Descaling toilet pipes

THE HIDDEN SCOURGE

Loo-pipe scale is something out of sight and generally out of mind. But we ignore it at our peril. Richard Hare suggests a way to clear it

Not everyone with a sea loo is going to have a problem with uric scale accumulation, this being the hard crud that accumulates in loo pipes and ultimately blocks them.

Those of us who sail in fresh water will be significantly less affected. Also less affected will be those that flush plenty of water through the pipes after the loo has been used. This reduces the amount of uric acid sitting in the pipes. Keeping pipe runs short helps too.

Uric scale accumulation is caused by the reaction of uric crystals – those same critters that conspire to give us gout – and calcium traces in the water that we pump through our systems. Salinity exacerbates the problem.

Pipework most affected is that below the waterline. It's here, at the 'wet' end of the system, where the lethal cocktail accumulates and is at its richest. Fast falling 'dry' pipework is less affected but the scale in this case is harder and more difficult to remove.

The significance of this is that our loo pipes could be half the diameter we believe them to be, or worse… Having seen how much accumulated in eight

What's the solution?

In PBO February 2013 we reported our test on three solutions reputed to clear uric scale from outlet pipes: a proprietary product (LeeScale), distilled vinegar, and Coca-Cola.

- **Proprietary products like LeeScale work effectively, as does vinegar – but vinegar takes about four times as long.**
- **More time is needed to remove the harder white scale from the 'dry' pipework, and it necessitates removal of the pipes.**
- **LeeScale at 10% is likely to work well enough if run through the system once a year to keep on top of the problem. However, if an accumulation has been allowed to build up over time then a 20% solution is preferable.**
- **Vinegar could work as an annual preventative treatment but would probably not be man enough to clear large scale accumulations without the process being repeated several times over several days.**
- **Coca-Cola made no practical impact.**
- **Descaling of the 'wet' pipes can be done in situ in a boatyard at the end of the season. System dosed, it can be left to get on and do its stuff while we're busying ourselves with other jobs.**

An example of limescale build-up


Descale your pipes

4 SOLUTIONS TESTED

Uric scale can reduce the diameter of sea-toilet hoses/pipes by half within five years. Richard Hare tests some solutions

years I have taken care to stay on top of the problem, usually once a year.

How to descale

The boat needs to be out of the water for descaling to be effective. Using vinegar, 36 hours might well be sufficient time but when using LeeScale at 20% with water this time can be brought down to 7-8 hours. Leaving it in longer does no harm.

To work out how much solution will be needed we must first measure the length of pipe we plan to treat. Given that 1lt of fluid fills 0.75m of normal loo outlet pipe, 4lt was ample to dose *Keppel*'s below waterline system, it being short and entirely confined within the heads. The holding tank is instrumental in this procedure as it enables the descaler to be poured directly down the system without airlock complications.

I did the dosing in two sessions as I was unsure that the delicate valves in the Jabsco loo pump would cope well with the pressure of pumping so much descaler round in one go. See far right, opposite page for the procedure on descaling the whole system in one hit.

I used malt vinegar, that's standard 5% acetic acid vinegar that we put on our chips. Great on cockles too:

Stage 1

1 Flush two buckets of fresh water through the system from toilet pan to seacock to make the job less unpleasant when the joker valve is eased away behind the toilet pump.

2 Slacken the joker valve connector. Allow the (now) clean water within the hose to fall out. Slackened as such this prevents an airlock and it enables the descaler to spread evenly across the lower part of the system.

3 Close outlet seacock to trap the descaler in the lower system.

4 Open the valve below the holding tank.

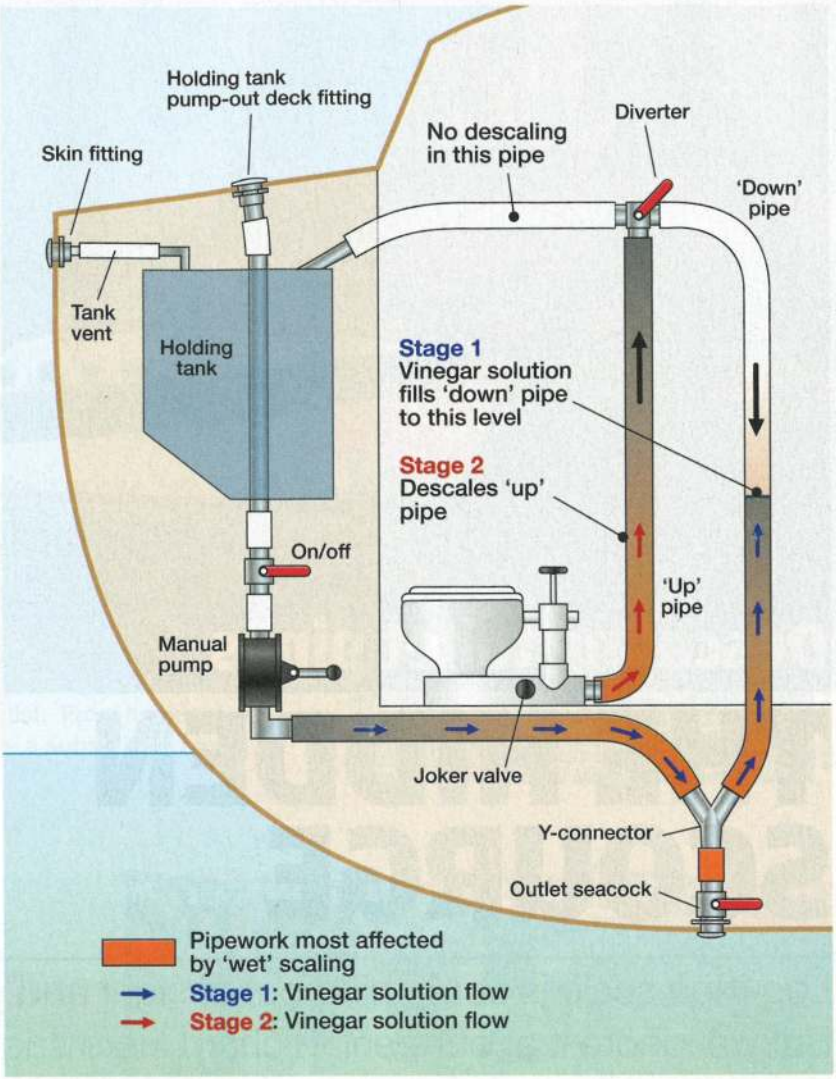
5 Pour descaler in through the holding tank pump-out deck fitting. Via the holding tank the descaler drops to the lowest point and back-fills the pipe leading up to the diverter valve.

