

Adult Critical Care

John Farman ICU

NCCU

VG70 User Guide

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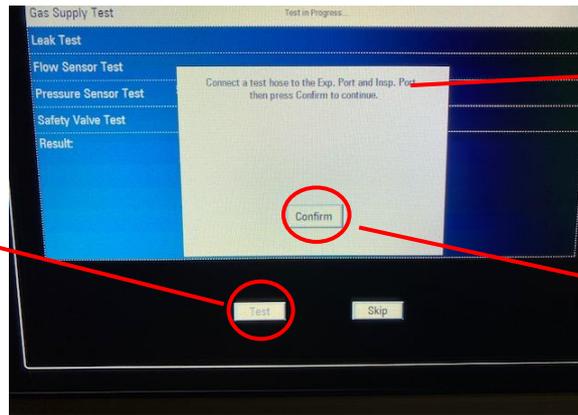
Consultant Physiotherapist

SETUP

Turn machine on (switch located at back of machine under plastic rotating guard).

There will be a short delay. A timer will appear on the screen. The pre-use screen will then appear. Please select 'test'. The screen is touch-screen. When you touch the relevant box it will highlight yellow. To confirm either press 'confirm' or 'accept' when choosing mode settings or press the control knob.

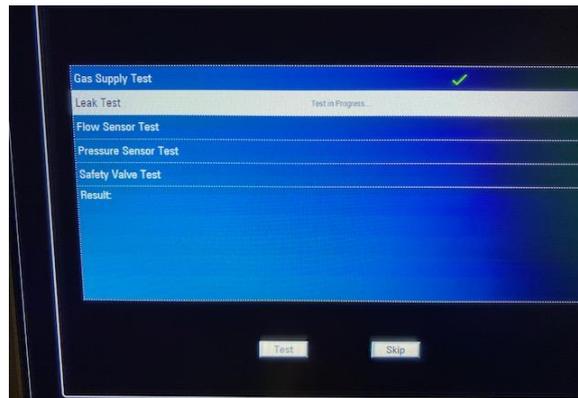
1. Select 'Test'



2. Follow the on-screen instruction and connect flexible test hose

3. Press 'confirm' to start pre-use test.

A series of green ticks will appear as each test is passed



A red cross will appear if the test is failed

The standby screen will appear on the screen when the first pre-use tests are complete. On the left of this screen are two additional pre-use tests which must be performed before the machine can be used on a patient.

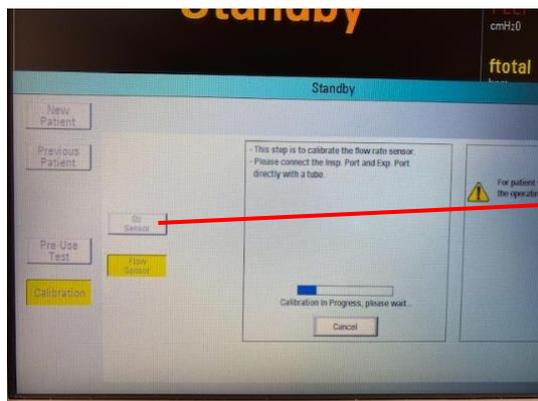
Select 'Pre-use test'. It will highlight yellow.
Press 'confirm'



A series of green ticks will appear if test is passed. If a red cross appears the problem must be rectified and the test must be performed again

For example, the above attempt has failed because of an oxygen issue (the machine was on a cylinder at time of performing and the cylinder was empty).

On attaching the oxygen hose to the mains supply the issue was rectified but the O2 calibration needs to be passed prior to attaching machine to patient.

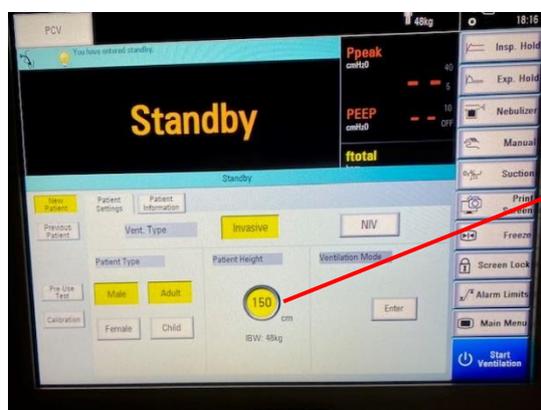


'Calibration' must be performed for both O2 and flow sensors by selecting the appropriate test

The above O2 sensor and flow sensor tests must be performed on every new set up

The machine is now ready to use on a patient.

Select:
Male/Female
Adult
Invasive
(all will highlight yellow)



Highlight height of patient. Adjust using the selection knob to the bottom right of the screen, by rotating the knob clockwise/anticlockwise. When the correct value is reached press the knob to accept.

It is important to set the alarm values prior to use on a patient. Please ensure 'tight' parameters as the machine has less 'measured values' visible on the screen when it is in use. For example, minute ventilation and Vti are the default volume values measured. These can be exchanged for Vti and Vte but you will lose the MV. Therefore, if tight alarm parameters are set, substitution will be safer (you may prefer to use Vti and Vte in a patient that is demonstrating 'gas trapping' rather than MV and Vti. All of the measured values on the right of the screen can be exchanged, when the machine is ventilating. **Please DO NOT substitute out either Peak pressure alarm or measured PEEP alarm.**

The three full mandatory modes can be programmed using the VCV, PCV or PRVC options on the left of the screen.

