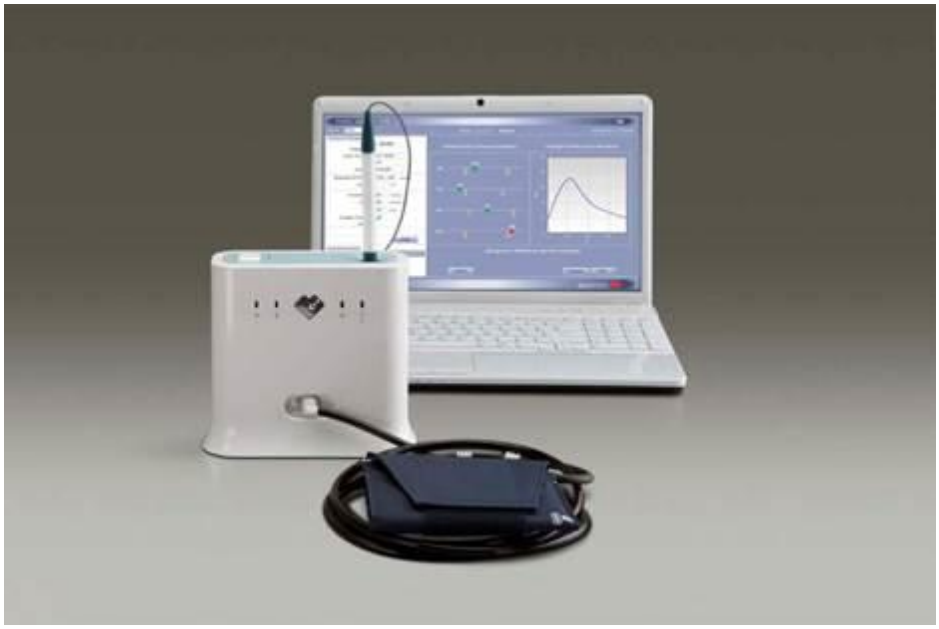
SphygmoCor XCEL

SIMPLY THE GOLD STANDARD

Service Manual

SphygmoCor XCEL System



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SphygmoCor® XCEL

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DCN: 101397
XCEL Service Manual
Manual Revision: 11.0

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CE 2797

Disclaimer

This manual has been validated and reviewed for accuracy. The instructions and descriptions it contains are accurate for the AtCor Medical product models at the time of this manual's production. However, succeeding models and manuals are subject to change without notice. AtCor Medical assumes no liability for damages incurred directly or indirectly from errors, omissions or discrepancies between the product and the manual.

This Manual is produced on the assumption that the operator is an experienced user of Windows Operating Systems.

If the operator is not familiar with Windows operations, please refer to the Windows User Manual or Windows Online Help.

Trademarks

"SphygmoCor®" is a registered trademark of AtCor Medical Pty Ltd.

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Caution
Federal (USA) law restricts this device to sale by or on the order of a physician

Introduction

The SphygmoCor XCEL Central Blood Pressure Measurement System

The SphygmoCor XCEL System is a non-invasive diagnostic tool for the clinical assessment of the cardiovascular system, providing Pulse Wave Analysis (PWA) and Pulse Wave Velocity (PWV) capabilities. The SphygmoCor XCEL device will have to be calibrated every 12 months. The SphygmoCor XCEL device is used with both XCEL 1.3 and XCEL 1.5 software.

Operator's Manual Cross Reference

This Service Manual shall be used in conjunction with the SphygmoCor XCEL Operator's Manual.

Refer to the SphygmoCor XCEL Operator's Manual for the below sections:

- Applicable standards
- Components, accessories, and spare parts
- Contraindications
- Database management
- Details of operation and use
- Displayed errors on the screen
- Electromagnetic Compatibility (EMC)
- Installation, setting up, uninstalling, and repair of XCEL
- Installing SphygmoCor XCEL in a Networked Configuration
- Maintenance and care of equipment
- Product Support
- Safety Warnings
- Specifications (technical, physical, environmental)
- Troubleshooting
- Visual indicators
- Warnings
- Warranty

Refer to the relevant XCEL Operator's Manual:

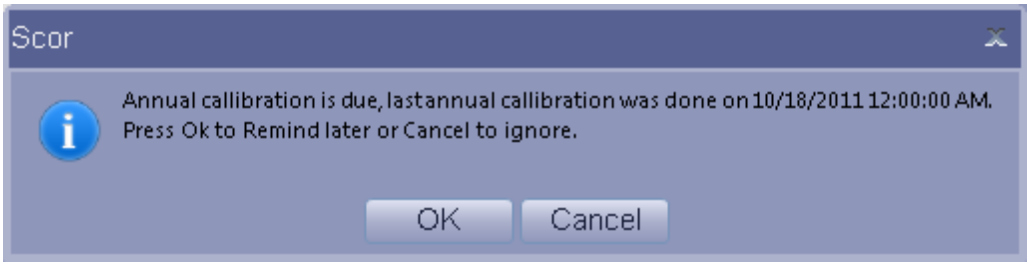
* For Xcel 1.3, SphygmoCor XCEL Operator's Manual (V1.3), DCN 101838
* For Xcel 1.5, SphygmoCor XCEL 1.5 Operator's Manual, DCN 102771



Calibrating SphygmoCor XCEL

Warning: The SphygmoCor XCEL System requires annual calibration. Failure to do so may result in the device being out of specification. This may result in inaccurate measurements.

When calibration is due, the following message will appear in the SphygmoCor XCEL application:



Note: The SphygmoCor XCEL device will continue to take measurements even though the calibration period has expired.

2 options are available for completing calibration:

1- Contact your distributor or AtCor Medical to arrange for your SphygmoCor XCEL to be returned for calibration.
2- Purchase a Calibration Kit. Contact your distributor or AtCor Medical for further information.

SphygmoCor XCEL Calibration Kit Operating Instructions

Intended Use

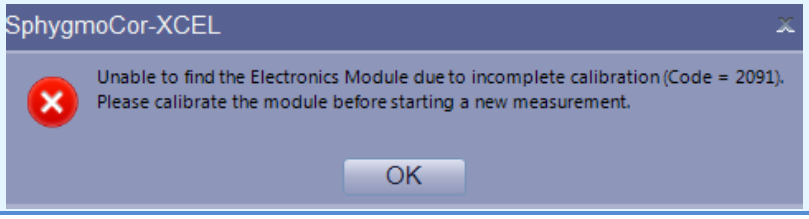
The SphygmoCor XCEL Calibration Kit calibrates the SphygmoCor XCEL Device by providing a rigid 1/2L volume and a pumping bulb to pressurise the pneumatic system. An external calibrated manometer (electronic manometer, Sphygmomanometer mercury column, or anaerobic Sphygmomanometer) with indication in mmHg and resolution of 1mmHg shall be used with the SphygmoCor XCEL Calibration Kit.
The SphygmoCor XCEL Calibration Kit is intended to be used by medical professionals and biomedical service personnel.

Warning: The aneroid Sphygmomanometer or manometer that will be used to calibrate the SphygmoCor XCEL, must be calibrated prior to calibrating the SphygmoCor XCEL device.

Basic Care

As per the relevant areas of the Basic System Care section for the SphygmoCor XCEL.

Note: If the following message appears in SphygmoCor XCEL application indicating incomplete or unsuccessful calibration, then refer to the Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.



WARRANTY: The SphygmoCor® XCEL Calibration Kit components are guaranteed for one year from the date of purchase

Calibration Kit Components

The Calibration Kit contains the following components:

1- Calibration Pneumatic kit



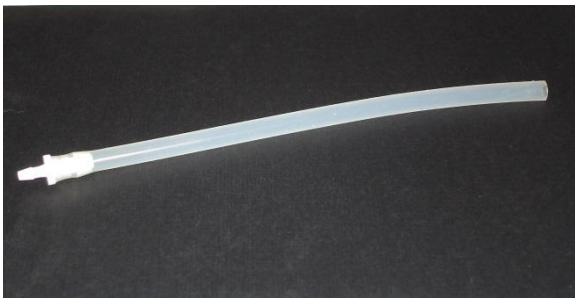
2- 1/8 ” male to 1/8” male adapter



3- 3/16” male to 3/16” male adapter



4- 3/16” female to 1/8” male adapter

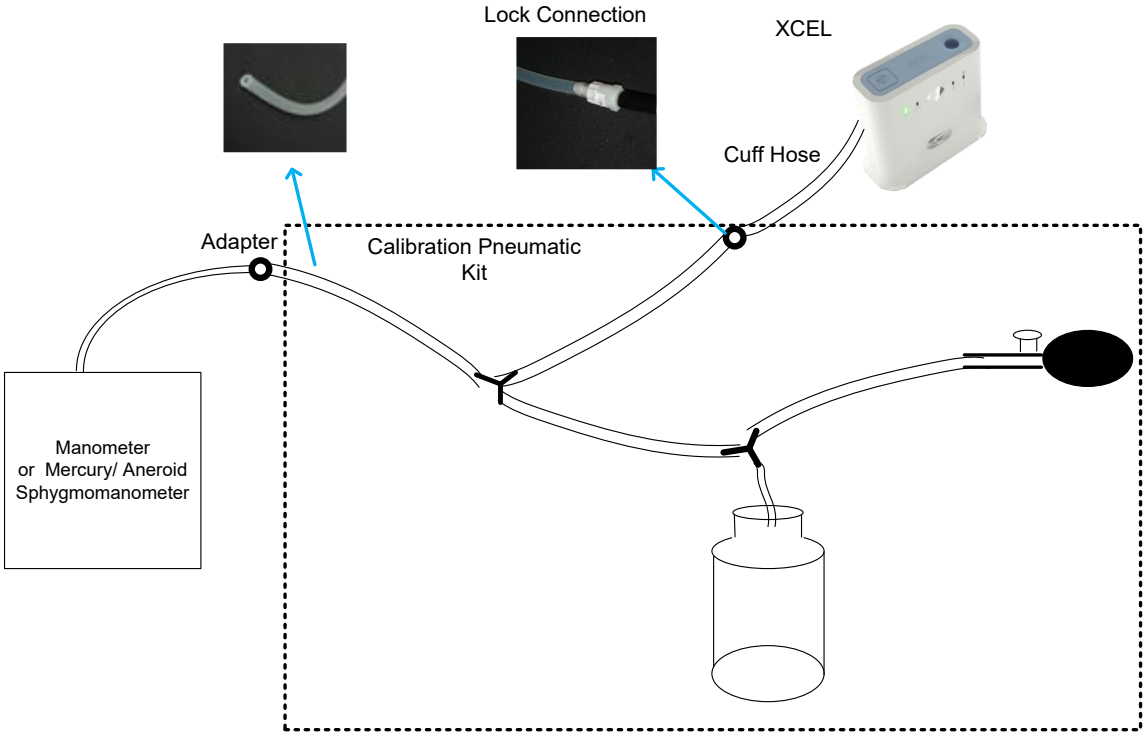


5- Calibration Kit Dongle



Calibration Setup

Connect the open ended tube of the Calibration Pneumatic Kit to a calibrated manometer (electronic or Sphygmomanometer mercury column or anaerobic Sphygmomanometer, with reading in mmHg, and resolution of 1mmHg) using one of the adaptors provided. Connect the other tube of the Calibration Pneumatic Kit to the cuff hose of SphygmoCor XCEL using the lockable connection as illustrated in the following figure.



SphygmoCor XCEL Calibration Software

Minimum computer requirements to install the XCEL Calibration Software

	Windows 7 Professional + SP1 **Windows 8 Pro**	**Windows 10, version 22H2** **Windows 11**
Type	IBM Compatible PC	x86 PC
Processor	Intel or compatible, 32 or 64 bits	AMD64 compatible (ARM processors not supported)
Nominal Speed	2.4 GHz minimum	2.4 GHz minimum
Memory	2GB RAM minimum	2GB RAM minimum
Hard Disk	2GB for Installation	2GB for Installation
Printer Drivers	User Provided	User Provided
Communications	USB port	USB port

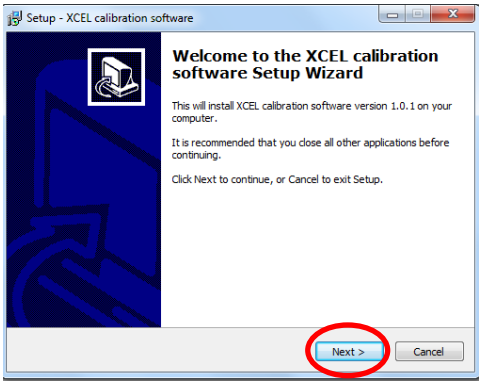
Software Download & Installation

Download

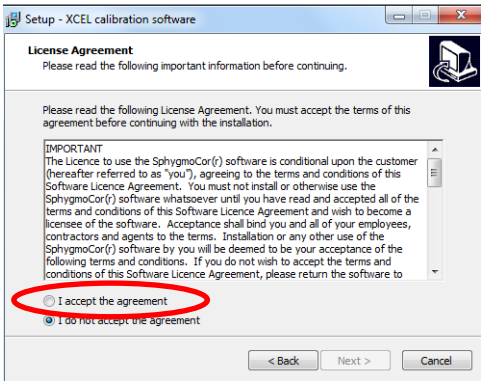
1- The SphygmoCor XCEL Calibration Software can be downloaded from the below website: https://www.conneqthealth.com
2- Navigate to the “Calibration Kit Software”.
3- Download the file.
4- Right click on the zip file and extract the files.

