

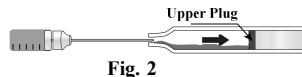
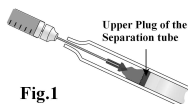
- ★ READ THIS INSTRUCTION MANUAL AND THE INSTRUCTIONS OF THE ASPIRATING PUMP PRIOR TO USING THIS PRODUCT.
- ★ DO NOT DISCARD CAREFULLY THIS INSTRUCTION MANUAL UNTIL ALL THE TUBES IN THIS BOX ARE USED UP.

### ▲ CAUTION FOR SAFETY

- 1) Safety glasses and gloves should be worn to prevent injury from splintering glasses.
- 2) The detector tube and separation tube contain chemical reagents. In case you touch the reagents, wash your hands thoroughly.
- 3) Keep the tubes out of the reach of children.
- 4) Be careful during measurement as using tubes fall off and blood sample may be spattered.

### ▲ CAUTION FOR USE

- 1) Use only with pump models AP-20, AP-20S, 400B, AP-1, AP-1S or 400A. Otherwise, considerable error in indication may occur.
- 2) Before testing, check the aspirating pump for leaks. **(REFER TO ITEM 3. LEAKAGE TEST OF THE ASPIRATING PUMP PRIOR TO USE.)** Any pumps showing signs of leakage should be corrected before use.
- 3) Do not use this tube beyond the stated operating temperature range.
- 4) Store tubes in a cool and dark place (0-25 °C/32-77°F) and use before expiration date printed on the top of the box.
- 5) Read the concentration immediately after drawing the sample.
- 6) Prior to use, read **ITEM 8. USER RESPONSIBILITY** carefully.
- 7) Use a separation tube and a detector tube in a same tube box as a pair.
- 8) Insert blood into the Separation tube as shown in Fig.1. Do not insert blood as shown in Fig.2. Include blood on the entire surface of the upper plug.



## 1. PURPOSE

Use the detector tube for measuring Carbon monoxide (CO) in blood only.

## 2. PERFORMANCE

Measuring Range	20 - 90 %COHb
Sampling Volume	100 mL
Blood Injection Volume	0.2 mL
Sampling Time	5 minutes (100mL, a flow control orifice is required)
Colour Change	Yellow → Blackish brown
Operating Temperature Range	15 - 40 °C (59 - 104°F) (No correction is necessary.)

## 3. LEAKAGE TEST OF THE ASPIRATING PUMP PRIOR TO USE

- ① Insert a sealed, unbroken detector tube into the aspirating pump securely.
- ② Align the guide marks on the handle and the stopper of the aspirating pump.
- ③ Pull the pump handle to a full stroke and wait for 1 minute.
- ④ Unlock the handle and allow it to return slowly into the pump by holding the cylinder and the handle securely.

### ▲ CAUTION HANDLE WILL TEND TO SNAP BACK INTO THE PUMP QUICKLY.

- ⑤ If the handle returns completely to the original position, the performance is satisfactory. Otherwise, refer to the "MAINTENANCE" procedures shown in the instruction manual of the aspirating pump to correct leakage.

## 4. MEASUREMENT



### CAUTION FOR USE

- MAKE SURE TO ATTACH THE FLOW CONTROL ORIFICE TO THE ASPIRATING PUMP PRIOR TO MEASUREMENT AS SHOWN IN Fig.3.
- THE FLOW CONTROL ORIFICE IS AN EXTRA OPTION OF THE PUMP.

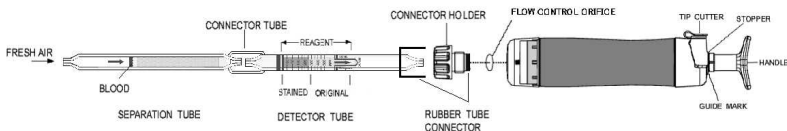


Fig.3

- ① Break both ends of a detector tube and a separation tube.
- ② Connect the detector tube and separation tube with the connector tube as shown in Fig.3.
- ③ Insert the detector tube into the aspirating pump securely. (An arrow mark of each tube should point to the aspirating pump.)
- ④ Take 0.2mL of blood into a syringe and insert it into the separation tube.
- ⑤ Align the guide marks on the handle and the stopper of the aspirating pump.
- ⑥ Pull the pump handle at a full stroke until it locks and wait for 5 minutes to aspirate fresh air.

**Note; If blood clots and stops on the separation tube during the measurement, it is not possible to make measurement correctly even if 5 minutes pass after the aspiration stops. To release CO from the clotting, insert the 0.1 mL of water into the separation tube during the aspiration as shown in Fig. 4.**



Fig. 4

- ⑦ Remove the detector tube from the rubber tube connector and read the scale at a maximum point of a stained layer.

### NOTE

- I. When aspirating the atmospheric air, suck fresh air. If CO is contained in the air, a reading become higher.
- II. Blood from burned body may stop up in the separation tube. Dilute the blood with purified water to 1/2 before the measurement. In this case, the readings multiplied by two is the concentration.
- III. If the blood is more or less than 0.2 mL, correct readings can not be obtained.

## 5. CORRECTION FOR AMBIENT CONDITIONS

- ① Temperature; No corrections is necessary.

**Note; It is impossible to obtain the accurate readings at temperatures outside of the operating temperature range. The low temperature such as less than 15 °C gives lower readings and wide dispersion of readings.**

- ② Humidity; No corrections is necessary.

- ③ Atmospheric Pressure; True concentration = Tube reading  $\times$   $\frac{1013}{\text{Atmospheric pressure (in hPa)}}$

## 6. CHEMICAL REACTION IN THE DETECTOR TUBE



## 7. DISPOSAL OF TUBES

**USED TUBES SHOULD BE DISPOSED CAREFULLY ACCORDING TO RELEVANT REGULATIONS, IF ANY.**

## 8. USER RESPONSIBILITY

It is the sole responsibility of the user of this equipment to ensure that the equipment is operated, maintained, and repaired in strict accordance with these instructions and the instructions provided with each Model AP-20, AP-20S, 400B, AP-1, AP-1S or 400A aspirating pump, and that detector tubes are not used beyond their expiration date or have a colour change different to that stated in the Performance specifications.

The Manufacturer and Manufacturer's Distributors shall not be otherwise liable for any incorrect measurement or any damages, whether damages result from negligence or otherwise.

※ Product specifications are subject to change without any prior notice.