6 Now tighten the joker valve connector to close the air release. The holding tank now provides this function.

7 After 48 hours, drop the jollop out of the boat by opening the loo outlet seacock. If necessary open the pump-out deck fitting to ensure no airlock.

8 I opted not to flush through with clean water, as vinegar traces could do no harm and might even be a benefit.

9 Discard the vinegar – you won't be wanting to use it accidentally on your fish and chips!



Start by flushing two buckets of fresh water through the system

With foul water replaced with clean, joker valve is relaxed to empty the waste pipe

The waste pipe seacock is closed to trap in the descaler

Stage 2

Also containing seawater, the uphill length of hose from the loo pump to the highest point of the system needs to be descaled, although it ought to be less affected than the lower part of the system. Why? Generous pumping after use should remove almost all of the urine. So, with the loo bowl and the pipe above it empty, proceed as follows…

Cost: 10 x 0.5lt bottles of Co-op malt vinegar @ 49p/bottle = **£4.90**

1 Based on a ratio of 1lt of descaler to 0.75m of pipe I pour 1lt of descaler in the loo bowl.

2 Ensure the diverter valve is directing the flow to the outlet seacock and open the seacock to free up the airlock.

3 Pump descaler from the bowl into the pipe until you hear it falling down out of the boat.

4 Leave descaler in the pipe for 48 hours.

5 Fill the bowl with fresh water and pump both it and the now foul descaler out of the boat.

6 Crack open the joker valve clamp if the pipe is to be emptied.

Plain malt vinegar works well as a descaler given time

Descaler (in this case vinegar) is poured into the system via the holding tank out 'filler' on deck

No holding tank?

With a straightforward bog-to-seacock pipe it's probably best to disconnect it, bash it about a bit to loosen the crud and then finish off by drawing a bottle brush through the pipe from end to end. It may also be filled with descaler by taping up one end using some plastic and gaffer tape.

Removal of the pipe might be avoided by pouring descaler into a vented loop if one is incorporated in the pipeline.

Drop a line through the pipe and use it to draw a bottle brush back and forth

Considerations

- To descale loo pipes boats need to be out of the water.
- Time is the essential factor. If the boat is laid up for the winter the slower, cheaper, vinegar route is fine. If, however, the boat is out of the water briefly for antifouling, then the faster proprietary product route is likely to be best.
- Shown is an example of a system with a holding tank. If you have a simple 'bog to seacock' system the pipe will need to be removed at the toilet pump end for the fluid to be poured in. Alternatively, if there's an anti-siphon valve, this could make matters simpler... another good reason to install an anti-siphon valve at the highest point?
- Don't leave the matter unattended. The pictures on the opening page show pipes that have been ignored for eight years – they're not far from blocking completely.
- Shown in the main diagram (opposite page) is a pipe running downhill from the diverter valve to the holding tank, or horizontally at least. This is normal. Should this pipe run uphill – not an ideal design, but sometimes unavoidable due to constraints of space – it will also need attention if the holding tank is used regularly.

Descaling in one hit

The descaling of the complete system might possibly be done in one hit, thereby reducing the time it takes by half. A caution though – anyone who has accidentally over-pumped a loo pump when the seacock has been closed will know that some repair work might be needed on the pump mechanism. It occurs to me that the one hit method might possibly lead to this, especially so if long runs with lots of liquid is involved. Me? I prefer not to take the risk.

However, if time constraints leave this as the only option then give it a go, just pump gently:

1 Perform stages 1-4 described in Phase 1 opposite page

2 Fill bowl with 6lt of descaler, ie sufficient in this case study.

3 Pump descaler down to the closed outlet seacock. It will find its level as the tank breather functions as a pressure release.

4 After 48 hours, drop the jollop out of the lower part of the boat by opening the loo outlet seacock. If necessary open the pump-out deck fitting to ensure no airlock.

5 Fill the toilet bowl with fresh water and pump out the descaler in the pipe that runs from behind the loo up to the highest point in the system.

6 Discard the old vinegar.