

# Starrsed RL

 **RR Mechatronics**  
Masters of Measurement



Gold standard ESR



*Does your busy laboratory perform up to 140 erythrocyte sedimentation rate (ESR) tests per hour and are you looking to automate this process? Or did you already automate this process but are you looking for a smarter solution? If so, the Starrsed RL is the obvious product. Building on the success of the Starrsed line, the Starrsed RL accepts up to 20 racks, each holding 10 blood collection tubes in its start yard to perform ESR tests fully automatically. Starrsed is the world's only product line that allows laboratories to perform ESR tests at large scale that are fully in agreement with the Westergren Method (the Gold Standard). An hourly capacity of approximately 140 samples and more will bring ESR sampling to new heights. The Starrsed RL achieves the highest degree of reliability in testing and automation, leaving you and your operators available for other tasks in the laboratory.*

## Westergren Sedimentation Method

One of the oldest and most frequently requested blood tests is ESR. It has not changed fundamentally in the way it is carried out since Westergren described it in 1921. In 2011, the International Council for Standardization in Hematology (ICSH) and the Clinical and Laboratory Standards Institute (CLSI) defined the Reference Method for ESR to be the Westergren Method; the Gold Standard. The objective of ESR testing is to measure inflammatory state. The Westergren Method measures both infections related to infectious diseases and chronic inflammatory conditions. In addition to being very reliable, the Westergren sedimentation Method is also amongst the cheapest laboratory tests available.

## The Process

The Starrsed RL works with standard Sysmex® blood cell counter racks and performs dedicated ESR measurements fully unattended. Direct interfacing/integration between the Sysmex XN-Series (XN-9000) and Starrsed RL is possible. RR Mechatronics developed the Starrsed RL according to the Sysmex XN-Series appearance, rack handling, software integration and outlook.

Blood cell counter racks will be directly transported from the XN-9000 line towards the Starrsed RL. Manual placing of racks is also possible. The direct interfacing reduces operator's involvement to zero and makes it easy to use by every employee in your laboratory. A built-in barcode reader identifies each sample. Capable of bi-directional communications with the laboratory information management system (LIS), the Starrsed RL knows which samples require ESR testing and which do not. A direct interface/integration between the Sysmex XN-9000 line and Starrsed RL is provided.

## How does it work?

The instrument is equipped with a start pool with a maximum capacity of 20 cell counter racks (=200 sample tubes). Racks with EDTA tubes are automatically fed from the Sysmex XN-9000 line in case of a

direct interfacing/integration of the instrument. In case the instrument is operated as standalone, racks from the cell counters need to be manually placed in the start pool (up to 20 cell counter racks). The Starrsed RL pre-mixes the blood sample automatically before actually drawing the sample from the tube. The Starrsed RL checks the barcodes and then starts sampling each tube requiring an ESR test. The aspiration system is activated and the needle pierces the cap. Blood is drawn from the tube. The Starrsed RL has a fully integrated diluting system, which dilutes the blood with the Starrsed Diluent in a 4:1 ratio, in full accordance with the Westergren Method. The diluted blood sample is then drawn up into one of the 84 Westergren pipettes inside the instrument. The optional printer gives the result that is also sent automatically to the LIS.

### Cleaning

All Westergren pipettes are automatically cleaned and dried after each test and ready for a new sample. Additionally, all 84 pipettes receive an automatic end of day cleaning and rinsing using special Starrsed agents. This prevents any bacterial growth or protein build-up. All waste fluids, i.e. blood, diluents, cleaning and disinfectant agents, are collected in a built-in waste container, ready for disposal as stipulated by local regulations. It is also possible to connect the waste line to a centralized waste system.

### Easy to use

A fully intuitive touch screen or mouse is all you need to operate the Starrsed RL. The connected PC stores all data and allows for easy access. A push of a button is all that is needed to produce the entire instrument operating history. The built-in QC-program monitors the performance of the Starrsed RL daily, and generates output files for use in Excel or external QC-programs.

### Controls

Good Laboratory Practice (GLP) requires the use of controls to ensure the continued reliability of the test results. RR Mechatronics supports this with Starrsed Control. It is to be used in the ESR analyzers as if it were a real patient sample. Starrsed Control is processed exactly the same way as a regular blood

sample, therefore fully compliant with the ICSH recommendations and CLSI procedures.