When SIMV is selected the mandatory component will populate to the right of the SIMV box. When the mode is chosen, the user will need to work down the options that appear on the left, in the box that appears as highlighted below. Please note that the options will be different dependent on mode selected. The options will only be fully available when 'Accept' is pressed to choose the mode.

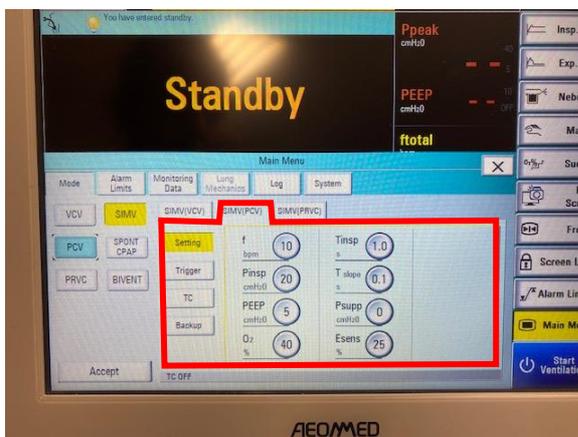


When SIMV (VCV) is selected the options shown here are the default settings. To adjust please choose (touchscreen) the parameter, adjust by rotating the control knob and click to accept.

To determine the I:E ratio please refer to the algorithm hanging from the machine. This is indirectly set by choosing the f (frequency) and Tinsp (inspiratory time)

Once 'Setting' is complete, please work down the relevant options underneath settings: highlight 'trigger' and select 'flow'

Lung recruitment can be chosen in this mode (Consultant only)



When SIMV (PCV) is selected the 'Settings' parameters can be adjusted in the same way (please note: no T pause)

The I:E is indirectly set as above

Once 'Setting' is complete the 'trigger' must be set (please select flow).

TC (Tube Compliance) will allow you to compensate for the dead space created by both the tubing and the ETT/tracheostomy by inputting tube size and selecting up to 100% compensation



When SIMV (PRVC) is selected the 'settings' parameters can be adjusted in the same way (please note: no T pause)

The I:E is indirectly set as above

Once 'Setting' is complete the 'trigger' must be set (please select flow)

Please note: the flow trigger is opposite to the Servo i. when the number is increased, it becomes more difficult. Patient will need to disrupt flow by the number of litres indicated to trigger the machine.

Issues/Troubleshooting the VG70

Circuit 'rain out' and blocked filters on the expiratory limb are a frequent occurrence. The circuit requires emptying 2-4 hourly and filters can require changing more than once per shift. The PEEP does not necessarily measure higher than the set PEEP as quickly as on other models of ventilator. The pressure peak often measures higher than the total pressure and so is unreliable as an indicator.

Machine failure has occurred on many patients, despite passing the pre-use test and additional flow-test, 21% and 100% O₂ calibration tests. When the machines have been looked at by clinical engineering they have found that the O₂ sensor has oxidised. This problem can be rectified on-site if EBME have spare sensor cables.

The alarms are generally very slow to respond:

- If the patient fails to ventilate (low tidal volumes) the machine flashes 'low expiratory tidal volume' once. This alarm is then replaced with a 'high expiratory tidal volume' alarm. The auto-scaling of the waveforms coupled with the high volume alarm can lead to confusion. From a distance, the waveform can appear that the patient is adequately ventilating (to more junior staff). Please pay close attention to the VT as this is the most accurate information. If this is reading is low please take note and action the issue.
- Rarely does a peak pressure alarm get triggered. Even in the event that you fully occlude the Y-connector to simulate a total occlusion, the peak pressure is slow to alarm in VC/PRVC and does not alarm in PC. Dependent on set mode, there may not be a peak pressure alarm (regardless of how tight your alarm parameters have been set) and you will be reliant on VT data. The alarm at the top of the screen will be flashing red and stating high expired tidal volume. Please ignore!
- In the event that the decision is made to deflate the pilot bulb on the tracheostomy to assess for upper airway flow, the machine does not alarm. There can be in excess of 300 ml difference between VT_i and VT_e. VT_e will flash however, the machine gives an occasional audible warning but does not persistently alarm to notify the user. This is the same when there is a mismatch of any origin.

Protracted suction/bronchoscopy results in loss of ventilation.

The peak pressure value on the right of the screen is higher than the total pressure provided, in most patients e.g. a patient on CPAP 8 is often found to have a peak pressure of >12 and up to 16. Even after eliminating other causes this is consistently high.

Compensation for compressible volume – this can only be activated in Pressure Control, SIMV/PC or PS/CPAP. You will need to 'accept' the mode before you attempt to access Tube Compliance (TC). When you access TC it will require you to input percentage you wish to compensate for, ETT v's tracheostomy and diameter of tube. This will allow the machine to calculate the compensation correctly.

The numerical data on the right of the screen (pressure peak, RR, FiO₂, MV, VT_e) is changeable. You can swap the information that is visible. Swap FiO₂ out and re-populate with MV, swap MV out and re-populate with VT_i and VT_e remains at the bottom right. For example, in a COPD or asthma patient you may wish to have VT_i and VT_e on the screen to track potential gas trapping (there would be a loss of V_t on each breath).

