chute allows for installations up to 1m high - and this can even be further extended with optional additional chutes.

Toilet Pedestal and composting container

- The composting container must be located directly below the toilet pedestal.
- Don't plan to install a light directly over the pedestal/waste chute as this will attract flying insects.
- Always close the lid of the toilet after use
- Don't use your bathroom fan! It's suction works against the suction of the fan of the GL 90.

Multi - Chute and Installation Options

The ingenious multi-chute that is included with the GL 90 system allows for 2 basic installation options. Which one you choose is up to you but as a general guideline, **installation option 1)** should be preferred if there is limited underfloor space, as it allows for the whole composting container to slide out, which facilitates access to the bungee loop fastening mechanism when exchanging containers. Installation option 1) is unique to Green Loo's GL and GT systems & there is no interpenetration of the chute with the bathroom floor. In this option the supplied wooden rails are used to create a sliding guide that holds the chute flange firmly against the underside of the floor when slid in place.

Installation option 2) is the more common of the 2 options, in which the chute is fixed in place and interpenetrates the bathroom floor. In this case the lid of the composting bin is slid up the chute when exchanging containers and the composting container is pulled out without the lid attached.

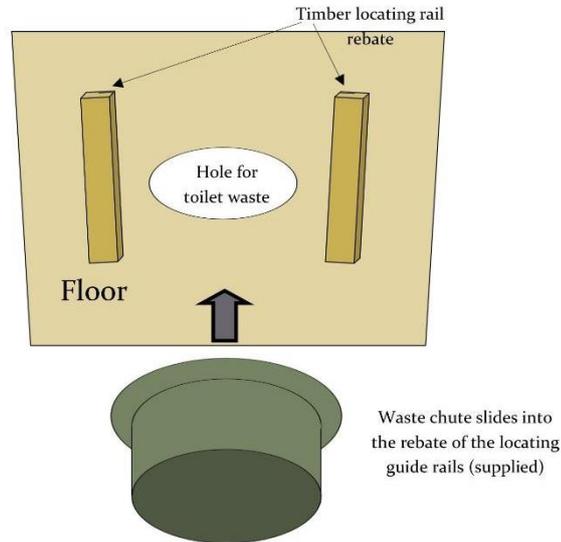
Choose your preferred installation option, taking installation height into consideration and personal preference.

Structural Issues

The GT System is installed sub-floor. It may be installed under a concrete slab or bearer and joist floor, in a full or partial cellar as desired in the building design. Consider the spacing of joists or concrete slab penetrations to allow for the waste chute. Consult a relevant Engineer to ensure support spacing and floor spans are adequate for the size and position of the GL 90.

Most GL 90s are installed in a location largely protected from the elements and can sit freely on the base. If your installation is likely to experience extremes, you may need to consider anchoring the composting container to the ground to prevent it moving in the event of weather events. The GL 90 is not designed to be immersed in water so should not be installed where severe flooding may occur without flood protection.

INSTALLATION OPTION 1)

Installation option 1)**Underside View****Placing the Pedestal and Cutting the Waste Hole:**

The first thing to do is to decide where in the toilet room you want to place the pedestal. Mark a centre position for the waste chute using the pedestal as a guide. The floor joists will need to be clear of the waste chute - and provision should be made to secure the waste chute guide rails to the underside of the floor, allowing enough space for the system to be slid in and out.

Once you have found the right spot in the toilet room, drill a small hole through the centre point and through the floor. Go to where the GL 90 is to be located below floor. Attach a plumb bob through the centre point hole and consider the position and ensure there is enough room to fix the vent piping and fan and there is adequate access to exchange the bins.

Check you have clearance in the joists for the waste chute to pass through the floor. Don't cut out the waste chute hole in the floor until you are sure you have everything lined up in case you need to adjust the position.

Now cut the waste chute hole in the floor. This hole should be larger than the throat of the toilet pedestal but smaller than the GL 90's chute, to ensure free fall of solid matter & clean drainage for liquids. Should you wish to line the hole, we suggest using a short length of standard 225mm pipe (250mm OD / 224 mm ID). This must not protrude below floor level in order not to foul up with the chute when exchanging containers.

