www.ssqllc.com

ZellESR®

Erythrocyte Sedimentation Rate Analyser

RoHS compliant

ISO 13485:2016

USFDA Registered

CDSCO Registered

CE

- Safe
- Simple
- Quality

ZellESR

Automatic ESR Analyzer

USER MANUAL

Model: ZellESR

Version: 12.2022.01M

Preface

Thank you for purchasing the ESR Analyzer manufactured by SSQLTD.

Read and understand this manual in full before operating the device, and keep it in a safe place for future reference.

Item	Detail
Product name	ESR Analyzer
Model	ZellESR

Manufacturer:

Sterile Safequip and Chemicals Limited, Unit-31, Panchratna Industrial Estate, Inside Pirana Gate, Near Ghoda Circle, Ahmedabad-382425

Website: www.ssqltd.com Support: support@ssqllp.com Mobile No: 9978635778

Contents

1 Explanation of Symbols: Product and Package Label & Pictograms

Symbol	Meaning
	**Biohazard:** Follow the instructions below the symbol to avoid potential biological contamination.
	**Warning:** Follow the instructions below to avoid personal injury.
	**Hot surface.** Attached on or close to parts of the instrument that become hot when the instrument is switched on. Keep fingers and other body parts clear of the hot surface.
	**Caution:** Follow the instructions below the symbol to avoid damage to or failure of the ESR analyser, or unreliable analysis results.

1.1 Abbreviations

Abbreviation	Meaning
ESR	Erythrocyte sedimentation rate
SSQLTD	Sterile Safequip & Chemicals Limited
hr	Hour
min	Minute
PID	Patient identification
FIFO	First in, first out

2 Content Disclaimers

Photographic disclaimer: Sample files, images and screen displays are provided for information and explanation only. They do not reflect actual names or test results.

Serial number: Each ZellESR carries a unique serial number, printed on the serial label (for example, 777072020), for device identification. The serial number is also printed on the digital copy of every cycle report.

Serial number of your ZellESR:

3 Introduction

The ZellESR measures the erythrocyte sedimentation rate (ESR) of 10 or 20 blood samples. It measures ESR from tubes containing a blood sample with sodium citrate. The test is carried out automatically and the results are derived using the Westergren method.

4 Who Should Read This User Manual

For safety reasons, read the warnings and instructions in this manual carefully before installing and using the device. Keep this manual with the device for future reference. If the device is sold or transferred, make sure the manual accompanies the ZellESR so that new users are informed of its functionality and related warnings.

The instrument should be used by qualified and skilled personnel only.

5 Danger & First Aid

5.1 Danger

> **Biohazard :** *To reduce the risk of exposure to patient blood, always follow the procedures described in this manual.*

- *Always wear laboratory-grade safety eyewear when operating the analyser and preparing test tubes with blood samples, to avoid direct contact with contaminated blood.*
- *Always wear laboratory-grade gloves when operating the analyser and preparing test tubes with blood samples, to avoid direct contact with contaminated blood.*
- Always follow the device manufacturer's instructions for use (IFU), including cleaning and packaging. Never use force to access the inside of the ZellESR.
- Do not operate the ZellESR outside the environmental conditions specified in this manual.
- Use only test tubes approved by the local regulatory authority. (In the USA, only US FDA-approved test tubes may be used.)
- Do not reuse test tubes.
- Do not use damaged test tubes.
- Call SSQLTD service personnel immediately if the ZellESR fails.
- It is the responsibility of the user's facility management to ensure that all personnel working with the ZellESR are trained and authorised by the facility management.
- It is the responsibility of the user's facility management to ensure regular training of all personnel involved in the operation and maintenance of the equipment, including emergency procedures for any direct blood contact with the operator, and to maintain attendance records and documented evidence of understanding from training sessions.
- *Always wear a laboratory-grade face mask when operating the analyser and preparing test tubes with blood samples, to avoid direct contact with contaminated blood.*

5.2 First Aid

- **Inhalation of a patient's blood sample:** Seek medical attention immediately.
- **Skin or clothing contact with a patient's blood sample:** Wash immediately with soap and water. Remove contaminated clothing and wash it before reuse. If signs or symptoms develop, seek medical attention.