Installation

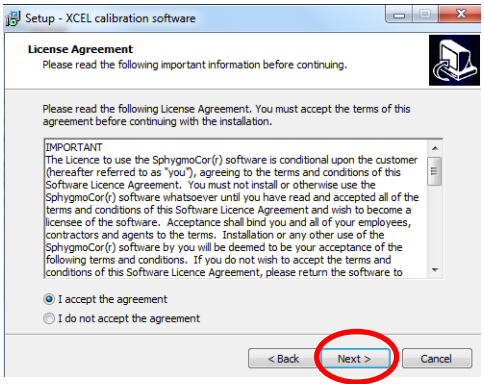
1- Once completing the download and unzipping of the file, run setup.exe



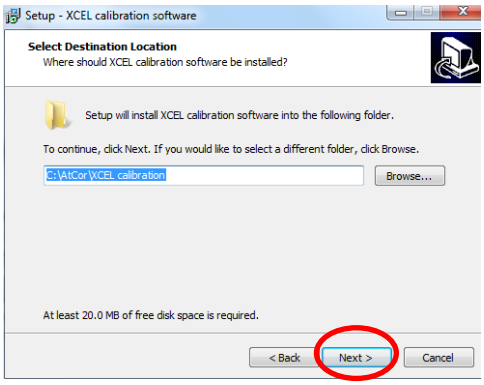
2- Click *Next*



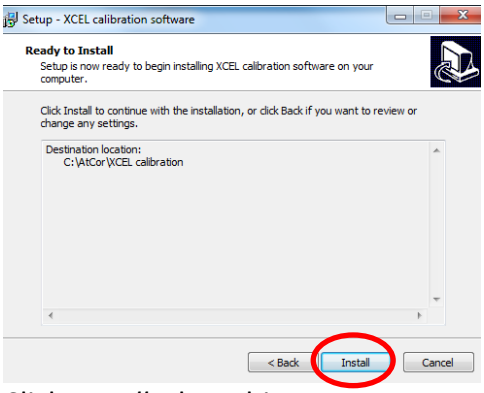
3- Select “I accept the agreement” if you agree with the terms and conditions.



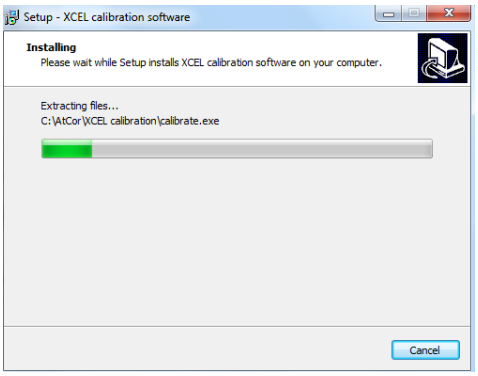
4- Click *Next* when the Next button is enabled.

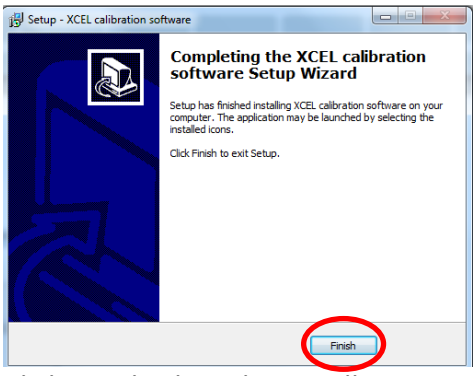


5- Click *Next* when this screen appears.



6- Click *Install* when this screen appears.





7- Click *Finish* when the installation is complete

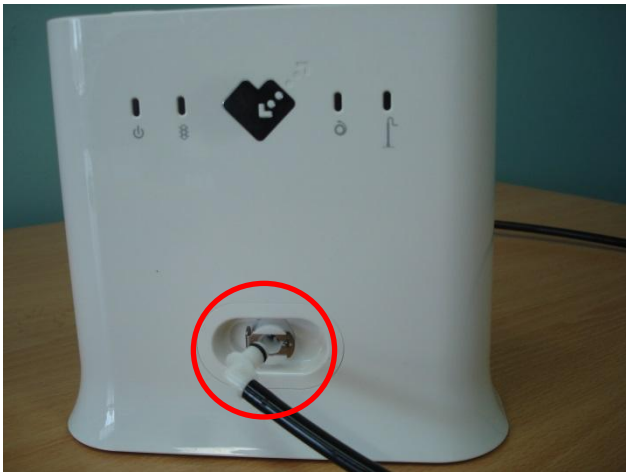
SphygmoCor XCEL Calibration Steps

Note: If during the calibration process a message appears indicating incomplete or unsuccessful calibration, or the calibration did not complete as expected, then refer to the Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.

1- Turn the SphygmoCor XCEL device ON, and connect the USB cable to your computer.

2- Connect either the tonometer supplied with your SphygmoCor XCEL or the Calibration Kit Dongle to the SphygmoCor XCEL device.

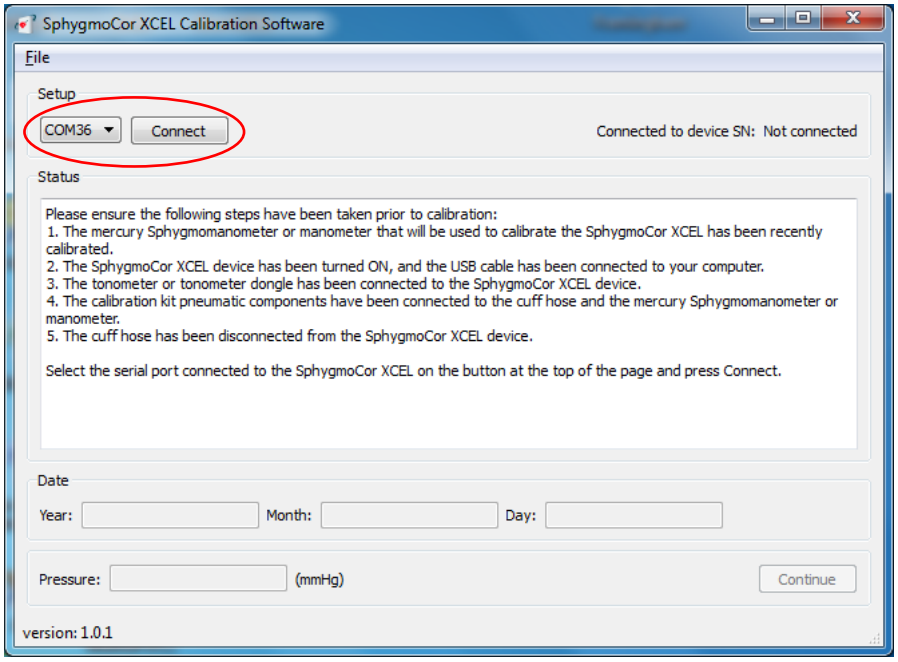
Note: To disconnect the Tonometer/Calibration Kit Dongle, gently push back the connector plug and the connector will automatically release away from the module. DO NOT twist the Tonometer/tonometer dongle connector.



3- Disconnect the cuff hose from the SphygmoCor XCEL device.



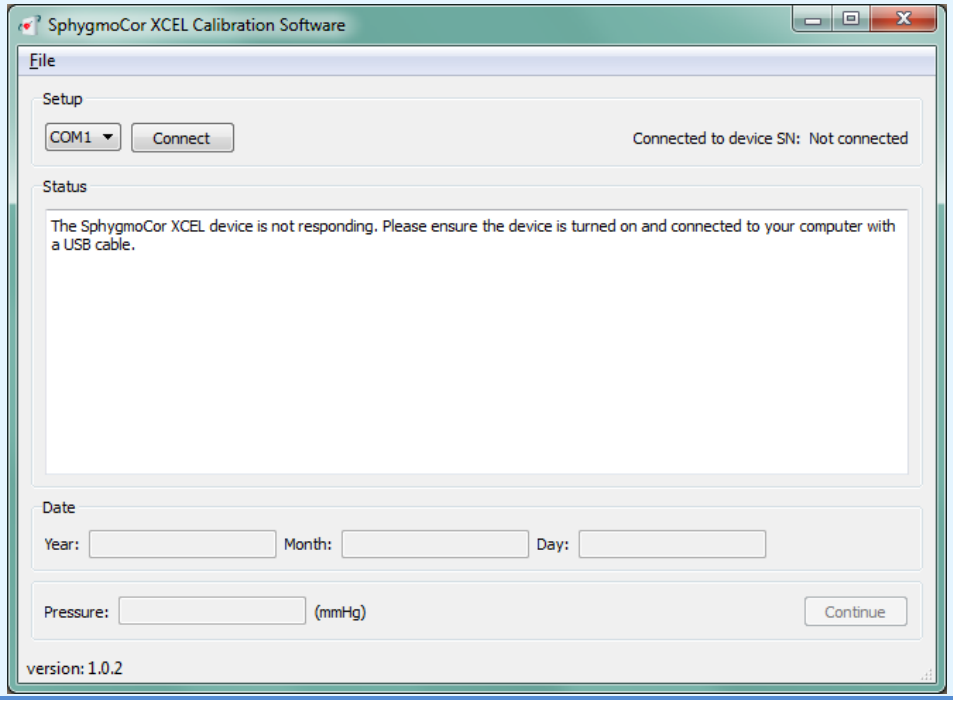
4- Run XCEL Calibration Software by selecting this icon.

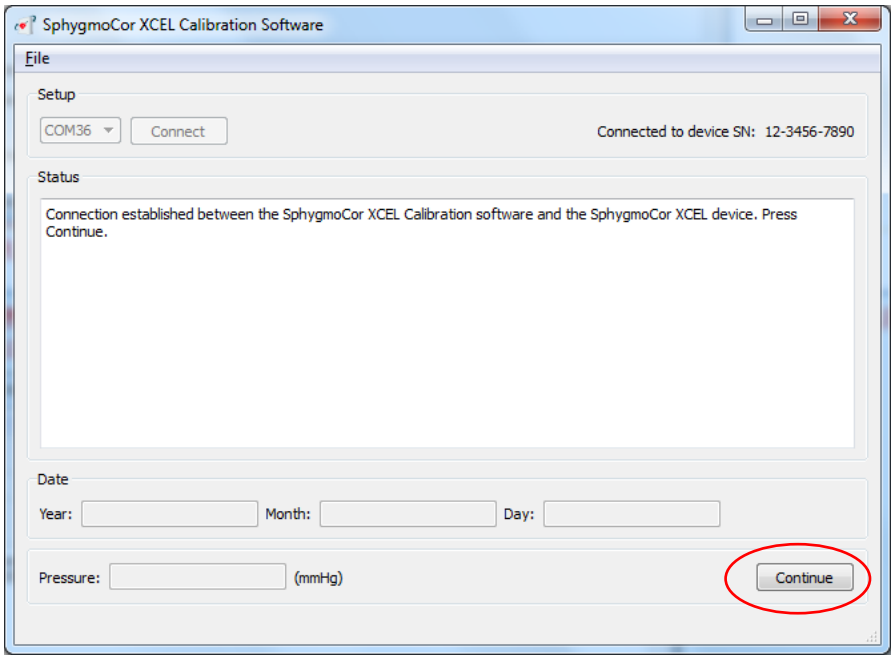


5- Select the Com port number that is connected to the SphygmoCor XCEL device using the drop down menu and click *Connect*

Note: To find the Com port that is connected to the SphygmoCor, please refer to the Finding Com Port Section in the Calibration Troubleshooting section.

Note: The following screen appears if the incorrect Com port has been selected. Please refer to the Finding Com Port Section in the Calibration Troubleshooting section.

