

# Application Note 22

Calibrating Breas Vivo 50 & 60 ventilators

analyser  
the art of measuring

**Proper testing and calibration of respiratory ventilators is crucial and therefore requires the use of high-precision testing and calibration equipment. Correct functionality is of paramount importance, errors can cost lives.**

**IMT Analytics FlowAnalyser PF-30X and CITREX are the most versatile and accurate flow-, volume- and pressure-measurement devices available, with a wide variety of use in medical device testing, calibration and industrial applications.**

**Two reference products that can be calibrated with IMT Analytics test instruments are e.g. the homecare ventilators Vivo 50 and Vivo 60 from Breas AB.**

## Breas Vivo 50/60

The Vivo 50 is an advanced, reliable and intuitive life-support ventilator. It contains a full range of modes, extensive monitoring solutions, SpO<sub>2</sub>, CO<sub>2</sub>, and FiO<sub>2</sub>, and an easy-to-use menu structure. Treatment can easily be adopted to patients needs by three pre-set profiles and the home-adjust mode. A wide range of accessories make Vivo 50 highly suitable for use in the hospital and at home and in a mobile environment.

Vivo 60 is a life-support ventilator intended for paediatric (>5kg) and adult patients requiring highly secure and comfortable ventilation in the hospital or at home. It comes with all benefits of the Vivo 50 and offers clinical excellence, versatility and a low cost of ownership, in the hospital and at home as well.

## How to calibrate Vivo 50 & 60 with FlowAnalyser PF-30X or CITREX

To ensure the highest standards in testing and calibration as well as to reduce cost of ownership for Breas Vivo 50 & 60 ventilators, Breas has developed a service software that enables service technicians to auto-matically test and calibrate their ventilators with just a click.

FlowAnalyser PF-30X as well as CITREX are fully integrated in the service software and are recommended by Breas as the testing devices for their ventilators. The integration allows the user to perform automatic testing and calibration by just simply connecting the devices as demonstrated in Figure 1 and following the instruction of the software. To guarantee consistence and high performance, Breas uses IMT Analytics testing equipment within their manufacturing process and their yearly service trainings.

Editorial

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Before starting the service software and connecting the testing instruments to the computer, we recommend executing a zero offset calibration on either CITREX or FlowAnalyser PF-30X (see user manual). Once this procedure is done, the software can be started and the connection between the devices can be set as shown in the following illustration.

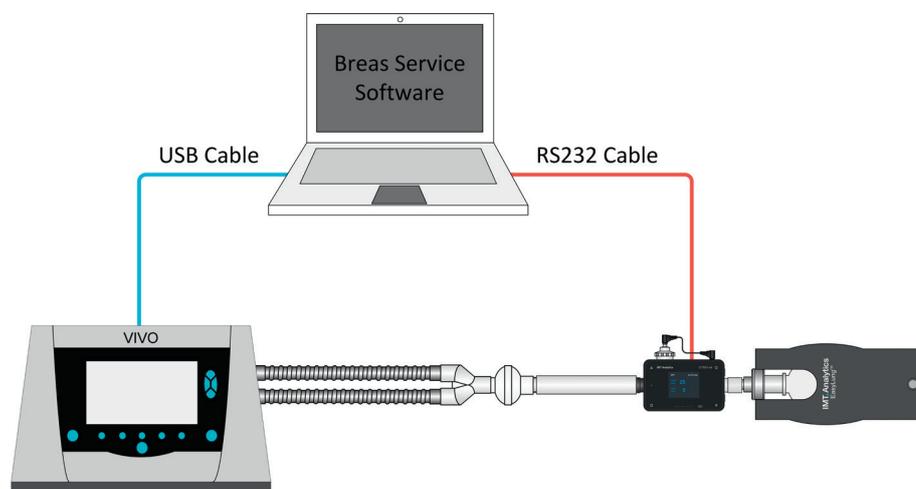


Figure 1

After successfully connecting all devices together, the service software can be started. The user then needs to choose his test equipment. By choosing CITREX or FlowAnalyser PF-30X the automatic testing and calibration mode can be accessed.

Table 1 shows all test modes who need to be executed by Vivo 50/60 in their yearly service procedure.

### **Performing a pressure test and pressure sensor calibration**

When entering the pressure test, the service software shows up illustrating the connection of the ventilation circuit between FlowAnalyser PF-30X/CITREX and Vivo 50/60. Once the connection is completed, the automatic test can be started by just pressing the “Start Test” button.