Installing the Guide Rails:

In this installation option, the most common way to install and service the GL 90 System is to push the container from the back of the toilet room to its position under the seat. To locate the waste chute, there are rails in the package to be installed either sides of the toilet waste chute hole (see

picture below). These rails ensure that the shaft holds firmly in its place during use. Install the rails parallel & exactly symmetrical either side of the hole and 250mm (+/- 2mm) apart.

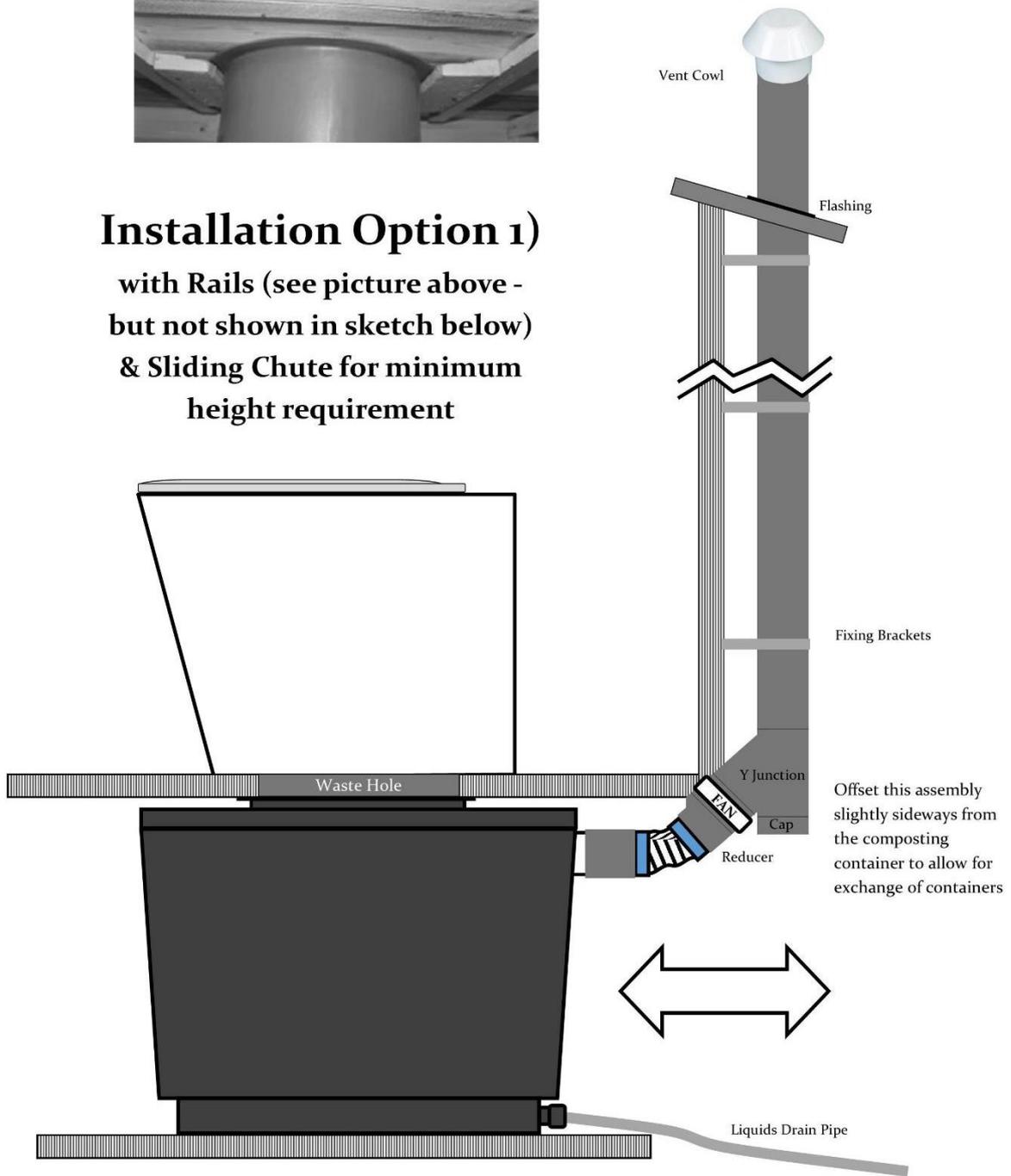
Sizing the chute:

Cut off the tapered end of the chute, allowing plenty of length remaining. Re-insert into the container. Slide the chute & container into place and mark where the chute meets the lid. Slide back out and cut off the excess length of the waste chute with a saw around 25mm - 40mm below where you made the mark.

See schematic drawing for installation option 1)



Installation Option 1)
with Rails (see picture above -
but not shown in sketch below)
& Sliding Chute for minimum
height requirement



INSTALLATION OPTION 2)

Placing the Pedestal and Cutting the Waste Hole:

The first thing to do is to decide where in the toilet room you want to place the pedestal. Mark a centre position for the waste chute using the pedestal as a guide. The floor joists will need to be clear of the waste chute - and provision should be made for enough space for the system to be slid out.

Once you have found the right spot in the toilet room, drill a small hole through the centre point and through the floor. Go to where the GL 90 is to be located below floor. Attach a plumb bob through the centre point hole and consider the position and ensure there is enough room to fix the vent piping and fan and there is adequate access to exchange the bins.

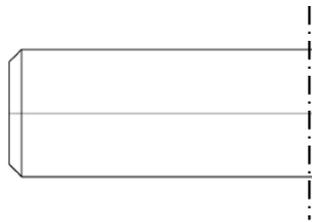
Check you have clearance in the joists for the waste chute to pass through the floor. Don't cut out the waste chute hole in the floor until you are sure you have everything lined up in case you need to adjust the position.

Now cut the waste chute hole in the floor - the size of the GL 90's chute - 250mm (+/- 2mm).

Sizing the chute:

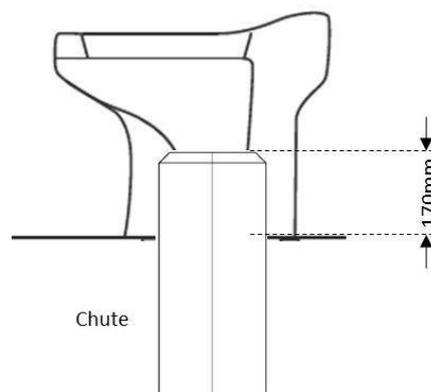
The purpose of this section is to cut the waste chute at the correct height for the pedestal, and correct depth for the composting container.

Cut off the flange of the chute (it is only used for installation option 1)).



a) If using porcelain pedestals (with a 200mm opening):

Retain the tapered end of the chute. The porcelain pedestal's throat is around 200 mm - which is the same as the diameter of the taper. Follow the instructions for the individual pedestal when determining the height of the chute installation from the floor. See example below for the Venice pedestal:



Fasten temporarily in place.

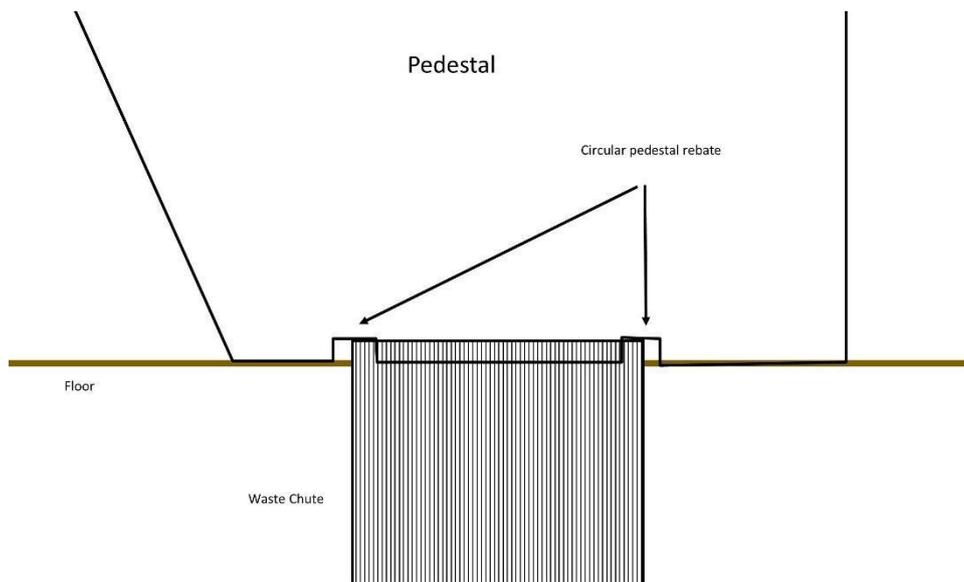
Slide the composting container without lid next to the chute and mark where the chute meets the top edge of the container. Slide chute back out and cut off the excess length of the waste chute with a saw around 5 - 10 mm higher than where you made the mark.

Re-insert the chute into the hole you cut. Fix to the floor at the previously measured height, less 2mm (so the pedestal doesn't rest on the chute). Use metal brackets and silicone to permanently fasten the chute to the floor.

b) All other pedestals:



Cut off the tapered end of the chute. Measure the depth of the rebate at the base of the pedestal - this should be around 10 mm for the Helsinki pedestal, longer for the fiberglass pedestals but is even longer for the 'standard' pedestal (the chute slides right up the 'standard' pedestal).



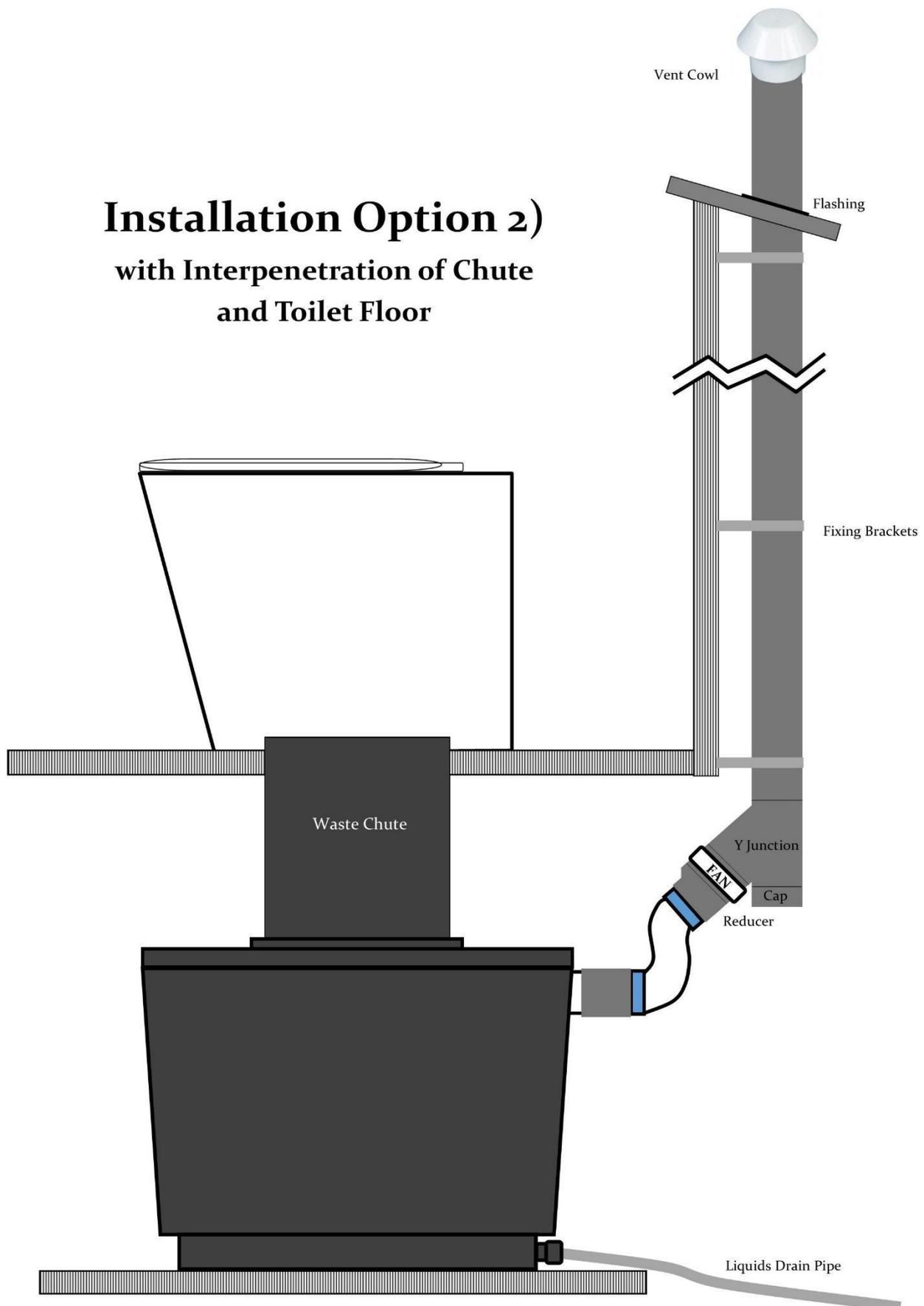
Insert the chute into the hole you cut. Fix to the floor at the previously measured rebate height. Fasten temporarily in place.

