

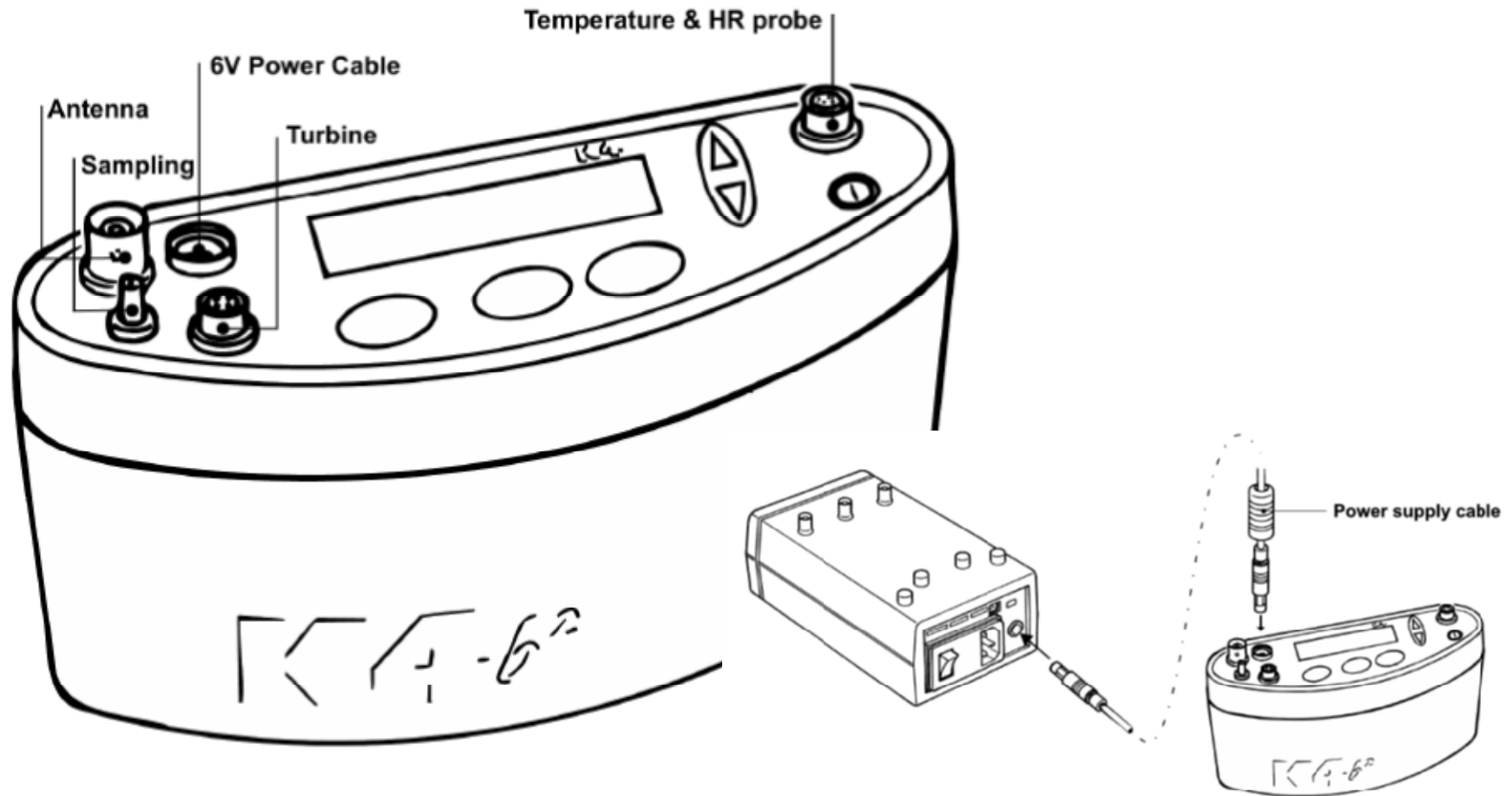
# Cosmed K4b2 User Guide



# Initial Mains Set-Up

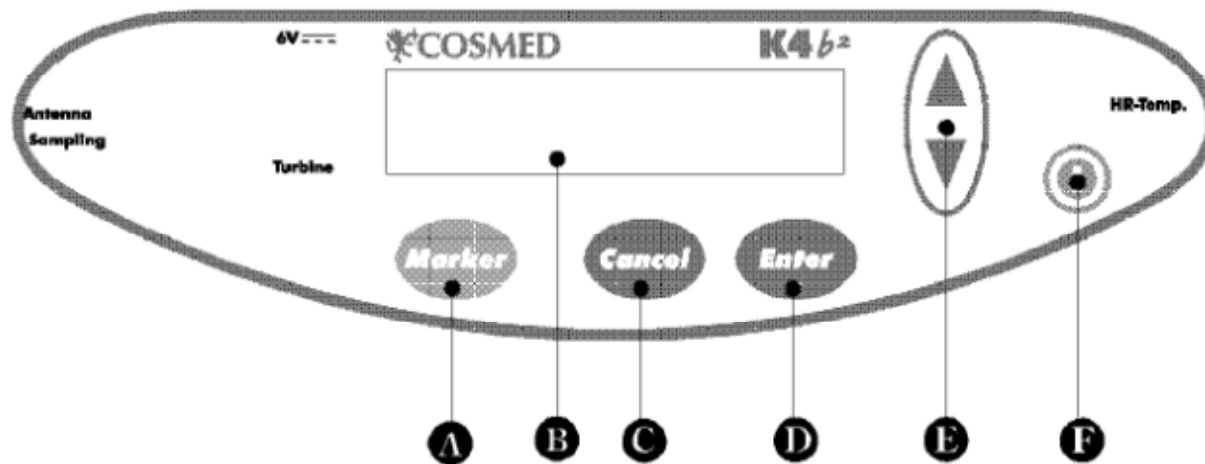
- Connect up 6V power cable to unit and plug in