The QC test results are saved separately from patient test results and appear on a designated QC page. As a result, your laboratory is always able to check on the instrument's status. Starrsed Control gives you maximum reliability at minimal effort and costs. An External Quality Assurance Service program (EQAS) is available to enter your control data. In EQAS your data are anonymously compared with relevant data of users of same instrument and controls (the so called peer group). EQAS is to be used free of charge.

### Additional Benefits

The Westergren pipettes are re-usable after each automatic cleaning with Starrsed Cleaning agents. Therefore no additional costs for new pipettes. No disposable plastics of any kind are used. It is easy to add the Starrsed RL to your laboratory when using Sysmex racks. As opposed to other ESR test instruments, Starrsed instruments actually identify and report hazy samples so that the lab technician may decide on further testing.

The Starrsed RL makes use of EDTA sample tubes. The advantage is that EDTA anti-coagulated blood is very stable compared to pre-citrated samples, allowing for accurate ESR test results up to 24 hours after collection. This provides laboratories with even more logistical flexibility.

Because the Starrsed RL dilutes the blood, which is in agreement with the Westergren Method, it compensates for different hematocrit levels. The hematocrit level of the sample therefore will not influence the accuracy of the ESR measured.

### Purchase or Lease

The Starrsed RL may be purchased, leased over a period of time, or installed on a cost-per-test basis. This brings the automated Westergren Method within everybody's professional reach.

All specifications of the Starrsed RL are available on our website [www.rrmechatronics.com](http://www.rrmechatronics.com)



## The Starrsed Line

Starrsed ESR instruments are unique due to the fact that they are the only fully automated ESR instruments that comply with the 2011 published reference method for ESR testing. The reference method is referred to as Westergren. The Starrsed instruments offer solutions in the range from tube-based to rack-based to track-based. Laboratories that operate multiple Starrsed instruments are assured that results are reliable, reproducible and comparable.

[A complete overview is available on our website  
www.rrmechatronics.com](http://www.rrmechatronics.com)

## Overview of RR Mechatronics

RR Mechatronics: Masters of Measurement. We are passionate about the development of highly precise analytical instruments. RR Mechatronics, established in The Netherlands in 1986, focuses on medical analytical laboratory instruments. We serve laboratory customers and OEM-partners all over the world. RR Mechatronics is the world leader in automated true Westergren ESR instruments. Tens of millions of ESR tests are performed with RR Mechatronics instruments, the only automated instrument fully complying with the Westergren Method. In addition to ESR solutions, RR Mechatronics has also developed a unique and highly specialized red blood cell analysis platform to evaluate the rheology of blood. It measures, amongst others, RBC, osmotic resistance, deformability and aggregation and is used in the diagnosis and treatment of RBC membrane disorders. In addition to the hematology related instruments, RR Mechatronics develops and markets reagent reconstitution instruments that help laboratories save on reagent use. To complement our line of instruments, we also offer diluents, cleaning-agents, controls, and specific reagents. For over 25 years we have adhered to the belief in the exponential strength of technological advancement. RR Mechatronics has a track record of thinking in terms of solutions, not problems. We do not have all the answers, but persistently strive to find them in close collaboration with research scientists and our OEM-partners. These partnerships significantly contribute to our high quality work.

## Global Distributors Network

RR Mechatronics is active worldwide. Where we don't sell and service directly, we have strong partnerships with locally renowned, highly specialized, and certified distributors. We do understand that service of daily used instruments must be performed on-site and our distributors are organized to do just that. The focus on uptime is paramount. All of our distributors are required to have factory-trained engineers available locally. Our distributors also offer service contracts, which can include both immediate response and planned maintenance.



## RR Mechatronics USA

Mechatronics USA is the specialized sales and service organization for RR Mechatronics instruments in the United States. We understand that service of daily used instruments must be performed on-site and we are organized to do so countrywide. The focus on uptime is translated into service contracts that include both immediate response and planned maintenance. Mechatronics operates a 24/7 service number for any service request.



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