Slide the composting container without lid next to the chute and mark where the chute meets the top edge of the container. Slide chute back out and cut off the excess length of the waste chute with a saw 5 - 10 mm higher than where you made the mark.

Re-insert the chute into the hole you cut. Fix to the floor at the previously measured rebate height, less 2mm (so the pedestal doesn't rest on the chute). Use metal brackets and/or silicone to permanently fasten.

See schematic drawing for installation option 2)

Installation Option 2) with Interpenetration of Chute and Toilet Floor



Vent System

The GL 90 airflow requirement is provided by 100mm pipe and incorporates a continuous running fan (supplied). Consider how the fan will be powered (240VAC or 12VDC) and ensure the fan housing is accessible for maintenance. Ensure correct airflow of the fan **away from the toilet**.

Remember that warm air from the composting chamber (the composting process generates its own warmth) naturally rises, and that sharp bends restrict airflow – designing the vent piping correctly will improve natural operation. Avoid bends tighter than 45 degrees.

Ensure that the vent system doesn't interfere with the sliding in and out of the composting bins. Consider installing the condensate (moisture) trap angling off parallel with the outside of the wall and slightly off to one side (see picture overleaf).

In order to maximise air flow, minimise the length of the flexible connection hose between the composting container and the vent system. Once the system is installed to your satisfaction, shorten the flexible hose as much as possible.

Ensure the flexible hose doesn't run downhill from the horizontal and ensure there are no kinks or restrictions to free air flow.

