VH TX-EX User Manual

Toilet Cubicle User Guide & Spare Parts

Shades Technics

Table of Contents

Introduction

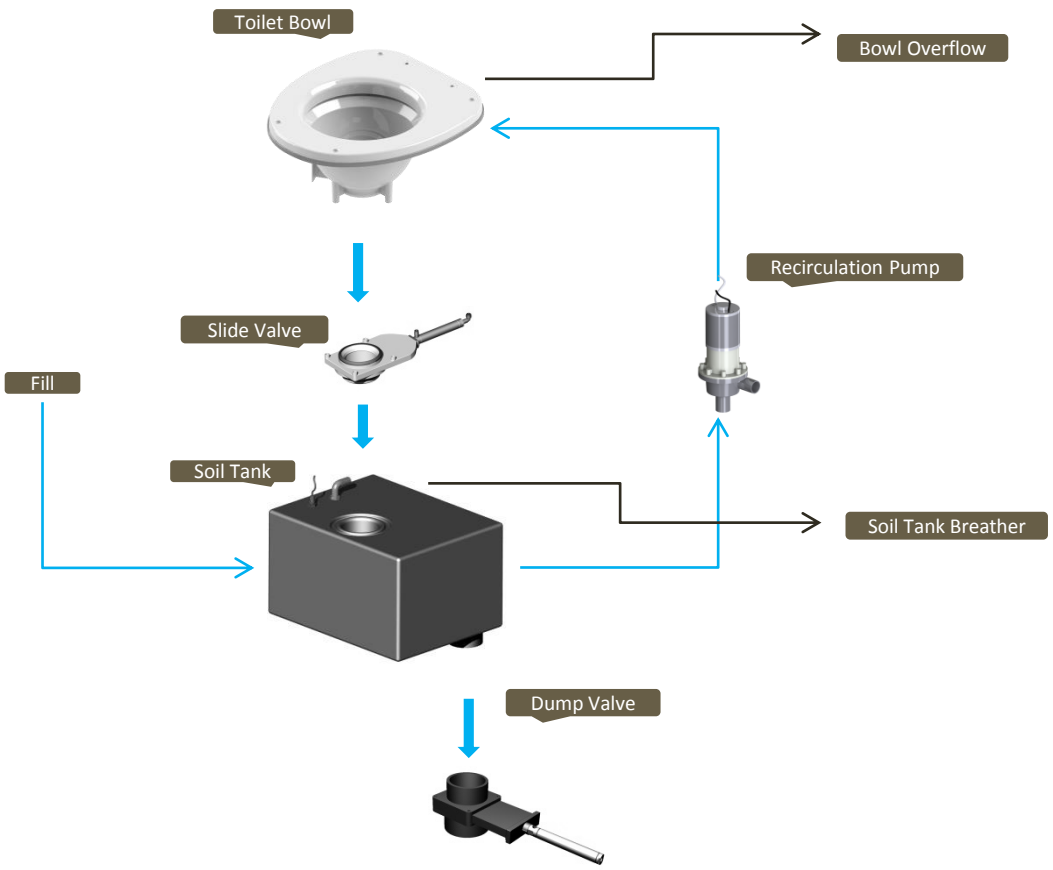
- Hydroflush

  The Shades Hydroflush system uses a timed function to recirculate water form the soil tank via a high pressure pump. A chemical should be used in the water to help break down the waste and reduce the odour as a small quantity of water will remain in the bowl to seal the slide. For consistent operation of this valve the maintenance guidelines must be followed, using the correct toilet paper and chemical will prolong the life of the system.

  The system requires a 'charge' of clean water to get the system working and uses a float switch to signal that the unit is ready for use. A separate level sensor shows when the tank is full. The whole cubicle is controlled via the PIR sensor that comes on when entering the cubicle. The system will not work unless the PIR has been activated.

- System Schematic

  Below shows a typical system layout of the water system.



Cubicle Operation

- Switching the cubicle 'ON'

  Engage the WC master switch on the dashboard. The cubicle interior lamps will turn on for 60 seconds and then switch off. The cubicle is now ready to use. It is recommended that the vehicle engine is running to protect the batteries.

- Interior Light

  Upon entry to the cubicle 2 main spot lamps will illuminate automatically. The interior lamp is controlled by a movement sensor which will switch off the light shortly after the cubicle is vacated.

- To Flush The Toilet

  Push the flush button  once to flush the toilet with a set quantity of water. Should a further flush be required, wait for the flush cycle to complete then press the button again.

  When the soil tank is full, the dashboard LED  will illuminate and the "Occupied" lamp will signal. The toilet is now out of use until the soil tank is emptied.

  If the system is using too much water a flow control valve fitted to the bowl can be adjusted.

- To Wash Your Hands

  Depress the hand wash button  once to dispense a set amount of water.

  When the hand wash tank is empty the dashboard LED  will illuminate to alert the driver.

  If the hand wash water flow is too strong a flow control valve on the rear of the sink can be used to adjust the flow.

- Cubicle Extractor Fan

  The ventilator fan runs continuously when the master switch is ON but has the option to only work when the light is activated.

- Water Tank Filling & Emptying

  Tanks are filled via the hose connectors located in the side locker. Each tank also has its own drain for cleaning or winterization.

Cubicle Operation

- Soil Tank Emptying

  The evacuation valve on the soil tank is controlled pneumatically and can be opened by pulling a black knob located behind the fuel filler flap or similar. The knob is sprung and will close when let go.

- Soil Tank Cleaner

  The soil tank is fitted with a jet washer nozzle that is used to prime the soil tank and clean the internal filter at the same time. It is advisable to leave the dump valve open for a short while to flush out the tank before closing it and priming the system.

- In Case of Emergency

  Depressing the RED alarm button inside the cubicle will alert the driver.

Cleaning & Hygiene

- Cubicle Cleaning

  The cubicle is manufactured from Glass Reinforced Plastic (GRP) with high gloss interior and lightly textured exterior surfaces. This surface finish is delicate and must only be washed down using a mild detergent. The use of a caustic or abrasive material is not recommended, as this will affect the appearance.

- Toilet Bowl Cleaning

  To protect the finish of theABS toilet bowl do not use abrasives of any kind. To clean the bowl, use a mild anti-bacterial detergent and suitable brush.

- Litter Bin

  The cubicle features 5 litre plastic bin located next to the sink. The use of a bin liner is recommended, open the lid and fold the liner over the edges of the opening.

- Toilet Roll

  It is recommended that a high biodegradable paper is used at all times.

Domestic grade toilet paper is not recommended as this can block the system.

Maintenance

- Daily Routine

  Prior to the vehicle entering service the holding tank should be charged with an additive to sanitise the effluent.

  The recommended product is **Shades Super Sani ECO** or **Sani RC**, formulated from natural essential oils, this formaldehyde-free formula is contained within a water soluble membrane. A single 16 gram sachet contains the recommended dosage for 110 litre capacity holding tank and will function for a maximum of three days.

  To apply:

  1. Check the tank evacuation valve is closed
  2. Charge the soil tank with approximately 10l of freshwater until the light comes on.
  3. Check the WC clean water tank is full.
  4. Switch on power to the cubicle (see page 4)
  5. Press the flush button and drop the complete sachet into the bowl.

  Cat No. 800025 (Box 100) or **Cat No. 800026** (Carton 1000)

  Caution: Do not open the sachet.

  It is recommended that the WC the soil tank is emptied at the end of every day.

  The hand wash tank should be emptied and re-filled daily. To help maintain a clean tank and freshwater the use of a sanitiser is recommended. Shades can supply a suitable product that disinfects the water, that is safe to drink and non-irritable to the skin and eyes. **Cat No. 800060**

Maintenance

- Weekly Routine

  Check extractor fan function.

  Inspect the security of the faucet, door hinges and toilet seat. Check the operation of the cubicle door and lock function.

  Check electrical and plumbing connections for security and leaks.

  Check water flow to the hand basin is smooth and constant.

- Quarterly Routine

  Rinse soil tank by priming with clean water whilst the dump valve is open. The fill hose connected to the soil tank is a jet pointed at the internal filter in the tank.

