



Taking care of the Water Trap and Gas Analyser on Tafonius machines fitted with a Solomon Monitor

The Tafonius ventilator encompasses a Solomon Multi-Parameter monitor which is positioned at the top of the machine behind the PC. It has a single blue light to indicate power and a string of yellow LED's to indicate function. The Solomon monitor has the capability of supporting Sidestream and Mainstream analysers. This document deals with sidestream analysers.

Sidestream Analysers

Sidestream analysers are of the Mindray type and incorporate a water trap and sampling line which comprise the DRYLINE system. There are two DRYLINE systems; DRYLINE I and DRYLINE II.

DRYLINE sampling lines can be used with either system but DRYLINE I and DRYLINE II water traps are **NOT** interchangeable.



Dryline I - Domed top



Dryline II - Flat top

The Water Trap protects the MultiGas Analyser from humidity, secretions, bacterial contamination and dust. The detachable fluid container can be emptied and cleaned when needed and the complete Water Trap may be used for up to one month.

Cleaning

Suitable cleaning agents for the fluid container:

Ethanol 70%, Methylated Spirit 70% or Isopropanolol 70%,
Chlorhexidine/ethanol (e.g, Hibitane), Glutaraldehyde (e.g Cidex),
Hypochlorite solution (e.g Clorox).

Service Interval: Replace the entire Water Trap once a month
Replace the sampling line at the same time or before if
frank fluid droplets are seen along its length.



Checking the health of your Water Traps and sampling lines

Sidestream Analysers use an internal pump to suck in the airway gas for sampling and analysis. The sampling rate in Tafonius is selected to be 200mls/min and the Analyser pump will work as hard as required to maintain this sampling rate. Anything that obstructs the passage of gas into and through the internal pump will require the pump to work harder to maintain the 200ml/min rate. At some point, if the obstruction is too great the pump will be unable to maintain the 200ml/min sampling rate. When the pump has to work harder there will be increased noise coming from the Solomon monitor.

Therefore:

- 1) Be alerted by any increase in pump noise coming from the Solomon monitor
- 2) Periodically check the sampling rate and performance of the internal pump, as described below.

When Tafonius is running, go to the Configure button and then the Gas Monitoring button to show the Modes/Status Tab:

If the text boxes are blank, click on the Reset button and wait for the unit to start.

The Pump flow is shown in the bottom right hand corner. In the above picture it is shown as 199 ml/minute. The standard flow is 200mls/minute +/- 5mls. If the Flow rate is less than 195 for extended periods of time, check the Water Trap and Sampling line as this indicates reduced flow due to an obstruction. If in doubt, replace the Water Trap and Sampling line with new ones. Sampling lines with visible water droplets along their length should be replaced.

A new Water Trap should allow the free passage of sampled air without obstruction. Obstruction to the Water Trap and, or Sampling line may cause measurement errors and lead to permanent damage to the MultiGas Analyser. When a brand new Water Trap has been fitted, the MultiGas Analyser pump should be heard to run quietly inside the Solomon monitor. Be alert to changes in the pump noise and check the Water Trap and Sampling Line if the pump noise increases.



Checking for leaks in the sampling system

If you are seeing odd waveforms on your capnograph and lower than expected readings for either CO₂, Oxygen or Agent, there could be a leak in either the Water Trap or sampling line. If a leak is suspected, perform the simple test below.

First, remove the sidestream sampling line from the Water Trap. Then use your finger to occlude the inlet to the water trap attached to the side of Solomon. The Flow rate should drop to less than 50mls/min and then the pump should be heard to increase in rate to attempt to clear the occlusion. The Flow and pump status will change to look something like the picture below:

Configuration	System
Presets	Modes/Status
Initial Settings	Status
Gas Monitoring	Alarms
SpO2	Cmnds
Security	Calib

Reset

Op Mode: FullAccuracy

Comm Mode: Normal

Water Trap: Adult

Pump: Regulating Flow: 25

Atm (kPa): 101.2

Message: Command OK

Close

The Pump status changes to Regulating. Release your finger. The rate may well increase to 300 mls/min before dropping back to 200 mls/minute. This is normal.

If the flow rate does not drop below 50 then replace the water trap with a **new** unit and repeat.

If the flow rate still does not fall with occlusion, contact your supplier or distributor for advice.

If the flow rate does drop to less than 50, the Water Trap has a good seal and is not leaking.

Now re-attach the sampling line and then occlude the far end of the sampling line (at the patient end) and watch for a fall in the flow rate. If the flow rate does not fall then there is a leak in the Sampling Line system. Be aware that in some Tefonius machines there is an extension line from the Y-piece to the main Sampling Line and this join may also leak.

Aspiration of fluids

If frank fluid is sucked into the sampling line then this will have a damaging effect on the water trap and the MultiGas Analyser. Initially the special



membrane in the Water Trap will absorb some of the water and some will pass into the reservoir container. The membrane itself will get saturated very quickly at which point fresh water will pass straight into the Analyser clogging the pump and contaminating the sensor. It is unlikely after an event such as this that normal function will return.

What to do if you suspect that fluid has been aspirated into the Analyser

- Remove the water trap and sampling line and discard them.
- Fit a new Water Trap but no sampling line.
- Leave the Tafarius software running so that the Analyser is continuously drawing in room air through the new Water Trap. The hope is that the continuous stream of air will dry out the sensor and pump.
- Leave the system running overnight if necessary
- Periodically connect a sampling line and exhale over the open end to see if a CO2 waveform is displayed

Common mistakes leading to fluid aspiration

The following are circumstances where fluid aspiration can accidentally occur.

- Disconnecting the Y-piece at the end of a procedure and dropping the sampling line on the floor. It is not uncommon after equine surgery for there to be pools of fluid on the floor and this can be aspirated
- Performing a leak test by placing the Y-piece in a bucket of water. This is a recognised procedure for detecting leaks in the Y-piece. However some users have disconnected the sampling line and blocked the end of the Y-piece sampling catheter, leaving the free end of the sampling line to dangle into the bucket...

It is recommended that whenever the sampling line is disconnected from the Y-piece, that the sampling line be disconnected from the water trap as well to prevent such accidents.

Salbutamol and other respiratory agents

Given the close proximity of the Salbutamol port and the end of the sidestream sampling port, it is possible that when administering Salbutamol, some may be aspirated into the Gas Analyser Sampling line. For this reason it is advised that the sampling line be temporarily disconnected from the water trap during, and for 2 breaths after, Salbutamol administration.

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