NatSol the compost toilet specialists

Management instructions for an ABOVE GROUND TWIN VAULT toilet

www.natsol.co.uk

Dear Customer,

Thank you for purchasing components for an Above Ground toilet. By following this guide your compost toilet should operate with the minimum of maintenance for many years.

Overview

NatSol composting toilets depend on natural biological processes to breakdown human waste into composted material. To allow this process to function successfully you should:-

1. Not contaminate the composting pile. The contents of your composting vault should only be human waste with little or no urine, toilet paper and a recommended soak material – see below.

2. Allow at least one year. The system uses natural biological processes to convert potentially harmful waste into useful compost and the process cannot be rushed. When your first vault is full it must be left for at least one year for the micro-organisms present in the vault to do their work.

Using the toilet

Number twos:
After use a handful of soak material, typically wood-shavings, is added to the vault. A container of soak is normally kept in the toilet cubicle to facilitate this. Alternatively, a manager could add soak at the end of the day according to the level of use.

Female urination only:
Women should sit rather than hovering over the seat as this may upset urine separation. The lid should be closed after use. It is not necessary to add soak material to the vault if the user has only urinated.

Male urination only:
Men who should use the wall mounted urinal provided. In some installations this may be located in a separate cubicle. The urinal is non-flushing. If no urinal has been fitted then men can use the toilet pedestal but must sit.

Hand cleansing:
Your toilet will usually come supplied with a waterless hand disinfectant system. Please read any instructions for use supplied with this unit.

Important:

1. Close the lid after use.

2. Dispose of sanitary towels, tampons and disposable nappies in a rubbish bin which should be clearly marked to distinguish it from the soak bin.

Management

Daily of weekly procedures depending on levels of use

Clean the urine plate using a spray and brush to remove any solid matter or paper that may have adhered. Wear gloves and store the brush in a safe place away from users.– see pics. Clean external surfaces of the pedestal.

A pump sprayer is good but you could use a hand held spray bottle

Check that the soak bin is full. Wood shavings make good soak material but not sawdust. Chopped barley straw is a good soak material as it assists rapid decomposition but may be more difficult to use. (With barley straw manure worms could be introduced. They can usually be found in animal manure and rich garden compost heaps.)

If you have a urinal clean the ceramic bowl with a similar cleaning solution and flush with approximately a litre of clean water.

Wear suitable protective clothing for all cleaning operations

If the toilet is on a site that has a large number of users or is open to the public you will need to carry out the above checks on a daily basis.

Less frequent checks

At least every two months open the sub hatch into the active vault on the outside of the building. Check the compost pile for “peaking” and if required rake the pile to the back of the vault using a tool kept specifically for this purpose and stored in a safe location. [If the vault is large enough you could store the tool in the vault.] The object of this operation is to prevent excessive build up of compost directly below the toilet which could ultimately impede the function of the urine gutter. At no time should the compost be closer to the urine gutter than 100mm. During this operation the progress of composting can be checked. If the compost is too wet add more soak material. This might be done most easily from above. If a significant amount is needed remove the pedestal. If the compost is dry it will be beneficial to add sufficient water to dampen the pile. Try to distribute this evenly.

With the pedestal removed you can visually inspect the urine gutter at the bottom of the separating plate to ensure that it is not becoming blocked with paper or solid matter. This is very rare but If you find it to be the case clear the blockage with a suitable implement. In the case of a severe blockage it may be necessary to rod through from the screwed access cap on the end.

Twice a year, or after clearing a blockage in the urine gutter, it is advisable to check and clean the back inlet gully leading to the soakaway. Remove the three screws holding on the lid. Tip a bucket of water down the trap to sluice through. If the water does not disappear quickly then pull out the black plastic inner by using the gully rod we provide. Clean and refit the black inner making sure the splines locate correctly in the side slots.






Check that all grab rails are securely attached. Also check to see that the cowl is still free to align with wind direction. Greasing may be necessary. To do this turn the retaining clip aside

and remove the upper half. Take care with the exposed spike on the lower half and squirt grease into the tube on the upper section and replace.

Vent pipes can occasionally be blocked by cobwebs. If you think this may be the case then remove the top part of the cowl and lower a small weight on a string down the pipe and draw up and down several times. This should clear obstructions.

The resting vault should be checked several times during its 12 month resting period. Open the access hatch [and the floor hatch over the vault next to the pedestal if necessary] and check to see if the pile is too wet or too dry. If too wet add additional soak and rake in through the hatch. If too dry add some water and rake in.