## Connections



# Initial Set-Up

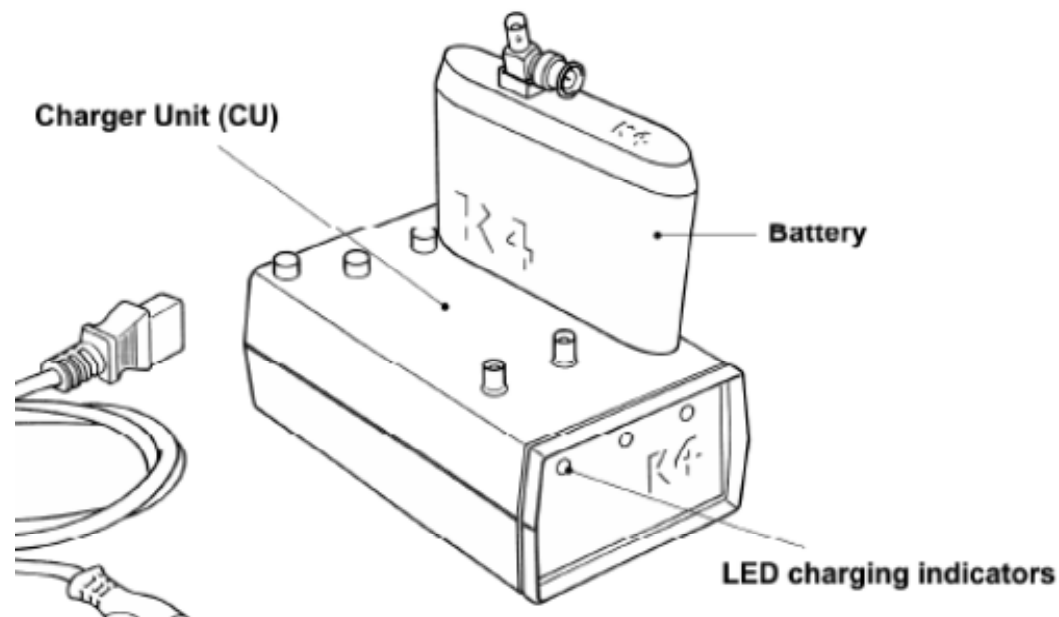
- Power on the main unit (F) and warm up for 15 minutes



- A Marker key
- B Display
- C Cancel key
- D Enter key
- E Scroll up/down key
- F On/Off switch

# Set-Up – Battery Charging

- Charge batteries during warm-up until green light starts blinking to indicate full charge