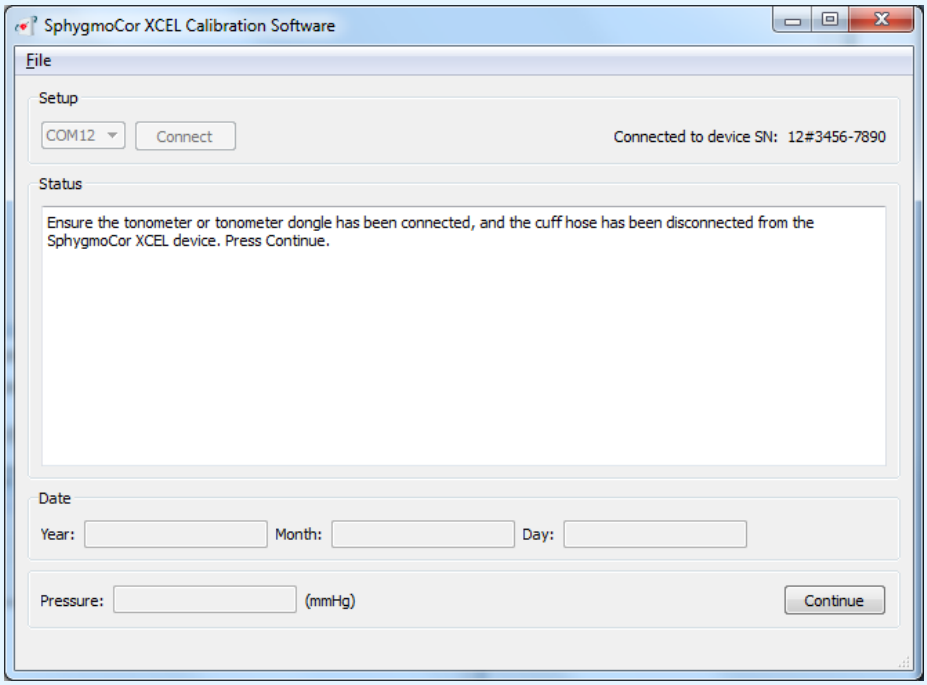




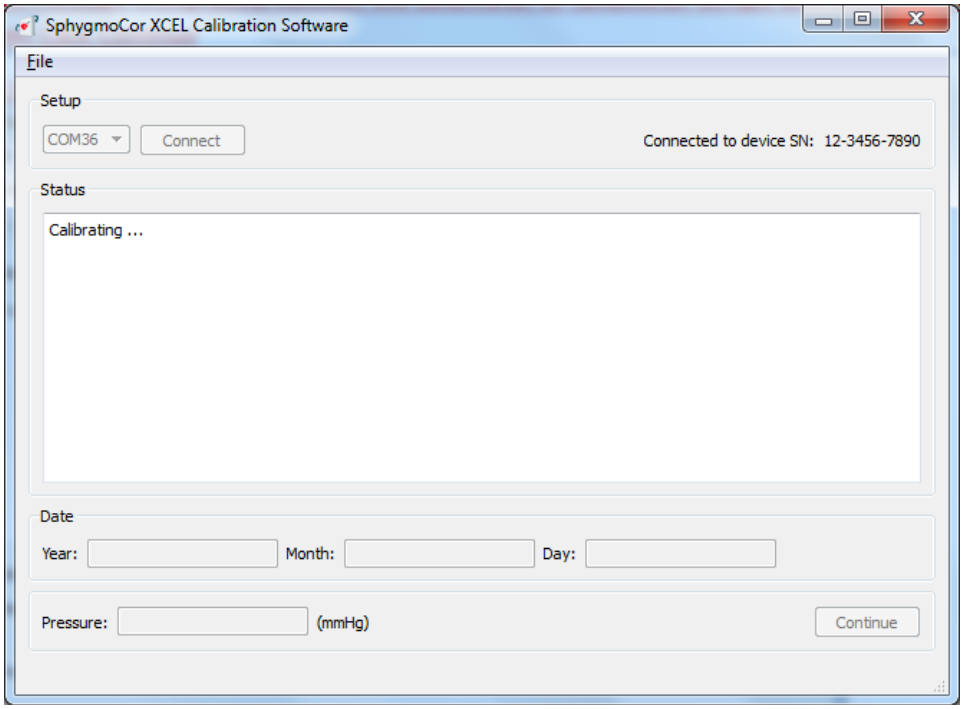
6- If successfully connected, click *Continue* in the bottom right hand corner

IMPORTANT: Before pressing Continue, ensure the cuff is disconnected from your SphygmoCor Xcel device.

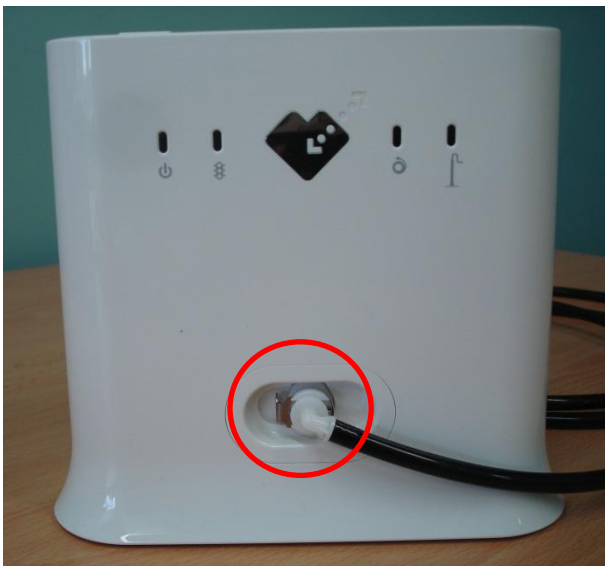
Note: The following screen appears if the tonometer or Calibration Kit Dongle is not connected, or if the cuff hose is connected to the SphygmoCor XCEL device.

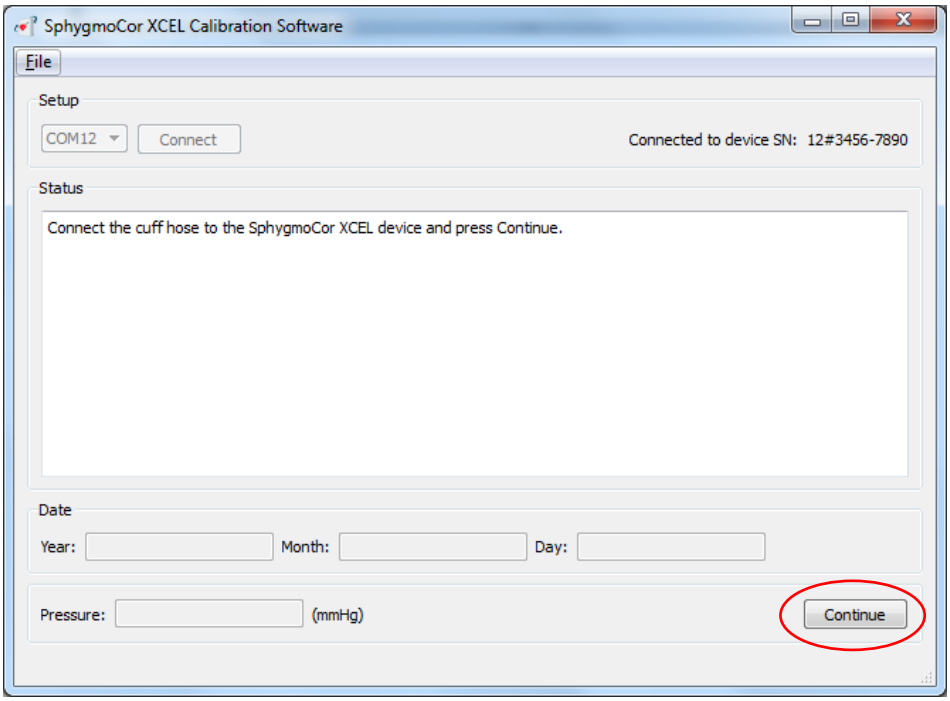


If this message is displayed, connect the tonometer or Calibration Kit Dongle and disconnect the cuff hose then click Continue

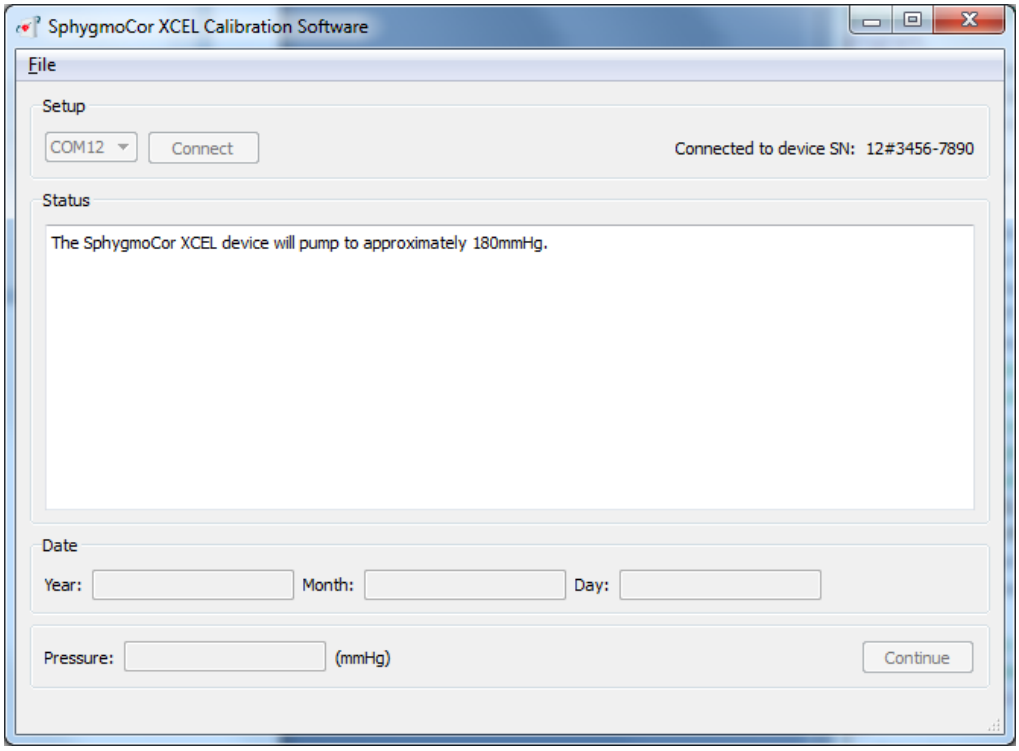


7- The software will display this message for a few seconds.

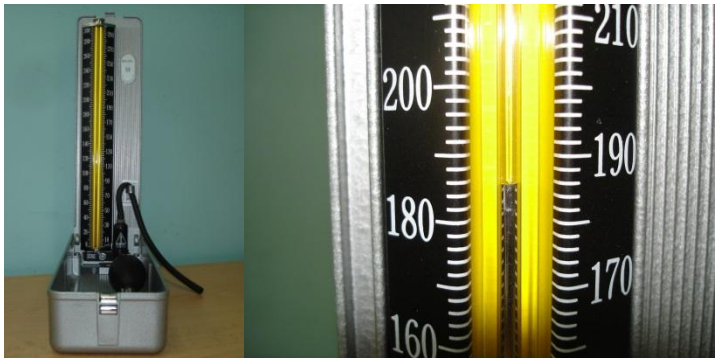




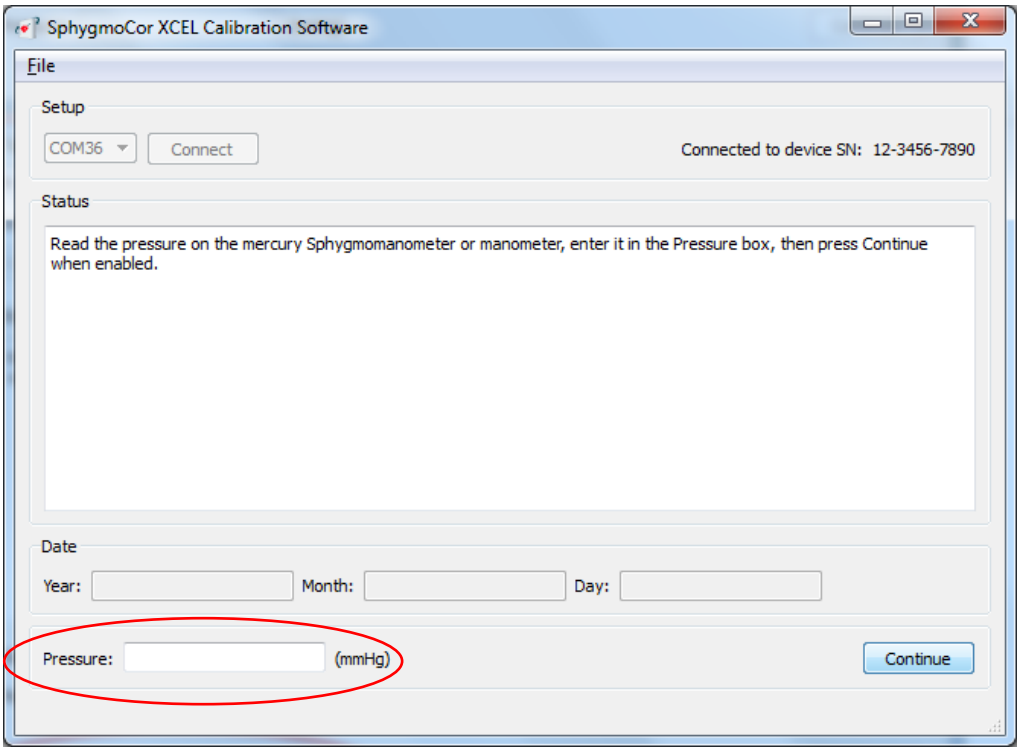
8- Connect the cuff hose on the SphygmoCor XCEL and click *Continue*



