Using Airhead Composting Lavatory

Prior to Using

I bought the Airhead from its UK distributor after several long email and telephone exchanges with the proprietor, Richard. He runs a website dedicated to a number of composting lavatories: http://www.eco-toilets.co.uk/. Richard was very helpful at the pre-sales stage. Unfortunately, I did have some problems with his after sales service.

This was the problem. The UK distributor routinely replaces the manufacturer's seat with a seat which has the standard UK shape. One can either have a plastic seat or a wooden one. The US seat has a rubber seal between the seat and the bowl and between the lid and the seat. The purpose of these seals are to stop flies getting into the bowl. The wooden seat I ordered provided the same seals but the seal between the seat and the bowl did not meet all the way around – the seat was in contact with the bowl at the front but there was a 1cm gap at the back.

Initially, Richard did not accept that there was a problem. Eventually, he did provide a replacement seat. This provided a better fit but there was still a 0.5cm gap at the back. It is in fact difficult to get a good fit because the Airhead is manufactured for a small round marine seat rather than the larger, egg-shaped, standard UK seat. However, it is possible. To avoid any further delays I decided to reduce the height of the hinges so the seat would fit flat on top of the bowl. After some 20 minutes with a hacksaw, and some restorative work involving epoxy resin, the Airhead was ready for action (well, we had to wait 24 hours for the resin to go off). It was not quite as pretty as before but close inspection would be necessary to spot the difference.

Since the Airhead cost me £815, it is disappointing that the seals do not do what they are advertised as doing and that the lavatory as delivered was therefore not fully functional. Richard will disagree with me about this; perhaps he thinks it is not necessary to have closely fitting seals. However, I approached the US manufacturer who confirmed that the seals on the Airhead should … well, seal!

Despite this particular problem, the build quality of the Airhead is excellent. It seems to be a very well-engineered bit of kit.

Start-up

Prior to using the Airhead I read the instructions provided by both the US manufacturer and the UK and Australian distributors – you can't say I didn't do my homework! One discrepancy was that the manufacturer called for the solids tank to be half-filled with cocoa shells before use and the UK instructions called for just 2" of cocoa shell – this is a big difference! Initially, I put in 3", still a long way below the half-way mark. However, I found that this was not really deep enough for the solids to be buried by the agitator, so I added some more.

I now believe that filling the solids tank about a third full with cocoa shells is about right. This is to just below the spindle on the agitator – see Figure 2. One can always add some more cocoa shells later.

Figure 1: Airhead Setup in Boatshed

Figure 1 shows the Airhead set up in the boat shed. The fan is being driven by a 12V supply from Swing Cat's batteries. The extractor fan vents into the polytunnel. Coffee filters are offered for use, but are not necessary. They are sitting on top of a laminated set of user's instructions – an aide memoire for those not familiar with how to use a composting loo; these instructions are also included at the back of this document. The white container is used to hold a supply of cocoa shells. There is also a spray bottle for cleaning the bowl and a piece of paper and pencil – to record how many poos it takes to fill up the solids tank! I want to test the claim in the marketing literature that it takes between 60 and 80 uses before it needs emptying.

Figure 2: Initial Fill of Cocoa Shells

Experience of Using the Airhead Composting Toilet

Men pee standing up but it is better to pee sitting down on the Airhead. This is not because the pee will necessarily get into the solids tank if one pees standing up; it will still find its way to the urine bottle if one pees on the side of the bowl and not onto the trap door. However, you will spend more time cleaning urine splash marks off the bowl if your pee into it in the standing position.

The opening into the solids tank provided by the trap door is shown in Figure 3. The agitator can be seen through it. The pee holes leading to the urine bottle are also visible.

Figure 3: Tap Door and Pee Holes of Airhead

It is not necessary to use the coffee filter paper – opening the trap door will enable the faeces to drop into the solids tank without dirtying the bowl. Opening the trap door does not release any odour – the loo is a pleasure to use. The urine bottle is also odourless provided a cup of sugar is put into it before use. We did find that venting the Airhead into the polytunnel did produce odours, especially after use! We then vented it outside and all odours disappeared.

Cleaning the bowl is easy, using either a water spray or a proprietary product like: http://www.eco-toilets.co.uk/shop/bio-flush-compost-toilet-fluid/ . This liquid can also be used in the urine bottle although we didn't try it as the sugar seemed to work well.

The solids tank was emptied after 65 deposits. Well, actually it wasn't emptied since I just replaced one solids tank with another. I thought about this a lot.

Most people just empty the solids tank, perhaps into a plastic bucket with a lid, and put it straight back on the Airhead. The solids then continue composting for another few months before being disposed of, e.g. around shrubs. This is a cheap solution. A spare Airhead solids tank costs £180 but it does come with an agitator. I decided it was worth spending the money. When the solids tank is full some of the deposits will necessarily be quite fresh. Being able to swap out one tank and attach another puts off the day you will need to empty the first tank by several weeks, during which time you can turn the agitator handle every now and then to assist in the continued decomposition.

