

Vitalograph 2120 User Manual

 **Vitalograph[®]**

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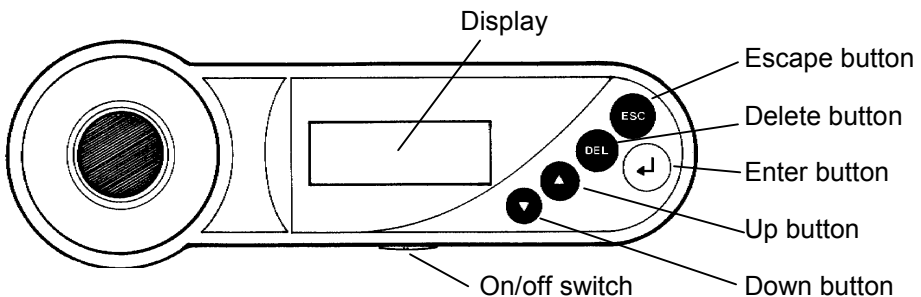
DESCRIPTION OF THE VITALOGRAPH 2120

The Vitalograph 2120 is a hand-held spirometer designed for lung function testing in a variety of environments, e.g. hospital wards, occupational health centres and private homes.

FEATURES OF THE VITALOGRAPH 2120

The Vitalograph 2120's features include:

- performs FVC and VC pre- and post tests
- a cradle to store the device for battery charging
- database of patient information
- test results are time and date stamped
- stores the results of at least 100 tests
- audible feedback device available
- printouts of test results available via the cradle
- smart option can automate actions by bypassing the menus
- on screen battery low indicator
- Performing real time testing with Spirotrac PC based spirometry system through the cradle.
- Uploading patient records from Spirotrac PC based spirometry system to 2120 through the cradle
- Downloading patient records and tests from 2120 to Spirotrac PC based spirometry system through the cradle.
- auto switch off after 30 minutes of no-use when running off the battery.

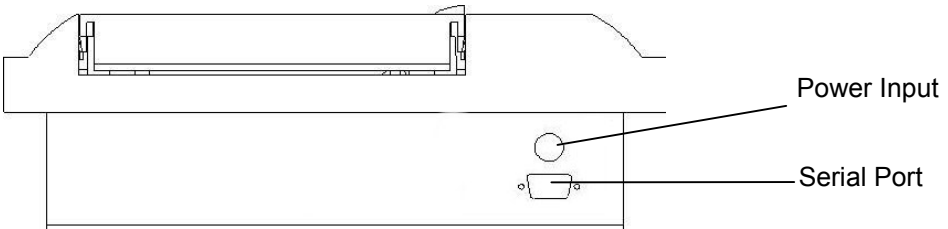


CONNECTING THE VITALOGRAPH 2120 TO A POWER SOURCE

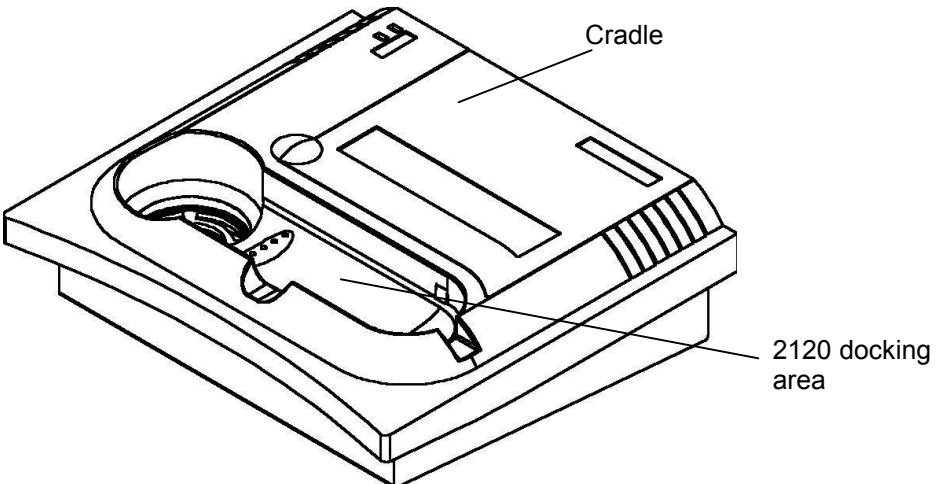
The Vitalograph 2120 is ready for use when you unpack it.