9- The software will display this message

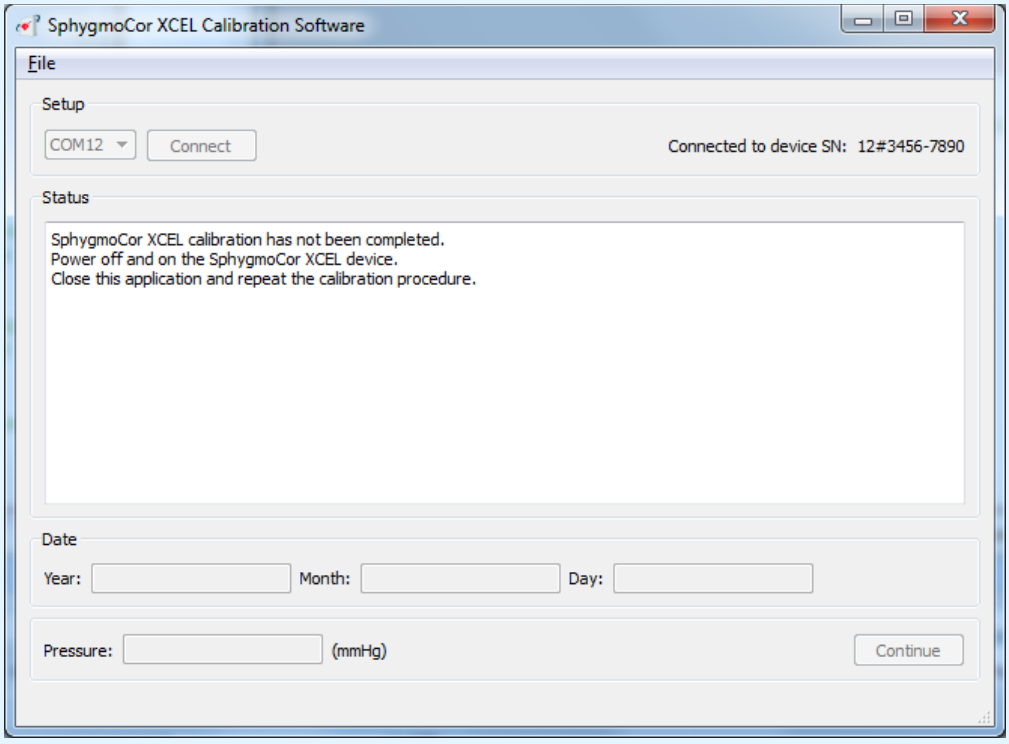


10- Review the pressure displayed on the manometer or Sphygmomanometer

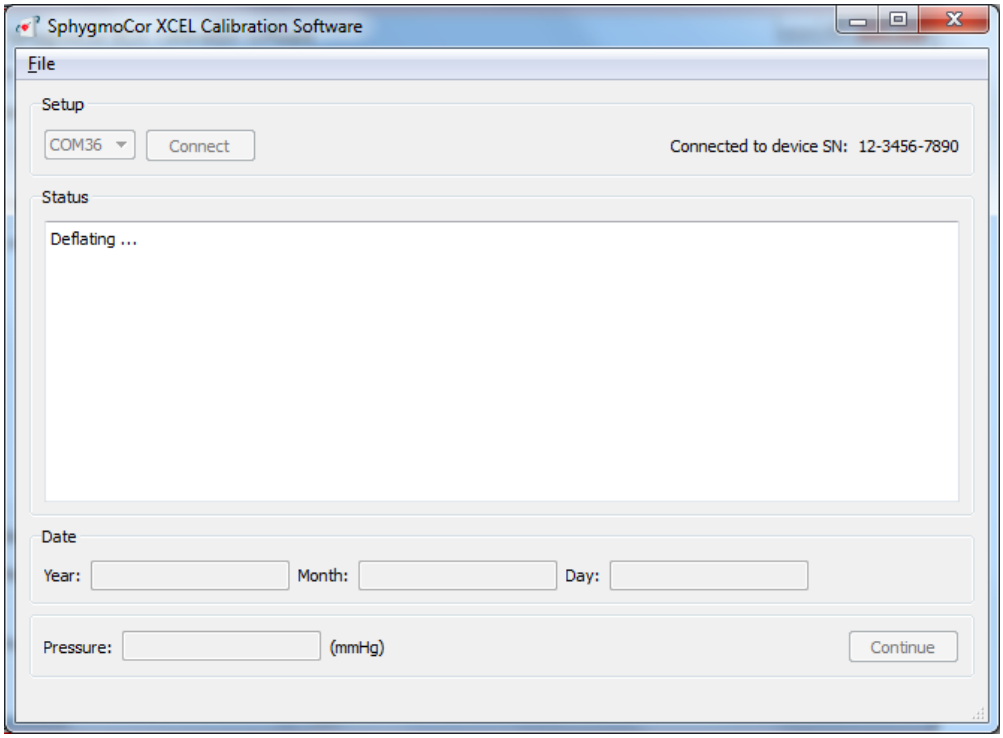


11- Enter the pressure value in whole numbers (no decimal points) and Click *Continue*

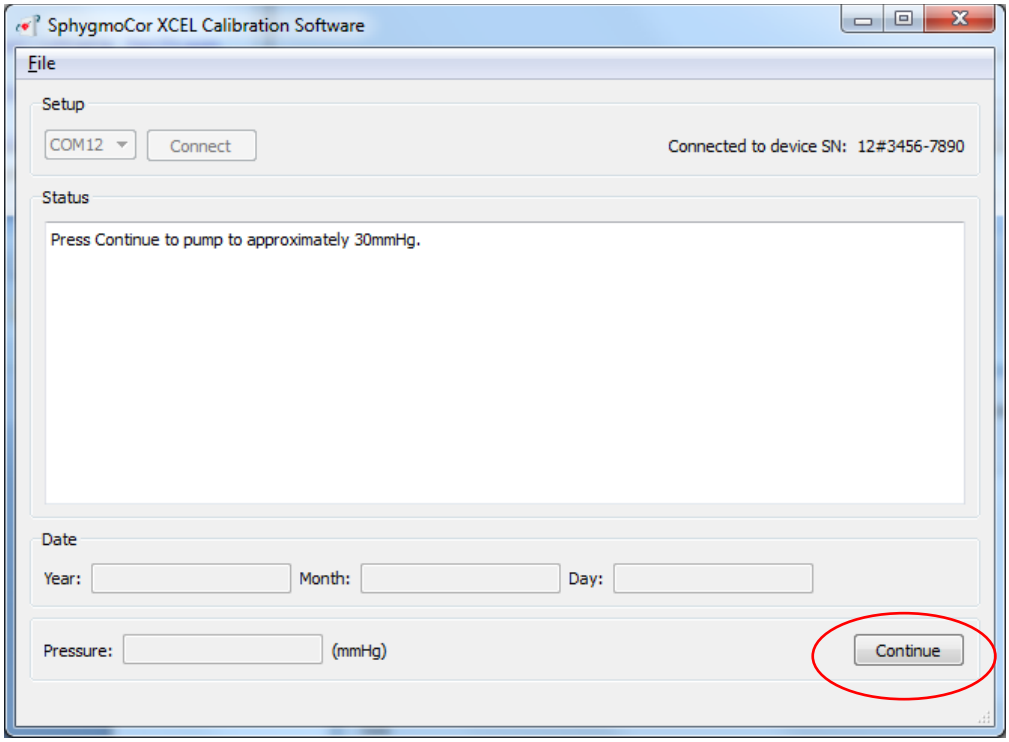
Note: The pressure value should be entered within 30 seconds; otherwise the following screen will appear:



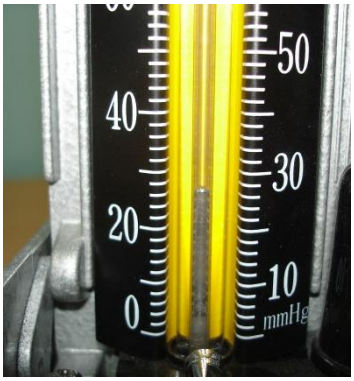
If this message appears, turn OFF and then ON the SphygmoCor XCEL device, close the SphygmoCor XCEL Calibration software, and repeat the calibration procedures from step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.



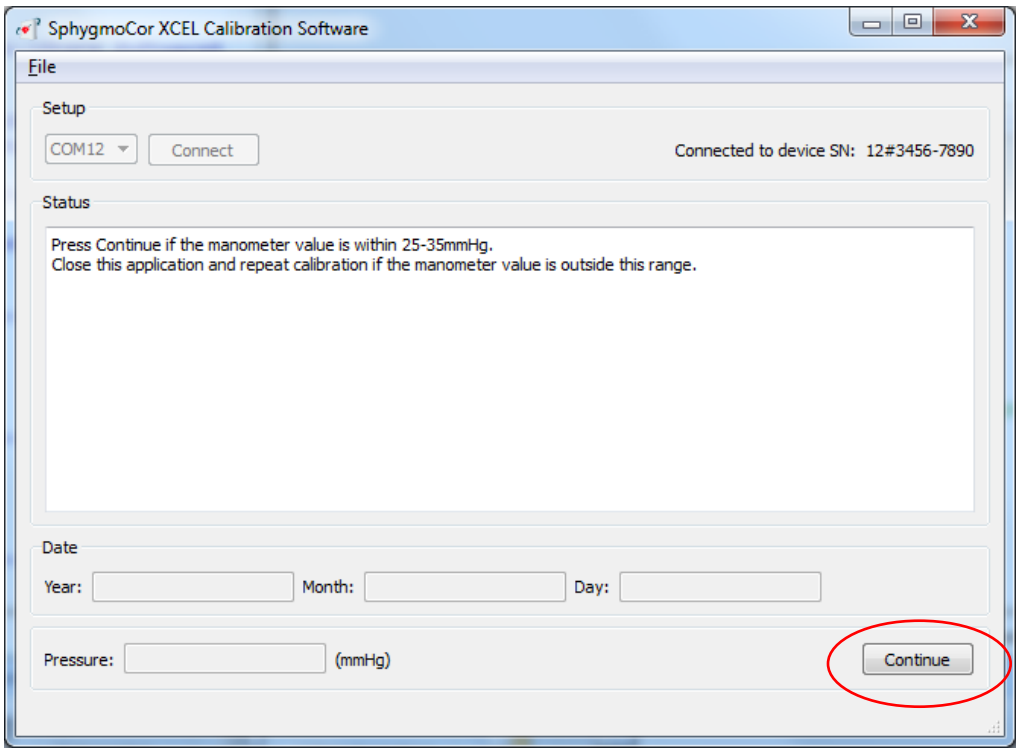
12- The software will display this message.



13- Click *Continue*

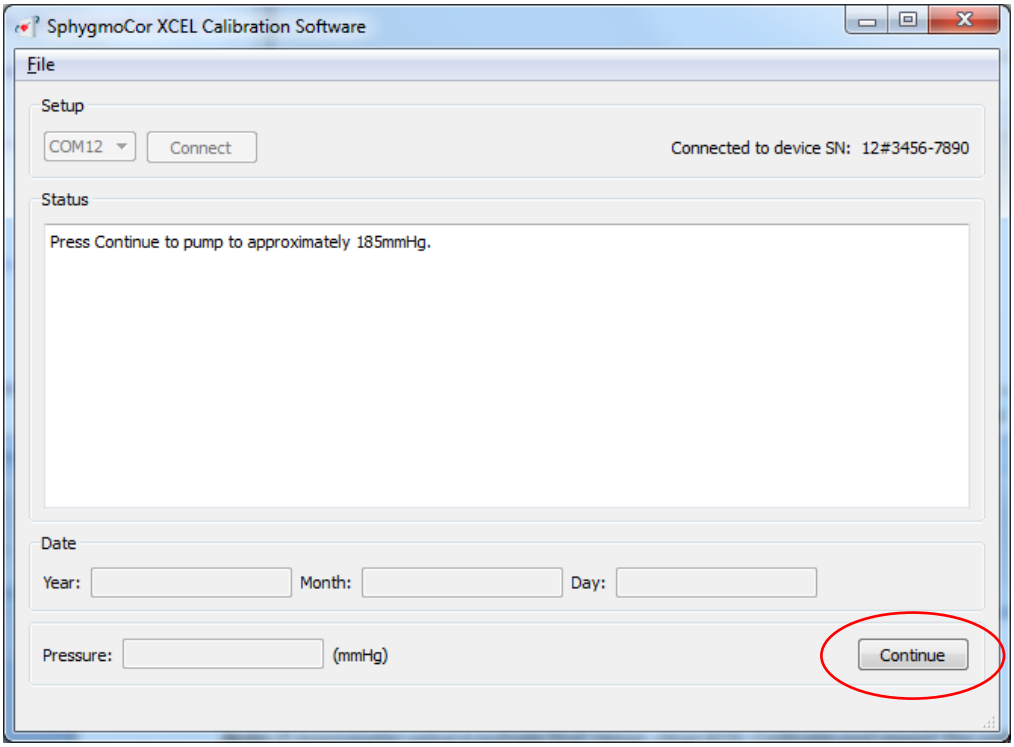


14- View the pressure displayed on the manometer or Sphygmomanometer

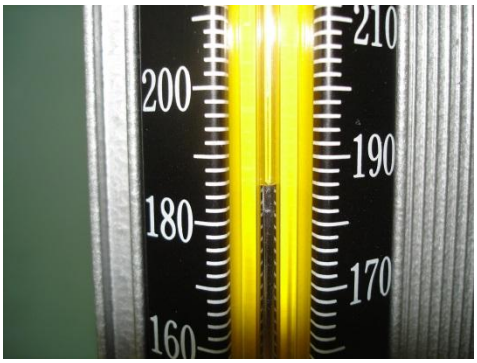


15- If the manometer readings is between 25-35 mmHg click *Continue*.