# Example connection



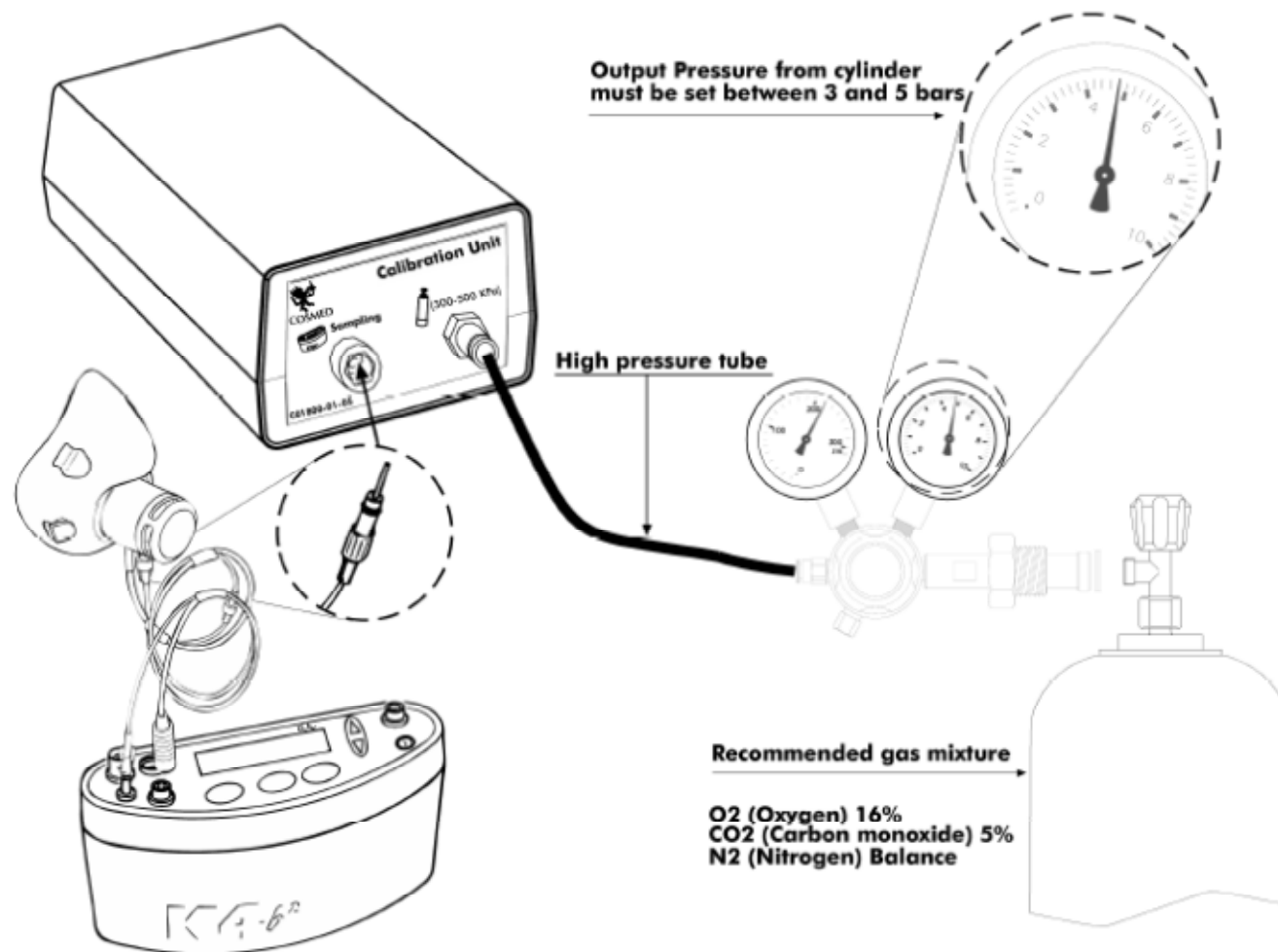
# Room Air Calibration

- Once the K4b2 has warmed up sufficiently the sensors will need to be calibrated. Firstly room air calibration will need to be carried out.
- Connect the K4b2 to the PC via the RS232 cable. Remove the sampling line from the unit also.
- Select the calibration tab and run calibration program - choose room air.
- Room air calibration in progress with appear and will say calibration done once completed.
- If the values are in black and not red then the values are within the set limits

Analyzers Calibration Results	
Date:	21/01/97
Time from start-up:	0.06.33
Air temperature (°C):	20
Internal temperature (°C):	25
Atmospheric pressure (mmHg):	739
Analyzers pressure (mmHg):	731
Humidity (%):	50
<b>Oxygen</b>	
Cylinder (%):	15.05
Base line (mV):	-296
Gain:	1023
Delay (ms):	673
<b>Carbon Dioxide</b>	
Cylinder (%):	6.02
Base line (mV):	526
Gain:	1605
Delay (ms):	592
OK    Cancel    Default    Help	

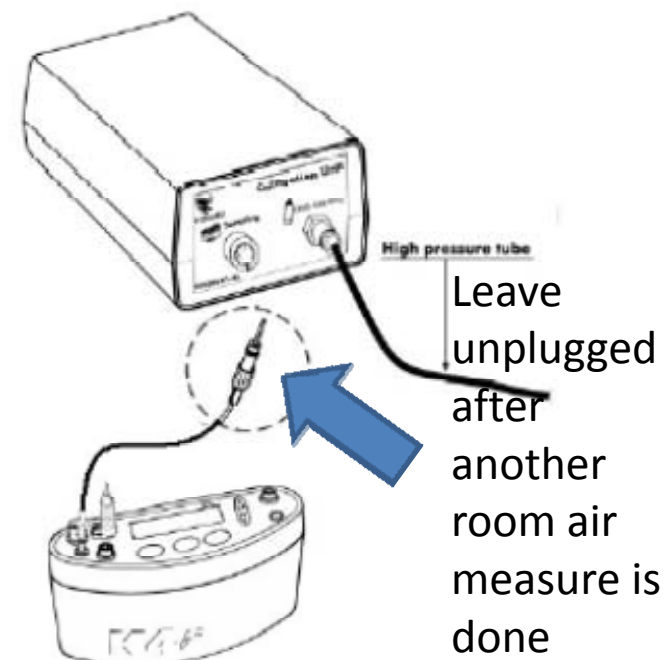
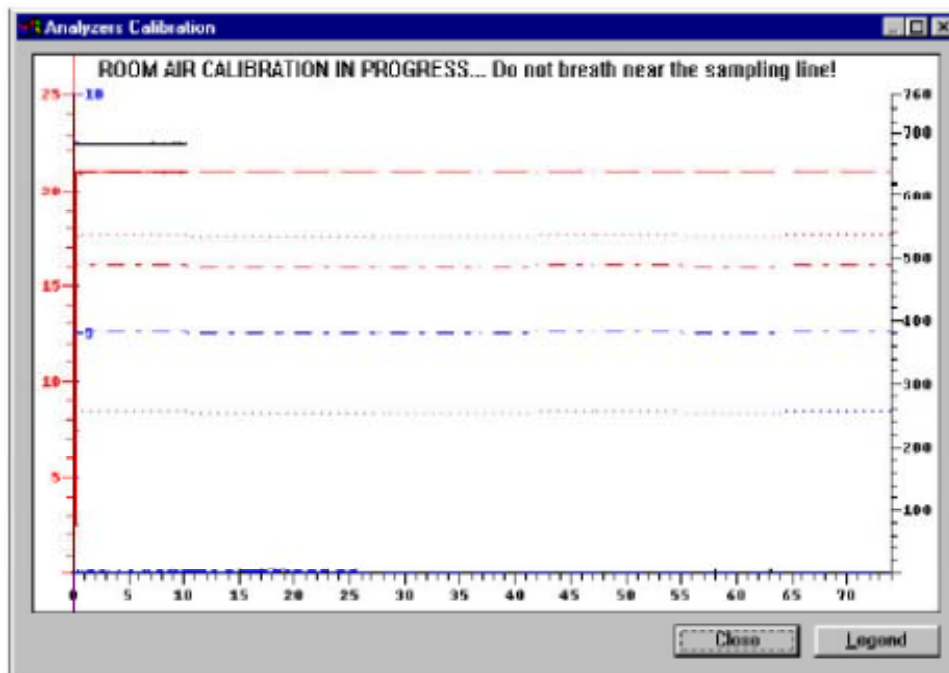
# Reference Gas Calibration

