

## Tips and Techniques

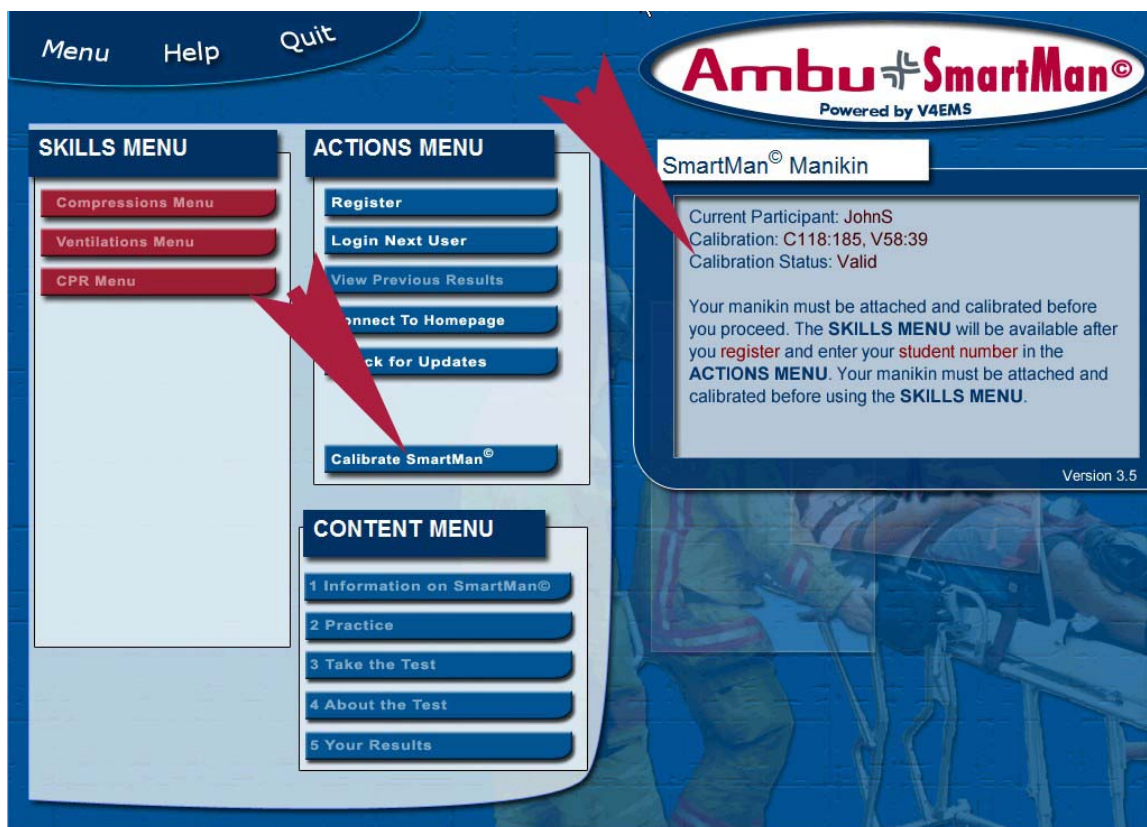
### Calibrating the Manikin



## Importance of Calibration

Accurate Calibration is important to the proper recording of all skills. There are several verification procedures that SmartMan undertakes to make certain that readings are within acceptable levels. Ambu SmartMan archives and monitors all practice and test results from all three skills sections of the program and if levels deviate too much from the expected reading, comparison readings or variation amongst levels, we will contact you and suggest that you recalibrate the manikin.

Calibration readings and status are shown on the Main Screen.



Calibration readings are also included with every set of practice and test data in all three disciplines.

## Overview

On first use and periodically the manikin needs to be calibrated.

- You must be connected to the manikin to calibrate the manikin.
- You must calibrate for chest compressions.
- You must calibrate for ventilations.

Every initial time the program is used with a different manikin it must be calibrated. Without calibrating, you CANNOT run a training program, a test or validate skills.

**NOTE:** If you only want to calibrate for compressions, then only compressions will be available in the Skills Menu. You will have to go back into the Calibrate Menu and calibrate for ventilations before the ventilation and/or CPR skills are available.

### Getting Ready to Calibrate

First you calibrate for compressions. Once that is complete you calibrate for ventilations.

The procedure for calibrating both is to set a) the zero point. The manikin will set the zero mark automatically when you click the “button” on the software menu b) You will then manually set the high level setting c) You will then set low level setting.