It is recommended you dock the unit in its cradle, as described below, to ensure it is fully charged. Note that it is not necessary to turn on the Vitalograph 2120 when charging. The cradle must, however, be connected to a power source. Whenever testing is finished, the unit should be docked for recharging. If the Vitalograph 2120 is not used over a prolonged period i.e. one month or longer, before use recharge the battery for 16 hours. If a battery low indication is given, the unit should be placed on the cradle immediately.



1. Plug the power supply (21001204) into the back of the cradle as shown above.
2. Connect the mains cable to the Power Supply.
3. Plug the other end of the Mains Cable into your nearest supply outlet.
4. The cradle will now be capable of supplying power to the Vitalograph 2120. Simply dock it in the cradle as illustrated below.





If you connect additional equipment (not produced by Vitalograph) to the serial interface port, it must conform to VDE0750 Part 1-1 regulations and to your EN specifications, eg. EN60950 for data equipment, EN60601 for medical equipment. Non medical equipment must be kept outside the patient environment ie. any area in which intentional or unintentional contact between the patient and parts of the system, or some other persons touching parts of the system, can occur.
(Contact your distributor if you have any queries.)

TURNING ON THE VITALOGRAPH 2120

Turn on the Vitalograph 2120 by sliding the switch at the side of the unit towards the flowhead. The date that the device was last checked and the memory status are briefly displayed. Pressing ESC at any time during this screen will by-pass it.

Vitalograph 2120	
21 / 06 / 2001	12 : 05
Cal . Check :	20 / 06 / 01
Memory :	90% used

After a few seconds the main menu is displayed as illustrated below.

>	PATIENT	DELETE
	TEST	SETUP
	PRINT	VIEW
	POST	CALIB

SETTING UP THE VITALOGRAPH 2120

There are a number of settings that must be made before you can use the Vitalograph 2120 for the first time. You can change these settings at any time to suit your requirements. This is achieved by selecting **Setup** in the main menu. The following screen is displayed.

Select option		
>	SAVE	CONFIG
	INDICES	SMART
	PRINTER	ABOUT

Setting Up Save

This is used to define the criteria for saving tests. If ATS or ERS Best are selected then the best test in a session is saved. If All is selected then every test in a session is saved. All saving of results is done automatically. Select **Save** in the **Setup** menu.

Save Setup	
ATS BEST	<
ERS BEST	
ALL	

ATS Criteria: highest FVC, highest FEV1, PEF from highest FVC+FEV1 sum. All other parameters are calculated from the curve with the highest FVC+FEV1 sum.
ERS Criteria: highest FVC, highest FEV1, highest PEF. All other parameters are calculated from the curve with the highest FVC.

Setting Up Indices

This is used to define the indices for which results will be displayed or printed. Select **Indices** in the **Setup** menu.

Select Indices	↓
VC	<
* FVC	
* FEV . 5	

The following list supplies definitions of the indices.

Indices

Definition

FVC Test

FVC	Forced vital capacity (litres)
FEV .5	Forced expiratory volume after 0.5 seconds (litres)
FEV .5/FVC%	Percentage FEV 0.5 of FVC (%)
FEV .75	Forced expiratory volume after 0.75 seconds (litres)
FEV .75/FVC%	Percentage FEV 0.75 of FVC (%)
FEV 1	Forced expiratory volume after 1 second (litres)
FEV 1/VC%	Percentage FEV 1 of VC (%)
FEV 1%	Percentage FEV 1 of FVC (%)
FEV1/PEF	Ratio of FEV1 versus PEF
FEV3	Forced expiratory volume after 3 seconds (litres)
FEV 3/FVC%	Percentage FEV 3 of FVC (%)
PEF	Peak expiratory flow (litres/min)
FEF 25-75%	Maximal mid expiratory flow: the mean FEF in the time interval between 25% and 75% of the FVC (litres/sec)
FEF ₂₅₋₇₅ /FVC%	Percentage FEF ₂₅₋₇₅ of FVC (%)
FEF 75-85%	Forced late expiratory flow: the mean FEF in the time interval between 75% and 85% of the FVC (litres/sec)
FEF .2-1.2	Mean forced expiratory flow in the time interval between 0.2 and 1.2 seconds of the test time (litres/sec)
FEF 25%	Forced expiratory flow at 25% of the FVC (litres/sec)
FEF 50%	Forced expiratory flow at 50% of the FVC (litres/sec)
FEF 75%	Forced expiratory flow at 75% of the FVC (litres/sec)

