

Customer Service

For the names and addresses of approved Vitalograph Service Agents, please contact any of the following offices or your local Vitalograph distributor.

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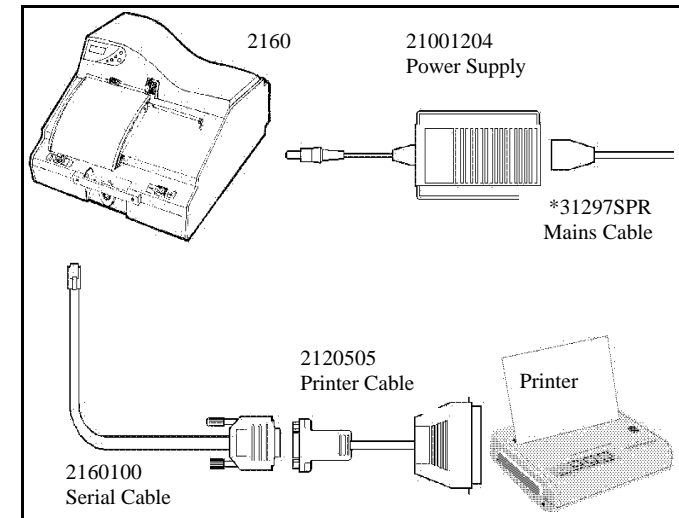
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How To Set Up Your Vitalograph 2160

The Vitalograph 2160 is ready for use as soon as you take it out of its transit packaging. It is strongly recommended, however, that you familiarise yourself with this product first. The intention of this Quick Start Guide is to help you do this.

Connecting the Vitalograph 2160 To A Power Source

To connect your 2160 to a power source refer to the illustration below, and use the following procedure,



- Plug the Power Supply (21001204) into the back of the unit.
- Connect the Mains Cable (31297SPR*) to the Power Supply.
- Plug the other end of the Mains Cable into your nearest supply outlet.

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Connecting the Vitalograph 2160 To A Printer

The Vitalograph 2160 can be easily connected to a desktop printer for output of informative, well presented reports. First, the correct printer must be selected on the 2160 by using the following procedure,

- From the main menu, select **Setup**.
- From the **Setup** menu, select **Printer**.
- Using the ▲ and ▼ buttons, select the printer type that you will be printing to.

Referring to the previous illustration, use the following procedure,

- Ensure everything is powered off and unplugged before setting up.
- Connect Printer Cable (2120505) to the 2160 Serial Cable (2160100).
- Connect the other end of the Printer Cable to the printer.
- Connect the other end of the Serial Cable to the 2160.
- Switch the printer on.
- Switch the Vitalograph 2160 on.

Once you have set up as above, you can perform the following test.

A quick test:-

After you have connected your Vitalograph 2160 to the printer, using the above procedure, do the following to ensure every thing is in working order,

- Switch the Vitalograph 2160 on.
- From the main menu, select **Patient**.
- Select **Manual** patient ID.
- Do not enter a patient ID i.e. press ⌵. This will ensure that nothing from this test is saved to the database.
- Press ⌵ on the **Sex, Age, Height** and **Race** fields - values entered are not important here.
- From the main menu, select **Test**.
- Press ⌵ to enter temperature.
- Select **VC** - the results of this test are quicker to print out.
- Blow into the breathing tube for a couple of seconds - performance is not

important here.

- Press **ESC** twice.
- From the main menu, select **Print**.
- Select **Current**.

A one page report with a VC result should now print out.

If a printout is not obtained. Power off everything and reconnect as above.

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How To Use Your Vitalograph 2160

Your new Vitalograph 2160 is the most advanced desktop volumetric storage spirometer available today and may be used for performing the full range of FVC and VC tests. The Vitalograph 2160 can store patient information and the results of over 100 tests, including graphical data. Results are time and date stamped, and may be printed in tabular or graphical form.

Entering Patient Data

In order to save results to the database, an ID must be assigned to a patient prior to testing. If a patient is performing a test for the first time, use the following procedure,

1. From the main menu, select **Patient**.
2. For a quick, automatically assigned ID, select **Auto** (this is based on today's date). Go to step 8.
3. For a specific ID, select **Manual** (e.g. if the patient's name is required as the ID).
4. Using the ▲ and ▼ buttons, select the first character of the ID. If you keep the button depressed, you will be able to speed scroll through the character range.
5. Press ↵ to select the character.
6. Follow steps 4 & 5 to select further characters in the ID, if required. At any stage, if a mistake is made, use the **DEL** button to correct.
7. Press ↵ to select the ID.
8. Using the ▲ and ▼ buttons, select **Sex**. Press ↵.
9. Using the ▲ and ▼ buttons, select **Age**. Press ↵.
10. Using the ▲ and ▼ buttons, select **Height**. Press ↵.
11. Using the ▲ and ▼ buttons, select **Race**. Press ↵.