If you only want to calibrate for compressions at this time, you can come back later and do the ventilations. You need a Bag Valve Mask (BVM) or a face shield to introduce the inspiration required to calibrate the ventilations.

To calibrate, you need to use the guides on the black popup panel at the base of the manikin.

Pinch the lower clasps and the center piece will popup.



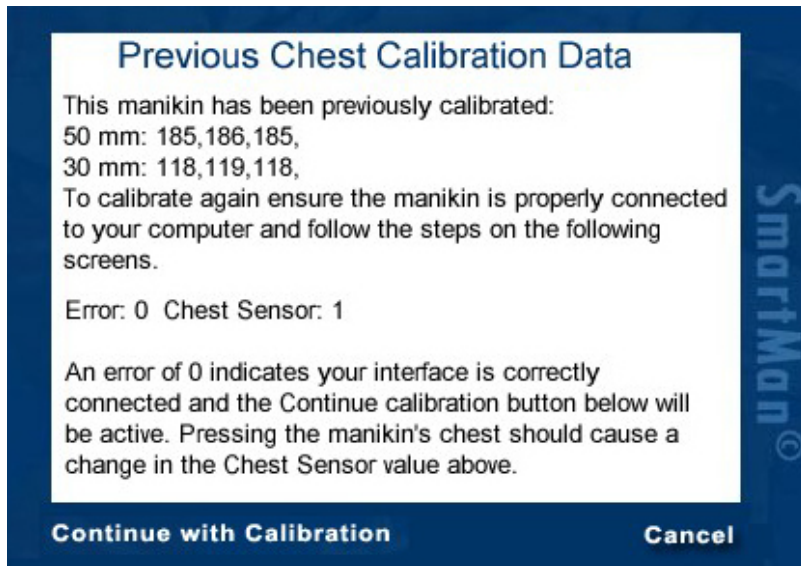
If the black plastic cover is hiding the front, slide the cover down. It will then look like the third picture.

The scale for compressions is at the top of the picture.

The scale for ventilations is at the bottom of the picture.

### Calibrate Chest Compressions

From the Main Menu click on “Calibrate Manikin” at the bottom of the Actions Menu. You will begin the Chest Compression Calibration Routine. See arrow above. Follow the instructions on the screen. This can be done by 1 person but is easier with 2 people. In the bottom right, you will see the following:



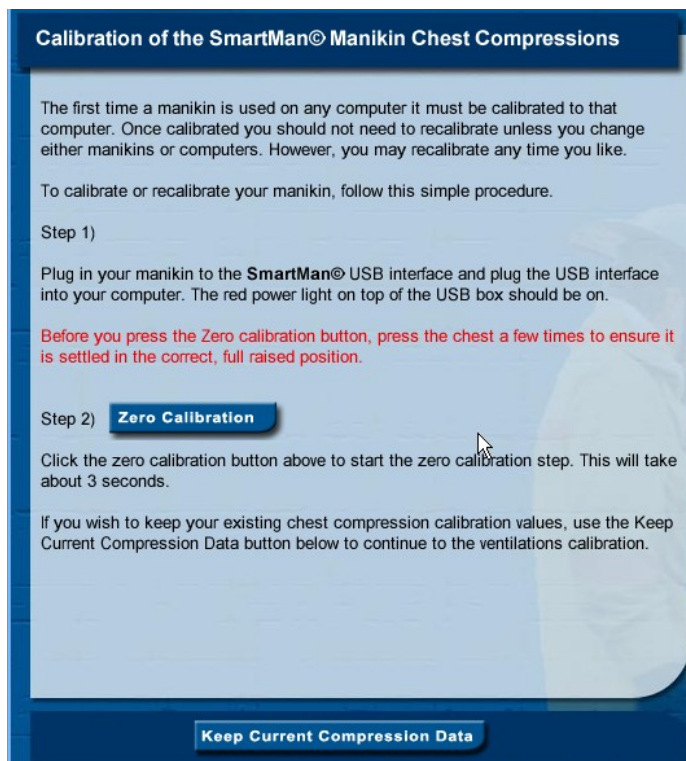
If this is the first time you have calibrated, no data will be listed.

If this manikin was calibrated before it will show the current readings.

Press the "Continue with Calibration" button to calibrate or recalibrate the chest compressions on this manikin.

