

## **A Cure for a Flush with no Gush**

When the Beast from the East threatened frost-damage to my Murvi, I drained the water tanks and heating system. After the cold spell had passed, I foolishly refilled my tank without first cleaning and flushing it out. As a result, when I primed the flush on my Thetford C200 toilet, brown gelatinous debris was pumped out of the water outlet (Picture 1).

Within a few seconds the water flow had stopped and there was no response from the flush button. I checked the 12v power supply and fuse (Picture 2) and proved that this was not an electrical fault.

Reading up on the toilet, I discovered that it has an electronic switch inside the bowl housing which opens to allow water pressure from the Murvi water pump to flush the bowl. Getting at it to repair or replace is not easy. Since I had photographed the job for my own reference, I thought that I would write it up and pass it on to other Murvi owners who may face the same problem.

### Procedure

- Firstly, I removed the cassette and wiped clean the compartment
- Dismantling the bowl assembly to gain access to the switch is a very fiddly job. This is done outside in the cassette compartment through the external access door. I found it best to view the work area by laying a mirror on the floor of the chamber (remembering of course that everything is then back to front).
- In Picture 3, I have marked with red S's the 10 screws which need to be undone. Remember you can rotate the bowl to gain access to those obstructed by adjacent components.
- Back inside the van, the bowl was lifted off the base assembly. This revealed the pipework and electronic switch (Picture 4).
- To remove the switch, I found it easiest to pull the tubing off the non-return valve highlighted in Picture 5. I made sure that I labelled the pipes so that they could be reconnected in the correct orientation.
- I also labelled the electrical contacts before disconnecting them. Then by undoing the knurled fitting highlighted in the picture the switch was removed.
- Close examination of the inside revealed the cause of the problem (Picture 5). The switch was filled and totally blocked with the brown gelatinous material.
- I applied a 12v supply to the terminals and could hear the switch trying to work so I assumed that it was just the blockage, not a failed switch, that was causing the problem.
- Rinsing off the gelatinous goo, revealed a straining mesh which was removed for thorough cleaning. See it before and after in Pictures 6 and 7.
- By reversing the steps outlined above, the unit was then reassembled. I was sure to connect pipework to the non-return valve correctly and I did a flush test to prove that it was working before re-assembly.
- Finally, I put a smear of silicon grease between the mating surfaces of the bowl and its base and then replaced the 10 screws that hold them together.

Water quality in a storage tank rapidly deteriorates and it is an ideal breeding ground for algae, bacteria and mould. The resultant growth forms a slimy residue called a biofilm which

taints the water and makes it unsuitable for drinking. The brown goo that had caused my problem was such a growth and it needed to be cleaned out.

Commercial cleaning and sterilising products are available, but they can be quite expensive and toxic. Bleach or other chlorine-based sterilising fluids and tablets such as those used to sterilise baby bottles are not recommended for this purpose. They corrode and stain metal components such as stainless-steel sinks and the internal parts of heating systems.

I decided to use food-grade citric acid powder. It is a safe, non-toxic steriliser and scale remover that can be bought on line or from home brew shops for about £5 a kilo. It is classed as a weak acid but if you use it, I recommend you wear eye protection and gloves.

I added 2 tablespoons per litre to a watering can. I then poured this in my tank and primed the taps, shower and loo. I then drove the van to slosh it about and left it for about an hour before draining and rinsing it out with fresh water. Citric acid occurs naturally in many fruits and it is used to flavour soft drinks, so any slight residue left in the tank is safe to drink. However, bugs are quick to regrow in a closed water system and so I do not advise drinking water from the on-board tanks.

Finally, a couple of citric acid tips:

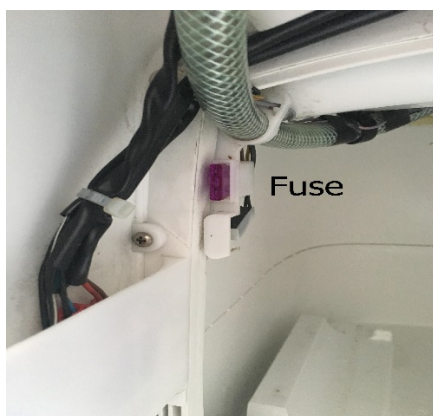
- washing a few tablespoons of citric acid down your sinks and shower tray after you drain your grey water tank will help keep it clean it and reduce the likelihood of smelly drains.
- It can also be used to descale your kettle. Just pop a couple of tablespoons into a boiled kettle and leave it to work it's magic. Then rinse thoroughly, re-boil and make yourself a cuppa after a job well done.

Picture 1

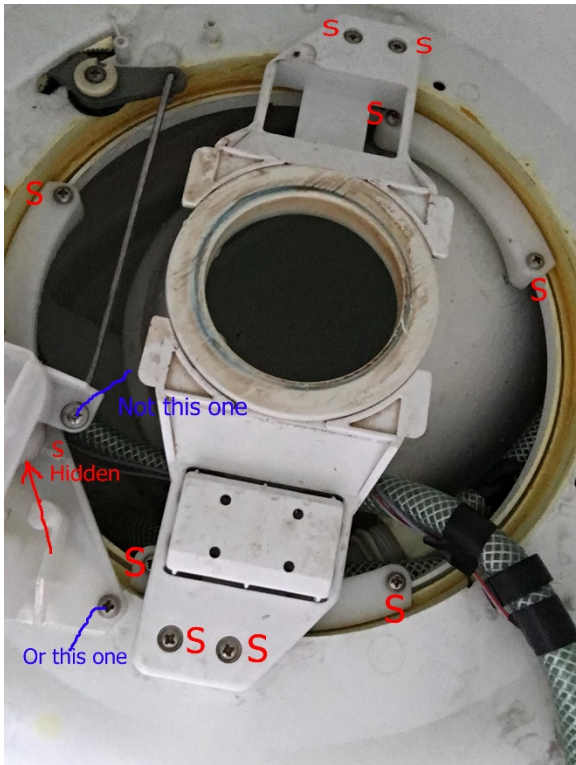


Picture 3

Picture 2



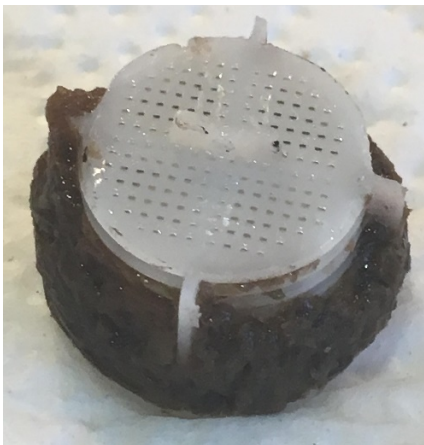
Picture 4



Picture 5



Picture 6



Picture 7