FMFT	Forced mid-expiratory flow time (sec)
FET	Forced expiratory time (secs)
MVV Ind	Maximum voluntary ventilation indirectly calculated from the FEV (litres/min)
FIVC	Forced inspiratory vital capacity (litres)
FIVC/FVC%	Percentage FIVC of FVC (%)
PIF	Peak inspiratory flow (litres/sec or litres/min)
FIF 25%	Forced inspiratory flow at 25% of the FVC (litres/sec)
FIF 50%	Forced inspiratory flow at 50% of the FVC (litres/sec)
FIF 75%	Forced inspiratory flow at 75% of the FVC (litres/sec)
FIF 50/FEF 50%	Percentage FIF 50% of FEF 50% (%)
VC Test	
VC	Vital capacity (litres)

Selecting a Printer

This is used to define the type of printer to be used for printing test results. Select **Printer** in the **Setup** menu.

```

Select Printer
EPSON FX SERIES
HEWLETT PACKARD <
CANON BJ SERIES
  
```

Note: you will be prompted whether you wish to print via the Base Station or not. Select No (ESC) here – this will ensure correct printing through the cradle. Do not select the Base Station as a printer at any time whilst using the cradle.

Defining Configuration

This is used to define various features of the Vitalograph 2120 such as the setting of the date and time. Select **Config** in the **Setup** menu.

```

Set Configuration
> DATE * INTERP
TIME * SOUND
PREDICT
  
```

Setting the Date

This is used to set up the current date and date format. Select **Date** in the **Configuration** menu.

```
Set the Date
Year      2001
Month     10
Day       18
```

Setting the Time

This is used to set up the current time. Select **Time** in the **Configuration** menu.

```
Set the Time
Hour      10 <
Minute    44
Second    00
```

Setting Predicted Values

This is used to enable or disable the availability of predicted values with test results and if enabled, a correction factor can be applied to these predicted values. Select **Predict** in the **Configuration** menu.

```
Set Predicted Values
> *ENTER DEMOGRAPHICS
  RACE CORRECTION
```

If Enter Demographics is disabled, then patient demographics is not required to be entered before testing.

```
Set 'Other' Race
Correction Factor
Factor : 100% <
Press ↓ to Continue
```

If you wish to offset the predicted values for the 'Other' race option, select Race Correction. Use the ▲ or ▼ button to set **Factor**. An offset of between 50 % and 150 % can be set.

Setting Interpretation

This is used to enable or disable interpretation of results on the printout. Select **Predict** in the **Configuration** menu.

Setting Sound

This is used to turn off or turn on a tone which sounds with key presses and also acts as feedback while a test is being performed. Select **Sound** in the **Configuration** menu.

Defining Smart

The Smart feature is used to automate actions you perform routinely by leading you through a sequence of functions such as performing an FVC test, running a post test, printing test results, and so on.

In Smart, when you turn on the Vitalograph 2120, you are led through a sequence of displays that depend on the selected functions.

(Be careful not to press the ESC button unless you wish to exit from Smart.)

In order to set up Smart, select **Config** in the **Setup** menu.

```
S e t   S m a r t   F e a t u r e s
      <   O n
    T E S T S           P O S T
  * P R I N T
```

Smart can be enabled or disabled here by simply pressing the \downarrow button.

Selecting Test shows what test types can be performed. An asterisk is displayed to show it has been selected. At least one test must be selected.

```
S e t   S m a r t   T e s t s
>   V C
  * F V C
```

Select whether printing and post testing should occur as part of Smart mode. An asterisk is displayed to show it has been selected.

About the Software

This is used to obtain information about the software. This information should be used if any queries are made to Vitalograph or a service agent. Select **Config** in the **Setup** menu.