The program will first check to see that the connection to the manikin is working correctly. You will see the following: Error: 0 and Chest Sensor 0. Sometimes the Chest Sensor will flash to one. This is acceptable

Press the "Continue With Calibration" Button. You will see the following screen.

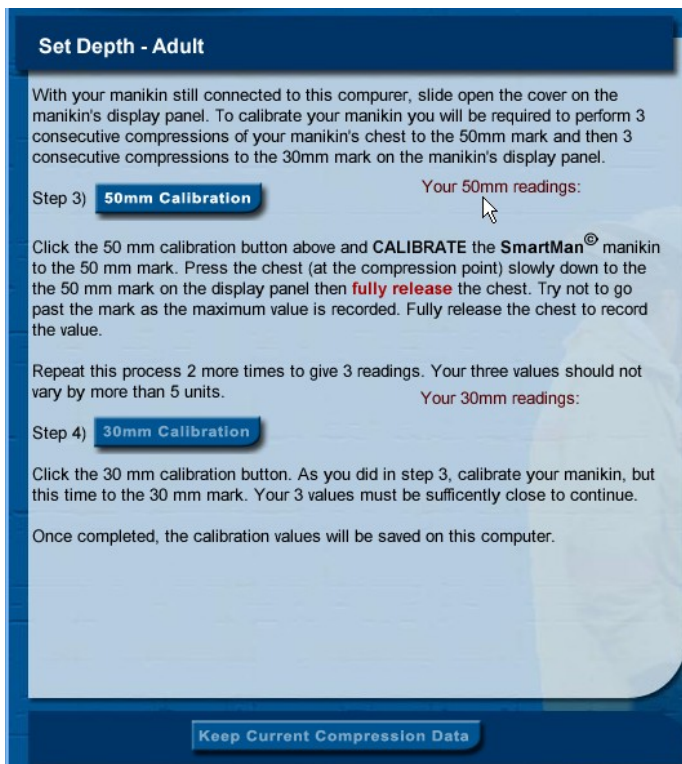


**Press the "Zero Calibration" Button.**

This will set the zero point for compressions on the manikin. Just wait for the computer to complete this. You will see that it will count down and take a few seconds.

When this is complete the next screen will give you a highlighted button on the screen to set the 50ml mark.

On one side of the popup panel you will see the numbers 10, 20, 30 and then 40, 50. These are the depths. For compressions calibration you will see that as you press the chest, the red and green bar on the right side will move.

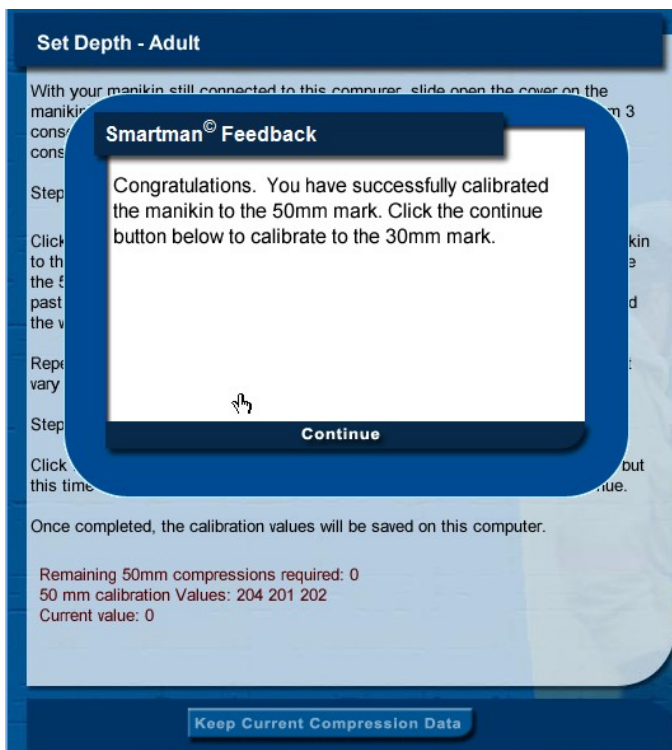


On the screen press the “50mm Calibration” Button This is equivalent to the 2.0” guideline mark.

Go to the manikin and press the chest to the 50mm mark indicated on the popup. Press the chest until the green mark on the popup goes exactly to 50mm. Note the exact spot where the bar stops.

Then fully release the chest. Repeat this so that the reading you get for the 50mm marker is as close as possible to the first press.