  Lubricate soil tank evacuation valve (to be carried out immediately after flushing through the soil tank). Undo the four fixing bolts holding the soil valve assembly together and remove the main body section. Lubricate the slide paddle using lithium grease or similar so the open/close operation is smooth. Replace the valve body and bolt together. Do not over tighten as this will restrict the operation of the valve.

  Disinfect the hand wash tanks and flush through with clean water.

Maintenance

- Winterization

  If the vehicle is to be parked in zero or sub-zero temperatures, it is imperative that all water containers are completely drained.

  Note: No warranty claims will be accepted on any winter damaged parts.

- Jump starting

  When jump starting the vehicle, please ensure that the dashboard master Switch for the WC is off!

- Fault Reporting

  1. In the unlikely event of a fault occurring an emergency parts kit has been supplied along with the enclosed comprehensive fault analysis flow chart
  2. Using these charts, determine the cause of the fault and replace the faulty item from the kit if possible.
  3. To order a replacement kit or non-kit part contact the dealer as specified on the contents page (Page 2) of this manual, quoting the cubicle serial number. The serial number is located behind the vanity access panel.
  4. In order for replacement goods to be dispatched a simple warranty procedure must be followed.

  Note: Tampering, unauthorised involvement or preventable damage will result in a charge being levied

Warranty Claims

Shades Technics offer a comprehensive warranty cover for all products, valid for 12 months from the vehicle's date in service.

Warranty does not cover shipping costs.

Contact the dealer or supplier from where the vehicle was purchased.

The dealer/supplier will contact Shades Technics who will Fax a warranty claim form to the customer.

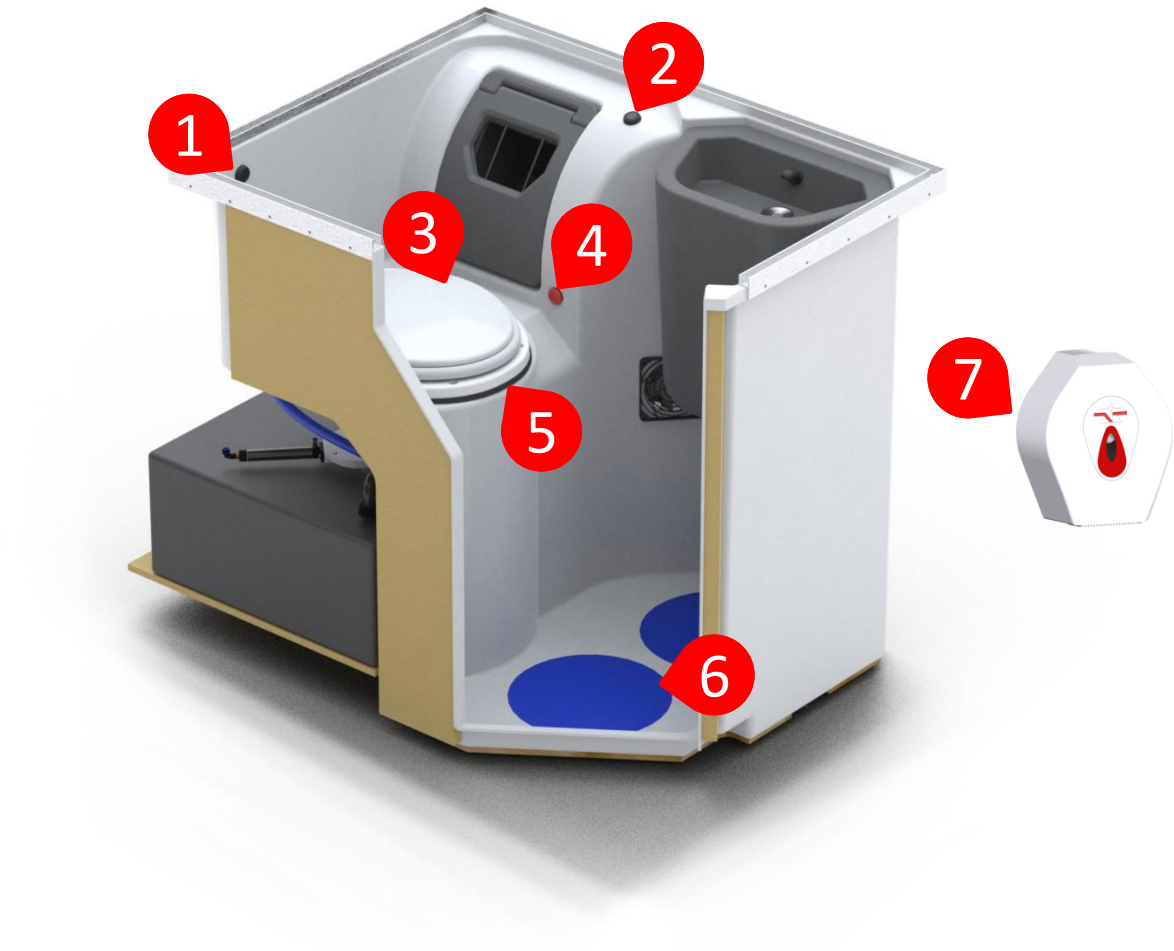
Complete the warranty claim form, ensuring all details are filled in and Fax back to Shades on

+44(0)1992 476831

Shades Technics will despatch any parts required or organise rectification via one of its service agents.

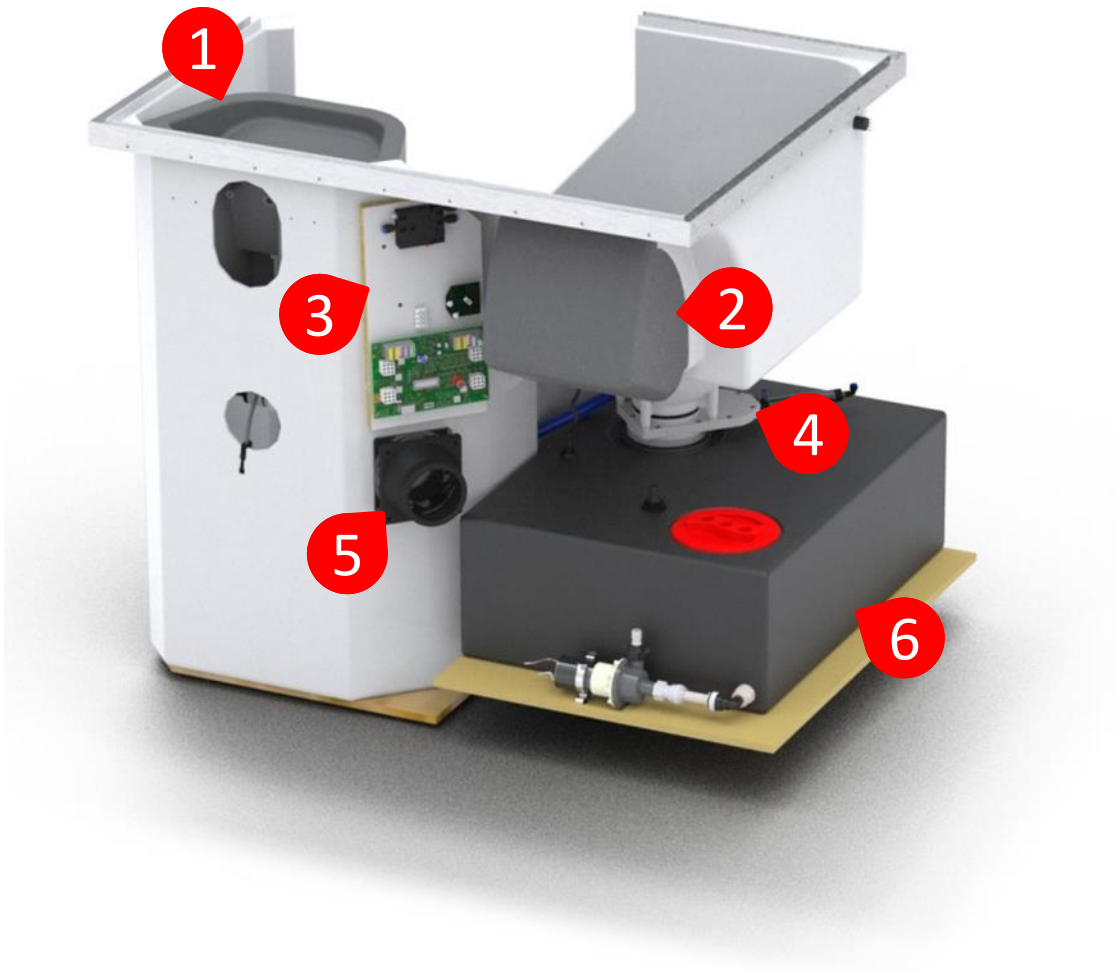
Please return any faulty parts that have been replaced under warranty within 14 days or a charge may be applied