CHECKING ACCURACY

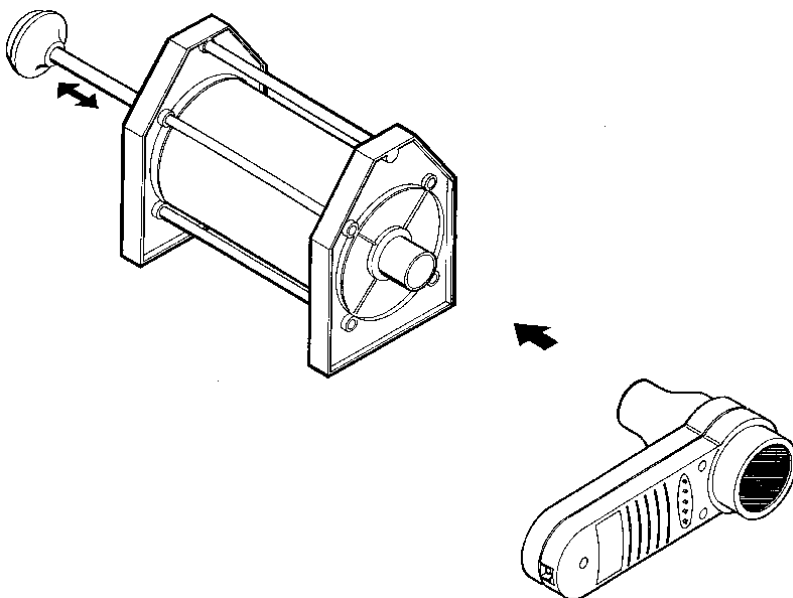
When you turn on the Vitalograph 2120, it displays the date that accuracy was last checked on the unit.

In accordance with the international standards governing spirometry, it is recommended that accuracy is checked daily.

ATS recommendations require that the difference between the volume measured by the spirometer and the volume pumped into the spirometer from the syringe is within 3%.

Attaching the Syringe to the Vitalograph 2120

Attach the Vitalograph 2120 to the precision syringe as illustrated in the following diagram i.e. with the on/off switch towards the table. It is recommended that the Vitalograph 1 Litre Syringe be used. This has an accuracy of $\pm 0.5\%$. If the flowhead has recently been used for testing then the temperature must be lowered to ambient by pumping room air through it prior to calibration using the syringe.



Select **Calib** in the main menu.

```
Set Ambient Temp
Temperature : 20 °C <
Press ↓ to Continue
```

The ambient temperature must be entered. Note that this will only have to be entered once while the unit is switched on. If a temperature of over 40 is entered, then it will be accepted as Fahrenheit.

```
Set Syringe volume
Volume : 1 <
Press ↓ to Continue
```

Select the syringe volume type using the ▲ or ▼ buttons. It is very important to set this up correctly, otherwise, the accuracy check will not function properly. Note: If you are using a 3-L Syringe the Volume should be '3'.

```
Inject Syringe into  
instrument now. Wait  
for audio feedback  
to repeat.
```

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.

With an even stroke, pump the contents of the syringe into the unit. The stroke must be at least one second in duration.

Wait for a double beep, withdraw the syringe piston fully and repeat stroking until five beeps occur. It is very important to wait for the double beep before withdrawing the piston each time.

```
Vol. difference with  
previous cal.: +1.5%  
Accuracy check over  
Press ↵ to Continue
```

The accuracy check is now complete. Press ↵ to continue. You will be prompted for an accuracy check report. 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).

```
Calibration OK  
Do you require a  
printout?  
↵ = Yes ESC = No
```

If the device's accuracy is outside the recommended limits, then a calibration update will be recommended.

```
Calibration update  
recommended. Do you  
wish to continue?  
↵ = Yes ESC = No
```

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.

ENTERING OR SELECTING PATIENT INFORMATION

In order to save results to the database, an ID must be assigned to a patient prior to testing. You can:

- enter information for a new patient
- or
- recall information previously entered for a patient

Entering a New Patient

Select **Patient** in the main menu.

```
P a t i e n t   I D :
>  A U T O           R E C A L L
   M A N U A L
```

For a quick, automatically assigned ID, select **AUTO** (this is based on the serial number of the Vitalograph 2120 device and today's date).

```
N e w   P a t i e n t   I D
0 2 0 1 5 _ 2 1 1 2 9 5 P 3
S e x   M <   H e i g h t   1 4 0
A g e   2 5   R a c e   C a u c
```

or,
For a specific ID, select **MANUAL** (e.g. if the patient's name is required as the ID).

```
E n t e r   P a t i e n t   I D
                                     <
S e x   M <   H e i g h t   1 4 0
A g e   2 5   R a c e   C a u c
```

Using the ▲ or ▼ 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. Press ↵ to select the character. Follow this procedure to select further characters in the ID, if required. At any stage, if a mistake is made, use the DEL button to correct.

After you press the ↵ button to accept the last character of the code, press the ↵ button again and the cursor moves to the Sex field.

Note: if no ID is entered, demographics may be entered and tests can be performed but no results will be saved.

Press the ▲ or ▼ button to display 'F' if the patient is female, and press the ↵ button.

Press the ▲ or ▼ button to display the correct age of the patient, and press the ↵ button.

Press the ▲ or ▼ button to display the correct height of the patient, and press the ↵ button.

Press the ▲ or ▼ button to select the required race option, and press the ↵ button.

Selecting an Existing Patient

If a patient has previously performed a test and that patient's details are already stored in the database, select **Recall** in the **Patient** menu.

```
Select Patient ID ↓
0 2 0 1 5 _ 2 1 1 2 9 5 P 3 <
1 2 3 4
J O H N S M I T H
```

Press the ▼ button to move the cursor to the Patient ID you wish to select and press the ↵ button to make the selection.

PERFORMING TESTS

You can use the Vitalograph 2120 to perform two types of tests: VC and FVC. Select Test in the main menu. You must first select a patient or create a new one.

Entering temperature

Before proceeding, the ambient temperature must be entered. Note that this will only have to be entered once while the unit is switched on. If a temperature of over 40 is entered, then it will be accepted as Fahrenheit.

```
Set Ambient Temp .
Temperature : 20 ° C <
Press ↵ to Continue
```

Performing a VC Test

Ensure that a new mouthpiece is inserted into the Vitalograph 2120 for a new patient. Select **VC** in the **Test** menu.

```
PERFORM VC TEST
```

Read the following instructions to the patient so that testing is performed properly.

- Stand up.
- Take hold of the unit, keeping it a vertical position and away from your mouth (ensure that the device is not jerked while handing it to the subject).
- Inhale as deeply as possible and insert the mouthpiece into your mouth, clamping it between your teeth.
- Close your lips round the mouthpiece.
- Exhale normally for as long as possible.

Testing will be accompanied by audible feedback if **Sound** is selected in the **Setup** menu.

```

T e s t   # 1   c o m p l e t e
R e a d y   f o r   n e x t   b l o w
↑   a n d   ↓   f o r   r e s u l t s
o r   E S C   t o   e n d   t e s t s

```

You can press the ▲ or ▼ button if you wish to view test quality messages, predicted and measured results.

The unit is ready to accept another test at any time. If **Sound** is enabled two beeps will occur. The display is updated with the new results. When you have finished VC testing, press the ESC button.

After performing a test, ensure that the unit is placed in the cradle.

Performing an FVC Test

Ensure that a new mouthpiece is inserted into the Vitalograph 2120 for a new patient. Select **FVC** in the **Test** menu.

```

P E R F O R M   F V C   T E S T
E x p i r a t o r y   o n l y

```

Read the following instructions to the patient so that testing is performed properly.

- Stand up.
- Take hold of the unit, keeping it in a vertical position and away from your mouth (ensure that the device is not jerked while handing it to the subject).
- Inhale as deeply as possible and insert the mouthpiece into your mouth, clamping it between your teeth.
- Close your lips round the mouthpiece.
- Exhale as quickly as possible and try to keep exhaling for at least 6 seconds.

Testing will be accompanied by audible feedback if **Sound** is selected in the **Setup** menu.

- If inspiratory parameters are required, continue with next step.
- Inhale as quickly as possible until your lungs have filled up again.

```
S l o w   s t a r t   o f   t e s t
A b r u p t   e n d   o f   t e s t
D u r a t i o n   4 . 6
W A I T   P L E A S E
```

Quality messages like this will be shown on screen for a few seconds. This relates to the manoeuvre just performed.

```
T e s t   # 1   c o m p l e t e
R e a d y   f o r   n e x t   b l o w
↑   a n d   ↓   f o r   r e s u l t s
o r   E S C   t o   e n d   t e s t s
```

The unit is ready to accept another test when two beeps occur (if **Sound** is enabled).