- **Eye contact with a patient's blood sample:** Seek medical attention immediately.
- **Ingestion of a patient's blood sample:** Seek medical attention immediately.

6 Safety

WARNING: To reduce the risk of exposure to patient blood, always follow the procedures described in this manual.

1. The hardware and mechanical components of the ZellESR meet the compliance requirements of IEC 61010-1:2010 AMD1:2016, IEC 61010-2-010:2019 and IEC 61010-2-040:2020.
   - *The ZellESR also meets the compliance requirements of* IEC 61326-1:2020 (Third Edition), laboratory use.
   - CFR 47, FCC Part 15B (using ANSI C63.4:2014).
2. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a medical laboratory environment.
3. *Always wear laboratory-grade safety eyewear when operating the analyser and preparing test tubes with blood samples, to avoid direct contact with contaminated blood.*
4. *Always wear laboratory-grade gloves when operating the analyser and preparing test tubes with blood samples, to avoid direct contact with contaminated blood.*
5. *Always wear a laboratory-grade face mask when operating the analyser and preparing test tubes with blood samples, to avoid direct contact with contaminated blood.*
6. *Check the position of the test tube and its cap to avoid tube breakage inside the analyser or blood spillage during operation.*
7. It is the responsibility of the user's facility management to ensure that all personnel who operate or maintain the equipment are trained in its operation and safe use, and to ensure that safety inspections are completed. Contact your local SSQLTD service personnel or authorised SSQLTD service personnel for the required safety guidance.

WARNING: *Always wear laboratory-grade gloves and safety eyewear when operating the analyser and preparing test tubes with blood samples, to avoid direct contact with contaminated blood.*

7 Description

The ZellESR is an electromechanical device that measures ESR using the Westergren method, with results temperature-compensated using Manley's chart. It is available in a 10-slot version, which measures 10 tubes at a time, and a 20-slot version, which measures 20 tubes at a time. The device has a 1 hr mode (which gives results in 30 min) and a 2 hr mode (which gives results in 60 min). Its operating parts are listed below.

1. Power supply
2. Stepper motor with driver
3. Microprocessor
4. Colour display with touch screen
5. RFID
6. 10/20 sample position slots

8 Intended Use

The ZellESR measures the rate at which red blood cells in whole blood descend in a standardised tube, reported in mm per hour.

> **NOTE:** Details of the standardised tube are given below.

9 Tube Details

The ZellESR can be used only with a fixed size of tube containing a fixed amount of sodium citrate, as detailed below. No tube of a different size, or differing from the details described below, may be used. These tubes must be filled with a blood sample to the specified volume and then placed in the ZellESR tube slot to measure ESR.

Tube specification:

Tube parameter	Specification
Tube usable volume	1.6 ml (1.28 ml blood + 0.320 ml sodium citrate)
Sodium citrate prefill	0.32 ml
Blood sample volume	1.28 ml
Inner diameter	—
Outer diameter	7.9–8 mm
Total height	117 mm