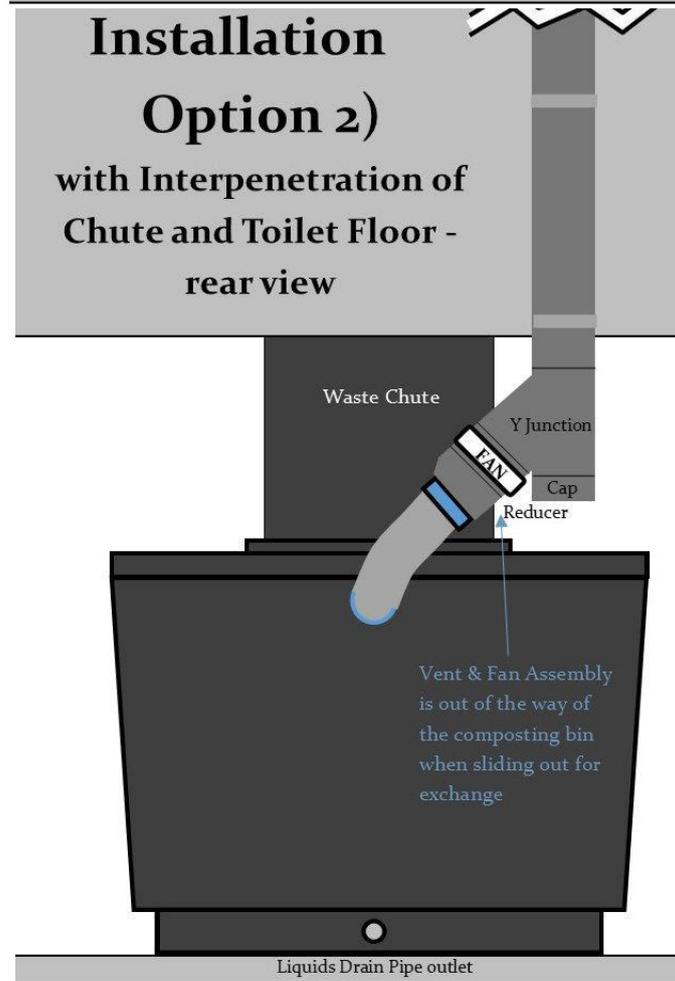
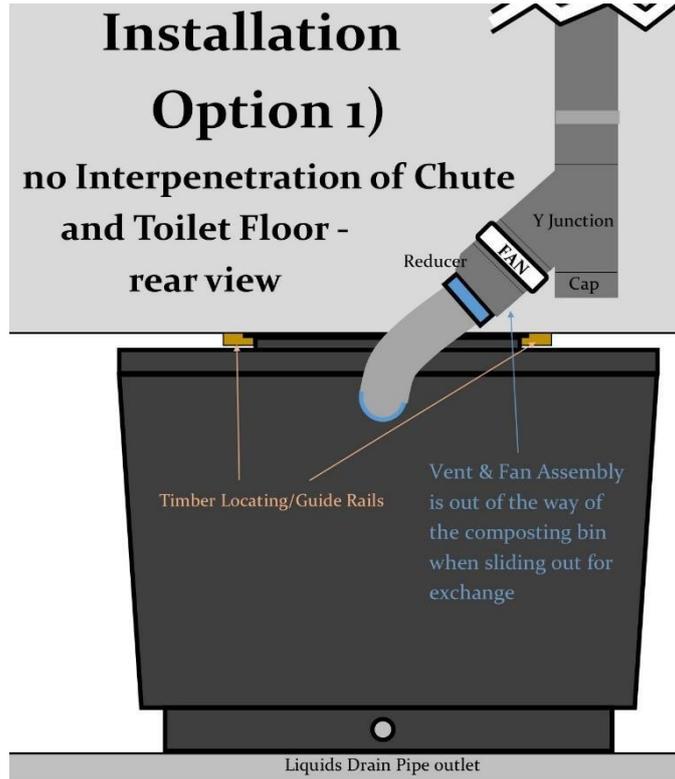
Warm air, holding moisture, entering a cold vent can result in condensation. Consider insulating the outlet vent piping - and install the provided condensate trap as per drawings.

Vent Pipe Installation

The ventilation pipe should rise perpendicularly with as few curves and elbows as possible, the vent cowl placed on top. Don't use pipe cement below the Y - shaped joiner – the push fittings should be tight enough for this purpose, and this allows you to dismantle and service the vent system and empty the condensate (moisture) trap as required.

The following is an example as to a standard vent installation – there are many permutations possible and if in doubt, contact us for discussion and guidance:

1. Attach your venting pipe to the wall of the building, including vent cowl. Ensure that the vent system doesn't interfere with the sliding in and out of the composting bins. Consider installing the condensate (moisture) trap parallel with the outside of the wall and slightly off to one side.