Cubicle



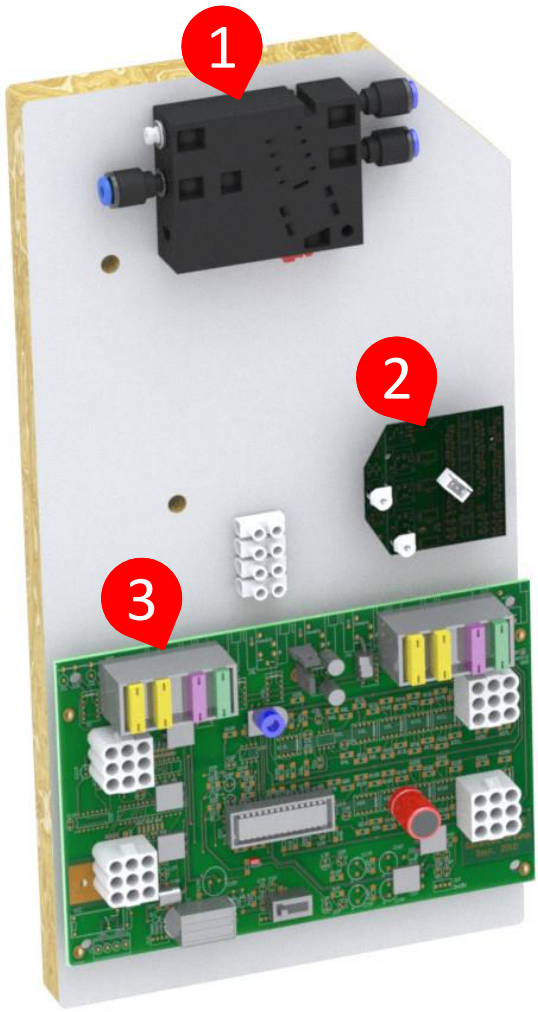
No.	Description	Part Number
1	Flush button	VH714007
2	Hand wash button	VH714007
3	Toilet seat	VH735100
4	Alarm button	VH714030
5	Bowl assembly	VH731259
6	Grip Circle	VH661482
7	Toilet Roll	VH661630

Cubicle



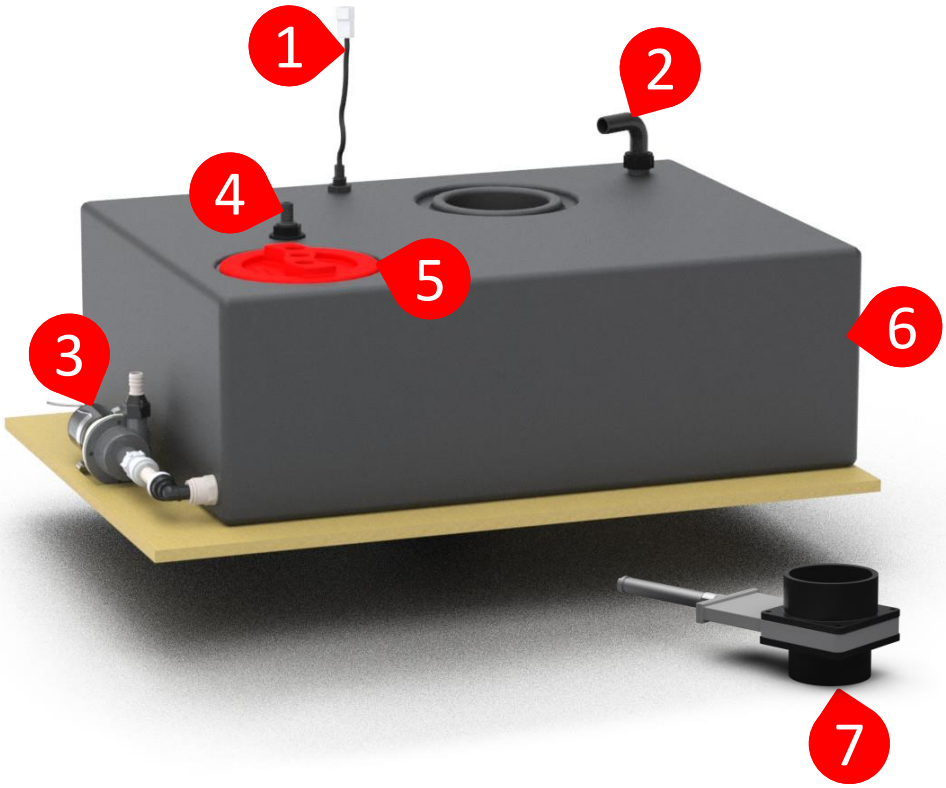
No.	Description	Part Number
1	Sink	VH733200
2	Rubbish bin	VH601035
3	PCB	See page 13
4	Slide Valve	VH735713
5	Extractor Fan	VH727515
6	Soil Tank	See page 14

Electrical Board



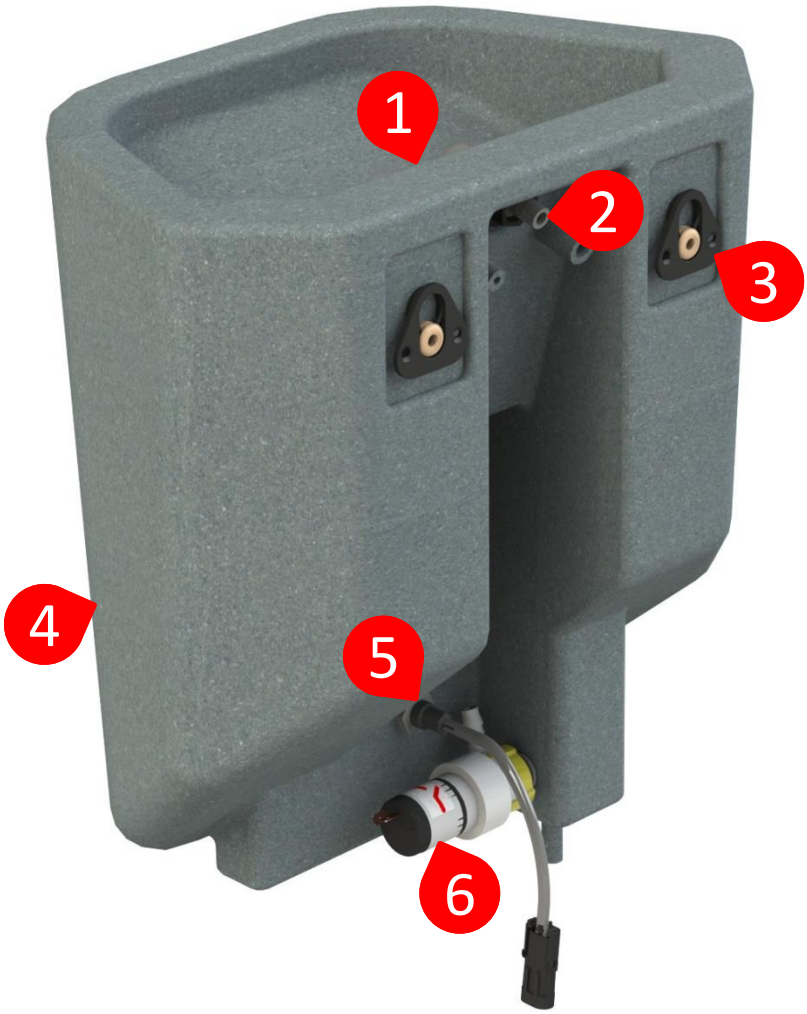
No.	Description	Part Number
1	Isonic Valve	VH735714
2	PIR	VH712035
3	PCB	VH730638