- Reference gas calibration with the following gas concentration (O<sub>2</sub> = 16%, CO<sub>2</sub> = 5%, N<sub>2</sub> = Balance) is required.



# Reference Gas Calibration

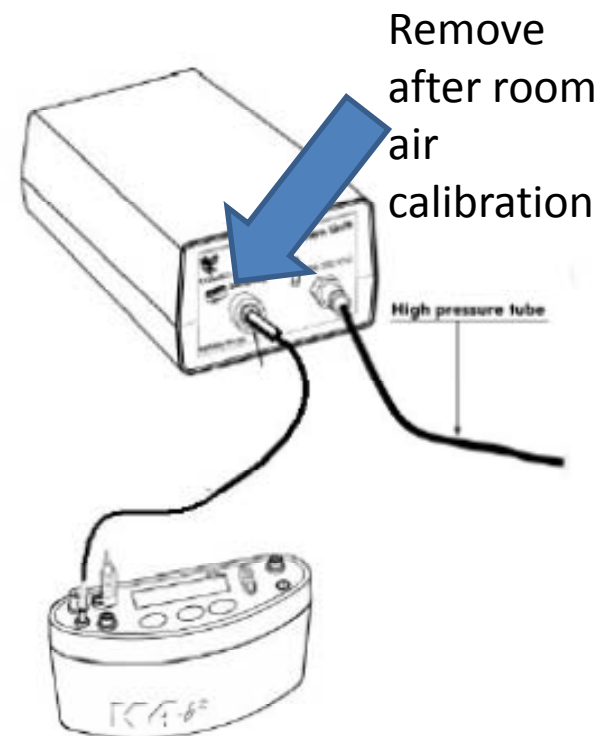
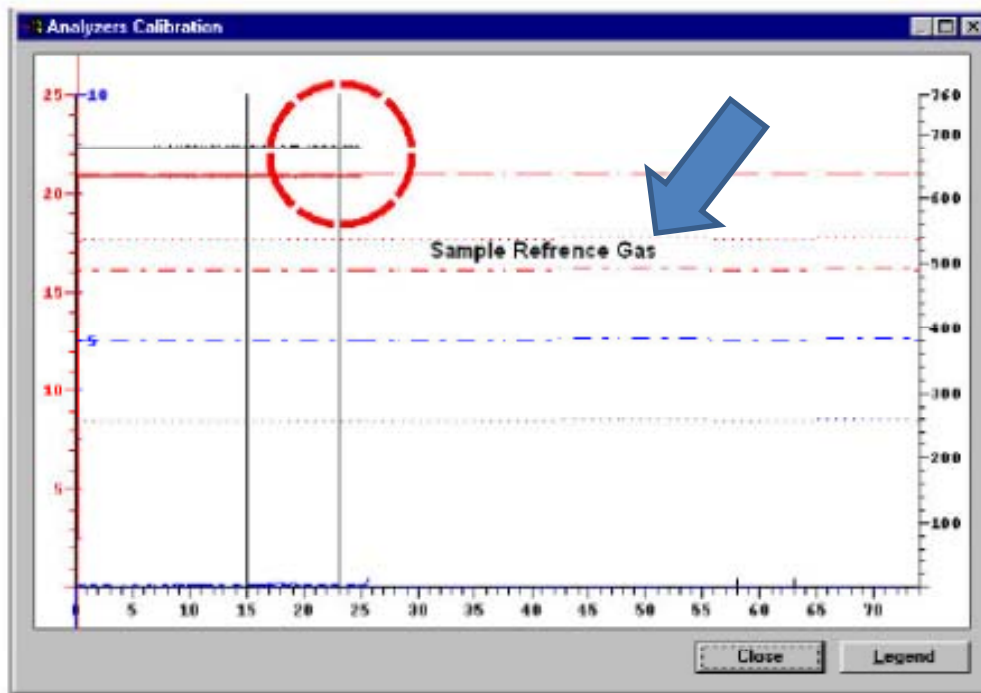
- Connect high pressure tube to the cylinder plug.
- Ensure the K4b2 unit is connected to the PC and remove the gas sample line from the reader.
- On the software choose 'gas' from the calibration menu, ensure the sample line is not plugged in as it runs another room air calibration initially
- Leave the switch on the gas line in the off position (no gas can be felt coming out of the end). Once the room air calibration has completed on this stage remove the sample line from the calibration box.
- Open the cylinder valve by turning the black lever (the dials are already set to the required values (3-5 Bar) so do not change these).