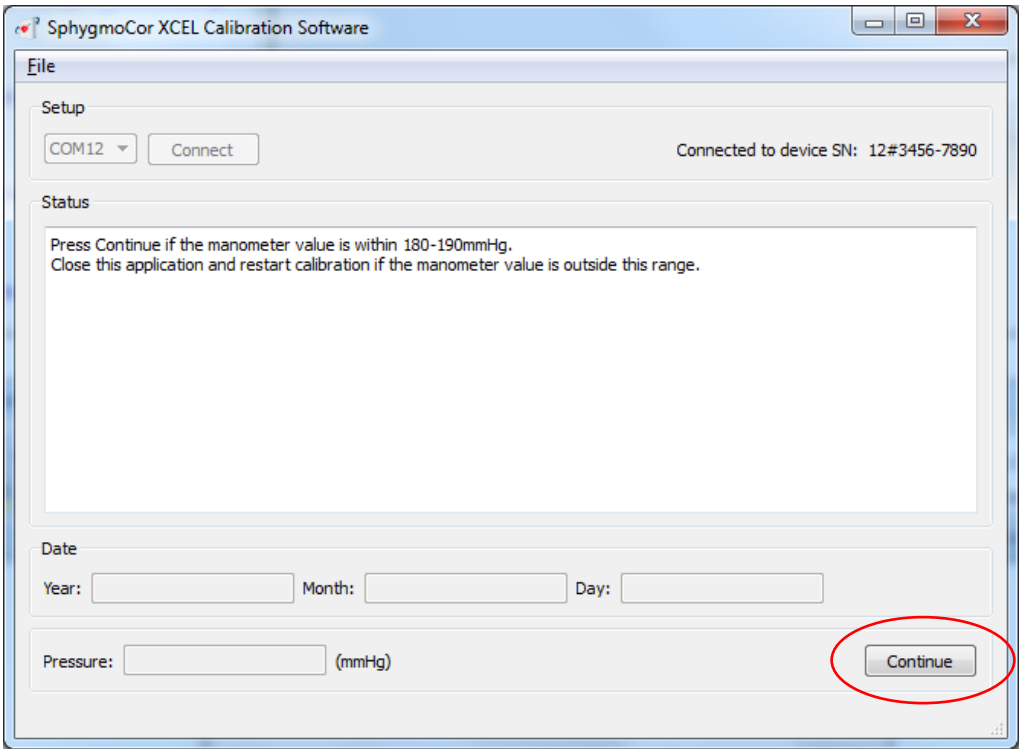
Note: If the manometer reading is not between 25-30 mmHg, close the SphygmoCor XCEL Calibration software and start the calibration procedures from Step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.



16- Click *Continue*



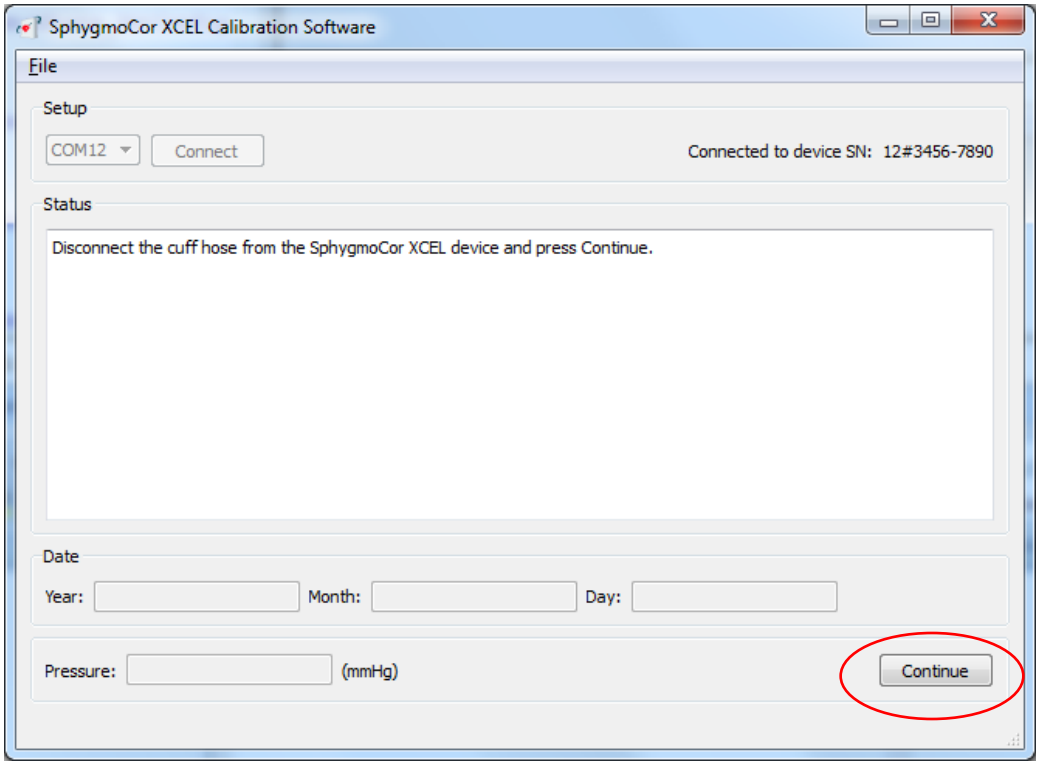
17- View the pressure displayed on the manometer or Sphygmomanometer



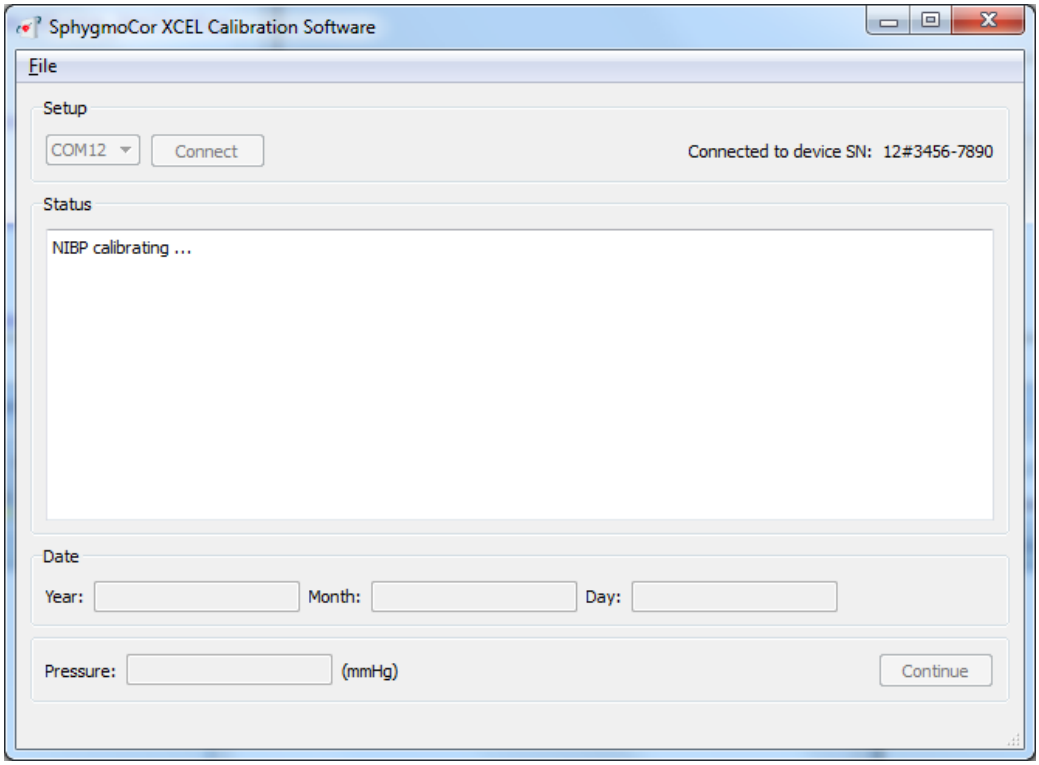
18- If the manometer reading is between 180-190 mmHg click *Continue*.

Note: If the manometer reading is not between 180-190 mmHg, close the SphygmoCor XCEL Calibration software and start the calibration procedures from Step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.

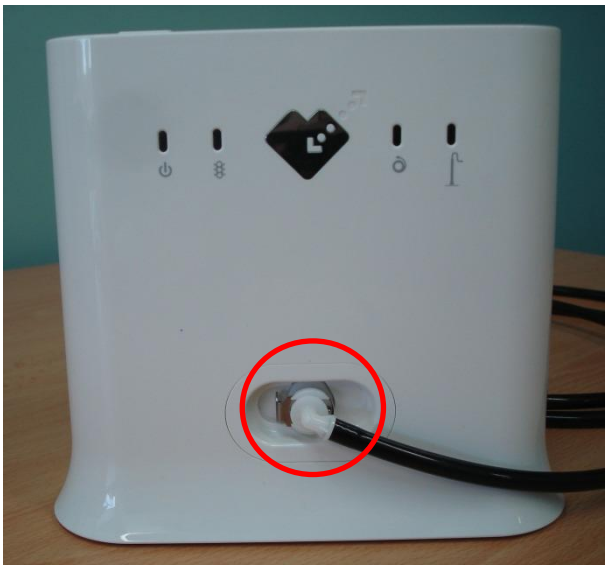


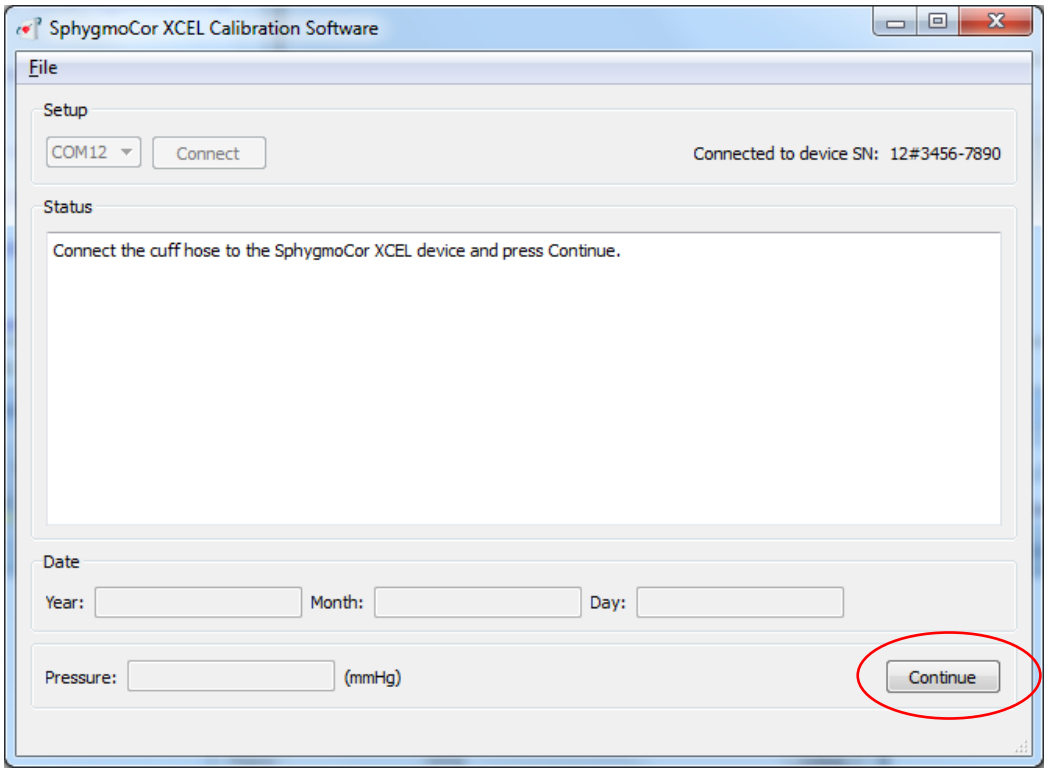


19- Disconnect the cuff hose on the SphygmoCor XCEL and click *Continue*

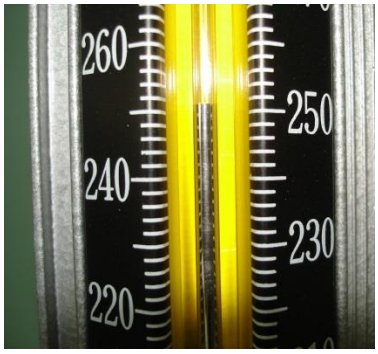


20- The software will show a message.