The service software successively sets four pressure points for the adult and four pressure points for the pediatric inspiratory pressure sensor on the ventilator and compares the values automatically with the measured values of FlowAnalyser PF-30X/CITREX. Only if all values are within the tolerated limits is the test counted as passed.

Following illustration shows the pressure test in progress.

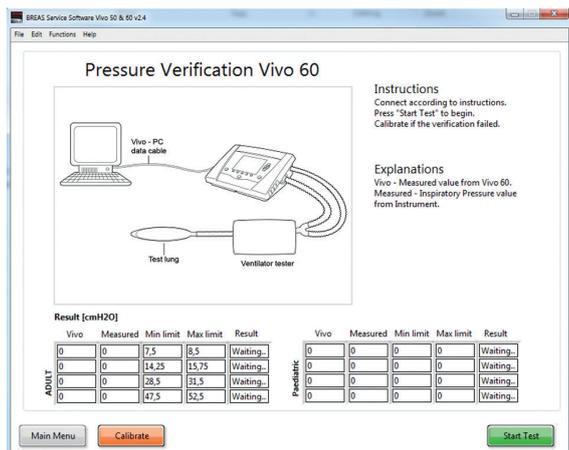


Figure 2: Volume test of Vivo 60 within service software version 2.4

If the test is not successful, a calibration and adjustment of the pressure sensor has to be performed. The calibration runs automatically within seconds. The software sets a pressure point on the ventilator, compares the value with the measured value of FlowAnalyser PF-30X/CITREX and adjusts the initial pressure point to the measured value. Once calibration is performed, the pressure test needs to be executed again until the test is passed.

This automatic procedure is very time effective and presupposes a very accurate and reliable test equipment. To guarantee consistent accuracy, IMT Analytics prescribes a yearly calibration of FlowAnalyser PF-30X and CITREX.



**Calibration orders can be placed via the online tool "EasyCal" reachable through the following link:**

<https://www.imtanalytics.com/Support#easycal>

### Performing a volume test and flow sensor calibration

The procedure of the volume test is similar to the procedure of the pressure test. The difference lies in the connection of the ventilation circuit between FlowAnalyser PF-30X/CITREX and Vivo 50/60. The correct connection is illustrated by the service software.

Following illustration shows the volume test in progress.

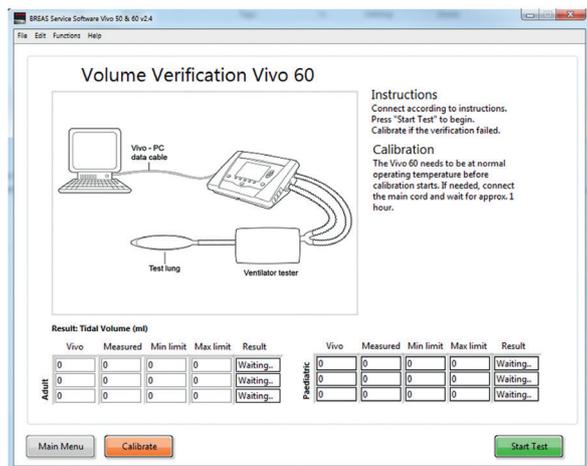


Figure 3

In case the volume test fails, a calibration and adjustment of the flow sensor has to be performed. The high precision mass flow sensor of Vivo 50/60 requires a multiple point calibration and adjustment. Since this sensor calibration is of high importance, a fully automatic calibration with FlowAnalyser PF-30X or CITREX is very convenient and therefore highly recommended. The different flows set by the service software are automatically compared with the measured values of FlowAnalyser PF-30X or CITREX in real-time and enable very accurate adjustment of all flow sensors. After the calibration procedure, the volume test needs to be performed again until the test is passed.

The simple test and calibration procedure of the Breas service software in combination with IMT Analytics test equipment allows service technicians to maintain Breas ventilators with high proficiency.

### Test report

The total testing and calibration procedures take about 15 minutes and ensures that cost of ownership for Breas Vivo 50 & Vivo 60 ventilators are kept low throughout the life cycle.

The sophisticated service software also gives the service technicians the ability to print out all executed test results as clear test report. This test reports represent a valuable document for service technicians in case of further troubleshooting.

## Recommended test equipment

Since Breas service software automatically communicates with both FlowAnalyser PF-30X and CITREX, Breas recommends using one of the following test sets:

Biomedical Test-Set "CITREX H4 mobile" (Order No: 302.161.000)



FlowAnalyser Biomedical Test Set "Ventilation" (Order No: 300.116.003)



The Biomedical Test-Set "CITREX H5 mobile" (Order No: 304.555.000) will be integrated in Breas service software as well.

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