

Extract from: - "District Laboratory Practice in Tropical Countries"  
by *Monica Cheesbrough*  
Part 2. - pages 303-304

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### \*DHT Haemoglobinometer (Direct read-out Hb meter)

This modern electronic direct read-out haemoglobin meter is precalibrated by the manufacturer and therefore requires no calibration standard solutions. A glass control standard is provided for checking the performance of the meter.

Suitability for use in tropical countries The DHT Haemoglobinometer uses inexpensive diluting fluid which is simple to make (no weighing of chemicals) and is stable in tropical climates. The DHT meter measures all forms of haemoglobin (HbO<sub>2</sub>, HbCO, Hi, SHb) by measuring at a wavelength of 523 nm and using a narrow band (10nm) interference filter and green light emitting diode (LED).

Haemoglobin values are digitally displayed in g/l. The measuring range of the meter is 20-300 g/l. The *DHT Haemoglobinometer* is particularly easy to use. The user simply inserts the cuvette and removes it. Placing the cuvette in the cuvette holder automatically turns on the electronic circuitry. In between measurements the meter returns automatically to a standby mode.

The meter requires very little electrical power to measure samples and to maintain the meter in its standby mode. The meter can be operated from mains electricity (220V 50Hz), using an optional 5 V AC/DC adaptor, or from three 1.5V AA type batteries (supplied) \*. It has been estimated that several hundred thousand measurements can be made from one set of three alkaline batteries.

The cuvettes used in the meter are standard size 10mm light-path cuvettes (glass or plastic). The dimensions of the meter are 178mm wide x 127mm deep x 43mm\* high. It weighs approximately 200g (without batteries). It is a sealed unit and the cuvette opening is fitted with a shutter to prevent dust from entering when the meter is not being used.

\* *NB: Power supply and dimension details amended.*

### Diluting Fluid

Weak, 0.4 ml/l (0.04%) ammonia water.

The reagent is stable when kept in a tightly stoppered bottle. Renew every six weeks.

*Note:* Weak ammonia water causes rapid haemolysis of red cells, is stable and the ammonia solution used in its preparation is easily available and inexpensive. It does not require refrigeration. The test requires only 2 ml of the ammonia diluting fluid.

### Test method

1. Measure carefully 20  $\mu$ l (0.02 ml, 20cmm) of capillary blood or *well-mixed* venous blood and dispense it into 2ml of the ammonia diluting fluid.  
***Important:*** The volume of blood used must be exactly 20  $\mu$ l
2. Stopper the tube and mix. The solution can be read immediately. The colour is stable for 6-8 hours
3. Check the performance of the meter by inserting the *Control Standard* glass provided in the cuvette aperture.

The reading must correspond to the stated value,  $\pm$  5.

*Note:*

Inserting a cuvette starts the measuring process. There is an audible signal as the meter reads the *Control Standard* or patient's sample. Immediately the value is shown on the digital display and held in memory for 30 seconds after the cuvette is removed. The last reading can be recalled by pressing a membrane key on the instrument. The *DHT Haemoglobinometer* has automatic zeroing. In between readings the meter remains in standby mode.

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4. Transfer the patient's sample or control blood sample to a clean 10mm light-path cuvette. Hold the cuvette only by its non-optical sides and ensure that there are no air-bubbles in the sample.
  5. Place the cuvette in the cuvette holder, wait for the audible signal, and read the haemoglobin value from the display.
  6. Return the sample to its tube and allow the cuvette to drain, e.g. invert it on a paper towel.
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*\* Extract used courtesy of author.\**

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