Soil Tank



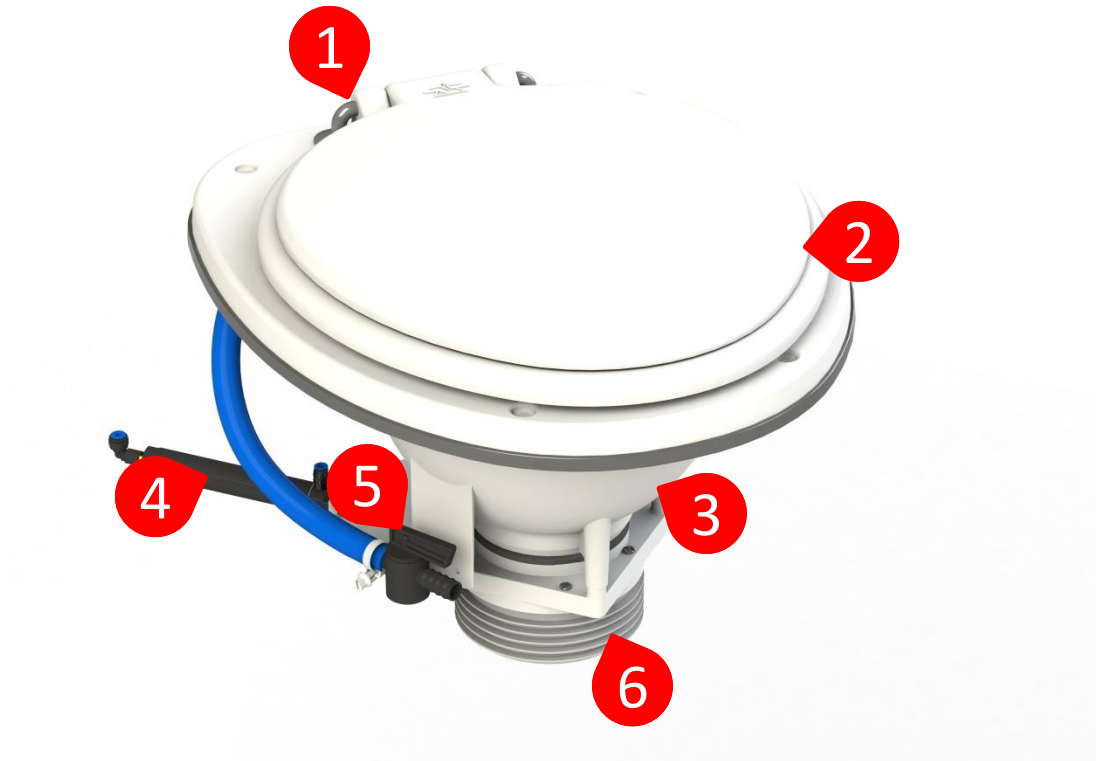
No.	Description	Part Number
1	Float Switch	VH714502
2	Tank Breather	VH744022
3	Recirculation Pump	VH702110
4	Filter Jet	VH663603
5	Hatch Cover	VH732051
6	Soil Tank Assy	VH733962
7	Pneumatic Dump Valve	VH735774

Sink Tank



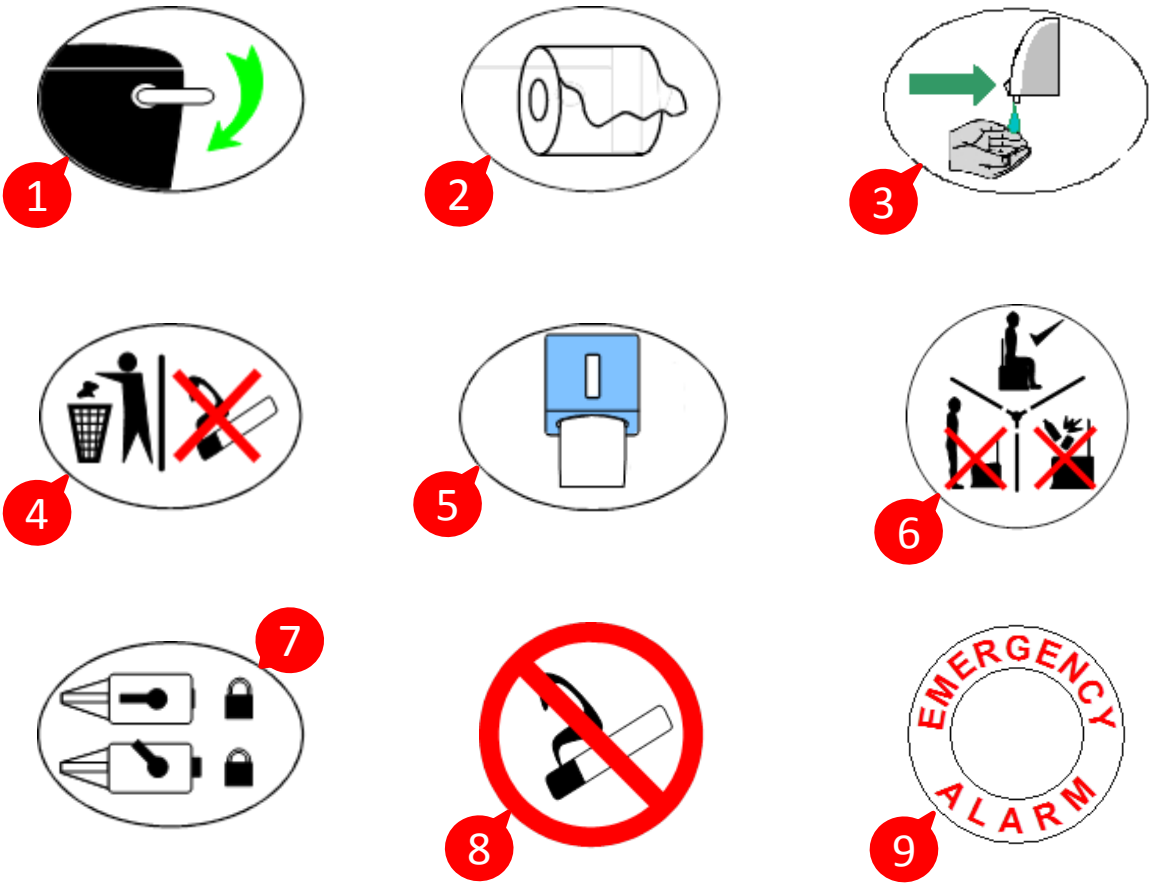
No.	Description	Part Number
1	Sink Waste	VH701504
2	Faucet	VH663603
3	Fixing	VH713154
4	Hand wash Sink-Tank	VH733200
5	Float Switch	VH714511
6	Hand Wash Pump	VH702112

Toilet Bowl



No.	Description	Part Number
1	Toilet Seat Hinges	735102
2	Toilet Seat & Lid	735101
3	Toilet Bowl Assembly	731262
4	Slide Valve	735713
5	Flow Control Tap	747041
6	Fir Tree Fitting	731736

Symbols (stickers)



No.	Description	Part Number
1	Toilet Flush	VH735562
2	Toilet Paper	VH735569
3	Soap	VH733510
4	Trash Bin	VH735567
5	Paper Towel	VH735573
6	Do Not Stand	VH735560
7	Door Lock RH	VH735564
8	No Smoking	VH735563
9	Alarm Button	VH735566

Cubicle Electrics

- Description

  The Toilet Cubicle Control Board is a solid state electronic control unit that manages all toilet cubicle functions. All output devices are short circuit and over-voltage protected for reliability and safety.