Press the ▲ or ▼ to move through a quality summary of the test session to date and the pre-configured indices, predicted and measured results.

	LAST	BEST
F V C	5 . 3 5	5 . 3 6
F E V 1	5 . 1 2	5 . 1 2
P E F	5 2 4	5 2 4

Repeat the above procedure until the unit beeps five times.

```
S u c c e s s f u l   s e s s i o n
      T e s t i n g   o v e r
P r e s s   ↓   f o r   m e n u   o r
↑   a n d   ↓   f o r   r e s u l t s
```

Note: if, for some reason, it is required that testing continue, simply press ESC to proceed.

After performing a test, ensure that the unit is placed in the cradle.

PERFORMING POST TESTS

Bronchodilation or provocation testing may be performed in Post mode. Post tests can be performed on a patient who has been previously tested. Select **Post** in the main menu.

Post testing can be performed on the current patient or can be performed on a previously stored patient.

```
Select Post Type
> CURRENT
  RECALL PATIENT
```

Testing can continue as described previously.

VIEWING TEST RESULTS

The results for indices are displayed automatically when you perform a test. You can also view the current test results or previously stored results for all the indices selected in the **Setup** menu. Patient demographics can also be recalled for viewing. This achieved by selecting **View** in the main menu.

```
Select View Option
> CURRENT TEST
  RECALL TEST
  PATIENT DATA
```

If selecting a test to view, then you will be faced with a screen like this.

```
Select Test
13 : 12  12 / 12 / 95  V <
13 : 12  12 / 12 / 95  F p
13 : 20  12 / 12 / 95  F
```

Press the ▼ button to move the cursor to the test you wish select.

Note: a test marked with 'p' signifies that it is a post test.

Patient demographics can be recalled for viewing by selecting **Patient Data** and the appropriate patient.

```
Patient Demographics
02015_211295P3
Sex M< Height 140
Age 25 Race Cau
```

PRINTING TEST RESULTS

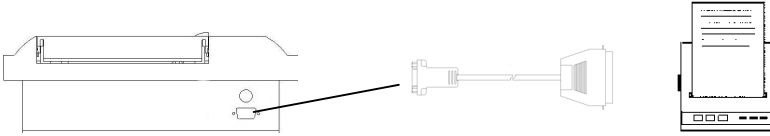
The Vitalograph 2120 is capable of printing informative, well presented reports. Ensure that the correct printer is selected in the **Setup** menu as previously described.

There are three choices available for printing test results:

- printing the results of the current test
- printing the results of all stored tests for all patients
- printing the results of a particular test stored for a specified patient

Connecting to a Printer

For printing, the Vitalograph 2120 Printer Cable (2120505) is required to interface between the cradle and the parallel port of the printer. Use the following procedure.



1. Ensure everything is powered off and unplugged before setting up.
2. Connect Printer Cable (2120505) to the serial port of the cradle.
3. Connect the other end of the Printer Cable to the printer.
4. Switch the printer on.
5. Plug the power supply into the cradle.

Printing Results

Select **Print** in the main menu. Ensure that the printer is switched on and that the Vitalograph 2120 is placed in the cradle.

```
Select Print Option
> CURRENT
  ALL
  RECALL
```

If a test has just been completed, select **Current** to print the results.

It is recommended that test results are archived daily. This can be achieved by selecting the All option.

A patient can also be recalled from the database for printing.

Note: as soon as the Vitalograph 2120 returns to the main menu, it can be lifted from the cradle – but not beforehand.

DELETING PATIENT INFORMATION AND / OR TEST RESULTS

There are four choices available for data deletion:

- all tests and all patient information
- all tests for all patients but no patient information
- all tests for a specified patient and his or her patient information
- all tests for a specified patient but no patient information

Select **Delete** in the main menu.

```
Select Delete Option
> ALL PATIENTS
   ONE PATIENT
```

Deleting All Patients

```
Select Delete Option
> Results only
   Patient & Results
```

Selecting **Results only** will delete the results for all the patients in the database but not the patient demographics.

Selecting **Patient & results** will delete everything from the database - results and patient demographics.

