

# SANI-TANK

## Marine Sewage Treatment System

### The 11 Most Common Installation Problems

*(Please read this before commencing installation of the system)*

- 1. Incorrect Wiring of the Control Module.** The power supply to the Control Module must be protected from significant power 'drops' which may occur such as when starting an engine or **flushing a toilet**. Directly connecting the toilet/s to the Control Module's power supply, or connecting the Control Module to the power supply to the toilets, will result in significant voltage drops to the Control Module that will cause erratic operation of the system and of the Treatment Tank discharge pump. It may also result in the system re-booting unnecessarily if the voltage **at the Control Module** momentarily drops below 7.2 volts. **Solution: Provide a 'clean' source of power from the battery or electrical panel to the Control Module, and do not connect any other electrical equipment to the positive side of this circuit.**
- 2. Incorrectly installing the Holding Tank parallel to the centreline of the boat, but with the discharge end towards the bow.** With a planing or semi-displacement hull, this will result in the waste in a partially-full tank flowing away from the fluid height level sensors when the vessel's bow rises. This may allow the tank to be over-filled i.e. the toilet can continue to pump waste into the tank until the new cut-off level is reached in the Holding Tank; when the vessel is again at rest, the waste will submerge the titanium probes in the sensor cap, possibly causing an extended disabling of the toilet. **Solution: Install the Holding/Treatment Tank with the discharge end towards the stern.**
- 3. Incorrectly connecting the Macerator Discharge Pump:** The negative return from the macerator discharge pump is used by the system electronics to detect when the tank is empty and the check the operating status of the pump. Connecting the negative from the macerator discharge pump to a 'common earth' and then to the negative connection shown on the circuit board (or not connecting the pump to the negative connection shown on the circuit board at all) will prevent the pump from operating correctly and will lead to erratic behaviour of the system. **Solution: Follow the circuit diagram and connect the macerator discharge pump, the dosing pump, and the electrode cell, exactly as shown on the wiring diagram. A 'common earth' (of large capacity) can be used for the negative return for the toilet cut-out relay, the deck/pressure pump relay, and the circuit board, if preferred.**

**Note:** Some installers have recommended installing a 'ball valve' (not supplied) between the tank and the macerator discharge pump to completely shut off the tank when replacing or repairing the macerator discharge pump.
- 4. Incorrectly installing the Pressure Sensor Tube:** The Pressure Sensor Tube and its reducing bush, must be installed as far as possible into the Holding Tank, preferably until both nuts are fully seated into the tank. Leaving the Pressure Sensor Tube raised prevents the air within the tube 'triggering' the air pressure switch at the correct height and may prevent the 'Learning Phase' from being undertaken. The system will not commence the Learning Phase if the maximum level height sensor has been triggered (flashing Hi-level LED) without the 80% height sensor having been triggered previously (steady Hi-level LED). **Solution: Screw the reducing bush and Pressure Sensor Tube into the tank as far as possible, preferably with the nuts in contact with each other and with the top of the tank.**
- 5. Incorrectly attaching/positioning the toilet 'trigger' connections:** The toilet 'trigger' connection must connect to the number 8 pin in the 8 pin array only i.e. the far left hand pin in the array with the cable glands facing towards you. Connecting this wire to any other pin in this array e.g. pin 7 or pin 1, and flushing the toilet will result in an immediate short circuit, severely damaging the main circuit board. **This is not a warranty issue**, and a replacement Control Module will need to be purchased. **Solution: Ensure that the toilet**

*trigger connection is correctly wired. The existing wiring should be left in place (essential if connecting two toilets) or if connecting only one toilet, ensure that the replacement wire is inserted correctly into the plug and that the one-way plug is inserted correctly into the socket.*

- 6. Incorrectly installing the Cell Tank in too low a position or incorrectly positioning/supporting the hose line:** The flow from the Cell Tank to the Holding Tank is via a gravity feed. Saltwater is forced into the Cell Tank by the peristaltic dosing pump and hypochlorous acid solution 'flows' from the Cell Tank into the Holding Tank via the black polypropylene hose line. Any loops, bends or dips in this hose line will potentially cause an air lock resulting in the correct amount of solution not being added to the Holding Tank. **Solution: Keep this hose line as vertical as possible with a constant 'fall' from the Cell Tank to the Holding Tank. Check the flow at the Holding Tank end of this hose to ensure that a reasonable amount of solution is being provided (200-300ml) per flush.**

**Note:** Some installers have recommended installing a small 'one-way' valve in the hose line between the inlet filter and the dosing pump to ensure that any other pumps connected to this line do not 'pull' the water away from the dosing pump.
- 7. Incorrectly installing the Nut & Hose Tail Connections:** The rubber washers supplied with the nut & hose tails occasionally become dislodged during transit and fall out of the nut. Installing the nut & hose tails without the corresponding washer will result in a persistent leak. **Solution: Check that the rubber washer is in place within the nut of each nut & hose tail prior to connecting the nut & hose tail to the nipple, etc.**
- 8. Incorrectly installing the Fluid Level Sensor Cap:** The Fluid Level Sensor Cap uses two ceramic/titanium probes to detect when the Holding Tank is 95% full. Once the tips of both probes are continuously immersed in water for one (1) second, the system will immediately 'open' the toilet control relay, disabling the toilet/s and preventing the toilet/s from over-filling the tank. The tolerance on this function is very small. Failing to screw the Fluid Level Sensor Cap completely onto the Holding Tank will raise the level at which the ceramic/titanium probes come into contact with the effluent and will potentially result in treated effluent being forced into the breather tubes. **Solution: Screw the Fluid Level Sensor Cap down fully onto the thread on top of the Holding Tank.**
- 9. Incorrectly installing the air breather tubes:** The air breather hoses must have a constant rise from the tank outlet to the external breather outlet. Allowing the hose/s to run horizontally or 'sag', will potentially allow fluid to collect in the hoses, forming an air-lock, resulting in the first of the high level alarms 'triggering' **briefly** each time that a toilet is flushed. **Solution: Ensure that all air breather hoses have a suitable rise from the tank to the external outlet.**
- 10. Using detergent to lubricate the piping:** Several installers have used liberal amounts of detergent to assist the installation of the piping. When testing the system after installation, this may result in excessive foaming occurring within the holding tank, resulting in the foam coming into contact with and staying in contact with the titanium probes until the foam evaporates. This will trigger the '95% full' alarm and will disable the toilet/s. **Solution: If using detergent, apply it sparingly, or use an alternative lubricant.**
- 11. Mounting the tanks below the waterline:** When installing tanks below the waterline of a vessel, special precautions must be taken to prevent unintentional filling of the tanks. The siphon breaker supplied must be installed between the through-hull outlet and the macerator discharge pump, particularly if the outlet is below the waterline or only slightly above the waterline. A 13mm siphon breaker must also be fitted between the pressure pump and the cleansing rotor, if the top of the treatment tank is below the waterline. The Cell Tank should **always** be mounted above the waterline; however, if this is definitely not possible, a manual valve or a solenoid valve **must** be inserted in the piping from the seawater inlet to the peristaltic pump so that this pump is completely isolated from the seawater inlet when the vessel is not in use. **Solution: Mount the Treatment Tank above the waterline if possible and/or use siphon breakers to prevent filling of the tank. Always mount the Cell Tank above the waterline and/or use valves to turn off the water supply to this pump when the vessel is not in use.**