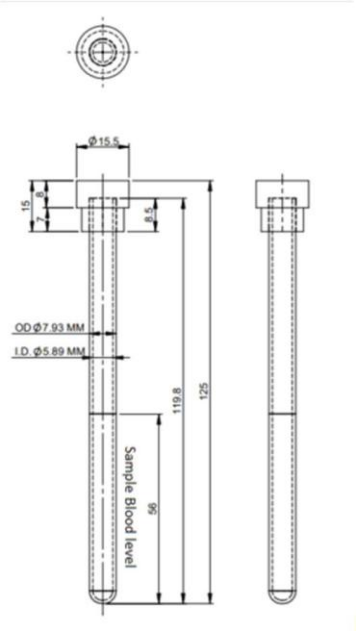


Fig. 1

10 Specification

Table 1

Parameter	Specification
Analysis time	30 min or 60 min (0~±3%)
ESR measurement method	Westergren method, mm/hr. Automatic compensation to 18°C (Manley table)
Measurement range	1–140 mm/hr
Height reading resolution	0.1 mm
Accuracy in height reading	±1 mm
Reproducibility	C.V. < 5%
LIS	RS-232, D-type 9-pin male connector Pin 2 Tx, Pin 3 Rx, Pin 5 Gnd
Barcode scanner interface	USB
Sample code entry	16 alphanumeric digits Manual entry or barcode scanning
Printer	Thermal printer
Test tube	As per section 9, Tube Details
Temperature compensation	15–30 ℃
Dimensions	323 mm (L) × 196 mm (W) × 187 mm (H)
Weight	5 kg
Loading pattern	Random access
Memory	9999 sample readings

10.1 Power Specification

Table 2

Electrical power	Operating condition — single phase (230 VAC)	Operating condition — two phase (208 VAC)
Voltage range	230 VAC	208 VAC (two phase)
Frequency	50/60 Hz	60 Hz
Phase	Single	Two
ZellESR	3 A	3 A

10.2 Operating Environment Specification

Table 3

Environmental condition	Operating condition
Operating temperature *	15–30°C
Operating relative humidity	20–70% (non-condensing)
Installation / transient overvoltage	Category II
Pollution degree	2
Ventilation	Maintain air exchange to ensure good air circulation
Electromagnetic interference	Keep the ZellESR away from electric-brush motors, flashing fluorescent lights and electric-contact equipment that is switched on and off frequently.

11 Installation

The ZellESR must be installed only by SSQLTD or its authorised agents. The customer is responsible for providing a suitable environment and adequate space. If the ZellESR needs to be relocated, contact SSQLTD or your local authorised agent.

Notify SSQLTD or your local authorised agent immediately on receipt of the analyzer.

1) To reduce the risk of shock from hazardous voltage, the customer must provide a properly grounded (earthed) outlet for installation, as described in the installation requirements section of this manual.

2) Never place any device emitting strong electromagnetic fields (EMFs) near the ZellESR.

11.1 Technical Description

11.1.1 Main Processor Board

Controls and processes incoming data from the sensors and manages all peripherals. It hosts the flash EPROM containing the programs, and the EEPROM in which read and processed data is stored.

11.1.2 Sensor Board

Detects the blood level. It is attached to the up-down mechanism assembly and moves up and down as the motor rotates.

11.1.3 Motor and Driver Board

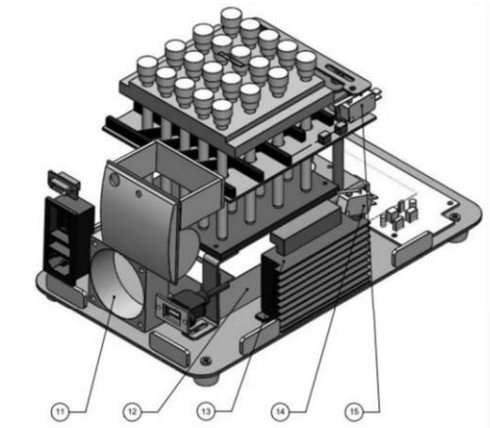
The motor is attached to the up-down mechanism. The assembly moves up or down according to the direction of motor rotation, which is controlled by the main processor board.

11.1.4 Display Unit

The 4.2-inch colour display is the interface between the operator and the main processor board. It keeps the operator updated with all process and result information.

11.1.5 Working Principle

An infrared LED and an infrared sensor are used to detect the blood level.