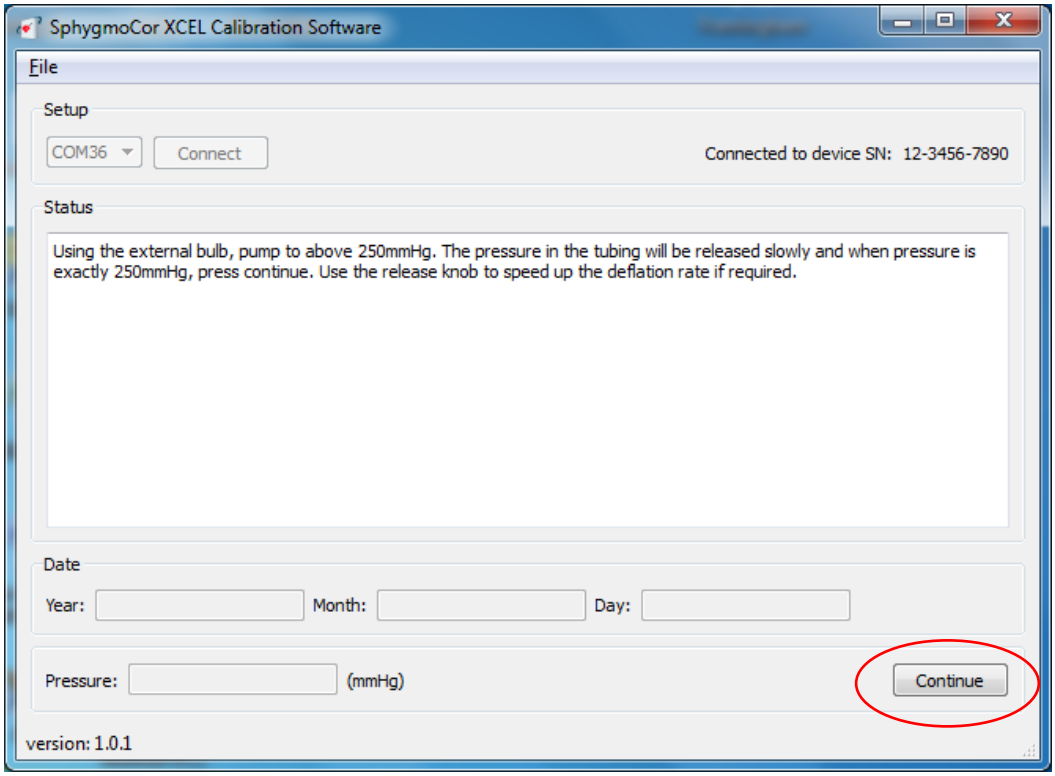




21- Connect the cuff hose on the SphygmoCor XCEL and click *Continue*

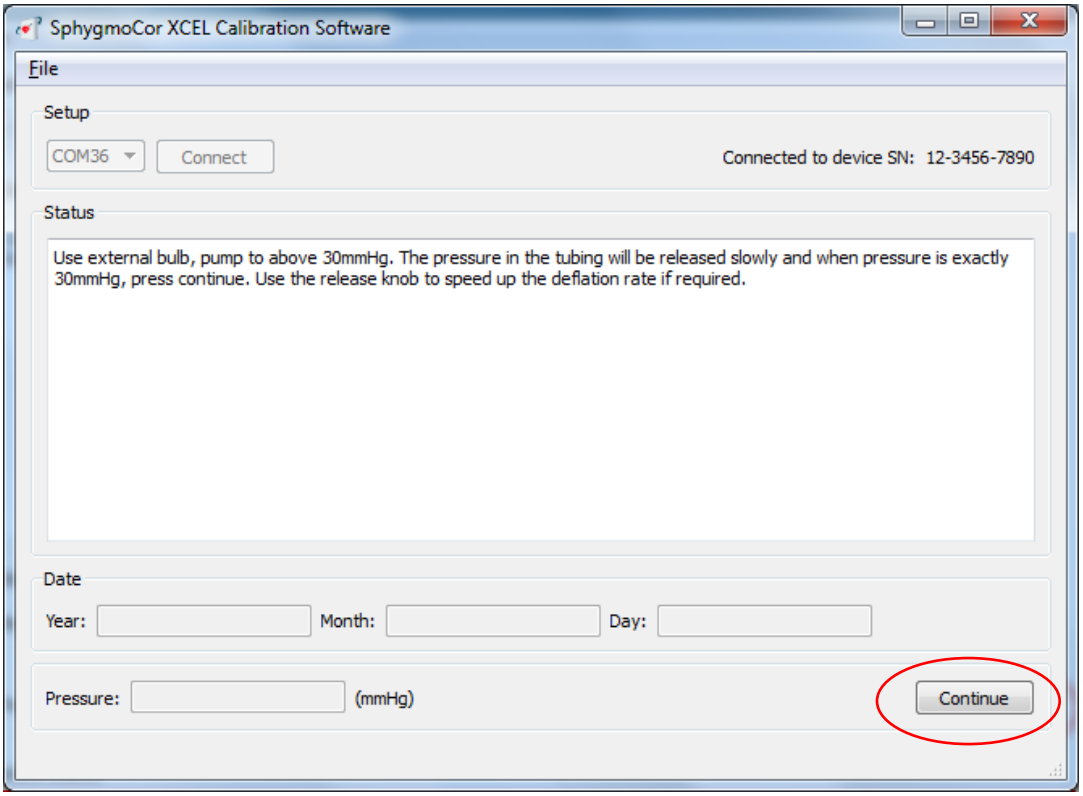


22- Using the bulb, pump until the pressure on the manometer is slightly above 250 mmHg. As you reach 250mmHg, ensure the pressure rise is gentle so as not to trigger the auto safety deflation of the SphygmoCor Xcel device – if this occurs restart the XCEL Calibration Software.



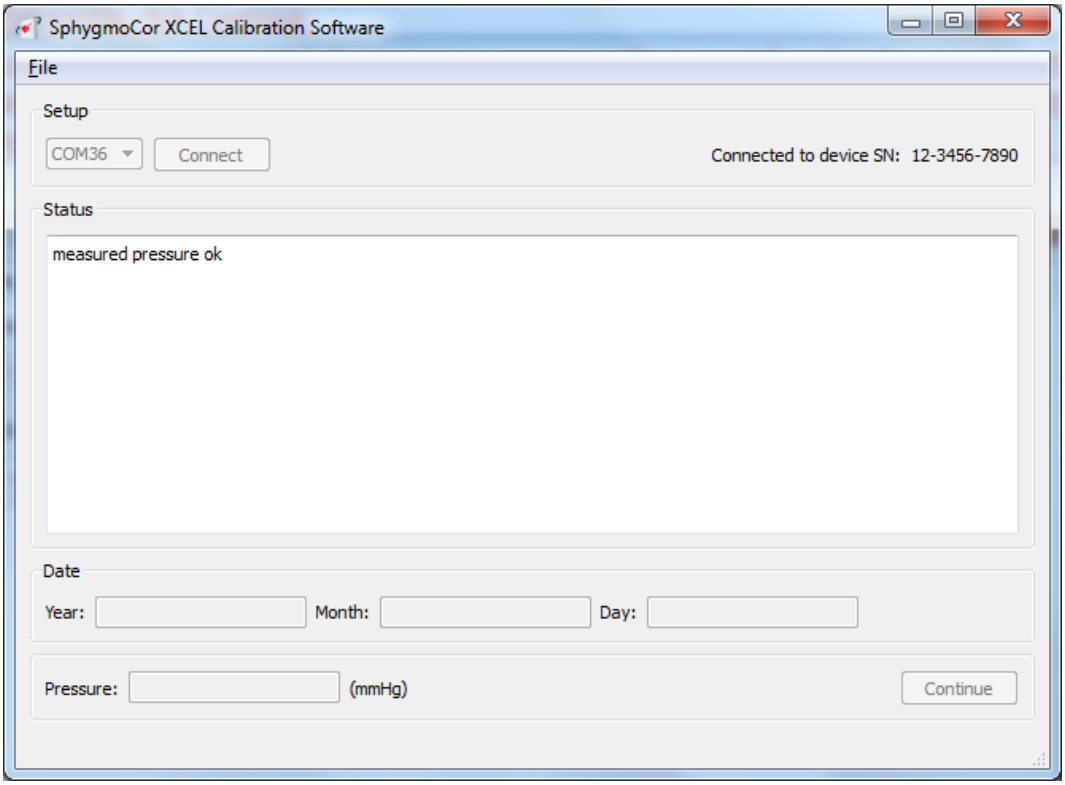
23- Release the pressure slightly using the release knob on the bulb. When the pressure drops to 250 mmHg click *Continue*.

Note: Once pumping starts ensure to click Continue within 3 minutes. If not, a message will appear informing that the calibration was unsuccessful. Then close the SphygmoCor XCEL Calibration Software, turn off/on the module and repeat the calibration procedures from Step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.

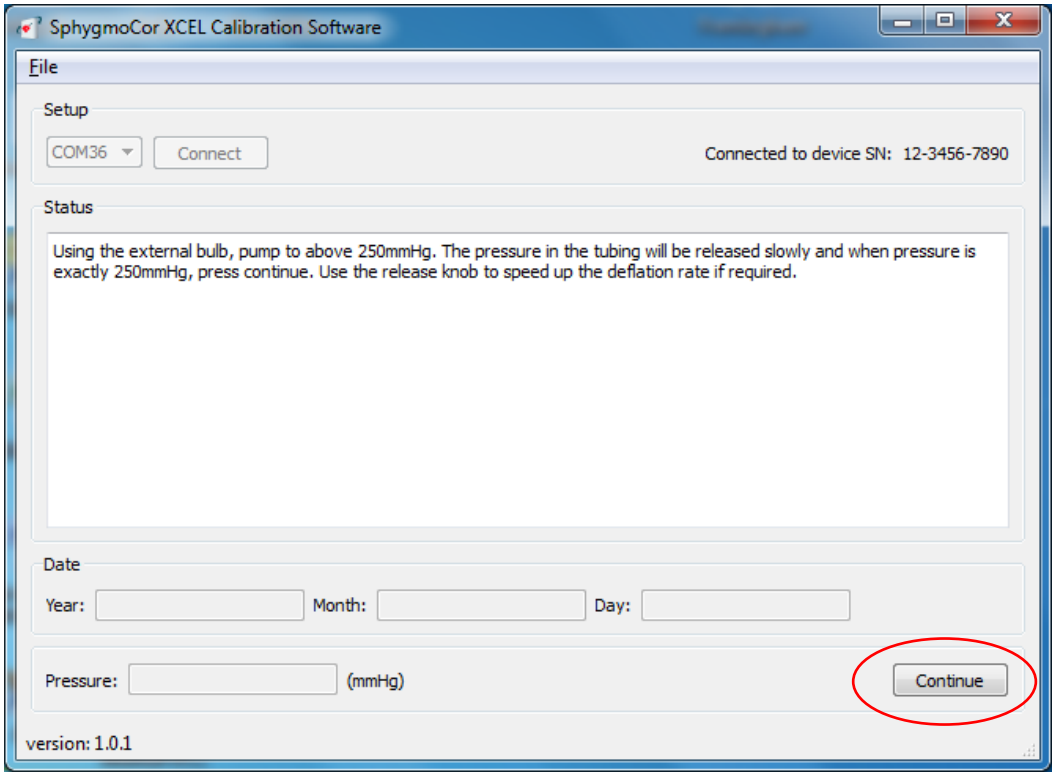


24- Using the bulb, pump until the pressure on the manometer is slightly above 30 mmHg. Release the pressure slightly using the release knob on the bulb. When the pressure drops back to 30 mmHg, click *Continue*.

Note: Once pumping starts ensure to click Continue within 3 minutes. If not, a message will appear informing that the calibration was unsuccessful. Then close the SphygmoCor XCEL Calibration Software, turn off/on the module and repeat the calibration procedures from Step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.



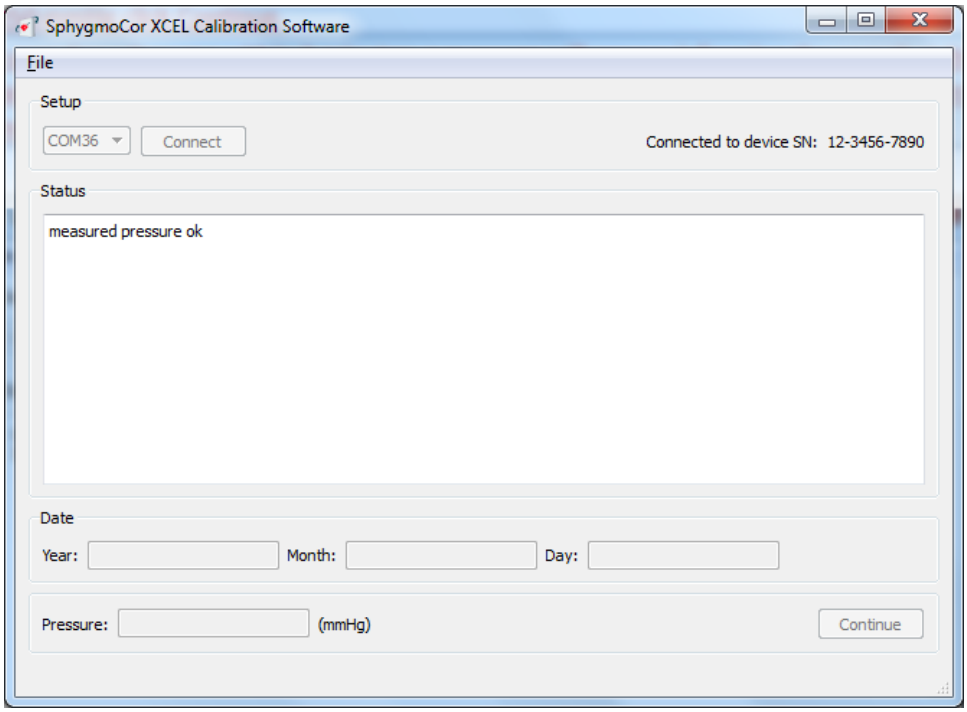
25- The software will display this message.