- Operation - Power-up & voltage low indicator

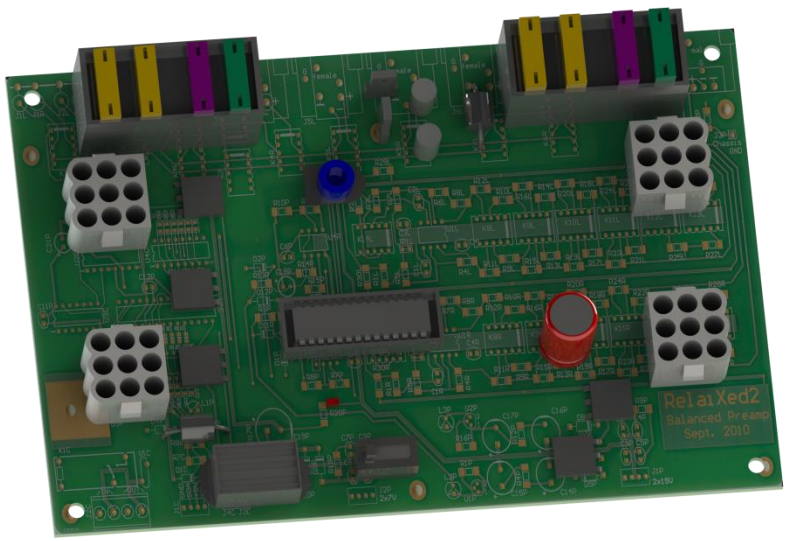
  On power-up the control board enters the shut-down mode for 60 seconds. In shut-down mode, the occupied lamp will be on and all other outputs off.

  After 60 seconds, provided that the voltage is not too low, the control board will enter the normal operating mode.

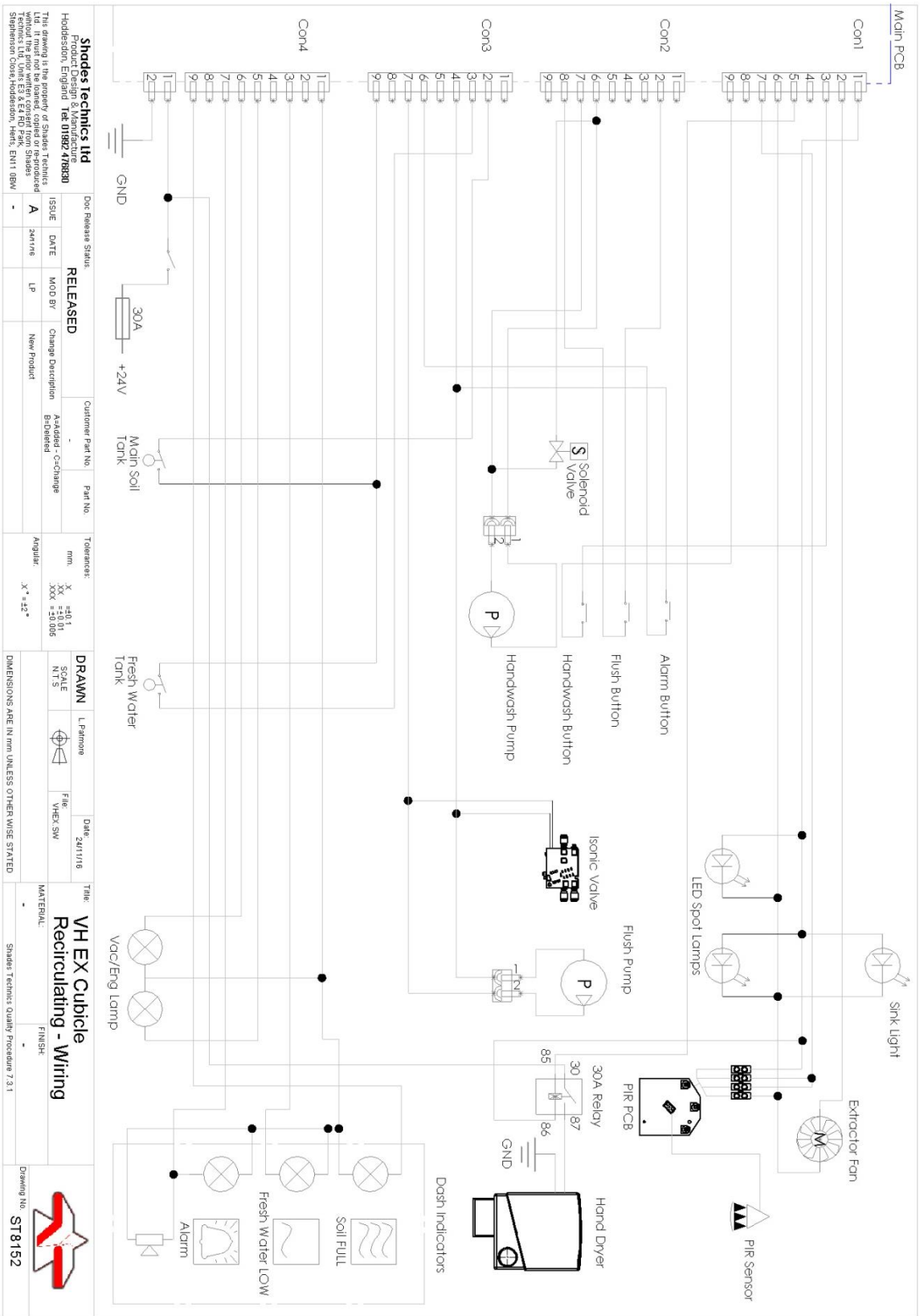
  If at any time the voltage drops below the threshold (set by VR1) for more than 5 seconds, the control board will re-set. After a re-set, the board starts in the shut-down mode for another 60 seconds before being fully functional.

  The threshold voltage is factory set to 22V, the RED 'low voltage' LED will begin to flash if the supply drops below the threshold.

  The board also features a float switch override to bypass the float switches for fault finding.



Cubicle Electrics

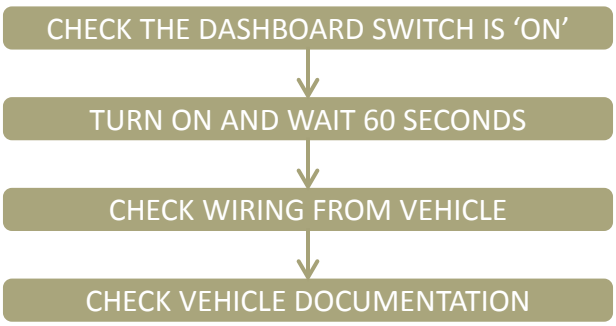


Fault Finding

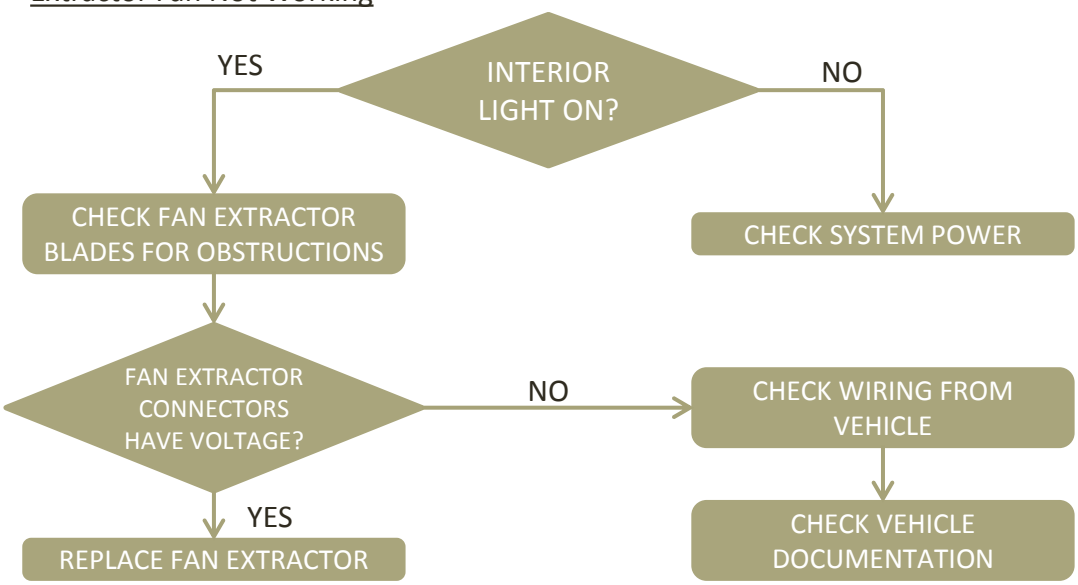
- System Without Power
- Extractor Fan Not Working
- Repeated Flush
- Alarm Button/Buzzer Not Working
- Bad odour from toilet
- WC Not Working
- Interior Lamp Timer
- Interior Lights Not Working