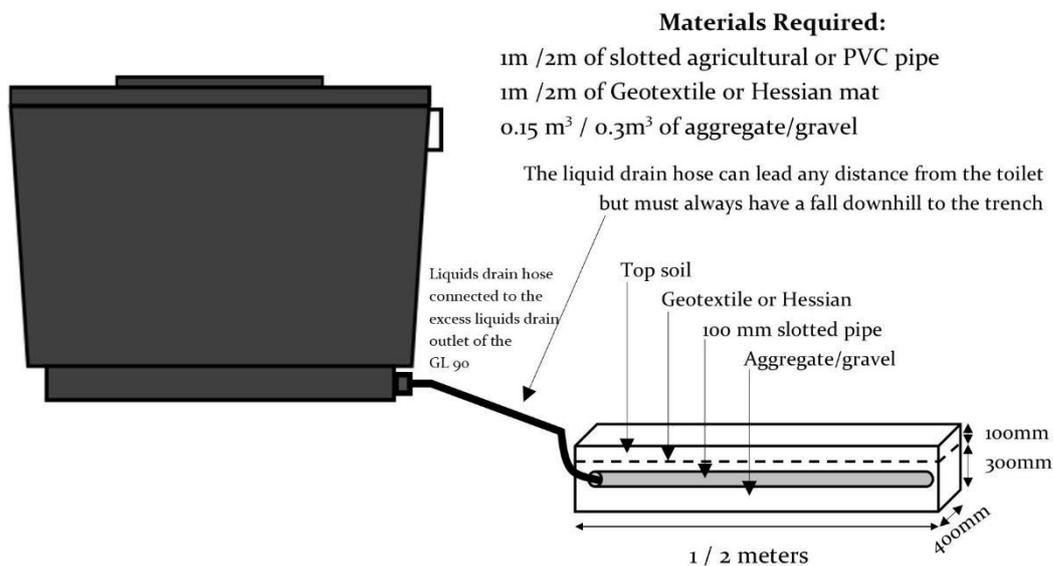
2. Attach the Y joiner as per the picture. Finish with screwing on the cap. This is your moisture trap, which should be emptied every few weeks by undoing the cap, letting the water drain out and re-attaching the cap.
3. Install the fan by cutting off 2 short pieces of 100 mm vent pipe and inserting the fan as a joiner. Plug the fan into the power supply and ensure the airflow is away from the composting container, upwards towards the exhaust end. Insert into the Y joiner, into the 45 degree angled inlet.
4. Attach the reducer to the fan assembly's opposite end.
5. Attach blue end of the flexible vent pipe to the reducer and the grey joiner end to the vent pipe of your GL container in situ.
6. Congratulations, you are done!

Excess Liquid

As a result of the capillary double base of the GL 90 System, 90-95 % of the liquid waste is used up in the composting process, as well as being evaporated through the vent system. An absorption trench is required to deal with any excess liquid.

The length of the trench is 1 m for the GL 90 (2 person permanent use) and 2 m for the GL 90 with an extra composting container (4 person permanent use). The trench is to be 400mm wide, 400mm deep.

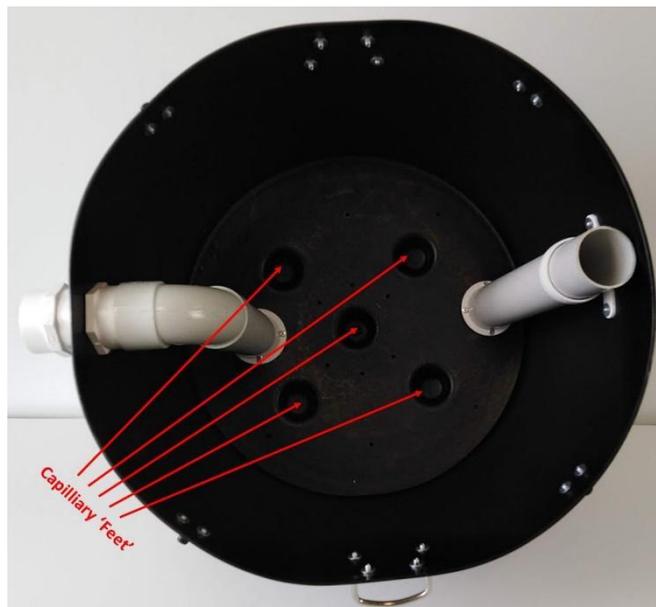
However, dimensions must not be less than required by Regulation 50 of the Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974 or AS/NZS 1547. See diagram for a GL 90 installation below.