You must do this 3 times with a variation in your depth not greater than 5mm. If your variation is greater than this, you see an ‘Invalid’ message and you will have to try the calibrations again.



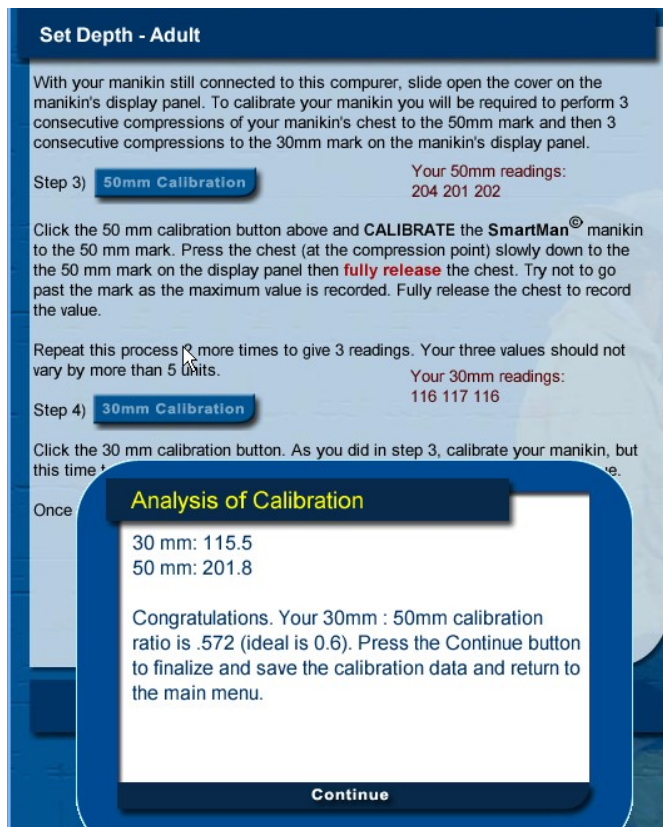
When the 50mm calibration is correct a popup screen will display the readings.

Also the readings that you produced will show near the bottom of the screen.

Click ‘Continue’ to proceed to the 30mm calibration.

Click on the 30ml Calibration button and press the chest to the 30mm mark three times.

**HINT:** If you make a mistake, skim through the rest of the compressions and click on the button to restart them. You can do this as often as required to get the calibration correct.



When you complete the 30ml calibration, you will see a congratulations screen and then an Analysis of Calibration screen. This will report the readings you provided and the ratio which you produced compared with an ideal ratio.

If the ratio is too far off, the software will not show a valid calibration and the skill sets cannot be accessed.

Click 'Continue'.

You now have the option to "Continue with Calibration" or to Skip the ventilations Calibration.

If you do not calibrate for ventilations, only the chest compressions will be available at the Main Menu.

## Calibrate Ventilations

### Overview

Before a manikin can be used to practice and test ventilations it must be calibrated.

If you have just finished calibrating for compressions click "Continue with Calibration" to calibrate for Ventilations.

If you wish to calibrate the ventilations at a later time you can do this Directly from the Main Menu: If you are going directly to calibrate ventilations from the main menu, do the following: click "Calibrate SmartMan", click "Continue with Calibration" click "Keep Current Compression Data", click "Continue with Calibration"

Calibrating for ventilations is a little more difficult than calibrating for compressions. You will need a BVM or a face shield to inflate the lungs.

### What you will do

You will inflate the lungs to 60ml 3 times and then inflate the lungs to 40ml 3 times. Take a look at the popup on the bottom of the manikin. On the left side you will see "Vents Liter. This is where you will see the markers for 60ml and 40ml levels.

Follow the on-screen instructions. Be patient as it is not easy to provide accurate inflation of the lungs and often takes several attempts.

**Calibration of SmartMan® Manikin Ventilations**

The first time a manikin is used on any computer it must be calibrated for ventilations and compressions to that computer. Once calibrated you should not need to recalibrate unless you change manikins, consumables or computers. However, you may recalibrate any time you like.

To calibrate or recalibrate ventilations, follow this simple procedure:

Step 1)  
 Plug in your manikin to the **SmartMan®** USB interface and plug the USB interface into your computer. The red power light on top of the USB box should be on.  
**Before you press the zero calibration button, press the chest a couple of times to ensure the lungs are full empty and reset.**

**Zero Calibration**

Step 2)  
 Click the Zero calibration button above to start the zero calibration step. This will take about 3 seconds.