Fault Finding

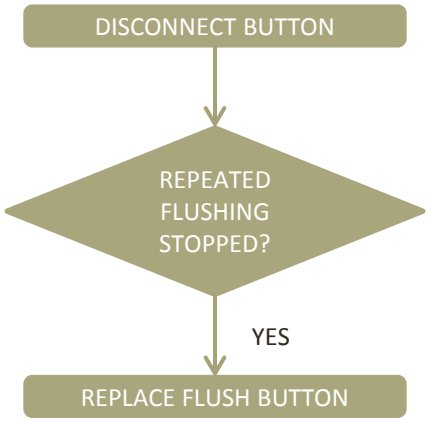
- System Without Power



- Extractor Fan Not Working

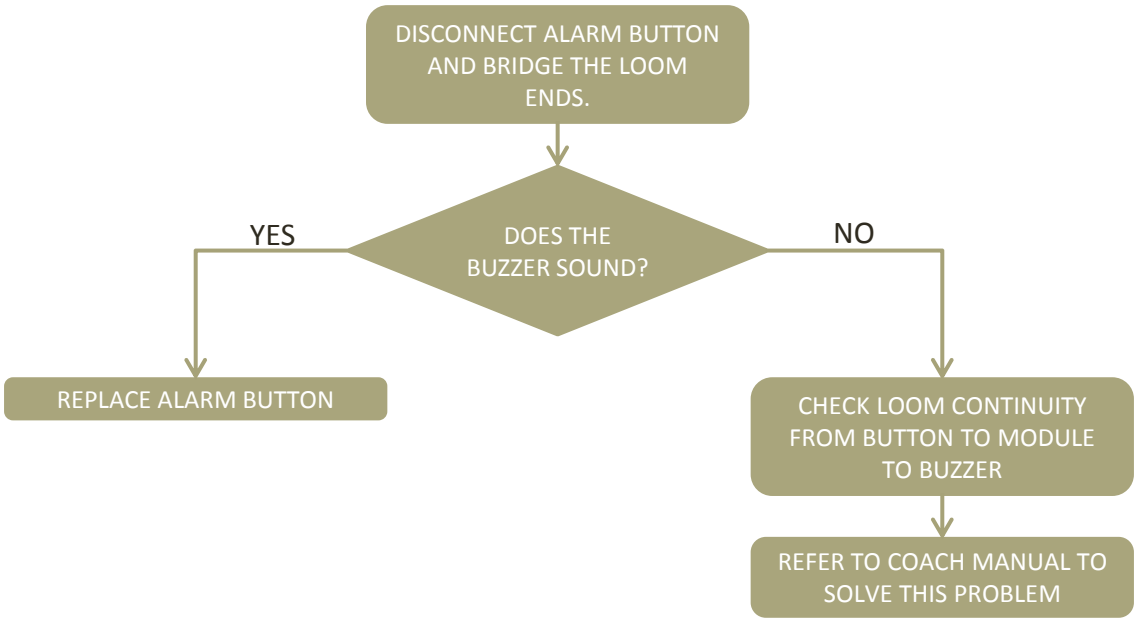


- Repeated Flushing



Fault Finding

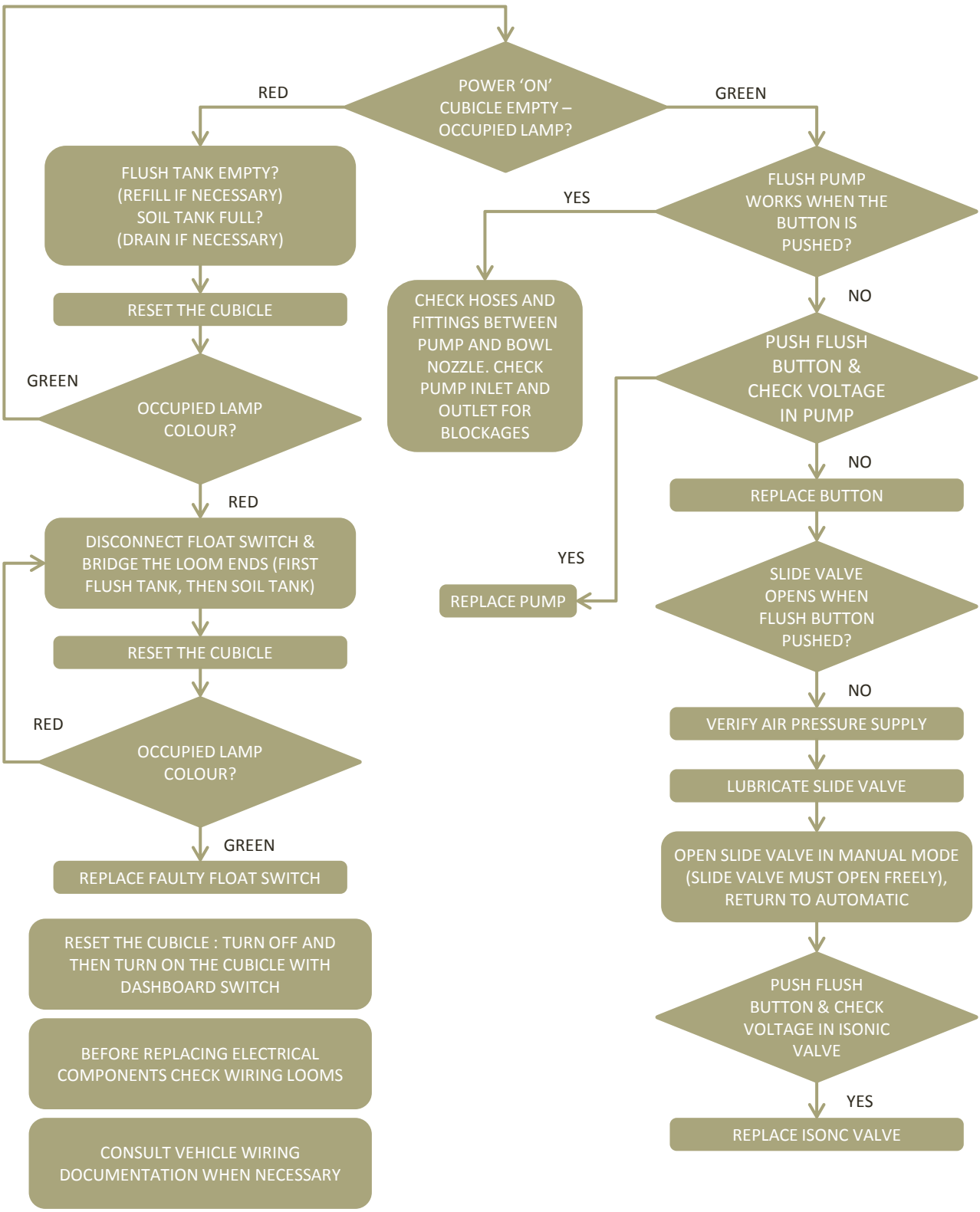
- Alarm Button/Buzzer Not Working



- Bad odour from toilet

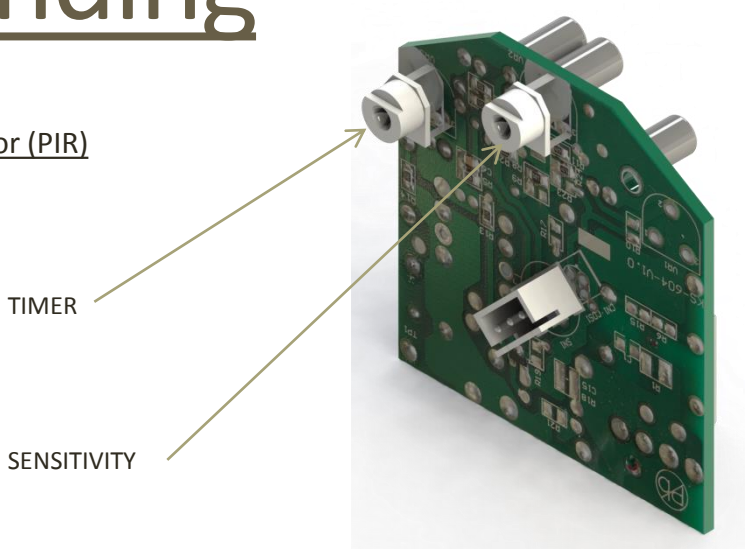
Fault Finding

- WC Not Working



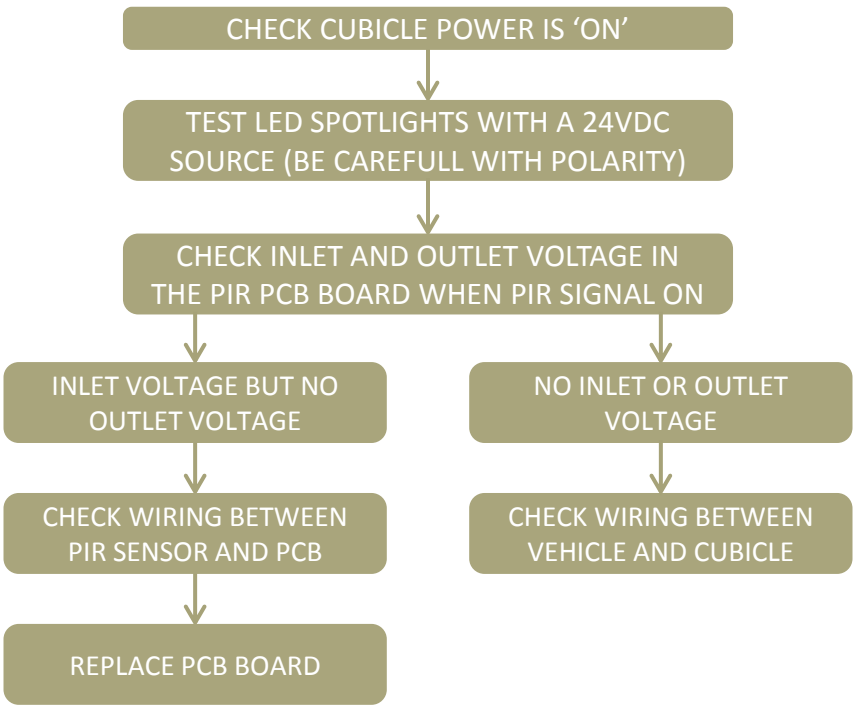
Fault Finding

- Interior Lamp Sensor (PIR)



PIR SENSOR DETECTS HEAT AND MOVEMENT. THE TIME CAN BE ADJUSTER, AS CAN THE SENSITIVITY, BY ROTATING THE DIALS SHOWN.

- Interior Lights Not Working



Service

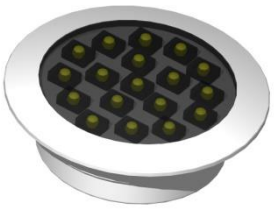
The following section details where to find key components and how to replace them.

- Lights (Cubicle ceiling)

  Disconnect the power to the cubicle

  Gently pull the LED-lamp from the ceiling, lifting the edges with a flat screwdriver. Use masking tape to protect the GRP-ceiling panel from the blade.

  Disconnect the light unit and replace.



- PIR-Sensor (Cubicle ceiling)

  Disconnect the power to the cubicle

  Gently pull the sensor from the ceiling, lifting the edges with a flat screwdriver. Use masking tape to protect the GRP-ceiling panel from the blade.

  Disconnect the light unit and replace.

Service

- Hand wash & Flush buttons (Sink vanity)

  Disconnect the power to the cubicle.

  Unscrew the back nut on the reverse of the button.

  Pull the button through mounting hole.

  Remove terminals from the back of the button.

  Connect terminals and re-fit button.

Use the two outer terminals

Service

- Flush pump (On wooden board next to the soil tank)

  Disconnect the power to the cubicle

  Remove any access panels protecting the tanks

  Drain soil tank tank

  Disconnect the wires to the pump

  Remove from securing clip

  Release inlet and outlet pipes.