26- Using the bulb, pump until the pressure on the manometer is slightly above 250 mmHg. As you reach 250mmHg, ensure the pressure rise is gentle so as not to trigger the auto safety deflation of the SphygmoCor Xcel device – if this occurs restart the XCEL Calibration Software.

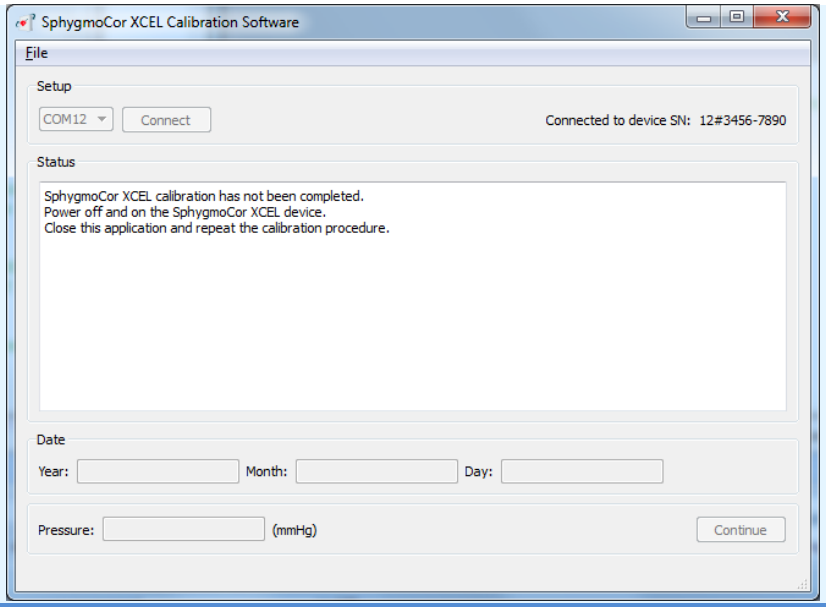
Release the pressure slightly using the release knob on the bulb.
When the pressure drops back to 250 mmHg, click *Continue*.

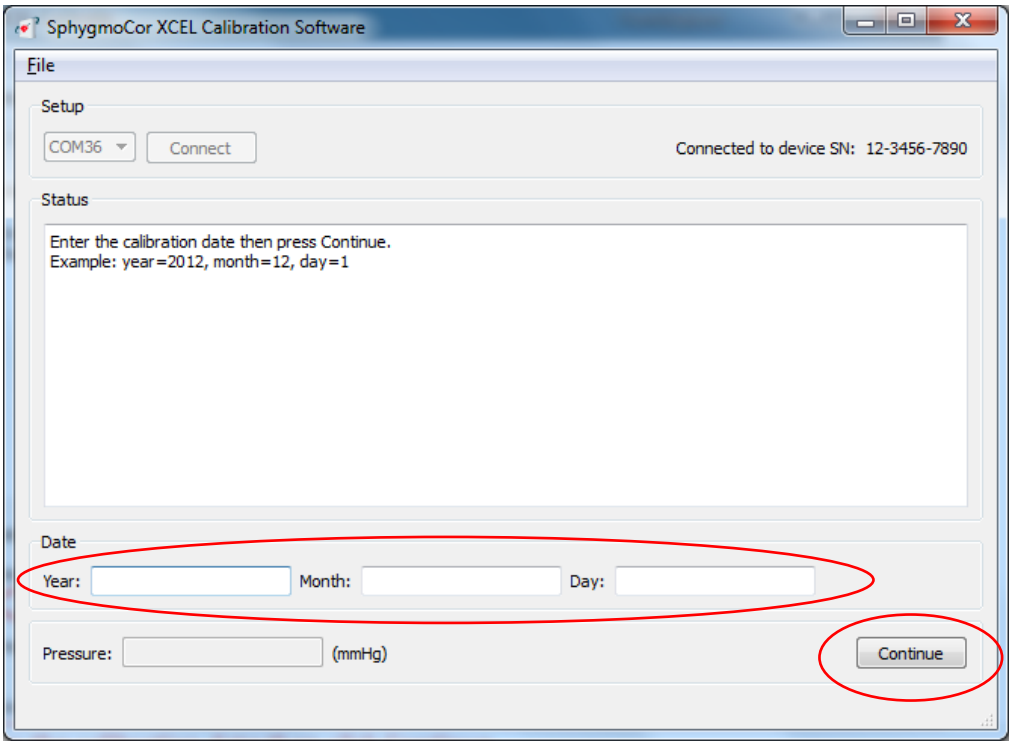
Note: Once pumping starts ensure to click Continue within 3 minutes. If not, a message will appear informing that the calibration was unsuccessful. Then close the SphygmoCor XCEL Calibration Software, turn off/on the module and repeat the calibration procedures from Step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.



27- The software will display this message.

Note: If this message appears (calibration was unsuccessful), then turn OFF and ON the device and close the SphygmoCor® XCEL Calibration Software and repeat the calibration procedures from step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.

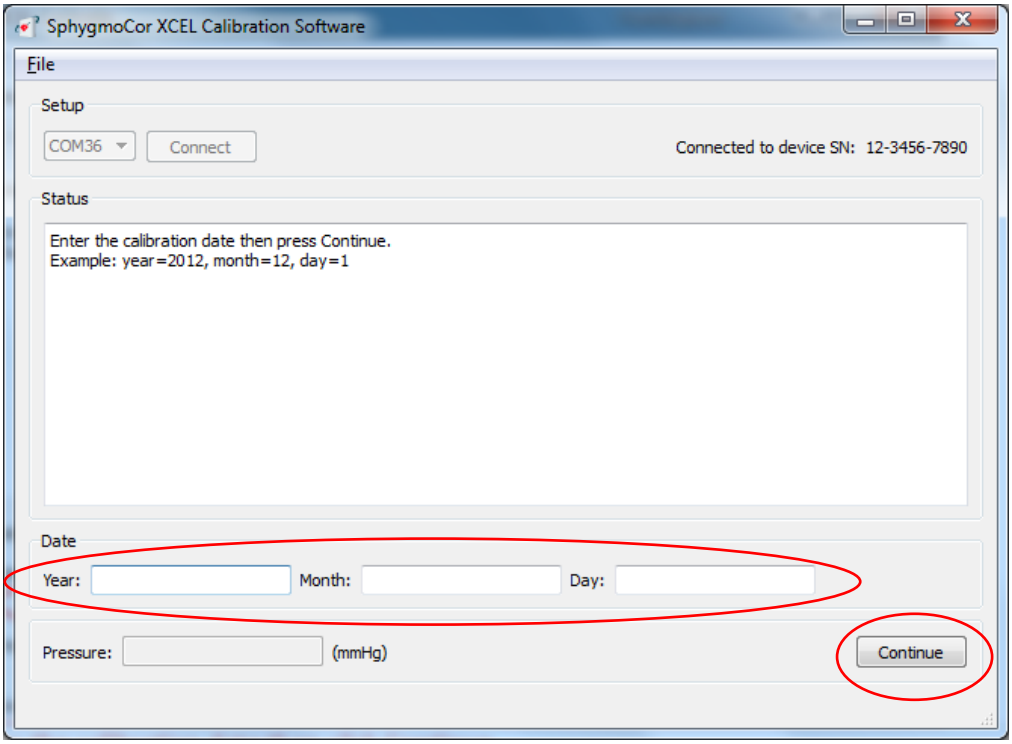




28- Upon successful calibration, enter the calibration date (year, month & date) then click *Continue*

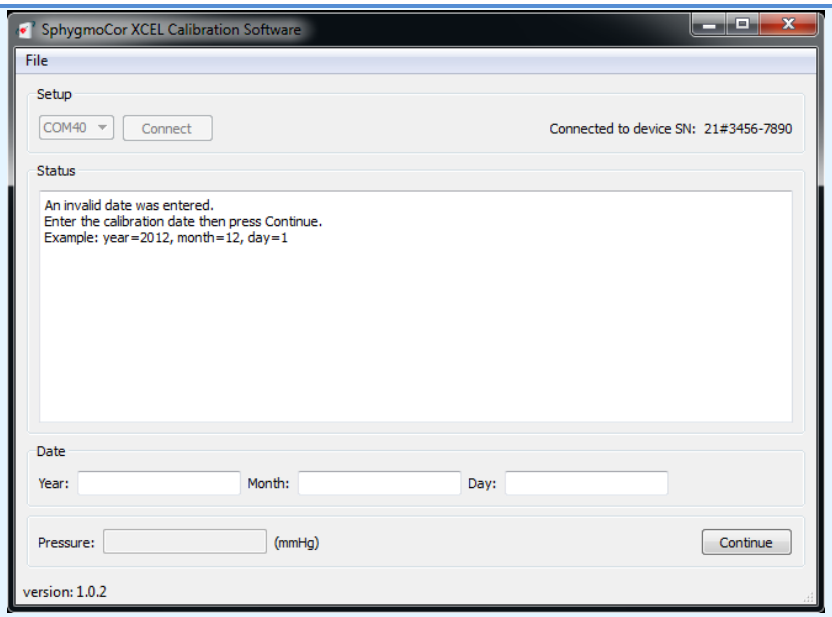
If the Continue button is pressed without entering a date, close the SphygmoCor XCEL Calibration software, turn OFF and then ON the SphygmoCor XCEL device, and repeat the

calibration procedures from step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.

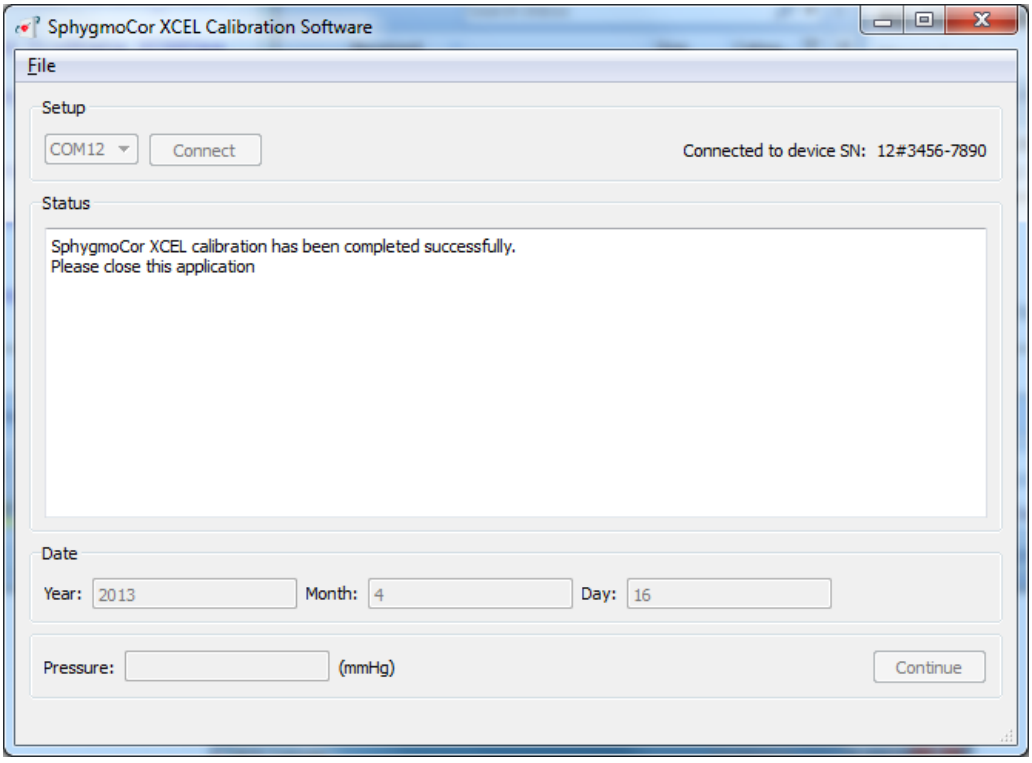


29- For verification purposes, the date is required to be entered for a second time. Enter the calibration date (year, month & date) then click *Continue*

If the *Continue* button is pressed without entering a date, close the SphygmoCor XCEL Calibration software, turn OFF and then ON the SphygmoCor XCEL device, and repeat the calibration procedures from step 1. Please refer to Restarting the Calibration Procedure Section in the Calibration Troubleshooting section.