SR.NO.	DESCRIPTION
1	PCB
2	STEPPER MOTOR
3	SPRING COUPLING
4	SCREW
5	UPPER BRACKET LIMIT SWITCH
6	UPPER PLATE WITH NUT
7	LINEAR BEARING MLE-8-UU
8	PCB WITH SENSOR(UP-DOWN)
9	TUBE GUIDE BOTTOM
10	TUBE GUIDE UPPER
11	EXHAUST FAN
12	SMPS
13	DRIVER CARD
14	LIMIT SWITCH LOWER
15	LIMIT SWITCH UPPER

Fig. 2

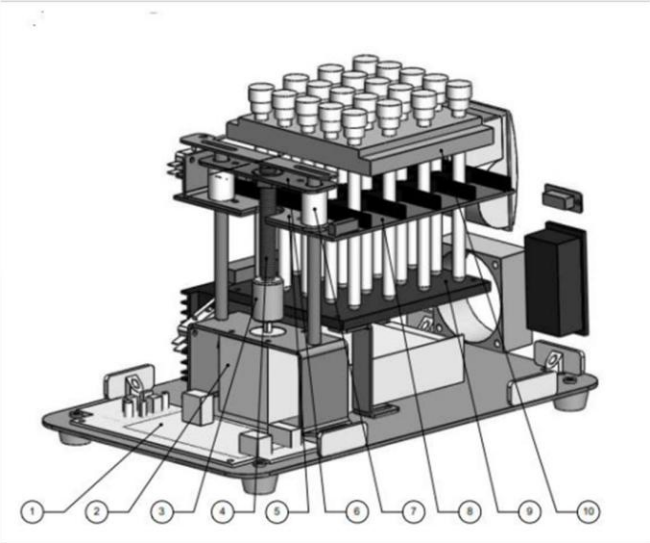


Table 4

11.2 Setup & Connection

Table 5

No.	Connection or component	Description
1	Tube slot	Tubes containing blood samples are placed in these slots to measure ESR.
2	Display	4.2-inch colour touch screen used to operate the device and monitor parameters and result details.
3	Printer	Thermal mini-printer that produces the ESR result printout.
4	USB	Used to connect the barcode scanner.
5	LIS	D-type 9-pin connector that can be used as a LIS interface.
6	Power switch	Turns the power supply to the device on and off.
7	Fuse	Safety fuse that breaks in the event of overload or short circuit, keeping the operator and the device safe.

11.3 Supplied Accessories

1. Power supply cable
2. 2 × fuse
3. User manual
4. Warranty certificate
5. 2 × calibration tube
6. 1 × thermal printer paper roll

11.4 Analyzer Placement

This instrument is intended for use in a laboratory environment.

For safety reasons, and given the type of analysis carried out, place the instrument away from heat sources, in an area not exposed to liquids, in a dust-free environment, and on a perfectly flat bench that is not subject to shock or vibration.

Maintain safety clearances of 20 cm from the rear of the instrument to the wall, and 10 cm from the left and right sides to the wall.

The safety of the ZellESR and of the operator is no longer guaranteed unless the following conditions are met:

1. The power supply must be fitted with an effective earth connection.
2. The instrument has an internal power supply that tolerates voltage variations as stated on the back plate of the equipment and in the power supply specification.

11.5 Installation Procedure

> **NOTE:** This procedure must be carried out only by authorised SSQLTD engineers.

1. Unpack the box and remove the analyzer.
2. Check all accessories supplied with the analyzer. (If anything is missing, contact SSQLTD.)
3. Check the power supply specification at the customer's site.
4. Check the earthing at the customer's site.
5. Check the surrounding environment.
6. Connect the power supply cable to the ZellESR.
7. Fit the thermal paper roll in the thermal printer.
8. Turn on the power supply switch.
9. The display starts within 2–5 seconds.
10. Go to QC mode and run a calibration tube.
11. Check that the result is within the range stated on the calibration tube.
12. Check the thermal printout.
13. Turn off the power.
14. Explain the operating procedure to the operator.

15. Hand over the device to the operator.

12 Operating Procedure

The following screen appears on power-up:

12.1 Power-Up Screen

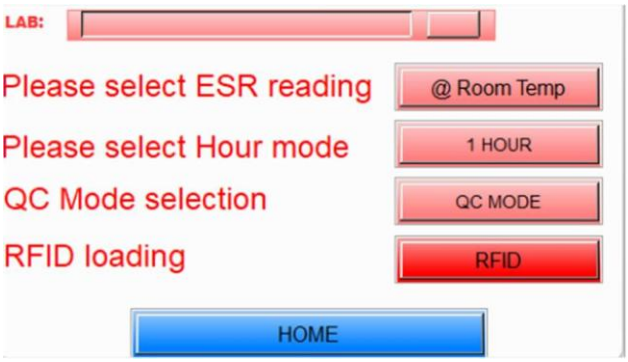


Fig. 4

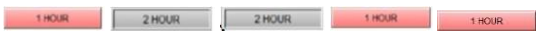
LAB: this field is used to enter the customer's laboratory or institution name (up to 16 characters). Touching it opens a security login screen; only an SSQLTD-authorised engineer has access to this login password. Once the password is entered, an alphanumeric keypad is displayed on which the operator can enter the laboratory or institution name. This name is printed on every result printout.

ESR reading: the ESR reading can be displayed at room temperature or compensated to 18°C, selectable as shown below.

is the default selection on power-up and indicates that the displayed ESR reading is taken at room temperature. To display the ESR reading compensated to 18°C, touch the icon; it changes to the compensated setting and the display then shows the ESR reading at 18°C. Touching it again returns it to room temperature.

The first icon indicates that the displayed ESR reading is at room temperature; the second indicates that it is compensated to 18°C.

1Hour/2 Hour: selecting the hour mode changes the analysis time. In 1 hour mode the analysis time is 30 minutes; in 2 hour mode it is 60 minutes.



1 hour mode is the default on power-up and represents a 30-minute analysis time. To switch to 2 hour mode, touch the icon; it changes to the 2 hour setting. Touching it again returns it to 1 hour mode.

QC mode: selecting this mode runs the ZellESR in QC mode, and the analysis time reduces to 5 minutes. The first icon indicates that QC mode is off, which is the default setting on the power-up screen. To run QC mode, touch the icon; it changes to the on state, meaning the device will run in QC mode. Touching it again turns QC mode off.

RFID screen: touching RFID opens the RFID screen, where the operator can scan an RFID card at the RFID spot on the left side of the ZellESR to top up the ZellESR by 100 tests.

HOME returns the display to the home screen.

The power-up screen appears every time the device is switched on. Once it has been passed, the operator cannot return to it.

12.2 Home Screen

Fig. 5

ESR Reading: this area displays the ESR reading according to the ESR reading type selected, either at room temperature or compensated to 18°C.

Tube Slot No: indicates the tube slot number, which is also engraved on the top of the device beside the tube slot (see section 11.2, Setup & Connection).

Early predicted Window: this small box is filled with a different colour according to the ESR prediction, as shown in the table below. It appears 12 minutes after tube detection.

Table 6

ESR reading	Colour
≤11	Yellow
>11 ~ ≤38	Green
>38 ~≤120	Orange
>120	Red

RTC: this button opens the real-time clock setting, preceded by a user ID login page. It can be accessed only by an administrator, who must enter a user ID and password.

Fig. 6

Administrator user ID: 33

Password: 33333333

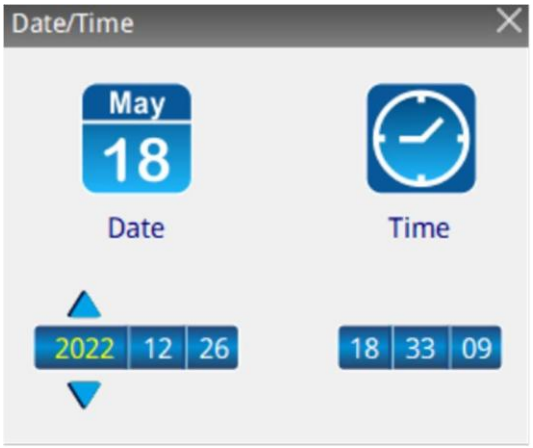
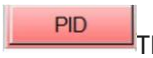


Fig. 7

PID screen: 

This button opens the patient ID entry page shown below, where the operator can enter a 16-digit alphanumeric patient ID or scan the patient's ID barcode. Touching the PID entry window opens an ASCII keypad.

