Instructions for Use:

Note: *Always wear appropriate personal protective clothing as indicated by Good Laboratory Practice. If blood is spilled follow your laboratory policy or national guidance, for safe disposal.*

1. Mix the blood sample thoroughly but gently, by at least 8 full inversions of the container.

2. **Pre-citrated blood sample**: using a transfer pipette add at least 1.25ml of the well mixed sample into a suitable test tube. (e.g. 12 x 75mm)

3. **EDTA blood sample:** In a small test tube add 4 parts of the blood sample to 1 part Normal saline solution (0.85%-0.145 mol/L, NaCl). Mix very thoroughly, but carefully, by at least 8 full inversions of the test tube. (Diagrams 1 & 2)

4. Without delay insert the plugged Dispette into the test tube and place the full assembly (Dispette plus test tube) in a correctly levelled ESR stand ensuring that the Dispette is at 90 degrees, plus or minus no more than one degree to the horizontal, (i.e. vertical, see diagram 4).

5. Using a suction pump, aspirate the blood sample up the Dispette until the blood sample soaks into the cotton plug approximately one third of the way up. (Diagram 4).

6. **Immediately start the timer**

7. At the end of the timed hour, the result is read by aligning the eye to the level where the red cell column has dropped – leaving clear plasma above (see illustration d on page 3). Record the number of mm the red cells have dropped from the mm scale printed on the Dispette.

8. Record the result as ESR = *x* mm
   or Sed-Rate = *x* mm

Note: It is common, though an incorrect practice, to record ESR results as *x* mm/hour or *x* mm per hour. Both the ICSH and CLSI point out that despite the common title Erythrocyte Sedimentation *Rate*, it is not in fact a rate but a measurement at one hour. Hence both these official organizations currently recommend that results should be reported as:
ESR = *x* mm.

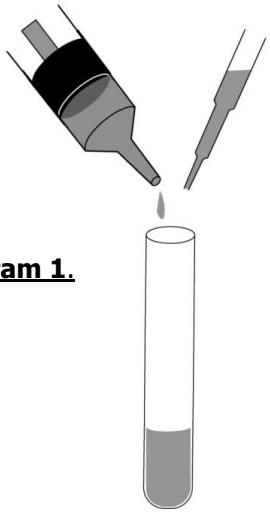
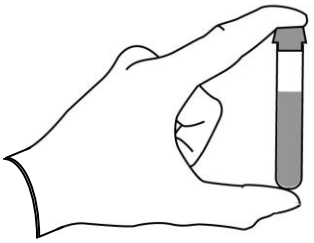


Diagram 1.



x 8

Diagram 2.

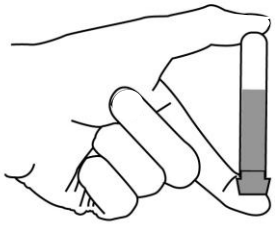
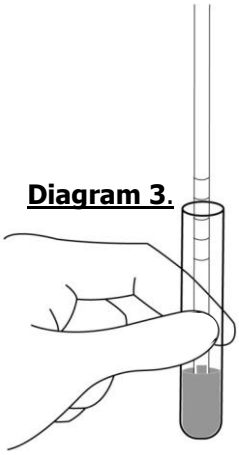


Diagram 3.



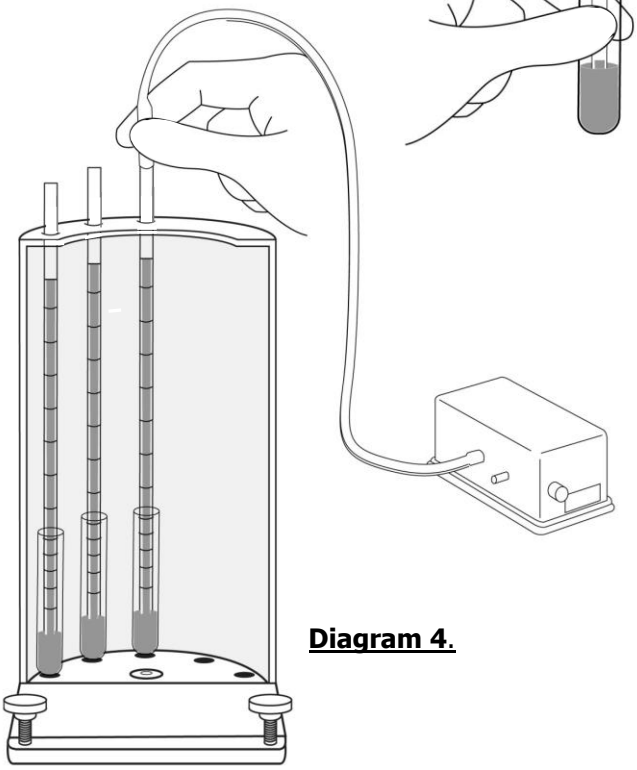


Diagram 4.