Hint: The correct position for the 0.4 liter and 0.6 liter calibration is illustrated on the right. Note: for the 0.6 liter mark, the bottom of the green bar is aligned with the bottom of the 0.6 dot. This means the bar is quite high, being partially obscured by the black horizontal bar on the panel. Similarly, for the 0.4 liter mark the top of the green bar is aligned with the top of the 0.4 liter dot, with the bottom part of the bar obscured by the panel

**Skip Ventilation Calibration**

**Press the “Zero Calibration” Button.**

This will set the zero point for ventilations on the manikin. Just wait for the computer to do this. You will see that it will count down. It will take a few seconds.

On the left side of the popup panel you will see the numbers marking liters. Note the numbers 0.6 and 0.4.

**Set Ventilation - Adult**

Ensure your manikin's display panel is visible. To calibrate your manikin, perform 3 consecutive ventilations of your manikin's chest to both the 0.6 liter mark and 0.4 liter mark on the manikin's display panel.

Step 3) **0.6L Calibration** Your 0.6 liter readings:  
71 69

Click the 0.6L calibration button to calibrate the **SmartMan®** manikin to the 0.6 liter mark. Using your bag valve-mask device, **slowly** inflate the manikin to the 0.6 liter mark (as illustrated on the display panel on the right) then allow the chest to deflate. Try not to go past the 0.6 liter mark as the maximum value is recorded.

Repeat this process 2 more times to give 3 readings. Your three values should not vary by more than 3 units.

Step 4) **0.4L Calibration** Your 0.4 liter readings:

Click the 0.4L calibration button above and calibrate your manikin to the 0.4 L mark (as illustrated on the right). Your 3 values must not vary by more than 3 units. The ratio of your calibrations will also be checked.

Once successfully completed, the calibration values will be saved on this computer.

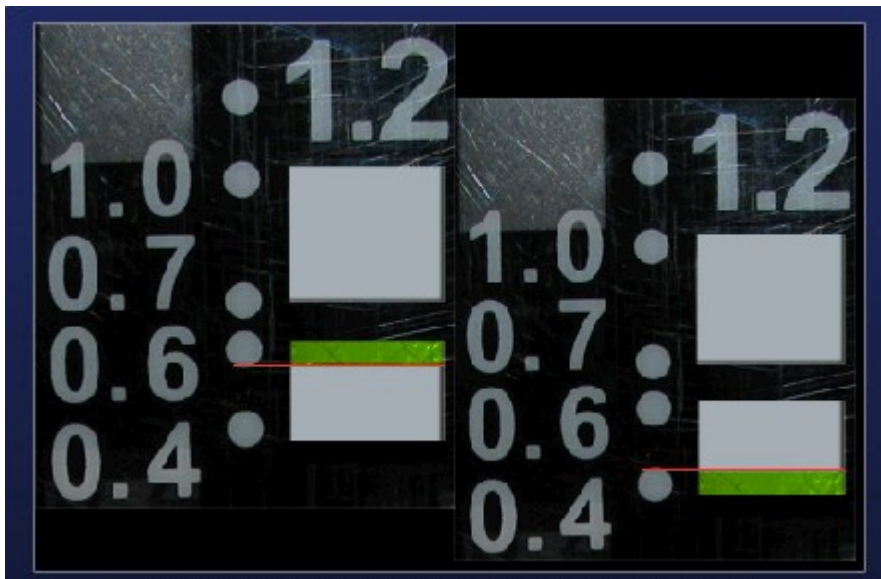
Remaining 0.6 liter ventilations required: 1  
 0.6 liter calibration Values: 71 69  
 Current value: 0

**Skip Ventilation Calibration**

**On the screen press the “06L Calibration” Button.**

Go to the manikin, using your BVM or shield making sure you have a good head tilt-chin lift and a seal with the mask or mouth.

Try this a couple of times to get a feel for the volume of air going into the lungs and showing up on the markers.