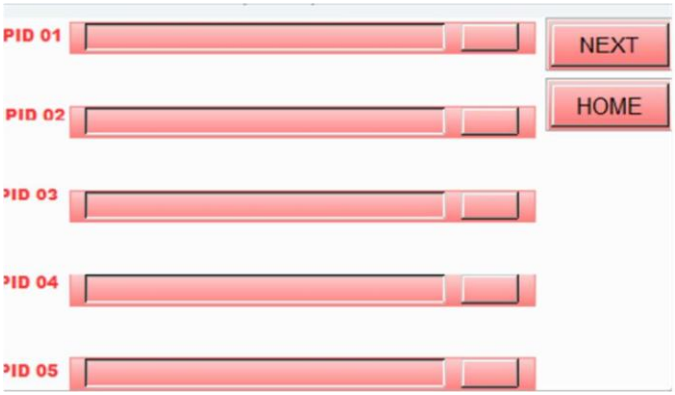


Fig. 8

opens the next PID page; the adjacent button returns to the home screen.

12.3 Data Storage Screen

this button opens the data storage table shown below.

Fig. 9

All analysis results appear on screen:

Sr. No., Time, Date, PID, ESR at room temperature, ESR at 18°C, Temperature and Hour mode. Up to 9999 records are stored, rolling over on a FIFO basis.

This button returns to the home screen.

12.4 RFID Screen

Fig. 10

on the power-up screen opens the RFID screen. Hold the RFID card against the left side wall of the analyzer, where 

is marked, and press  . The tube counter increases according to the RFID programming.

Once this screen is reached, the only way to return to the home screen is to restart the device.

13 Preparing Test Tubes for ESR Measurement

13.1 Blood Sample Type

1. Blood can be collected directly into vacuum ESR tubes (3.8% sodium citrate) using the standard blood collection method.

2. Blood can also be collected into standard EDTA tubes and used with the instrument.
3. The tube must be mixed on a rotary shaker for at least 5 minutes.
4. The test must be performed within 4 hours of blood collection.
5. In both cases, blood can be stored for 24 hours at 2–10 °C.

This analyzer requires a specific type of test tube; the specification is given in section 9, Tube Details. Remove the cap and dispense sufficient blood (1.28 ml) up to the line marked on the tube: more or less than this can cause an error in the final ESR reading. Shake the tube for at least 3 minutes so that the blood and sodium citrate blend thoroughly and the air bubble travels completely from one end of the tube to the other. Shaking coats the whole inner face of the tube with blood, so insert the tube into the device as soon as it is taken from the shaker. Once inserted, tube detection may take 1–3 minutes depending on the sensing cycle; during this time blood on the side surface of the tube settles to the bottom. Once the tube is detected, the corresponding slot area on the display becomes visible and the elapsed time starts.

> **NOTE:** This is a single-use tube and must not be reused.

14 Analyzer Working Principle

The analyzer uses the Westergren method to derive ESR. Test tubes can be placed randomly in any slot. Once a tube is detected, the corresponding slot area on the display becomes visible with the elapsed time, and the initial blood level is detected. 12 minutes after tube detection, the analyzer measures the blood level and displays the expected range through the colour-coded window (see Fig. 5 and Table 6). At the end of the selected analysis time, the analyzer measures the final blood level.

Once both the initial and final level readings have been obtained, the analyzer derives the ESR reading by calculating the difference in level relative to the analysis time. This result is at room temperature. Because the ESR reading is strongly affected by ambient temperature — and, according to Manley's experiment in the Westergren method, 18°C is the ideal temperature at which to measure ESR — the analyzer also predicts the ESR at 18°C for the same sample from the room-temperature reading, using Manley's table.