  Re-fit new pump. Make sure both inlet and outlet are water tight and the flow arrow is pointing in the correct direction.

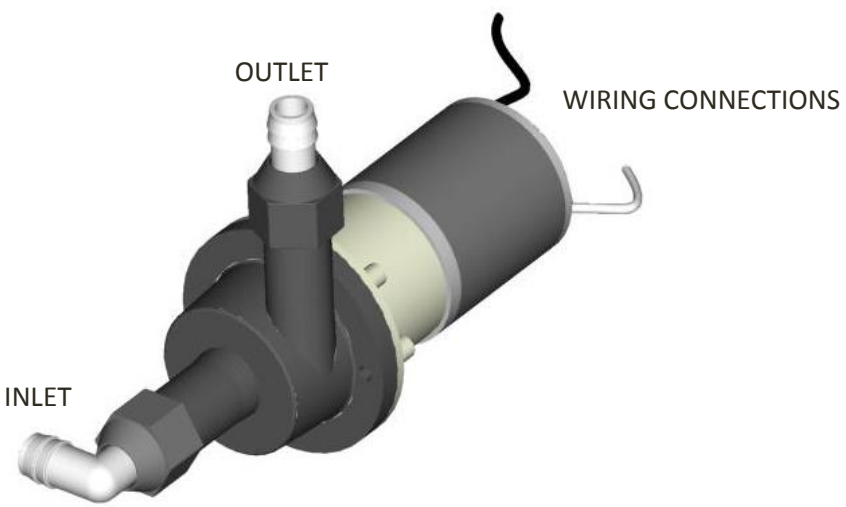
  Re-connect the power.

  Close the drain on the supply tank.

  Re-fill soil tank with freshwater until side sensor activates.

  Switch on power to cubicle.

  Prime pump with 2-3 button pushes.



Service

- Hand wash Pump (BEHIND SINK TANK)

  Disconnect the power to the cubicle

  Remove 2x screws under the sink bracket inside the cubicle

  Lift the sink tank up and pull forward

  Disconnect the wires to the pump

  Remove the hose

  Release inlet from tank coupler

  Re-fit new pump. Make sure both inlet and outlet are water tight

  Re-connect the power.

  Push the sink against the wall and push down, clipping the tank back in to the wall fixings.

  Secure to the barcket with the 2x screws underneath

  Switch on power to cubicle.

  Prime pump with 2-3 button pushes.

Service

- PCB (Right Hand side of toilet through service door)

  Disconnect the power to the cubicle by removing the 2-way connector.

  Remove all four remaining 9-way connectors.

  Remove the 4x screws holding the PCB.

  Fit the new PCB and attach the five connectors, making sure that the four 9-way connectors go back in the correct order.

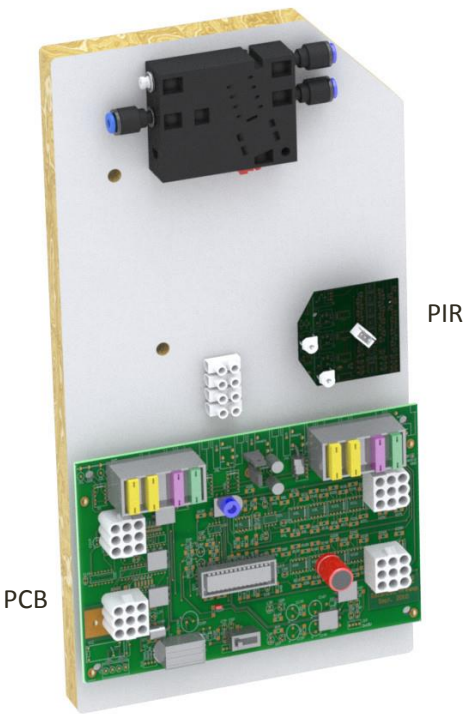
- PIR Circuit Board (next to the main PCB)

  Disconnect the power to the cubicle by removing the 2-way connector.

  Remove all the wires in the screw terminals and the small sensor plug.

  Remove the 2x screws holding the PCB.

  Fit the new PCB and attach the small plug & wires, making sure that the wires go back in the correct order.



Service

- Toilet Slide Valve (Toilet Bowl)

Removal

Disconnect the power to the cubicle.

Remove 4x fixing screws from around the top of the bowl.

Pull and twist the bowl to release the seal from the soil tank.

Once released, remove the supply hose to the flush nozzle.