If a patient has previously performed a test and that patient's details are already stored in the database, use the following procedure,

1. From the main menu, select **Patient**.
2. Select **Recall**.
3. Using the ▲ and ▼ buttons, select a patient ID that was entered previously.

Performing A Test

When patient details have been entered, a test can be performed. Use the following procedure to perform a VC or FVC test,

1. From the main menu, select **Test**.
2. Using the ▲ and ▼ buttons, enter the ambient temperature (you will only have to do this the first time the unit is used for testing after it is switched on).
3. Select **VC** or **FVC**. If patient details have not been entered, you will be prompted to do so. Refer to **Entering Patient Data**.
4. The screen will prompt for a test .
5. When the test is complete, there is a prompt to perform another test (accompanied by a double beep if **Sound** is enabled) .
6. Using the ▲ and ▼ buttons, a quality summary and individual results can be accessed. The **Indices** displayed here are dependent on what was selected in the **Setup** menu. Results include results from the **Last** test, results from the **Best** test and predicted results (**Pred**).
7. When the Vitalograph 2160 is happy that a good test session is achieved, there is a prompt that a successful test session has been achieved (accompanied by five beeps if **Sound** is enabled) - this is relevant to an **FVC** test only.

Printing Test Results

When testing is complete, the results can be printed out. Ensure that your printer is set up correctly (refer to **Connecting the Vitalograph 2160 To A Printer** in part 1). Use the following procedure,

1. From the main menu, select **Print**.
2. Select **Current**. The results of the test session that was just completed, will be printed out.

Checking Accuracy

The Vitalograph 2160 should be calibrated at room temperature prior to performing tests. In accordance with the international standards governing spirometry, it is recommended that you check calibration regularly. If the temperature of your testing environment remains stable (within $\pm 4^{\circ}\text{C}$) it should not be necessary to adjust the calibration after the initial set-up. Use the following procedure,

1. Prior to checking accuracy, have your calibrating syringe ready (we recommend the Vitalograph 1 litre syringe - Cat. No. 20.408).
2. Insert a chart in the chart carrier. (See the Inserting the Vitalogram Chart section of Chapter 3 in the User Manual if you require assistance.)
3. Set the stylus on the **Stylus Start** line at the base of the centre scale. (See the Adjusting the Stylus section of Chapter 3 in the User Manual if you require assistance.)
4. Switch the chart carrier switch to the calibration position, i.e. the centre position.
5. Turn on the Vitalograph 2160 and from the main menu, select **Calib**.
6. Using the ▲ and ▼ buttons, enter the ambient temperature (you will only have to do this the first time the unit is used for checking accuracy after it is switched on).
7. Ensure the syringe piston is fully withdrawn. At this point, connect the unit to the syringe and leave it in a stable position - do not move the unit during this procedure.
8. With an even stroke, pump the contents of the syringe into the unit. The stroke must be at least one second in duration.
9. Wait for a double beep, withdraw the syringe piston fully and repeat step 6 until for another 6 strokes (it is very important to wait for the double beep before withdrawing the piston each time).
10. The accuracy check is now complete. Press **↵** to continue.
11. The calibration is OK when the volume difference with the previously stored calibration value is less than 3%. There is no need to update calibration here. (if, for some reason, an update is still required then press the **DEL** button at this stage) If the volume difference with the previously stored calibration value is greater than 3%, then an update is recommended.
12. An accuracy check report can be printed when prompted to do so. Ensure your printer is set up correctly (refer to **Connecting the Vitalograph 2160 To A Printer** in part 1), and press **↵**, otherwise press **ESC**.

Note: if you check accuracy during a test session and attempt to update the calibration, you will be informed that the current test session will be completed. If you press **↵**, the calibration will be updated and the best test to date will be saved to the database. If you press **ESC**, the calibration will not be updated and testing can resume.

Note 2: The calibration of the electronics can be altered independently of the bellows calibration. The converse is NOT true. To ensure that your chart results agree with the electronic results, it is strongly recommended that the bellows is calibrated (as outlined in the User Manual) prior to changing the calibration of the electronics.