15 Operating Procedure

Prepare the test tube as described in section 13, Preparing Test Tubes for ESR Measurement, and insert it into any available slot. Tube detection may take 1–3 minutes depending on the sensing cycle. Once the tube is detected, the corresponding slot area on the display becomes visible and the elapsed time starts.

The analyzer then measures the initial and final blood levels and derives the ESR reading as described in section 14, Analyzer Working Principle.

The analyzer also derives the predicted ESR reading at 18°C from Manley's table and displays the reading according to the ESR reading type selected on the power-up screen. As soon as the ESR reading is obtained, the printer produces a printout containing all the details for that sample.

 Once the ESR reading has been obtained, the test tube can be removed from the slot. A few minutes (0–3 minutes) after removal, the corresponding ESR reading disappears from the display and the slot is ready for another test.

> **NOTE:** *If the test count shows a value less than or equal to 0, the analyzer will not run.*

16 Error Messages

- **Low-level error:** if the blood sample in the test tube is below the limit line, the display shows "L" beside the corresponding slot number. The test still runs, and the printout carries the message "LOW VOL:RE-RUN".
-  **High-level error:** if the blood sample in the test tube is above the limit line, the display shows "H" beside the corresponding slot number. The test still runs, and the printout carries the message "HIGH VOL:RE-RUN".

> **WARNING:** If an error message is displayed, the ESR reading must not be considered valid.

17 Calibration

- To run a calibration, select QC mode and set the ESR reading type to "@Room temp" on the power-up screen, as described in the operating procedure.
- On the home screen, once the sensor assembly has settled at the home position, the ESR time is set to 5 minutes (see Fig. 5).
- Two calibration tubes are supplied with the ZellESR. They must be placed in slot 1 and slot 2.
- Either calibration tube may be placed in slot 1 or slot 2, but do not use any other slot: slots other than 1 and 2 can give an inaccurate reading with the calibration tube.
- Once the calibration tube is in the slot, the analyzer detects it within 1–3 minutes and gives a result 5 minutes after detection.
- Check whether the result is within the allowable range, and check that the printout reading matches the display.
- The message "QC mode is active" also appears at the end of the printout.
- If the result is within the allowable range, remove the calibration tube, turn off the analyzer and restart it for routine use.
- If the result is outside the allowable range, turn off the analyzer and contact your local SSQLTD service representative, the SSQLTD service centre, or any authorised dealer or distributor.

18 Print

18.1 Routine Printout Format

```
********** LAB: ABCDFEGH
********** ZellESR
Auto ESR analyzer Ver.01.22
Channel:1
Patient ID:sdf14234kj
Date Time: 28/12/2022 13:16
Temperature:27  1hr=55  18_1hr=42
2hr=000  18_2hr=000
**********
```

In the printout format:

- **"LAB"** represents the end-user institution or laboratory, as entered on the power-up screen.
- **"Channel"** represents the corresponding slot number.
- **"Patient ID"** represents the PID entered for that sample.
- **"Temperature"** represents the temperature in ℃.
- **"1hr"** represents the ESR reading at room temperature with a 30-minute analysis time.
- **"18_1hr"** represents the predicted ESR reading at 18 ℃ with a 30-minute analysis time.
- **"2hr"** represents the ESR reading at room temperature with a 60-minute analysis time.
- **"18_2hr"** represents the predicted ESR reading at 18 ℃ with a 60-minute analysis time.

