

- ★ READ CAREFULLY THIS INSTRUCTION MANUAL AND THE INSTRUCTIONS OF THE ASPIRATING PUMP PRIOR TO USING THIS PRODUCT.
- ★ DO NOT DISCARD 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 contains 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 aspirating pump models AP-20, AP-20S, 400B, AP-1, AP-1S or 400A. Otherwise, considerable error in indication may occur.
- 2) Before measurement, check for leakage in the aspirating pump (refer to “3. CHECKING PRIOR TO USE (LEAKAGE TEST OF ASPIRATING PUMP)”).
- 3) Do not use the detector tubes beyond the stated operating temperature range.
- 4) Store the detector 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 the measurement.
- 6) Prior to use, read carefully “8.USER RESPONSIBILITY”.
- 7) Use a separation tube and a detector tube in a same 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.

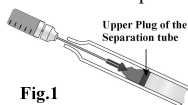


Fig.1



Fig. 2

1. PURPOSE

Use the detector tubes for measuring Ethyl alcohol in blood only.

2. PERFORMANCE

| | |
|-----------------------------|---|
| Measuring Range | 0.2-2.0 mg/mL |
| Sampling Volume | 300 mL |
| Blood Injection Volume | 0.1 mL |
| Sampling Time | 6 minutes (300 mL, a flow control orifice is required) |
| Colour Change | Pink → Pale blue |
| Operating Temperature Range | 0 -40 °C (32 -104 °F) (Temperature correction is necessary.) |

3. CHECKING PRIOR TO USE (LEAKAGE TEST OF ASPIRATING PUMP)

- 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.**

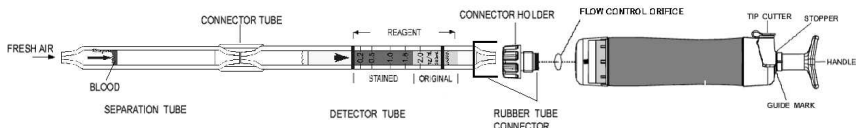


Fig.3

- ① Break both ends of the detector tube and 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 should point to the aspirating pump.)
- ④ Take 0.1mL 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 locked position and wait for 2 minutes.
- ⑦ Push back the handle without removing the detector tube from the rubber tube connector. Then repeat the step ⑤~⑥ twice more.
- ⑧ Remove the detector tube from the rubber tube connector and read the scale at the maximum point of the stained layer.
- ⑨ The scale is calibrated at 20 °C(68 °F). Readings obtained in other circumstances should be corrected by using “5. TEMPERATURE CORRECTION TABLE”.

NOTE

- I. When aspirating the atmospheric air, suck fresh air. If gasoline or organic solvents are contained in the air, the readings become higher.
- II. When the aspiration does not finish within the specified sampling time by hardened sample blood, dilute the blood with purified water and measure it again. In this case, multiply the reading by the dilution ratio to obtain a true concentration.

5. CORRECTION FOR AMBIENT CONDITIONS

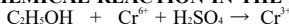
- ① Temperature: Correct the tube reading by following temperature correction table.

| Tube reading (mg/mL) | True Concentration of Ethyl alcohol in blood (mg/mL) | | | | |
|-------------------------|--|------------------|------------------|------------------|-------------------|
| | 0 °C (32 °F) | 10 °C (50 °F) | 20 °C (68 °F) | 30 °C (86 °F) | 40 °C (104 °F) |
| 2.0 | --- | --- | 2.0 | 1.7 | 1.5 |
| 1.5 | --- | 1.9 | 1.5 | 1.3 | 1.1 |
| 1.0 | 2.2 | 1.3 | 1.0 | 0.8 | 0.7 |
| 0.5 | 1.1 | 0.6 | 0.5 | 0.4 | 0.3 |
| 0.2 | 0.5 | 0.2 | 0.2 | 0.2 | 0.2 |

- ② Humidity: No corrections is necessary.

- ③ Atmospheric Pressure: True concentration = Temperature corrected × $\frac{1013}{\text{concentration Atmospheric pressure (in hPa)}}$

6. CHEMICAL REACTION IN THE DETECTOR TUBE



7. DISPOSAL OF TUBE

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 which are either 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.

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