VES-MATIC CUBE 30
AUTOMATED BENCH-TOP ANALYZER FOR THE DIRECT DETERMINATION OF ERYTHROCYTE SEDIMENTATION RATE (ESR) IN PRIMARY EDTA TUBES

Features of the System:

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<th>Feature</th>
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<td>ESR Directly from EDTA Tubes</td>
<td>Complete Sample Traceability</td>
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<td>No Sample Contact</td>
<td>Works with any Brand/Type of EDTA Tubes</td>
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<td>No Sample Consumption</td>
<td>Walk-away System</td>
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<td>No Production of Waste Fluids</td>
<td>User-friendly User Interface</td>
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<td>30 results per analytical cycle</td>
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INSTRUMENT OVERVIEW:

The Ves-Matic Cube 30 is an automatic bench top analyzer designed and programmed to determine the Erythrocyte Sedimentation Rate (ESR) on whole blood samples anti-coagulated with EDTA. It can analyze up to 30 blood samples per analytical cycle; the throughput is roughly of 60 ESR results per hour. The instrument performs the analysis making use of the full blood count samples and accepts any kind of brand/model of top lavender tubes available in the market; it’s therefore neither necessary to use a dedicated Citrate tube nor to transfer the blood from the tube inside the instrument.

The main innovation of the system is that the sedimentation of red cells in autologous plasma is read directly in the original EDTA tubes used for the full blood count, by means of a specially designed optical system. Due to
this feature, no part of the system comes in contact with or consume any of the blood samples during its operation. As a result, there is no transfer of blood from the original tube into any part of the analyzer and no production of waste fluids. The system is therefore designed to maximize the operator safety and protection. The Ves-Matic Cube 30 is environmentally friendly since it eliminates the possibility of biological contamination of the environment via biological waste and reduces the amount of plastic tubes that have to be disposed of.

The Ves-Matic Cube 30 is a true walk-away system. Sample analysis is executed completely automatically (mixing of the samples and reading of the sedimentation) and the results, obtained in only 15 minutes of sedimentation, correlate with those obtained with the Westergren Citrate standard method (60 minute sedimentation performed at 18°C using dedicated glass pipettes of 200 mm, with an internal bore with a diameter of 2.5 mm). The total duration of the analysis is 33 minutes, including the mixing of the samples ensuring the careful resuspension and disaggregation of red blood cells (red blood cells spontaneously aggregate at rest).

The analytical cycle

The full count EDTA tubes are inserted in the sample holding rotor; ESR and non-ESR samples are sorted by reading the bar-code label applied on the tube: the bi-directional connection to the LIS and the complete host integration allow the automatic selection of the samples for which ESR testing is required (Figure 1).

Once the tubes have been loaded in the 30-position rotor, the analytical cycle is started pushing the START key; in case all of the 30 positions are occupied by samples, the cycle is started by closing the lid. The sample holding rotor bends of 90° on its shaft and start rotating to thoroughly mix the samples; the mixing phase takes 15 minutes. At the end of the mixing phase, the rotor goes back to home position, and the level of blood at time 0 of sedimentation is read for each sample. After 15 minutes of sedimentation, the final level reached by the settling red cells is read and recorded to give the final ESR result (1st hour, according to the Westergren citrate method).

The user interface is through a keyboard, and the software is extremely simple and intuitive: to start a run it is sufficient just to load the samples and press the START key.

A very important feature of the system is the possibility of using EDTA tubes of different brands and models simultaneously, with the only restriction of rubber cap tubes; for this kind of tubes a special adaptor - to be placed on the rotor - is provided with the instrument (Figure 2).

Host Computer Connection

The Ves-Matic Cube 30 can be connected to a Host Computer via the RS232C serial interface. The bi-directional communication to the LIS allows the instrument to receive the work list containing the barcodes of the samples for which ESR testing is requested.
**Temperature Correction**

The Ves-Matic Cube 30 contains a temperature sensor; it measures the working temperature inside the instrument and is positioned inside the Analysis Module. The actual temperature is displayed in the ‘temperature window’ on the screen, either in Celsius (°C) or in Fahrenheit (°F) degrees. The instrument reports the results corrected to the standard temperature of 18°C according to Manley’s Normogram (Figure 3). Never the less it is possible to de-activate the temperature correction feature for differing laboratory needs.

**Quality Control (QC)**

The Ves-Matic Cube 30 has a built-in internal QC function. A bi-level (normal and abnormal) ESR Control blood is available to verify the proper functioning of the instrument. The ESR Control is a modified and stabilized human blood that can be used to monitor the accuracy and precision of the Ves-Matic line instruments. The range of expected values associated with each instrument model is shown in the ESR Control product insert.

**ESR CONTROL**

Ref. 10430  2 x 9 mL vials normal + 2 x 9 mL vials abnormal
Ref. 10434  1 x 9 mL vials normal + 1 x 9 mL vials abnormal

**Transponder**

The ‘Transponder’ is an electronic device that allows the instrument to have a defined number of executable tests available. For every result the Transponder will automatically undergo a decrease in the number of available tests. Once number of available tests is exhausted, the operator must reload the instrument with a new Transponder. The Transponder has the dimensions and appearance of a normal CBC test tube (Figure 5). To reload the instrument simply insert the new Transponder in the dedicated holder inside the analyzer: the Transponder tube will automatically transfer the reload to the instrument (Figure 4). At the end of the operation the Transponder tube is empty and cannot be used again.

**TRASPONDER**

Ref. 10290  10.000 tests
Ref. 10291  5.000 tests
Ref. 10292  1.000 tests
**TECHNICAL SPECIFICATIONS**

- Current Europe: 230Vac@50Hz; Usa/Canada: 110-120Vac@60Hz
- Absorbed electric power: 265VA
- Fuse block: 2 x 5.0 AT (Delayed) (5 x 20 mm) UL
- Dimensions: 510 x 350 x 500 mm (l x h x d)
- Weight: 15 Kg
- Room temperature: In operation from +15 to +35°C - Storage from +5°C to +45°C
- Allowable relative humidity from 20% to 30% without condensation
- Central unit: microprocessor ATMEGA 128, RISC 8-BIT technology with extremely low dissipation
- Display: 240 x 128 pixel liquid crystal display rear illuminated with a CFL lamp
- Internal analytic section: 30 position rotor
- Optic group: one couple of optic-electronic elements (Led & analogical sensor)
- Printer: Alphanumeric with thermal paper 58 mm wide, 36 characters per line, speed 20mm/sec.
- Interface: 1 x RS232C and 1 x RS485
- Protection category: CLASS I
- Security of the device: EN61010-1
- EMC: EN61326-1
- Installation category II

The Ves-Matic Cube 30 instrument is a bench-top analyzer and requires a dedicated work space due to its dimensions. No special electrical system requirements nor waterworks nor air conditioning are required.

The Ves-Matic Cube 30 is supplied with all the accessories and settings required for the optimal functionality.

No daily or programmed maintenance of the instrument is required to the operator.

Bibliography: