

Plan for induction of Tafonius

Documentation

Tafonius will have been delivered with a full set of manuals but take a spare set for reference:

- Auxiliary Mode operating Manual Version 101.doc
- DOCA4942E (UK) Using the Tafonius Software.doc
- Getting Started with Tafonius.doc

Take the following printed documents to distribute to people attending the induction plus some spares:

- The Parts of Tafonius.pdf
- Tafonius Troubleshooting guide Ver 101 August 2009.pdf
- Getting Started with Tafonius.doc

Dry Induction training will take a whole day. Allow the morning to go through the dry run of Tafonius plus operation in Auxiliary mode. Allow the afternoon to go through the PC mode and the software.

Allow a second day for a real run with at least one live patient.

Day 1

Induction Outline

Overview of Tafonius – run through the main points of the machine BEFORE any power is applied.

Start-up in Auxiliary Mode – Run through the Auxiliary mode start-up, pointing out status messages and their relevance. Explain the options available during start-up.

Running in Auxiliary Mode – Demonstrate the ease of piston movement in Spontaneous mode and the action of Tafonius in IPPV mode

Start-up in PC Mode Mode – Run through the PC mode start-up, pointing out status messages and their relevance. Explain the options available during start-up.

Running in PC Mode – Run through the normal PC mode start-up, the Leak & Compliance procedure, followed by an overview of software.

Questions and hands-on by the user

Overview of Tafonius

Main Points of machine
Initialisation of Tafonius ready for use
Basics of using the machine
Safety features
Cleaning & maintenance

Main points of the machine:

Use the guide notes (Parts of Tafonius.pdf) go over the machine, pointing out the major features and indicating what they do.

Start with the front of the machine, work around to the back and finish with a view inside the back door.

Notes:

Batteries – 2 batteries with separate fuses. 10A(T) type only. Unit will slowly discharge the batteries if left un-plugged (5 days or so) in which case starting the machine will be delayed whilst it trickle charges. Advise keep plugged in between use. Or start machine well in advance of requirement.

Valve Block- can be dismantled for cleaning – mention now but go over in detail later

Auxiliary screen – for use in absence of PC – mention now but go over in detail later

RCD breaker – must be set ON for Auxiliary electrical outlets to work and to charge batteries.

Cylinder release knobs: Must pull both out to release cylinder.

MUST NOT MOVE CYLINDER WHEN MACHINE IS OFF

Drain plugs – remove for cleaning/drainage after use – mention now but go over in detail later. Mention also the manual bag attachment and its connector. Will be covered in detail later.

Initialisation of Tafonius ready for use

All of this section is done without any power applied to the machine, so there are no distractions from the introduction.

Run through the use of the machine using the document, “Getting Started with Tafonius” as a guide. – pages 4-8

Connection of mains power

Connection of Oxygen and other gas supply hoses

Stress the importance of the Pressure sensing line for normal operation.

Basics of using Tafonius

Explain concept of Tafonius – same as any other anaesthetic machine and ventilator.

Have traditional flow meters, vaporiser control oxygen meters etc. User must begin to understand idea of the virtual bag, in that the piston is designed to

behave like a bag. The main difference is that the bag size is easily and readily controlled and also that the bag can be mechanically squeezed for ventilation. Their control efforts are concerned with setting the bag size and appropriate gas flows.

Safety features

Explain that there are 3 levels of control. PC control, Auxiliary control and Manual control. With PC control all information and features are available. If this fails for any reason, drop back to Auxiliary control. In Auxiliary control there is still full control of anaesthetic circuit (O2 flow, vaporiser setting) plus spontaneous and IPPV breathing modes with basic spirometry as well. If Auxiliary mode fails for any reason there is a manual back-up system. This allows full control of anaesthetic circuit (O2 flow, vaporiser setting) and spontaneous breathing, but now IPPV must be manual. Point out that changing between PC and Auxiliary mode does not require any action on their part – this is automatic. If Manual mode is required, then the manual circuit must be attached.

Demonstrate the method of removing the stopper and attaching the manual tube. Then make sure that all people present perform this procedure as it is important that they understand the process prior to an emergency. Point out that the laminated card on the side of the machine is a reminder of the process they need to go through for manual bag attachment.

Cleaning and Maintenance

Talk through the following:

Dis-assembly of Y-circuit. Remove monitoring bundle, CO2 sampling line, pressure line and detach Y-circuit. Advice re placing sensors/transducers back in the accessories box provided. Remove breathing tubes for cleaning. Valve block dis-assembly and cleaning.

Removal of soda lime tray and drain stops. Then demonstrate cleaning procedure by flushing down from valve block and into drain pan etc

Demonstrate valve-block re-assembly and supervise at least two people doing this themselves so they are competent at it.

Run through complete re-assembly including pressure line, CO2 sampling line, monitoring bundle re-attachment etc so that the machine is ready to go.

Demonstrate access to the battery compartment and show how the battery strap is loosened and then tightened to prevent excessive water ingress.

Start-up in Auxiliary Mode

This section goes through the function of Tafonius in Auxiliary mode to enhance understanding of the concept and to make users familiar with this “emergency” mode if required. Remove the Auxiliary USB cable and the PC auto-start cable from the back of the ELO to prevent unit going into PC mode.

Explain action of Power button – single press to start, long press and hold to turn off.

Auxiliary screen:

Battery voltages at start-up - these can be an aid to problems starting

“Push any knob for pressure sensor setup” – explain this is not to be used unless directed by an authorised engineer under guidance.

“Disconnect patient and press Run Button” – explain why Y-piece must be open and action of zero-ing the piston

Demonstrate “MAINS” versus “BATT” on main screen. Explain action of knobs – change & commit.

Running in Auxiliary Mode

Fit cap to Y-piece and explain method of pre-filling piston (“bag”) with gas + anaesthetic. DO NOT add any agent as future parts of demo require people to breathe in and out of Y-piece

Fill piston to mid-point

Remove cap and allow people to try breathing through Y-piece to experience the Servo Effect.

Attach a 5.0L bag and set TV and demonstrate IPPV

Turn on incoming gas to demonstrate action of dump valve

Take piston to bottom and demonstrate automatic retraction of piston when a) opening the cylinder, b) turning off the machine.

Explain action of O2 Flush

With piston at bottom, show Dump Valve opening on negative pressure caused by inspired breath.

Close machine down and then invite someone to start the machine and prepare it for a 500kg horse.

Start-up in PC Mode Mode

Now connect the PC USB cable and the PC auto-start cable at the back of ELO.

Start the machine.

Demonstrate Auxiliary screen still shows output and can be entered at any time.

Show that by not touching machine, unit will launch into PC mode and present with the Tafonius Shell.

Use “Tafonius” button to launch software.

Work through leak and compliance test explaining limitations of test and common causes of failure. Get users to watch the pressure wave on the screen and the piston position (numbers) to get a feel for the leak.

Explain meaning of compliance

When setup is complete Tafonius software is ready to use.

Running in PC Mode

Try and demystify the screen by splitting into monitoring and ventilator control. Most is monitoring. Draw attention to fact that only the green buttons need to be, or can be set. Other buttons are dependant on the settings of these green buttons. Demonstrate action of setting a button.

Demonstrate that spontaneous mode breathing is same as Auxiliary mode – take piston to 10L and allow users to breathe in and out of Y-piece.

Use a 5.0L bag to demonstrate IPPV mode with and with out incoming FGF

Talk through initial procedures: Patient Data and filling out of preliminary information.

Introduce concept of Presets and saving screen setup.

Work though all tabs on the Patient Data button

Describe and demonstrate the monitoring:

Explain adding/removing traces from screen and that with a non-visible trace, the numbers should always be visible.

ECG - show how to change speed, size and to set alarms. Explain synchronising with IBP

IBP – show how to zero the IBP trace and change size, speed etc

Demonstrate breath monitoring equipment including disposable items and advancement of catheter into ET tube for improved readings

Demonstrate Pulse-Ox monitoring with either Transmission or Reflectance probes

Demonstrate Temperature monitoring and how to silence the Temperature alarm

Demonstrate real-time trend graph for monitoring and concept of beginning the Anaesthetic Record.

Demonstrate action of Finalising a Record

Close Tafonius software and the whole machine and then invite someone to start from scratch and prepare the machine for a 500kg horse.

Day 2

With only advice from the instructor, ensure the user(s) can start the machine and prepare for the case(s) of the day. Users should enter all preliminary information and prepare the monitoring equipment ready for connection to the first patient. At the end of all procedures users should be instructed on extracting the data for viewing on a remote PC. This is a good time to go over the other buttons in the Tafonius shell.

Users should also dismantle and clean Tafonius ready for the next use.

Finer details of using Tafonius

This involves the detail of patient data entry, events, viewing data etc

Start at the beginning and work through the procedure for entering patient data and all pre-op parameters.

Work through the different Patient Data tabs, explaining how new procedures and surgeons etc can be added to the list. This detail is explained in the manual so it is more important to present an overview of what can be achieved, rather than the fine detail of how it can be achieved.

Other features of Tafonius

Viewing recorded data

Exporting Data

Touch-Screen setup

Ventilator function is no different from any other IPPV ventilator. The main concept to grasp is that of the 'virtual bag'

There are 2 different modes:

Spontaneous breathing & IPPV mode

In spontaneous mode, set the tidal volume to that required for maximal breath. This can vastly exceed the actual ventilated tidal volume. For example, for a 500kg horse set the TV in spontaneous mode to e.g. 15L. For IPPV this would be nearer 5L. Explain the reason for the difference.

Set FGF rate as normal and adjust the vaporiser as normal.