Deleting One Patient

```
Select Patient ID ↓
02015_211295P3 <
1234
JOHNSMITH
```

Select the appropriate patient.

```
Select Delete Option
> Results only
   Patient & Results
```

Selecting **Results only** will delete the results for this patient but not the patient demographics.

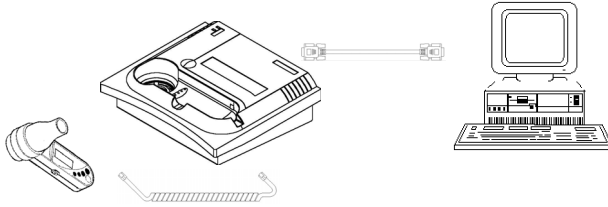
Selecting **Patient & results** will delete this patient and the associated results.

USING THE VITALOGRAPH 2120 WITH SPIROTRAC

Spirotrac is Vitalograph's PC based spirometry system. For more information, contact your local sales agent.

In order to use the Vitalograph 2120 with Spirotrac, the Spirotrac Connectivity Kit (74075) must be purchased.

To connect the Vitalograph 2120 to Spirotrac, connect the hand-held device to the cradle with the coily cable as illustrated below. Then connect the cradle to the PC with the 9 way to 9 way serial cable.



For further information on setting up Spirotrac, consult the Spirotrac user manual.

CLEANING AND DISINFECTING THE VITALOGRAPH 2120

Part	Material	Cleaning	Disinfecting
Case exterior	A.B.S.	Lint-free damp cloth. Ambersil. Do not use solvents.	Mild liquid disinfectant wipe over.
Flowhead cone	T.P.X.	Mild detergent. Flush with clean water. Brush off any deposits. Dry thoroughly.	Mild liquid disinfectant. Flush with clean water. Dry thoroughly. Autoclaving (15 minutes @ 134°C)
Flowhead mesh	Acetal and polyester	Disposable	Disposable
End cap	T.P.X.	Mild detergent. Flush with clean water. Brush off any deposits. Dry thoroughly.	Mild liquid disinfectant. Flush with clean water. Dry thoroughly. Autoclaving (15 minutes @ 134°C).

Fleisch element assembly	Anodized aluminium stainless steel	Mild detergent. Flush with clean water. Brush off any deposits. Dry thoroughly.	Soak in disinfectant to manufacturer's recommendation. Autoclaving (15 minutes @ 134°C) - replace the seals every 50 cycles.
Contact pins	Tin plated brass	Use cotton bud doused with alcohol based fluid (e.g. propane)	N/a

EXPLANATION OF SYMBOLS



Type BF equipment



Class II

VA

Power rating

V

Voltage DC



Attention (reference relevant section in manual)

Other labels

10101

Serial connector

V
10

Power input connector

O

On (I) / Off (O) switch

I

Power indicator

I

Docking indicator



CONSUMABLES/ACCESSORIES

Cat. No.	Description
20201	Cardboard Mouthpieces (Box of 200)
20202	Mini (Paediatric) Mouthpieces (Box of 400)
20242	Safety Mouthpieces (Box of 200)
20302	Mini Mouthpieces Adaptor (Paediatric)
20303	Noseclips (Pack of 10)
20408	1 Litre Calibration Syringe
28200	Bacteria/viral Filters (Box of 50)
42084	Filter Meshes (Pack of 10)
74075	Spirotrac to Cradle Connectivity Kit
2100011	Serial Print Adaptor
2120505	2120 Printer Cable

Spare Parts


Cat. No.	Description
32297SPR	Mains Cable - UK
32375SPR	Mains Cable - USA
32376SPR	Mains Cable - Schuko
62019SPR	Flowhead Cone
62006SPR	Flowhead End Cap
62094SPR	Carrying Case
74076	2120 to Cradle Coily Cable
76062	9 Way to 9 Way Serial Cable
21001204	Power Supply
2120060	Serial Cable

TECHNICAL SPECIFICATIONS

Flow detection principle	Fleisch type pneumotachometer
Back pressure	0.1kPa/litre/second, complies with or exceeds ATS standards.
Volume measurement	Flow integration
Maximum recorded flow rate	$\pm 141/s$
Maximum recorded volume	>8 litres
Measuring accuracy	Better than $\pm 3\%$ or ± 0.051 volume whichever is greater and $\pm 5\%$ flow (inspiratory: $\pm 5\%$ vol., $\pm 8\%$ flow)
Operating temperature	15-40°
Safety standards	Designed to conform to EN60601-1, EN60601-1-2
Spirometric standards	ATS and ERS
Power supply	Input 98V - 264V AC