I think this is worth doing, not because the contents of the solids tank smell awful or are difficult to handle but because after a few more weeks they should be more friable and compost-like and even easier to handle. Perhaps they could then be used directly as a mulch or added to a general compost heap.

Some Reflections of a Personal Nature

In my life I have used Army latrines (just a hole in the ground), the heads on several yachts, chemical lavatories, the normal "flush and forget" lavatories and several bushes. Since I am over 60 I have also used a plastic bag so I could take samples to send off for analysis for bowel cancer; this procedure, part of a national screening programme, is quite disgusting and makes me gag. Chemical lavatories also have gag potential and as for Army latrines … let us just say that conversations with fellow dumpers (Army latrines were, in my day, open plan) are mercifully short since there is no temptation to linger.

So when it comes to "poo" I am quite squeamish. I can't pick up dog poo without gagging. The hardest part of any film I have ever watched was that bit in Slumdog Millionaire when … well, if you don't know, you have either not watched it or you have a much stronger stomach than me!

One of the worst experiences of my life was clearing a blocked heads in Guernsey harbour – a tampon had got lodged somewhere in the sea toilet system comprising of a sea toilet, a pump, a holding tank about 3 metres of pipework and several valves. Practically all of it had to be dismantled before the blockage was found.

So given my tendency for finding poo disgusting you might be surprised to learn that I regard the Airhead composting toilet as in my top two lavatorial experiences, on a par with the flush and forget variety. In some respects it is better than the flushing loo in that:

- you don't have to flush sever times to get rid of floaters,
- you are not wasting a lot of fresh water,
- it will not get blocked and
- taking samples for bowel screening is much easier (you may have to take my word for this).

The only drawback is that there is no "forget" element to the composting toilet – sooner or later you are going to have to deal with the pile. However, this is much less disgusting than emptying a chemical toilet – and you have to do it much less often.

From the point of view of a yacht, the composting lavatory is vastly superior to the sea toilet; it is very difficult to keep a sea toilet sweet smelling – all those fittings and hoses are bound to release vapours, or even worse leak, as they age. The thought of 100L of poo soup sloshing around a holding tank, perhaps under your bunk, is worrying to say the least. .The smells when you take your yacht to a pumping out stations can also be revolting.

Then there is the thought, as you dive off the stern into the clear waters of a Mediterranean anchorage, "are any of these boats anchored here just about to flush their lavatory?" OK, the fact you have a composting toilet does not mean the other yachts do but at least you are not part of the problem. By using a composting toilet you are saving on two below-the-water-line through-hulls and therefore making your boat safer. The use of a composting lavatory also saves on a lot of space that would otherwise be taken up with all the paraphernalia of a sea toilet and its holding tank.

Given all these advantages, why don't we all use composting loos? I can't think of any valid reason. I can only assume that we are all so culturally conditioned to the "flush and forget" loo that we automatically go down the same route even when we are not connected to a mains sewer that makes everything magically disappear. So, we end up with a poor facsimile of the flush and forget loo called the sea toilet, but perhaps better called the "flush and can't forget" loo. To make up for the fact we don't have a sewer connected to our boat we invent holding tanks. What we should really do is to rethink the whole business. Fortunately, some people have done this for us and come up with the composting toilet.

How to use the Airhead Composting Lavatory

General principles.

Liquids go into urine bottle via holes in front of bowl.

Solids go into tank via trap door.

Extractor fan should operate continuously.

Compost heap should be moist and crumbly.

Having a pee.

Keep trap door closed.

Women - sit as normal.

Men – avoid targeting trap door if standing, try sitting. When at sea – sit!

Empty urine bottle while level is still visible, undo wing nuts on each side and pull towards you using tab.

Use screw top to avoid spillage during transportation to where it will be disposed of.

Add ½ a cup of sugar to bottle before replacing.

Having a poo.

Either:

- use coffee paper on top of trap door and open door afterwards, or;
- open trap door before commencing.

Add loo paper to solids tank.

Rotate agitator handle to bury deposit in compost.

Cleaning

If necessary, clean loo afterwards with water spray and tissue paper.

Add tissue paper to the solids tank.

If using any chemicals to clean, **do not** add any of the cleaning materials to the solids tank.

Problems

If compost heap too dry (e.g. loo paper sticks to agitator), add water.

If compost heap too wet (e.g. becoming “swamp-like” or “muddy”), add dry compost.

Changing the Compost

Empty solids tanks when compost is about 2 inches from the top.

Use disposable gloves.

Empty contents of solids tank into large bucket (or small dustbin) to “mature”.

Do not clean out the solids tank.

Add sufficient water to new compost to create a moist crumbly structure with no dust.

Add about enough compost to solids tank to reach just below the agitator spindle.

(Optional) Add compost activator whenever water is added.