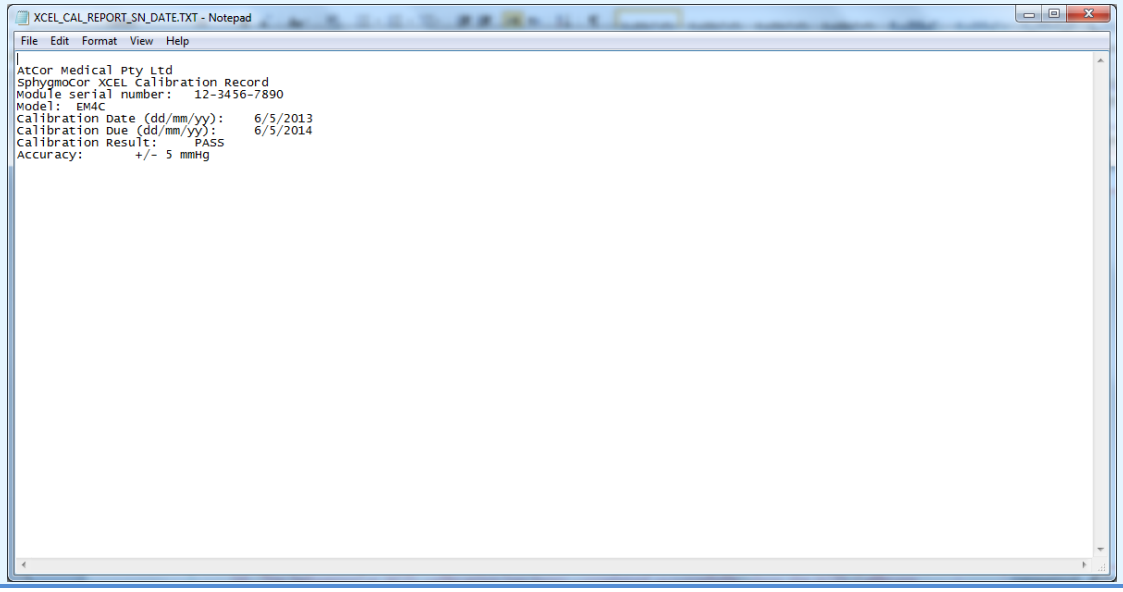
Note: If this message appears (incorrect date entered), enter the correct date and press *Continue*.



30- The SphygmoCor XCEL calibration has been completed successfully, close the XCEL Calibration Software

Note: Once the calibration has been completed successfully, a calibration summary report will be generated and saved as "*XCEL_CAL_REPORT_SN_DATE*.txt" in the same directory where the

application was installed (default installation directory is “C:\AtCor\XCEL calibration\”, but this can be changed by the installer during the installation process).



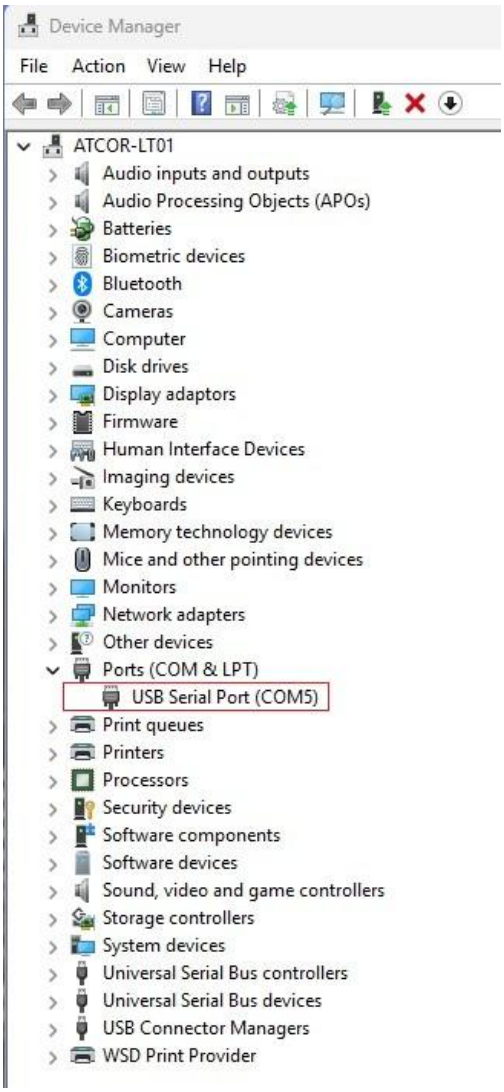
Calibration Troubleshooting

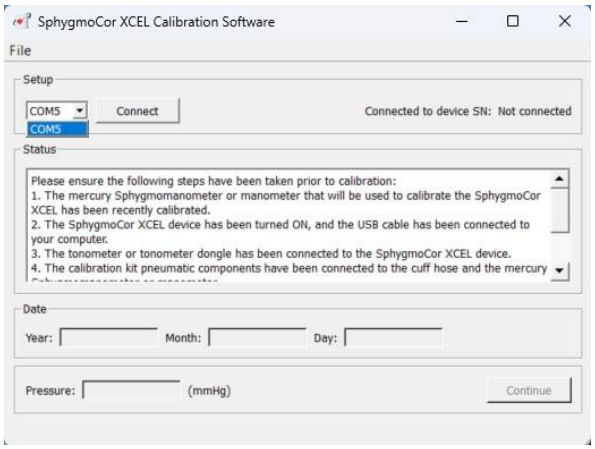
Finding the Com Port

To find the com port that is connected to the SphygmoCor XCEL device, follow these steps:

1. Connect the SphygmoCor XCEL device to the computer via the USB cable, and turn it on. Ensure your SphygmoCor Software is closed.

2. In Windows 11, or in Windows 10, open the Device Manager, and in the list “Ports (COM & LPT)” you will see the list of available USB ports. In the below example, COM5 is the only port, and the drop-down menu in the Calibration Software also shows COM5. Select the appropriate port in the Calibration Kit software.





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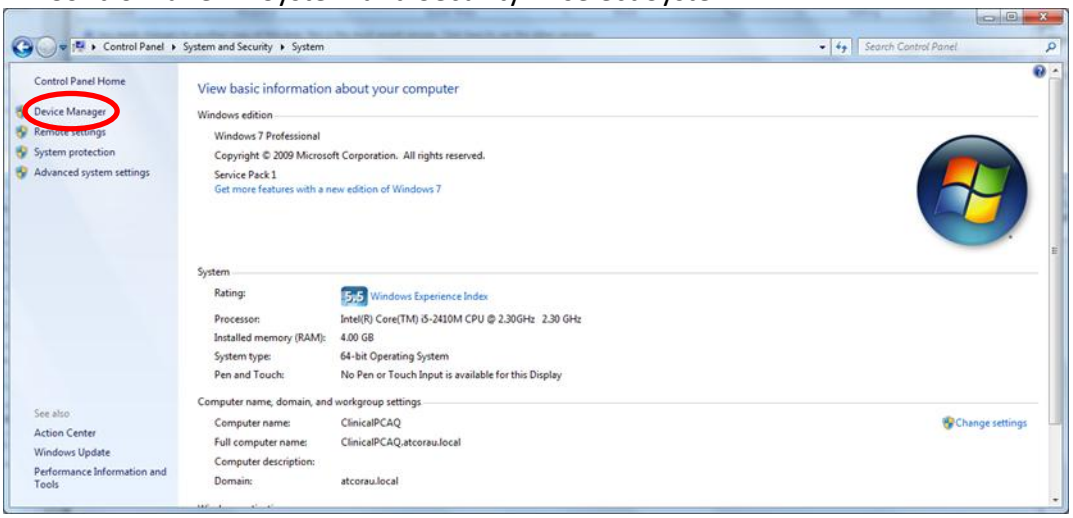
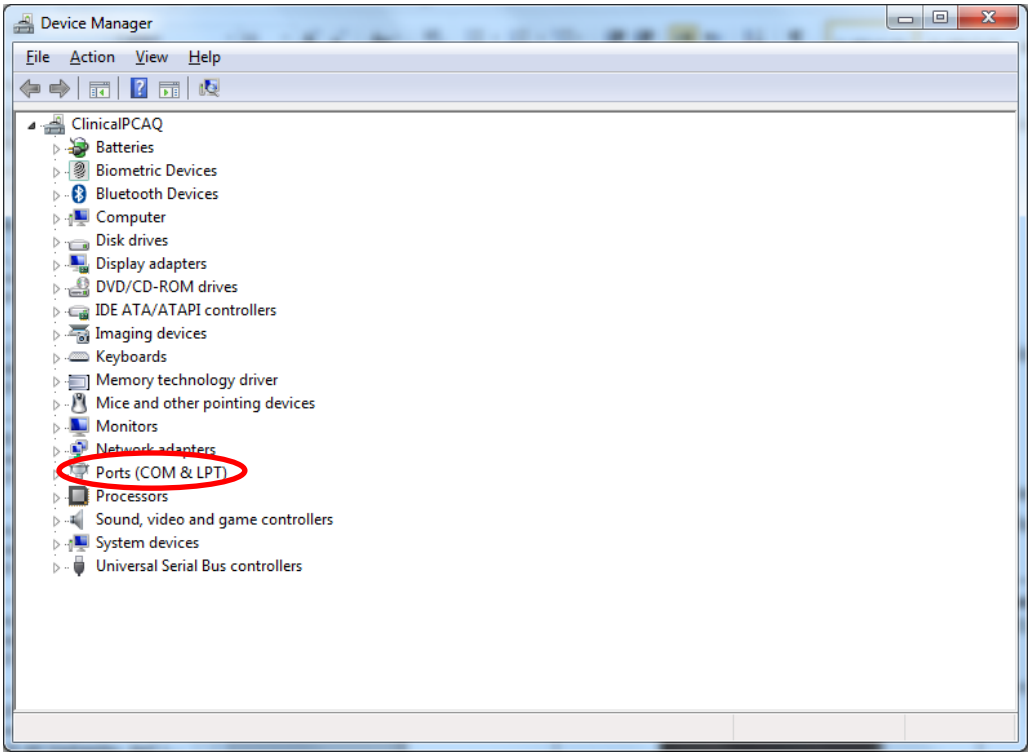
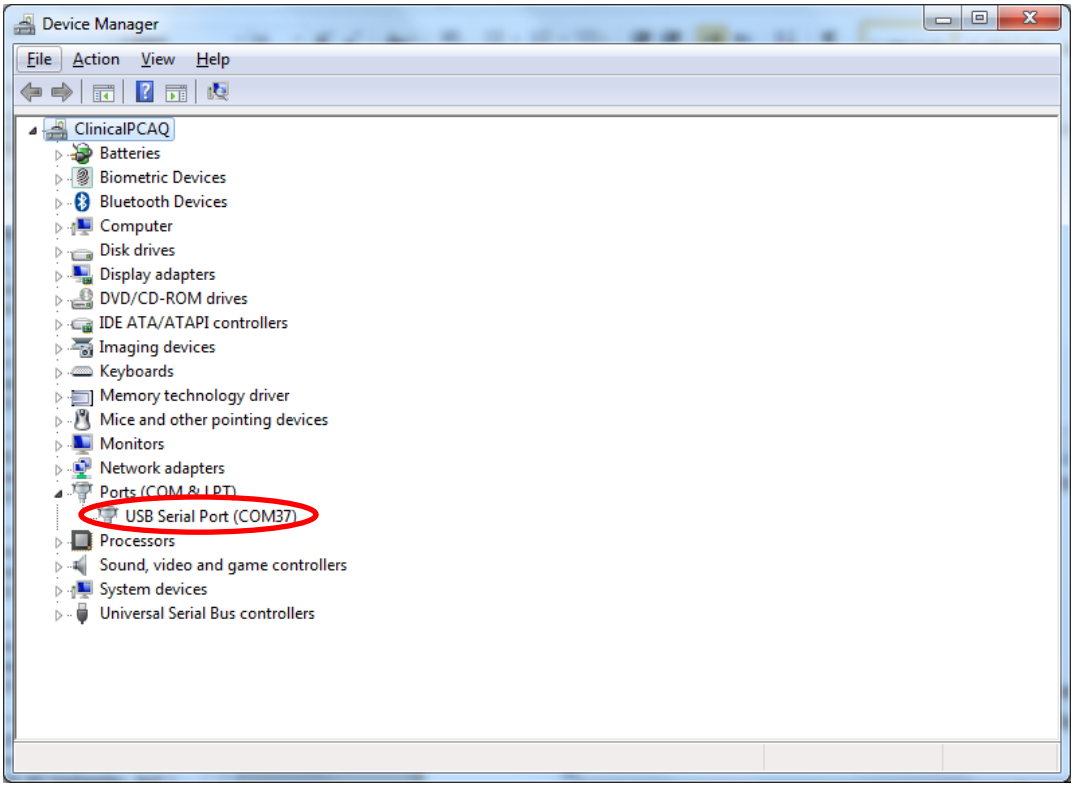
1- In Windows 8, or in Windows 7, navigate to:
Control Panel -> System and Security -> select System.



Then, Select the Device Manager link on the left menu.



Then, expand the PORTS (COM & LPT) section.



The SphygmoCor XCEL will appear as 'USB Serial Port' and the COM Port number will be displayed next to 'USB Serial Port (COM##)' – in his example 'COM37'.

In the Calibration Kit software, you will need to select the Com Port number (COM##) from the drop down list.

Restarting the Calibration Procedure

If calibration is not completed successfully, before restarting the calibration procedure, ensure the following:

1. That the Aneroid Sphygmomanometer or manometer that will be used to calibrate the SphygmoCor XCEL has been recently calibrated.
2. That the SphygmoCor XCEL Calibration software has been closed.
3. That the SphygmoCor XCEL device has been turned OFF/ON, and the USB cable has been connected to your computer.
4. That the tonometer or Calibration Kit dongle has been connected to the SphygmoCor XCEL device.
5. That the calibration kit pneumatic components have been correctly connected to the cuff hose and the Sphygmomanometer or manometer, as per the figure in section "Calibration Setup".
6. That the cuff hose has been disconnected from the SphygmoCor XCEL device.

Note: If the restart calibration is not successful, please contact AtCor Medical for technical support.

Note: If the calibration process was not successfully completed, your SphygmoCor Xcel device may not be correctly recognised by the SphygmoCor Xcel software.
If this were the case, you would need to re-run the Calibration Software, and complete the calibration process.