PRECAUTIONS:

a) Thorough mixing of the blood sample before adding to the reservoir is essential. However it must be done gently, shaking the sample will result in haemolysis which may obscure the end point.

b) Shaking the sample may also create bubbles which will seriously affect the result. If bubbles are present in the Dispette repeat the test with a fresh sample that has been more carefully mixed.

c) The ESR must be performed at room temperature (defined by the ICSH as 18 to 25^0C or 64 to 77^0F). Do not place the stand near a window, in direct sunlight or where it may be subjected to drafts.
Note: Should it be impossible to perform the test within this temperature range, a temperature correction chart may be downloaded from www.guestscientific.com

d) The ESR is affected by vibration; ensure the stand is placed well away from machinery and that the bench is not subjected to knocks. Remember that vibration mat only occur intermittently and/or may be as a result of machinery (e.g. a centrifuge) sited in another part of the building.

e) Do not pick up the stand to read the result as this will affect other tests in progress. Bring the eye to the level of the red cells to read accurately from the scale (see illustration d).

f) Occasionally the level of the red cells is not clear-cut and a 'Christmas Tree' effect may be observed. In such cases the level where the red cells become fully concentrated should be recorded (see illustration f).

g) In cases of serious infection or leukaemia a heavy layer of white cells may be present on top of the column of red cells. This should be ignored and the reading taken from the level of the red cells only.

h) It must be remembered that the red cells will continue to settle after one hour has elapsed. Therefore it is most important to read the test at exactly one hour after setting up the test in the stand (e.g. the test reading will generally be higher at 1 hour 15 minutes than at 1 hour).

i) **Note:** The rate of fall of the red cells is not linear. Therefore it must not be assumed that the reading at 60 minutes will be twice that at 30 minutes (see Physical basis of blood sedimentation on page 1).

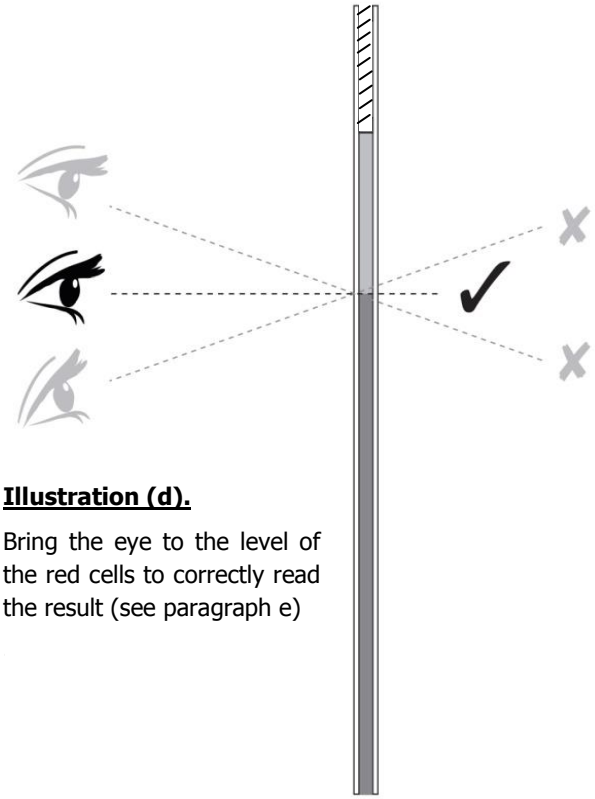


Illustration (d).

Bring the eye to the level of the red cells to correctly read the result (see paragraph e)

Please note: Illustrations are not to scale

Illustration (f).

Reading the maximum concentration of red cells where 'Christmas Tree' effect is present (see paragraph g).