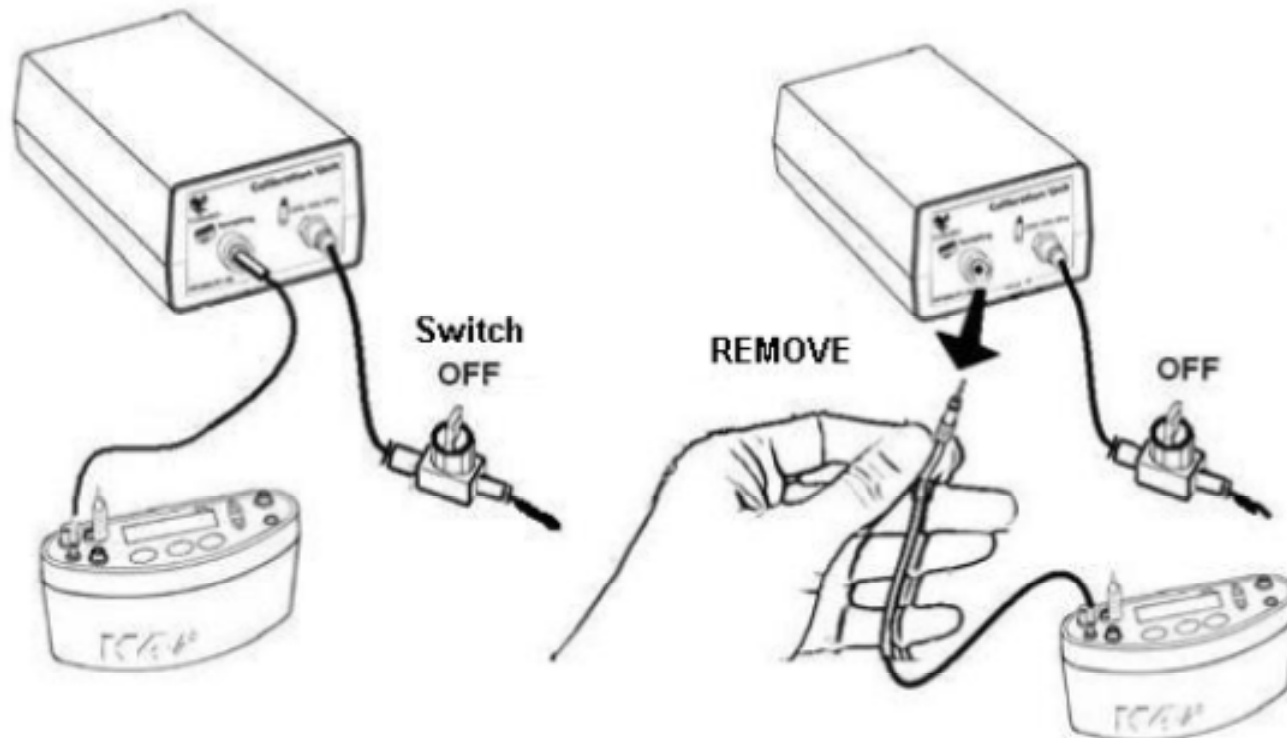
# Reference Gas Calibration

- When the message 'sample reference gas' appears plug in the gas sample line to the calibration unit