Battery	Output 10V @ 3A 3.6V Rechargeable Nickel Cadmium (3 x AA size) Capacity = 0.6Ah
Fuse	500mA
Size (Vitalograph 2120)	215x130x70mm
Weight (Vitalograph 2120)	520g
Size (cradle)	300x250x130mm
Weight (cradle)	1.35Kg
Storage Temperature	0-50°C
Storage Relative Humidity	10% - 95%

CE Notice

Marking by the symbol  indicates compliance of the Vitalograph 2120 to the Medical Devices directive of the European Community. Such marking is indicative that the Vitalograph 2120 meets or exceeds the following technical standards:

- EN60601-1 - “General requirements for safety”
- EN55011 - “Radiated and mains conducted emissions for industrial, scientific and medical (ISM) radio-frequency equipment”
- IEC801-2 - “Electromagnetic compatibility for industrial-process measurement and control equipment Part 2: Electrostatic discharge requirements.”
- IEC801-3 - “Electromagnetic compatibility for industrial-process measurement and control equipment Part 3: Radiated electromagnetic field requirements.”

FDA Notice

Caution: Federal Law restricts this device to sale by, or on the order of a physician.

CUSTOMER SERVICE

Service and repairs should be carried out only by the manufacturer, the approved importer or by Service Agents specifically approved by Vitalograph.

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

Vitalograph Ltd., Maids Moreton, Buckingham, MK18 1SW, England
Phone: (01280) 827110 Fax: (01280) 823302
e-mail: sales@vitalograph.co.uk Internet: www.vitalograph.co.uk

Vitalograph GmbH, Jacobsenweg 12, 22525 Hamburg, Germany
Phone: (040) 54 73 91-0 Fax: (040) 547 391 40
e-mail: info@vitalograph.de Internet: www.vitalograph.de

Vitalograph Inc., 8347 Quivira Road, Lenexa, Kansas 66215, U.S.A.
Phone: (913) 888-4221 Fax: (913) 888-4259
e-mail: vitcs@vitalograph.com Internet: www.vitalograph.com

Vitalograph (Irl.) Ltd., Ennis Industrial Estate, Gort Road, Ennis, Co. Clare, Ireland
Phone: (065) 6864100 Fax: (065) 6829289
e-mail: sales@vitalograph.ie Internet: www.vitalograph.ie

GUARANTEE

Terms of Guarantee

Subject to the conditions listed below, Vitalograph Ltd. and its associated companies, (hereinafter called the Company) guarantee to repair or at its opinion replace any component thereof, which, in the opinion of the Company is faulty or below standard as a result of inferior workmanship or materials.

The conditions of this Guarantee are:

1. This Guarantee shall only apply to hardware defects which are notified to the Company or to its accredited distributor within 1 year of the date of purchase of the equipment, unless otherwise agreed in writing by the Company
2. Software (meaning computer software, or user installable modules) is guaranteed for 90 days from the date of purchase.
3. The Company warrants that the software when correctly used in conjunction with the hardware will perform in the manner described in the Company's literature and user manuals. The Company undertakes to rectify at no expense to the customer any software failure notified within the period stated above, provided that the failure can be recreated and the software has been installed and used in accordance with the user manual. Notwithstanding this clause, the software is not warranted to be free of errors.
4. This Guarantee does not cover any faults caused by accident, misuse, neglect, tampering with the equipment, use of consumable items or parts not approved by the Company, or any attempt at adjustment or repair other than by personnel accredited by the Company, nor does it cover reinstatement of any configuration changes caused by the installation of any software.
5. If a defect occurs, please contact the supplier from whom it was purchased for advice. The Company does not authorise any person to create for it any other obligation or liability in connection with Vitalograph® equipment
6. This guarantee is not transferable and no person, firm or company has any authority to vary the terms or conditions of this Guarantee.
7. To the maximum extent permitted by law, the Company does not accept liability for any consequential damages arising out of the use of, or inability to use any Vitalograph® equipment.
8. This Guarantee is offered as an additional benefit to the Consumer's statutory rights and does not affect these rights in any way.