Low Use Situations

It does not matter if the toilet is used very infrequently but the composting pile may become rather dry and small additions of water can be useful to keep the composting going.

Changing over vaults

H&S Observe sensible hygiene precautions during this procedure.

We strongly recommend that the vaults are changed over annually unless use has been very low AND the contents seem dry. If there is any sign of excess moisture then swap over after a year and mix plenty of soak material into the chamber which has been in use.

First change on new installation

It does not matter which vault is used first. Unless the level of use of the toilet exceeds our design criteria it should not be necessary to change to the second vault before one year.

Changing vaults

Remove the bolt which holds down the back of the pedestal into the floor. Now lift the back of the pedestal clear of the floor and tip the pedestal to release the urine separator from under the floor at the front. Make sure you do not damage the urine plate when you put the pedestal down. It may be best to take the pedestal outside whilst swapping the hatch cover. Use this opportunity to clean the inside of the pedestal. Rest it on a non-scratching surface. Use a brush and disinfectant spray. If the urine plate has become heavily soiled it may be useful to soak it with disinfectant and water several times before brushing clean or to use a wire brush – in which case wear eye protection. Mortar cleaning acid available from builder's merchants will shift **calcium deposits** but make sure you wear appropriate protection.





Taking care with regard to the open vault aperture, unscrew and remove the rear hatch cover over the other vault and screw down where the toilet pedestal has been removed. Bring the toilet pedestal back into the toilet cubicle and carefully locate the urine plate back under the floor at the front. Then bolt down the rear. Move the SOAK bin across to the new side behind the pedestal. Cover the floor of the new vault with a generous layer of dry SOAK. For public toilets this could be 200 to 300mm deep. The toilet is now ready to use. Now clean your hands.

Second and subsequent vault change

The vault which has been resting for a year or more will need to be emptied. This is done by removing the entire galvanised hatch complete with sub-hatch. Use a long handled spade to remove the compost into a wheelbarrow or suitable bags. The vault does not need to be cleaned out completely. Leave about 50mm (2") of compost to help seed the next batch with useful organisms.

The hatch is then refitted and resealed with grease or silicone and the pedestal swapped over as described above.

What to do with your compost:-

The compost should be used or disposed of in accordance with Environment Agency and Local Authority guidelines.

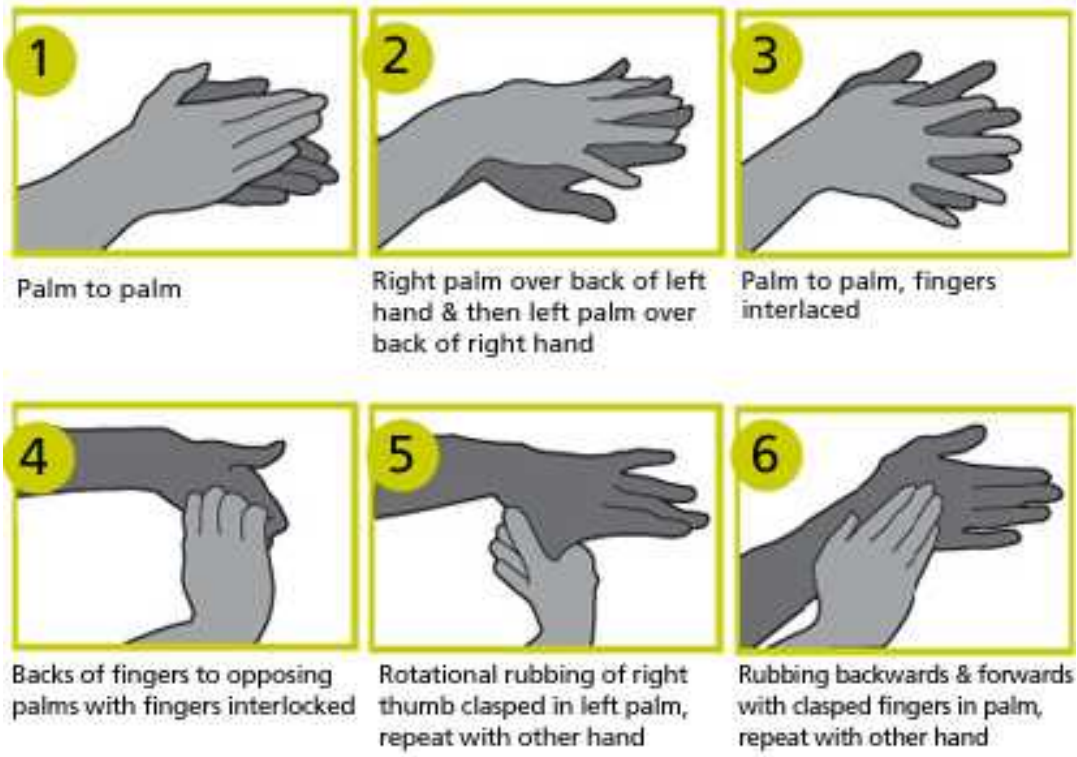
In the absence of any official advice, further composting can be carried out in a dedicated composting facility on site before eventual use or disposal. Most pathogens will have been eliminated by composting for a one year period - which is the minimum period we recommend between vault change-overs. However, human parasites may survive longer. A further 2 to 3 year period of composting outside of the toilet should deal with most of these. If human roundworm eggs are present an even longer period is necessary and for this reason we do not recommend the use of finished compost on food crops - with the possible exception of burying around fruit trees. Human roundworms [Ascaris suum] are generally only found in tropical or sub-tropical populations where there is poor sanitation but travelers to these regions could conceivably become infected and so with toilets used by the general public [e.g. allotment sites where there are many users] it is wise to take precautions against it.