# Reference Gas Calibration

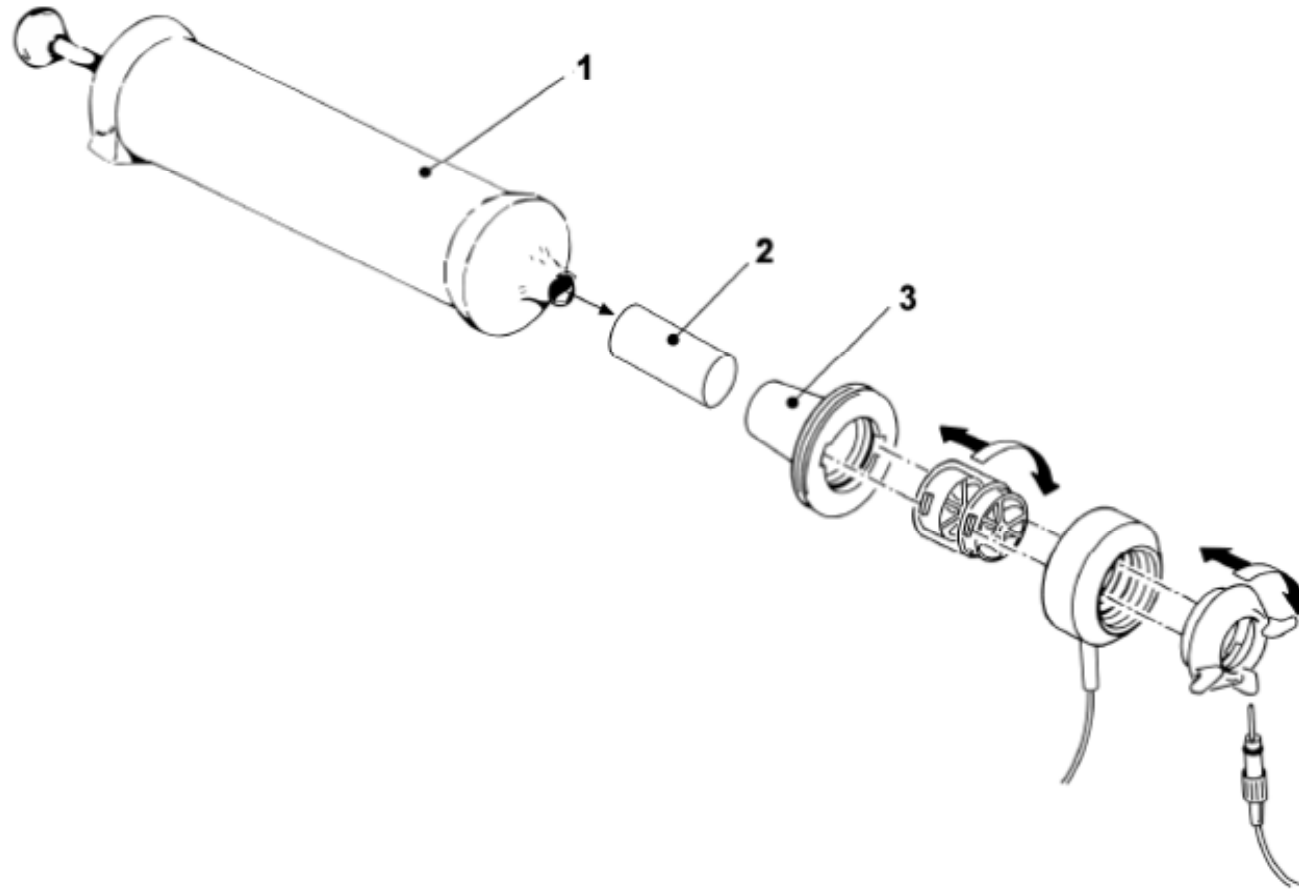
- 'Calibration done' will appear, click ok to confirm the values
- Remove the sample line and close the cylinder



# Gas Delay Calibration (Weekly)

- Connect K4 to the PC and remove the sampling line from the reader
- Run calibration program and choose 'delay' from the calibration menu
- A room air calibration will take place initially, then a message will tell you to connect the sample line to the flowmeter, press ok once this is done
- Breathe into the mask in time with the beeps that begin (inhale on one, exhale on the next)
- Repeat until it says calibration done and press ok

# Turbine Calibration - Assembly



1. Syringe
2. Silicone tube
3. Adaptor for calibration syringe.

# Turbine Calibration

- Select 'reference values' from the 'file' menu (default 3 litres)
- Select calibration/turbine, a dialog box will appear showing the IN/EX strokes of the syringe (5 IN and 5 EX strokes in total)
- The box will display the % error. Press OK once completed

**Turbine Calibration Results**

Date: 26/01/97  
Syringe (ml): 3000

Type (mm):

Gain Exp.:

Gain Ins.:

**Turbine Calibration**

Syringe volume: 3000 ml

**Results**

Exp.	%	Gain	Ins.	%	Gain
3002	+0.07	1046	2993	-0.23	1027
2985	-0.50	1048	2995	-0.17	1028
2972	-0.93	1052	3010	+0.33	1026
2993	-0.23	1052	2993	-0.23	1027
3019	+0.63	1051	2984	-0.53	1027
2992	-0.27	1051	2990	-0.33	1028
2994	-0.20	1051	3004	+0.13	1027
3009	+0.30	1050	3008	+0.27	1027
2988	-0.40	1051	2996	-0.13	1027
2974	-0.87	1051	3006	+0.20	1027

Move the calibration syringe...

# Enter Subject Data

- In the software select 'patient' from the 'file' menu

Patients in archive

Search for:  
 Last name  
 ID code  
 Progressive

Find:

Find... List... New... Cancel

Patient:  
Progr.: 5  
ID code: 3  
Last name: GAS+ECG  
First name: INCREMENTAL  
Sex: M

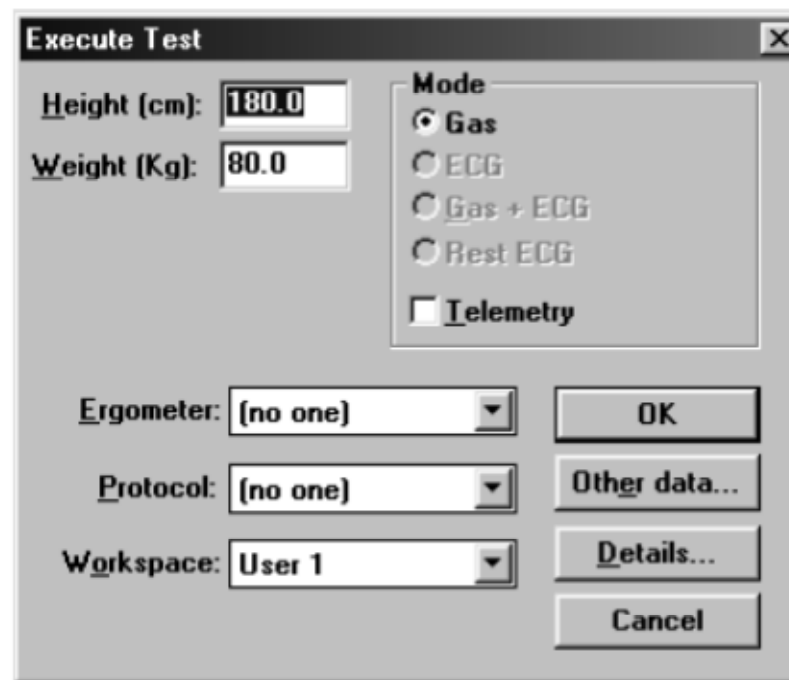
Next  
Previous  
Modify...

