CUBE 30 touch

USER MANUAL

Rev. 1.1 July 2018

Automated instrument for ESR determination

with modified Westergren method

Only for in vitro diagnostic use

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Chapter 1

INTRODUCTION

Presentation of the instrument

The CUBE 30 touch (Fig.1) is an instrument designed to measure the erythrocyte sedimentation rate (ESR) of blood samples anticoagulated with EDTA, directly from the EDTA tube in only 20 minutes. The instrument can analyze a load of 30 samples at once or on a random access and continual loading basis. By analysing the sample directly from the EDTA blood collection tube, multiple samples or sample transfers are not necessary. With its colour touch screen, the user can select various instrument functions, which are described in more detail in the following sections. The analysis is fully automated (mixing and reading) and the results provide excellent correlation to the one-hour Westergren reference method.

Fig. 1

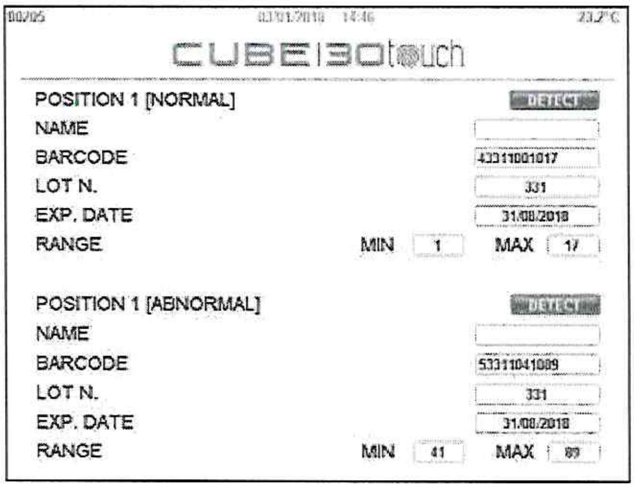


Fig. 30

Performing QC analysis

Control materials are loaded and processed in the same manner as patient samples (See chapter 4). The CUBE 30 touch will recognize the barcoded test tube as a QC sample and display it on the screen as shown in Fig. 31:

- Normal control: white cap
- Abnormal control: black cap

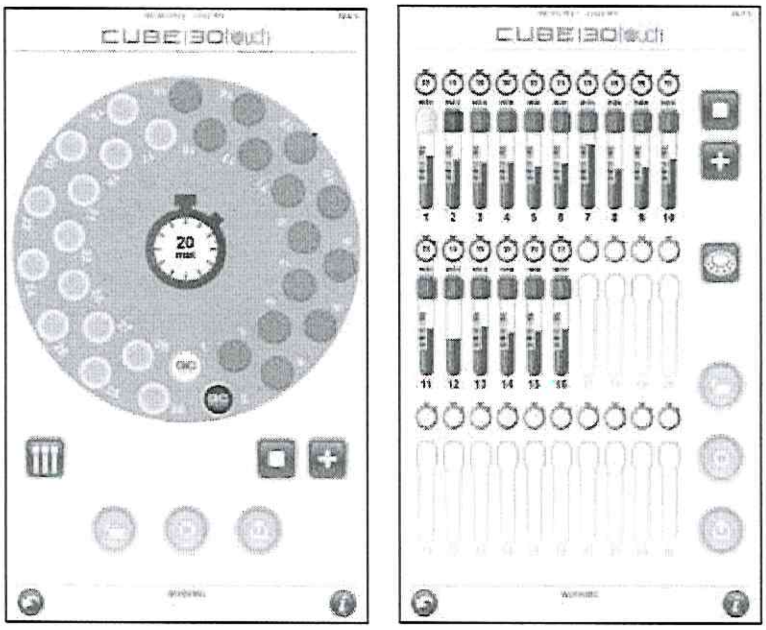
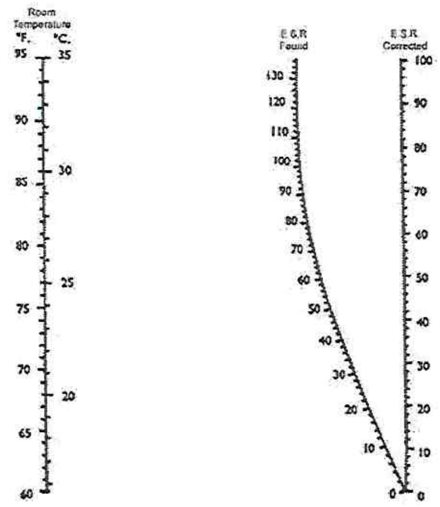


Fig. 31

The instrument is designed to have temperature correction enabled at all times; it relates the results to a temperature of 18°C according to Manley's Nomogram. However, it is possible to de-select temperature correction according to laboratory needs.