APPENDIX A

HYGIENE PRECAUTIONS WHEN CLEANING AND MANAGING COMPOST TOILETS

Wear gloves for all cleaning operations

Wear overalls when switching vaults or emptying compost



Clean hands after all toilet cleaning or management procedures.

Appendix B - Trouble Shooting Guide for NatSol Twin Vault Toilets

Our toilets are designed to be very simple and highly reliable. Most problems are due to incorrect use or lack of routine maintenance. This guide should enable you to identify and solve most problems.

Type of problem encountered:

ODOUR

NatSol toilets are known for their lack of odour. If there is an odour problem it is important to identify where it is coming from.

Urine

The usual culprit is urine on the floor. This could be due to a leaking waste connection on the urinal and this can be checked by pouring water into the bowl. However, it is more likely to be due to urine splashes. If the toilet is used a lot by small boys then it is essential to provide a box to stand on or to install an additional urinal to the left of the standard one at a lower height. NatSol can advise on this and supply components. Otherwise the solution is regular cleaning.

Smell coming from the pedestal, or an unidentified source

Normally air is drawn down the pedestal and up the vent pipe so that no smells enter the building. If the vent pipe is blocked (cobwebs, bird's nest etc.) or the cowl is not free to align with the wind direction then the ventilation won't work. If you remove the upper part of the cowl it is possible to see down the vent pipe. Move the retaining catch aside to remove the upper part. Be careful of the spike sticking up from the lower part. If the toilet pedestal is in the RH position, lift the lid to let some light into the chamber. If the pedestal is in the LH position remove the rear RH hatch. To clear cobwebs lower a small weight on a string down the pipe and draw up and down several times. If the cowl is stiff then add some fresh general purpose grease. Re-position the retaining catch afterwards.

VERY WET OR FLOODED VAULTS

The compost vaults should be moist but not wet or flooded. If there is water in the vaults then this could be due to a manufacturing or installation fault or a management issue:

Installation or flooding

1. If the site has flooded then surface water will have entered the vaults through the hatches or through the urine outflow pipe from the urine soakaway. Toilets should not have been located where flooding is likely but if this has occurred then the vaults will need to be pumped out by slurry tanker and re-started with a fresh bed of shavings.

2. The urine soakaway has been installed incorrectly, e.g. uphill (!), or the vaults have been installed too low in the ground. These problems would require significant remedial work.

Operational problems – for these checks observe precautions in Appendix A

1. The urine outlet has blocked. Check and clean the back inlet gully (see page 4) and check that water gets away.

2. The soakaway is not draining away. This could be due to waterlogging, or to roots which have invaded the area around the soakaway since installation. If you pour several buckets of water down the back inlet gully and the water ceases to flow away then please call us to discuss.

3. The urine separator in the pedestal is not working properly. This can be checked by gently squirting water from a washing up liquid bottle or similar onto the urine plate and watching through the hatch. The water should enter the gutter and run away freely.