Delete... OK ?

- Select patient from a list or press 'new' to enter a new subject. Press ok to confirm.
- You will need to give the subject an ID

# Starting a Test

- Open patient dialogue box, select patient/create a new patient.
- Choose 'Execute test' from the 'test' menu



The screenshot shows a dialog box titled "Execute Test" with a close button (X) in the top right corner. The dialog contains several input fields and a list of options:

- Height (cm):** A text input field containing the value "180.0".
- Weight (Kg):** A text input field containing the value "80.0".
- Mode:** A list of radio buttons and a checkbox:
  - Gas
  - ECG
  - Gas + ECG
  - Rest ECG
  - Telemetry
- Ergometer:** A dropdown menu showing "(no one)".
- Protocol:** A dropdown menu showing "(no one)".
- Workspace:** A dropdown menu showing "User 1".

At the bottom right of the dialog, there are four buttons: "OK", "Other data...", "Details...", and "Cancel".

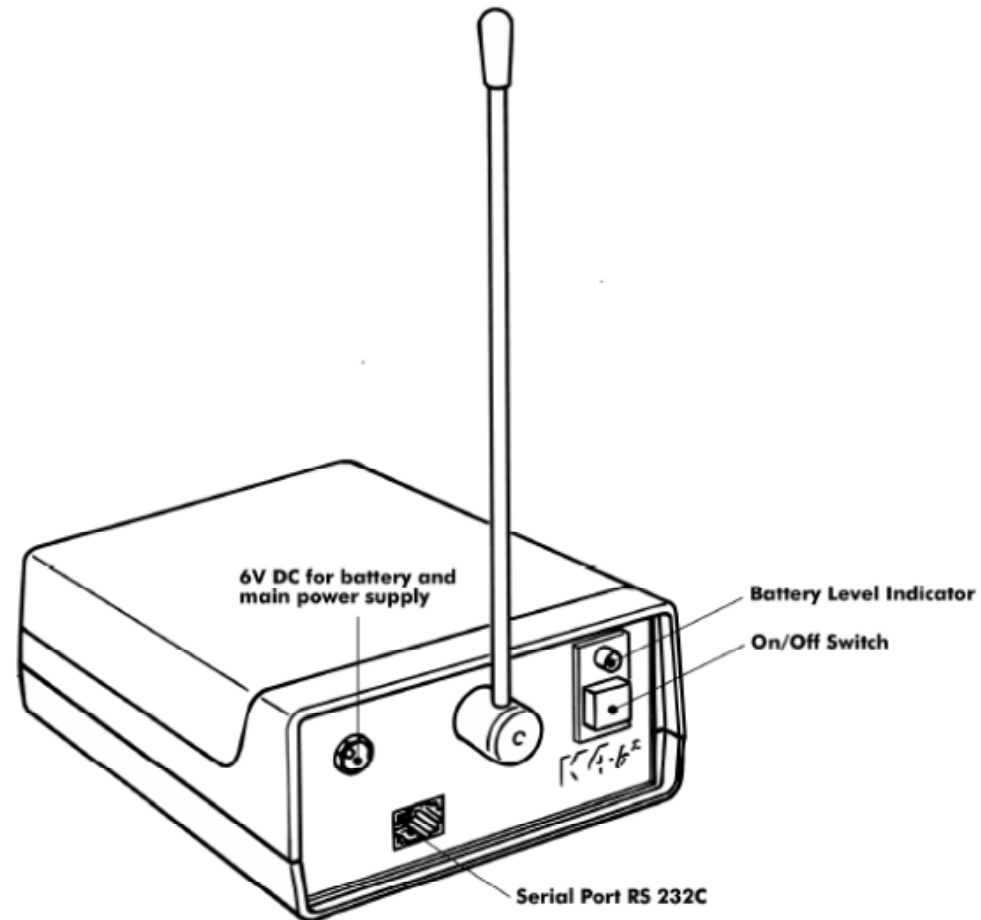
# Starting a Test/Stopping a Test

- Type in the patient information
- Select the data you want to see throughout the test
- The software shows some preliminary breaths, press F2 to begin data recording
- Once data collection is complete, press F3, then OK to confirm the end of testing
- All data is automatically saved
- Data can be exported to excel