Lift bowl out and remove the 2x air supply hoses to the air cylinder.

Remove 4x fixing bolts, securing the slide valve to the toilet bowl.

CAUTION: As this air supply is from the vehicle (via the control valve), when it is disconnected the air pressure in the pipes will be at approx. 8 bar and will cause the pipe to 'snake around' violently if it is not held firmly.

Replacement

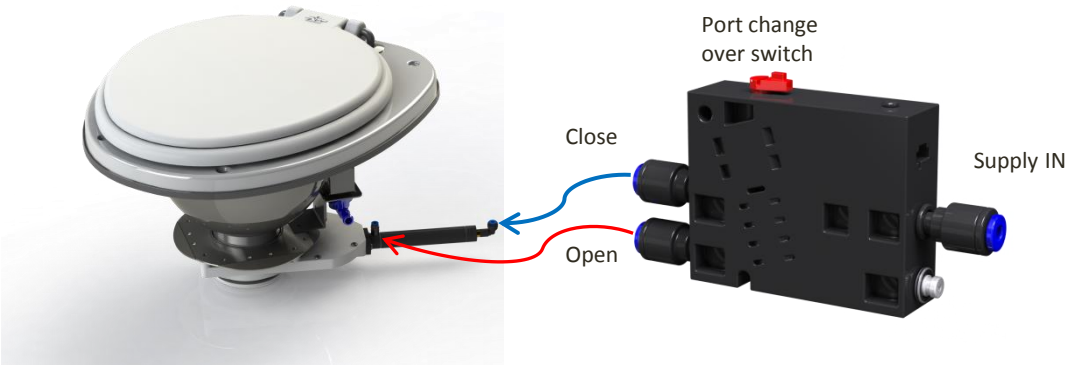
Position the valve assembly on the bottom of the bowl and secure with the 4x bolts. Tighten bolts to 6 kgf/cm^2 using a torque wrench

Smear silicone grease or similar around the black O-ring on the pneumatic valve and pass bowl through aperture on the cowling push firmly into the soil tank. Ensure that the rubber fin gasket is not in the entrance to the tank and on the bottom of the valve.

Reconnect the air pipes to the cylinder and the inlet pipe t the flush nozzle.

Connect the slide valve outlet to the routing pipe to soil tank.

Start the vehicle engine and switch on the WC master switch. Wait until the vehicle air pressure is at maximum before attempting to flush the toilet.



Service

- Toilet Valve Control Box (Panel to right of cubicle)

  Disconnect the power to the cubicle.

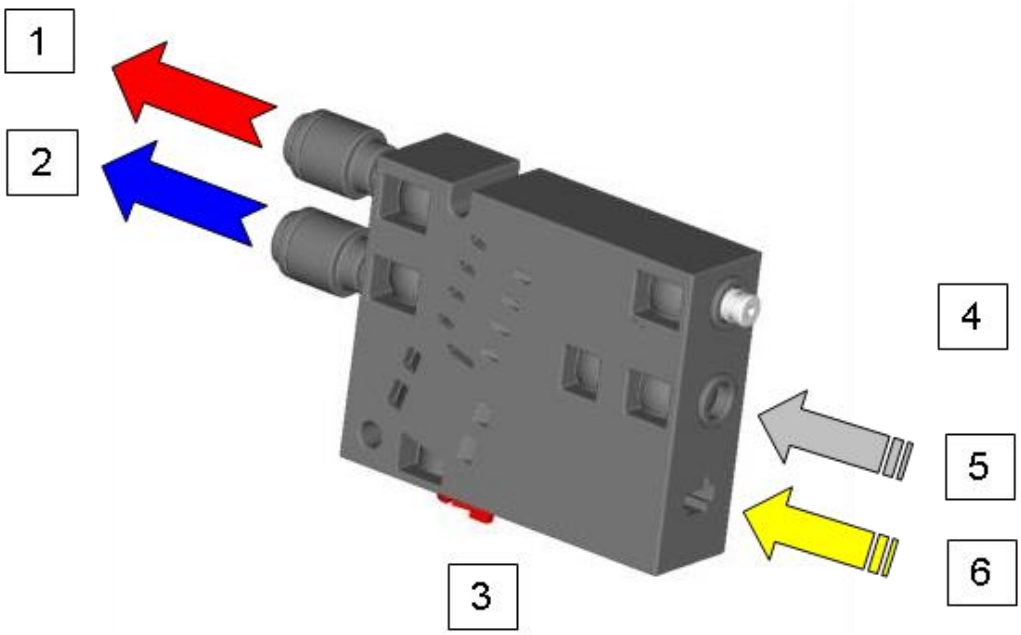
  Unclip the black control valve from its location.

  Remove the electrical connector from the valve.

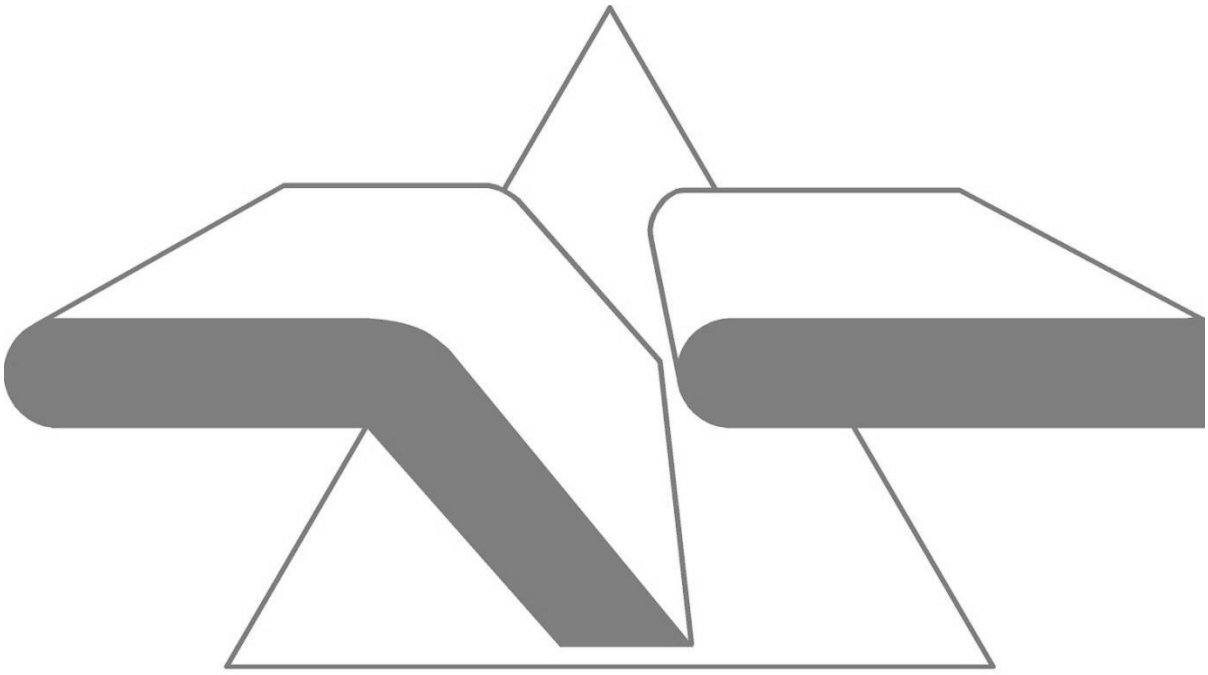
  Remove the 3x pipes from the valve.

  Reconnect new valve making sure that the pipes are in the correct location.

  CAUTION: As this air supply is from the vehicle (via the control valve), when it is disconnected the air pressure in the pipes will be at approx. 8 bar and will cause the pipe to 'snake around' violently if it is not held firmly.



1. AIR SUPPLY OUT – TO FRONT OF CYLINDER TO OPEN SLIDE VALVE
2. AIR SUPPLY OUT – TO END OF CYLINDER TO CLOSE SLIDE VALVE
3. OVERIDE SWITCH – SWAPS PORTS 1 & 2 OVER
4. EXHAUST – MUST BE KEPT CLEAR
5. AIR SUPPLY FROM VEHICLE – 10BAR MAX
6. ELECTRICAL CONNECTOR



Shades Technics

www.shades-technics.com