Manley's Nomogram

Clinical significance of ESR

The erythrocyte sedimentation rate test measures the distance travelled by red blood cells in autologous plasma over a certain period of time. In normal conditions, red blood cells tend to move apart reciprocally due to the presence of negative electric charge from the numerous residues of sialic acid present at a membrane glycoprotein level. When the protein composition of plasma changes with the production of "acute phase proteins" at a hepatic level, following an inflammatory process or tissue damage, the bond of these proteins (fibrinogen, immunoglobulins) with the surface of the red blood cells alters the negative charge of the membrane potential (Z) and the red blood cells can bind, forming a rouleaux pattern. These rouleauxed cells aggregate to form microspheres of a uniform radius, which start to sediment when their density exceeds that of plasma. The ESR value goes up in all cases where there is an increase in acute phase proteins, in particular fibrinogen (which is considered

Reading Unit

A motor lifts the reading unit, which uses 2 optical sensors to verify the suitability of the sample and detect the level at time zero and at the end of sedimentation.

Sample Detection

Sample detection happens after the cycle has been started, through the optical sensors. The instrument carries out a scan of the test tube inserted in each position, verifying that it contains an adequate volume of blood.

Sample identification

Sample identification is done by an internal barcode reader which reads the barcode when a sample is detected by an optical sensor. The sample ID code may be manually entered with a virtual keyboard or by using an external barcode reader (accessory).

Acoustic Warning

The function of the acoustic warning is to alert the operator during various stages of the operating cycle or in the event of errors.

Temperature Sensor

This sensor is used to measure the temperature and is fitted in proximity of the test tube carousel.

Printer

The analysis results are printed at the end of each operating cycle or working session.

LIS

Results transmit to the LIS automatically upon completion of the 20-minute test and/or can be viewed in the Tube view.

External connections of the instrument

The power connector is on the back of the instrument (Fig. 3).

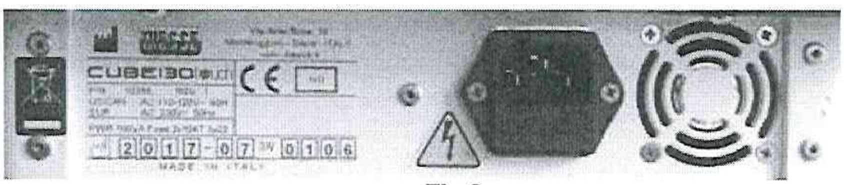


Fig.3

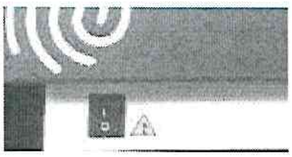


Fig.4

The ON/OFF switch is on the left side of the instrument's base (Fig.4).

ARCHIVE

The Archive menu is searchable and contains up to 5000 records.

Samples may be organized by date or by code (ID), using the appropriate tab.

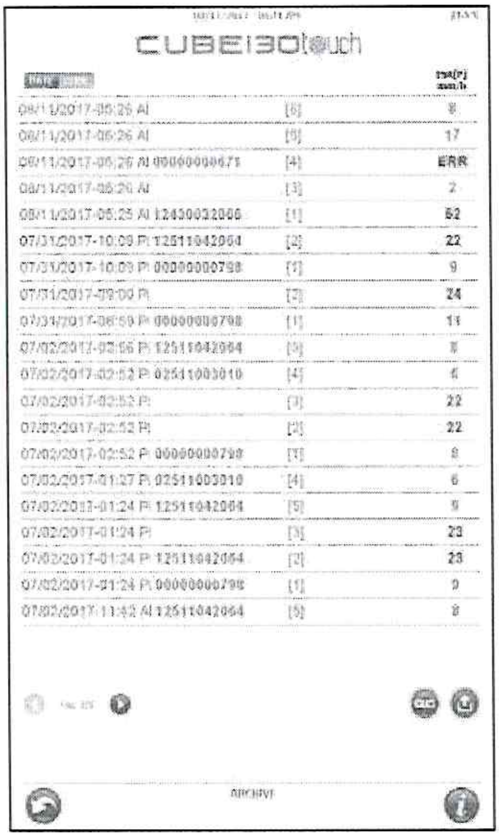


Fig. 27

Each sample in the archive has associated with it:

- Date and time of the analysis cycle
- ID code
- Cycle number for the day
- Position occupied in the carousel
- ESR value (mm/h).

By clicking on the Export icon the user can:

- Send to Host
- Print list
- Filter the archive by sample ID, cycle or date