18.2 Low-Level Printout Format

```
********** LAB: ABCDFEGH
********** ZellESR
Auto ESR analyzer Ver.01.22
Channel:1
Patient ID:sdf14234kj
Date Time: 28/12/2022 13:16
Temperature:27  1hr=55  18_1hr=42
2hr=000  18_2hr=000
LOW VOL:RE-RUN**********
```

18.3 High-Level Printout Format

```
********** LAB: ABCDFEGH
********** ZellESR
Auto ESR analyzer Ver.01.22
Channel:1
Patient ID:sdf14234kj
Date Time: 28/12/2022 13:16
Temperature:27  1hr=55  18_1hr=42
2hr=000  18_2hr=000
HIGH VOL:RE-RUN**********
```

18.4 QC Mode Printout Format

```
********** LAB: ABCDFEGH
********** ZellESR
Auto ESR analyzer Ver.01.22
Channel:1
Patient ID:sdf14234kj
Date Time: 28/12/2022 13:16
Temperature:27  1hr=140  18_1hr=42
2hr=000  18_2hr=000
QC mode Is active**********
```

19 Transportation and Packaging Instructions

Packing, Storage and Handling

Markings and labels must be legible, durable and tamper-resistant. The device must be wrapped with stretch film, bubble wrap and thermocol or sponge sheet to prevent dents or damage to the touch screen and any utility connection, and then packed in a corrugated box. The corrugated box must be marked "UPSIDE" and "FRAGILE".

Storage Environment

Environment	Condition
Temperature	10°C to 40°C
Humidity	≤ 50% RH

Handling

At the customer's site the product can be handled easily: the device is light enough to be lifted by hand and moved from one place to another.

20 Repair and Replacement

SSQLTD assumes liability for damage arising from manufacturing defects or malfunction of the device during its intended use within the warranty period. It declines any other type of liability.

For servicing information or warranty claims, contact your local SSQLTD service representative, the SSQLTD service centre at the address below, or any authorised dealer or distributor:

> **Sterile Safequip & Chemicals Limited**
> Unit-31, Panchratna Industrial Estate, Inside Pirana Gate, Near Ghoda Circle, Ahmedabad-382425
> Email: support@ssqllp.com

21 Compliance and Reference Standards

21.1 Device Safety Compliance

The ZellESR complies with the following standards:

- IEC 61010-1:2010, AMD1:2016 (Edition 3.1) Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
- IEC 61010-2-010:2019 (Fourth Edition) Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of materials.
- IEC 61010-2-040:2020 (Third edition) for use in conjunction with IEC 61010-1:2010, AMD1:2016 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-040: Particular requirements for sterilizers and washer-disinfectors used to treat medical devices.

21.2 Electromagnetic Compatibility (EMC) Compliance

The ZellESR complies with the following EMC standard:

- IEC 61326-1:2020 (Third Edition) Electrical equipment for measurement, control and laboratory use. Medical device — EMC requirements — Part 1: General requirements.

22 How to Change the Fuse

Fig. 11

- If the device does not turn on even though the power supply is working correctly, check the fuse.
- Pull out the fuse holder as shown in Fig. 11.
- Check whether the fuse is intact.
- If the fuse is intact, call an SSQLTD service engineer, an authorised engineer, or your dealer or distributor.
- If the fuse has blown, replace it with a spare fuse as shown in Fig. 11.

23 Warranty

Products supplied by SSQLTD to the distributor will, under normal and proper use and care, be free from defects or deficiencies in design, material and workmanship for the period defined in the warranty policy, where a warranty period is expressly stated.

1. The warranty period for the ZellESR-10 or ZellESR-20 (main unit only) is 12 months from the date of purchase.
2. The warranty does not cover accessories supplied with the device.
3. The warranty does not cover breakage caused by transportation or mishandling.
4. The warranty applies only to manufacturing defects identified during the warranty period.
5. The warranty is void if unauthorised personnel tamper with the device, even within the warranty period.
6. The warranty does not apply without a purchase invoice.
7. The warranty does not apply if the device was purchased from an unauthorised dealer or distributor.
8. For warranty claims, contact the authorised dealer or distributor from whom the device was purchased.
9. In a warranty claim, SSQLTD alone decides whether to repair or replace the device, depending on the problem.
10. The warranty applies only if the device is registered with SSQLTD at support@ssqllp.com by formal email, together with the purchase invoice, by the end user, dealer or distributor within seven days of the purchase invoice date.