4. Insufficient soak. The soak is needed to keep the pile aerobic and so promote biological breakdown but it also mops up small amounts or urine that inevitably enter the vault. Lack of soak is often associated with infrequent emptying in situations where the volume of solids is low but urine contributions are quite high. Regular raking of solids and soak towards the emptying hatch helps decomposition and enables one to see if there is significant liquid accumulating on the floor of the vault. In such cases it is best to add a quanitity of dry soak material to the liquid and rake in thoroughly. Record these actions in the log-book. Options to ensure correct use of the toilet must then be considered and implemented.

User issues

1. Women may hover over the toilet rather than sitting down. This can affect urine separation. We can supply signage to encourage them to sit and an additional urine plate which would also be useful on busier sites.

2. Males standing to pee into the pedestal. Occasional misuse may not be a problem but for busy sites the amount of urine introduced this way could be enough to flood the toilet. It may be necessary to add an additional low level urinal for boys and improve signage.

If the above steps do not resolve the problem:

Contact us with the following information:

1. The site name or your contract number and the date of installation or first use.
2. Data from your log-book.
3. Whether the use has changed and an estimate of the number and type of users i.e. ratio of adults to children and men to women.
4. Whether ground levels or conditions around the toilet have changed since installation.

If the vaults are very wet or flooded please answer these questions:

1. Is it a seasonal problem? On what date did you become aware that the vaults were too wet?
2. Are both vaults wet or flooded? If not, which one? What depth of solids and liquids are present? Use a stick to estimate and send photographs looking into both vaults through the front floor hatches.
3. How regular is management? How often does somebody check: the urine plate; the vaults; the back inlet gully on the soakaway?
4. What type of soak material is used and is this added by users or a manager? It should be dry wood-shavings; sawdust and wood-chip are not suitable.
5. The amount of soak you are using per vault change-over or per annum.
6. Do you have a 'short urine plate' fitted in the pedestal? This plate is removable through the pedestal top. It catches more urine.

It will be useful to us if you can confirm your current type of use:

PUBLIC or CLOSED USER GROUP

A closed user group is usually a society or association, such as an allotment association, where it is reasonable to think that users have been made familiar with the toilet function and use it correctly.

A public toilet will be used by people who are not members of an association and they may use the toilet only once or rarely. Such toilets might be in parks, nature reserves, campsites, churches. In a church you may have regular users who are members of the congregation and non-regular users e.g. wedding guests.

DURATION OF STAY

1. Are users resident on site?
2. If visitors, are they there all day or just for an hour or so?
3. Do you get high usage on certain days or at certain times of year?
4. What is the average number of USERS per toilet and, if you have more than one toilet, is use evenly distributed?

AGE AND CAPABILITY OF USERS

1. What proportion of users are young children (<11yrs) and is this equally male and female?
2. What proportion of users have learning difficulties?

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SUPPLIES, SPARES and OTHER USEFUL ITEMS:-

HAND DISINFECTANT GEL

We use a hand disinfectant gel where no wash basin has been provided and can supply dispensers and gel. The one we use is Gojo PURELL Instant Hand Sanitizer – 4 x 2 litre refills pack. Product code: 2256-04. These are also available through:-

For supplies try:- Excalibur Hygiene Ltd, 40 Baldwin Way, Swindon, Dudley, West Midlands, DY3 4PF

Phone: 01384 400690 Fax: 01384 402223 Email: sales@hand-cleaners.co.uk

TOILET SEAT

Should you need to replace the toilet seat at any time it is a **Celmac Lyric**. This is available in Focus Do It All and is almost certainly available in other DIY stores and general plumbers merchants. It will be cheaper for you to buy this yourself than to get us to send you one.

NATSOL **Service Record for Twin Vault Toilets**

SITE:

CONTRACT No (if known):

For coding PTO

Example							
DATE	**Actions**	**>**	**>**	**>**	**>**	**>**	**>**
23.07.2020	A	B	C				
		2 cm	¼ bale				
30.09.2020	A	D					
24.11.2020	A	E	F	G	H		
Your data							
DATE	**Actions**	**>**	**>**	**>**	**>**	**>**	**>**

ACTIONS

Frequent - monthly on most sites

A. Compost pile in active vault raked
B. If liquid present state depth in cms
C. Extra soak added to mop up excess liquid. State how much e.g. ½ bale

Less frequent - perhaps quarterly

D. Pedestal removed for deep cleaning
E. Compost pile in resting vault raked.

Annually – on most installations

F. Urine gutter checked for blockages.
G. Back inlet gully checked and cleaned.
H. Cowl greased
I. Vaults swapped

J. Other - please describe