Inflate the lungs to the 0.6 mark. Follow the suggestions on the screen to the left. The red line is where you should aim to place the green marker each time

To calibrate you must produce 3 accurate volumes

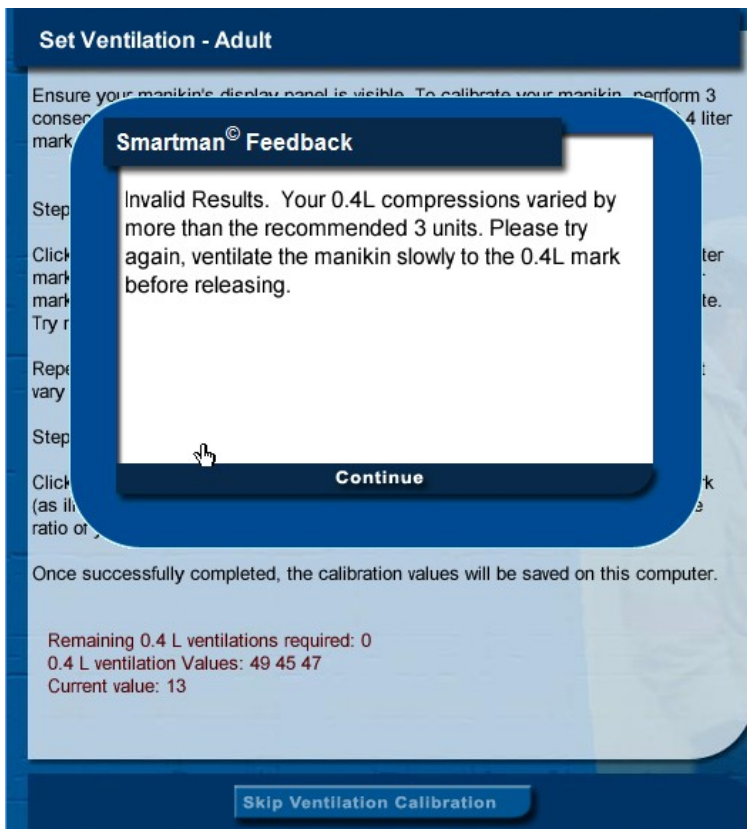
Note the exact spot where you move the bar to each time.

HINT: If you start to do a ventilation and the feel is bad and it registers as a calibration attempt, the easiest way to get by this is to give 2 more quick ventilations, and then click the '0.6 Calibration' or '0.4 Calibration' button again.

Fully release the chest and proceed to the second and third inspiration so that the reading you get for the 0.6L mark is very close to the previous level.

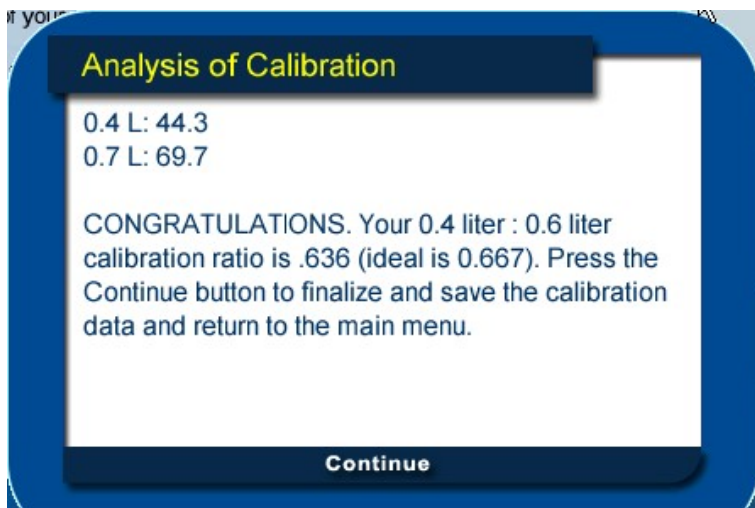
Take your time as during calibration to speed of inflation is not measured. Only the Maximum value is recorded.

Once you have done the 0.6L mark you will see a congratulations screen. Then proceed to set the 0.4L mark repeating the procedure.



The relationship between the 0.6 and 0.4 settings is important for accurate recordings and the results will not be accepted. Click continue and click the 0.4L Calibration Button and repeat as often as necessary.

Your scores of each attempt will display at the bottom.



When the ventilations are correctly calibrated your actual readings are stored.

Also an "Analysis of Calibration" screen will report the readings you provided and the ratio which you produced compared with an ideal ratio.

### Re-Calibrating

- 1) If the SmartMan software is put onto a new computer, the manikin must be calibrated for that machine.
- 2) After every so many users or after so much time, SmartMan must be re-calibrated in order to make sure readings are accurate.

Calibrating the manikin assures that the measurements are accurate. If we notice a problem we will contact you to advise recalibration of the manikin.

Initial Calibration and any subsequent Recalibrating procedure is identical to the process described above.