1. BEFORE USE

The composting power of the GL 90 System is based on the capillary double base which works similar to under watering flower pots. A large part of the liquid waste is absorbed back to the composting mass through capillary action, thus boosting the composting process.

Before putting the system into use, fill the base with a 5 cm layer of peat. Make sure also to fill the "legs". This layer enables the capillary feature to work. Also, after every emptying, remember to add a new layer of peat before use and fill the legs.



2. USE OF THE GL 90 SYSTEM

The GL 90 System can be used almost like any normal water toilet. Toilet paper can be thrown into the toilet, as it composts together with the waste. However, any items containing plastic, e.g. sanitary towels should be placed into a separate bin. A handful of covering material (peat, 1 cup) should be added after each bowel movement. The composting process can be enhanced even further by leveling and mixing the compost occasionally. Our compost accelerator (biodegrader) may also be added.

3. SERVICE

- a) Check the fan 1) monthly to ensure it is working or 2) if you notice unusual odour.
- b) The average length of time until a container is full is 3 to 6 months at 2 people full time use for the GL 90.
- c) Both the active and fallow container need to be secured to prevent tampering by young children by fastening the bungee loops at all 4 points.
- d) It is not vital that the fallow container is kept in the sun, however composting is accelerated by warmth. Therefore choosing a warm spot is helpful, as long as provision c) above is observed.

To exchange or empty the GL System, protective clothing, face mask, glasses and gloves must be worn at all times. Tip the bin backwards before taking the excess liquids hose off and then lift the hose up (once disconnected) so that any free liquid is syphoned off. This prevents excess liquids from spilling out. Disconnect the flexible ventilation pipe at both ends.

Installation Option 1):

Pull the container out, undo the 4 bungee loops & exchange the lid onto the second, spare container and move the second container in place (having prepared the container as per

above). Set aside the first container and seal with the supplied lid. The waste will finish composting in this container (2 - 3 months on average). Leave to compost until the second container is full in order to maximise composting time. Cap the excess liquids drain with the supplied camlock cap & insert the Mozzie proof vent cowl into the vent pipe.

Re - attach both vent and excess liquids drainage systems.

Installation Option 2)

Undo the 4 bungee loops. Slide the lid up the chute - make sure it stays there. Pull the container out, and seal with the supplied lid. Move the second container in place (having prepared the container as per above). The waste will finish composting in the 'fallow' container (2 - 3 months on average). Leave to compost until the second container is full in order to maximise composting time. Cap the excess liquids drain with the supplied camlock cap & insert the Mozzie proof vent cowl into the vent pipe.

Re - attach both vent and excess liquids drainage systems.

For exchange of containers and the emptying of composted container 2 persons may be required. You can expect weights of 50kg for the GL 90. When emptying a container, transport to the prepared disposal site. Gently lay the container on its side and start emptying the container with a spade or shovel. Always observe safe work methods. Clean the container by hosing if required.

4. USE OF COMPOST

- a. Bury the contents of the container into a prepared area. Burial depth is a minimum of 300mm in soil that is not intended for human food cultivation for six (6) months, and
- b. Burial should be a minimum of 30 metres from any water source and 6 metres from any sub-soil or open drainage system, or
- c. Disposed of as directed by the Local Government.

Dear Friend,

Thank you very much for choosing our GL 90 Bio Sanitation Systems.

We hope that you enjoy many years of fruitful, waterless and trouble-free use.

Please don't hesitate to contact us with any questions, suggestions, we are here to help.

Feedback is always welcome and is an invaluable part of providing an excellent product and service!

Finally, thank you for being an integral part of the environmental solution. The Earth will thank you too!

The Team at Green Loo



Green Loo NZ

22 Teviotview Place

Amberley 7410

info@greenloo.org.nz

www.greenloo.org.nz