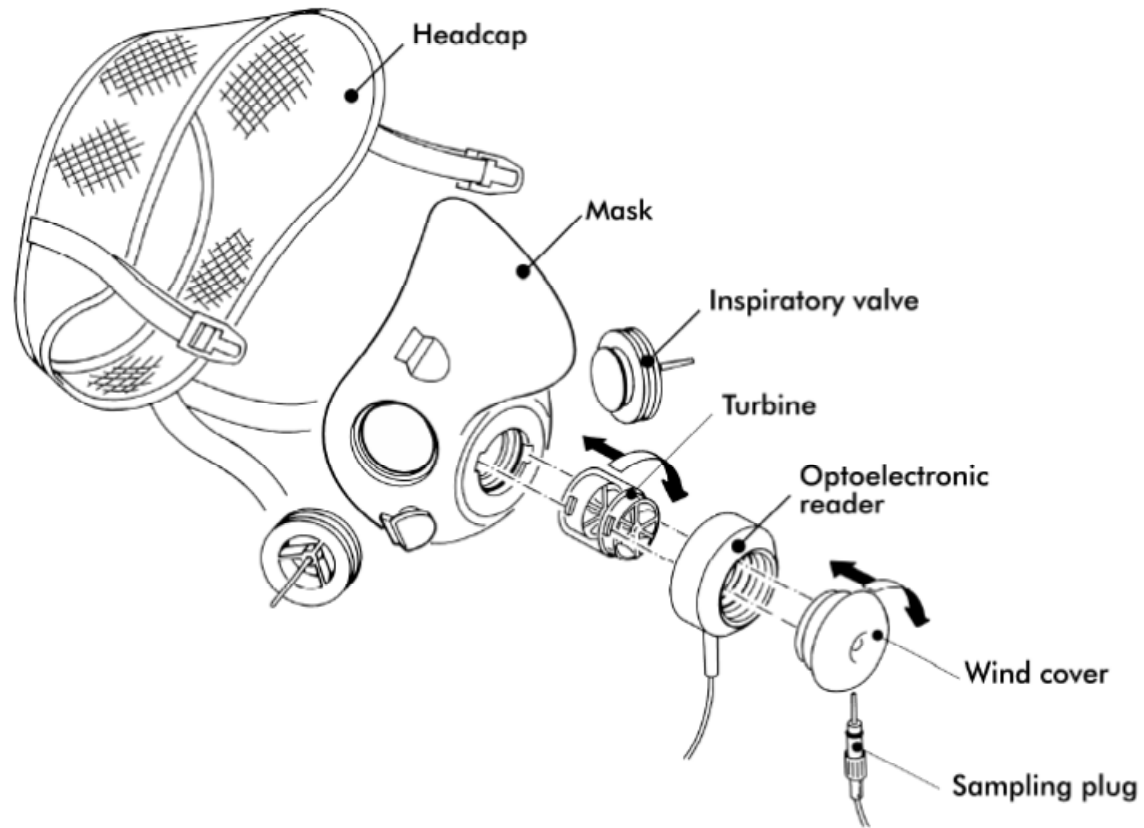


# Receiver Unit

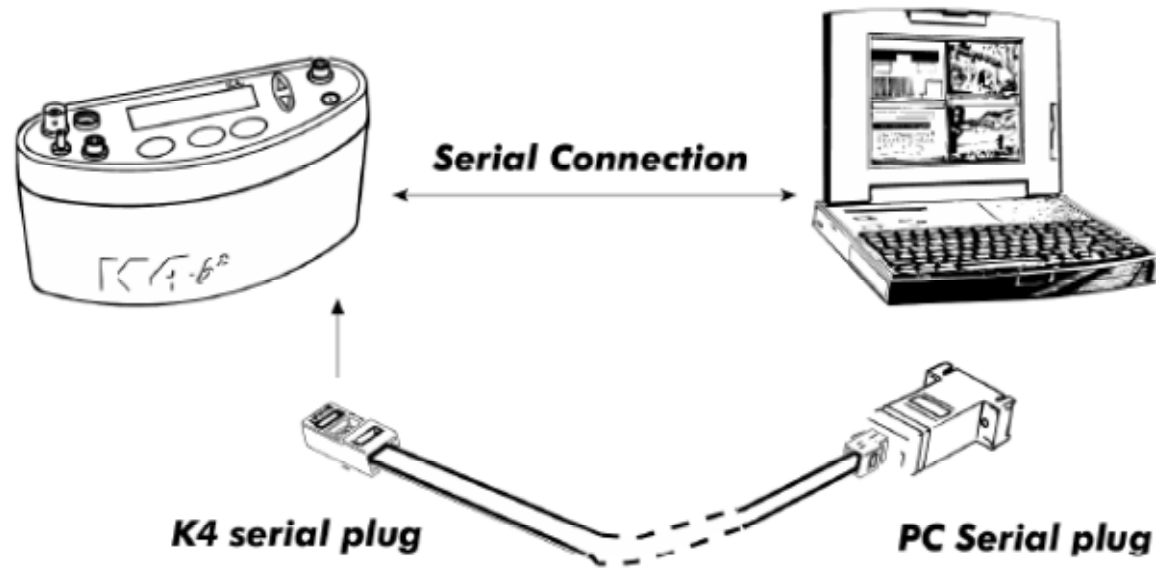
- To see 'live' data, connect the receiver unit to a PC via the RS232 cable
- It has a transmission range of up to 800m
- The data is also stored on the K4b2 unit anyway for download after testing
- The K4b2 unit will need to be set to (INSERT WHICH MODE)
- Also the software needs to be set to (INSERT WHICH MODE)



# Mask Set Up



# USB to PC Connection



# Live data connection

