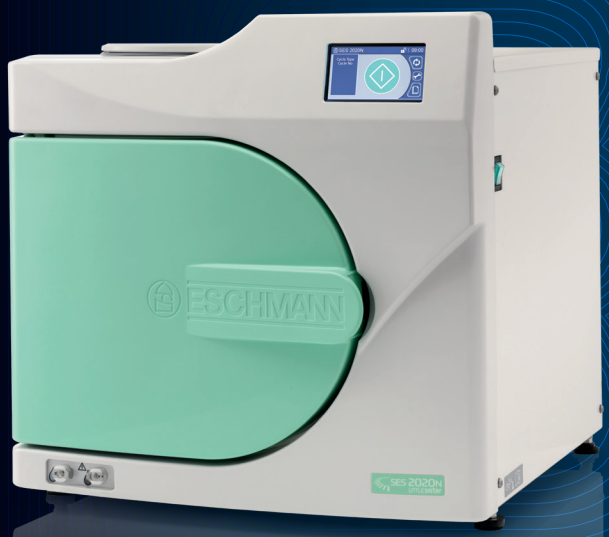
ESCHMANN



Little Sister SES 2020N Non-vacuum Autoclave

User Manual

CE 2797

Thank you for choosing Eschmann

Eschmann design, manufacture and supply a range of market leading products including benchtop autoclaves, accessories, washer disinfectors and surgical suction.

For further information visit our website: www.eschmann.co.uk.

Please read the manual before installing or using the product for the first time. Keep the manual handy for quick reference. Always make sure that the manual is available for the next user/owner of the product.

The product(s) described by this manual must only be operated and used by qualified personnel trained in the use of this equipment. Contact Eschmann with your training requirements.

Pay particular attention to the safety notes, cautions and warnings provided in the text, and also to those displayed on the product labels.

This product must be used, installed and maintained in accordance with the procedures given in this manual. Failure to do so could result in injury to patients and/or users, or damage to the equipment.

Eschmann products must be serviced by Eschmann trained engineers only. Failure to do so may invalidate the warranty.

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1 Safety Warnings and Usability

Comply with warnings and cautions at all times. All users and operators should be made aware of them.

⚠ WARNING!
Only use the autoclave as specified in these instructions. Eschmann are not responsible for a malfunction or reduced level of protection provided by the equipment when not used as specified. Never tamper with, bypass or interfere with any of the safety features.

Only use Eschmann accessories and mains leads. Any spare parts required must be supplied by Eschmann. They must be fitted in accordance with the Service Manual or instructions supplied by Eschmann engineers, or engineers trained by Eschmann.

Be careful not to splash water on the top of the autoclave. If water is poured onto the autoclave, or a leak is found, disconnect from the mains socket, dry thoroughly and allow time to dry.

1.1 Safety checks ⚠

Contact Eschmann if any problems are found.
Do not use the autoclave until the unit is repaired.

Daily

- When loading the autoclave take care not to damage the door or front face of the chamber, especially the door seal and mating face.
- Check the condition/cleanliness of the door seal.
- Check for any obvious escape of steam or water during a cycle (other than the Steam Vent on the top of the autoclave).
- Drain the fresh water reservoir on a daily basis. Close the fill cap when complete.

Weekly

- Check the door seal and chamber face for any signs of damage.

1.2 Potential hazards ⚠

- All autoclaves operate with steam at high pressure and temperatures. Take care to avoid contact with any residual steam or hot water. The Eschmann tray lifter must be used to remove trays etc. Avoid contact with the hot internal surfaces of the chamber and door. Water in the waste reservoir can be very hot, take care when draining to avoid contact with the hot water.
- Always select the correct cycle for the load being processed, otherwise the load may not be sterile at the end of the cycle - refer to the Instructions For Use for the items being sterilised. If in doubt contact Eschmann or an expert on sterilising processes.
- If a Warning screen is displayed, the load must be treated as non-sterile. Sterilise the load by running the cycle again. Refer to Appendix 5.
- The Steam Vent on the top of the autoclave vents steam under normal operation:
  DO NOT REMOVE; DO NOT COVER;
  CAUTION: HOT STEAM.

1.3 Limitations of use ⚠

- Do not process hollow, porous, pouched or wrapped items.
- Do not process liquids in this autoclave.
- Never use trays or cassettes without perforations.
- Do not use autoclaves near flammable materials.
- When sterilising instruments not of solid metal construction, consult the instrument manufacturer about its suitability for processing in an autoclave.

1.4 Electrical safety ⚠

- This equipment must be earthed.
- Always switch the autoclave off and disconnect from the mains electrical supply before renewing fuses, checking and cleaning the autoclave.
- No attempt must be made to service this autoclave internally.

1.5 General safety ⚠

- DO NOT use the autoclave if the door seal, filter or covers are damaged, loose or missing.
- DO NOT place heavy items or containers with liquids (e.g. cups etc.) on top of the autoclave.
- DO NOT cover any of the ventilation grills.
- Ensure the fresh water reservoir fill cap is in place and in its closed position before using the autoclave.
- DO NOT press the touch screen too hard, or use sharp objects to press the screen.
- DO NOT use tap water or cleaning products containing chlorides, chlorine, acids or other corrosive substances to clean the chamber, chamber face or door seal.
- DO NOT use abrasive powders, chemicals, or solutions containing chlorine to clean the autoclave.
- Any potentially contaminated waste materials produced during cleaning and disinfection should be handled in accordance with local procedures and National legislation for the disposal of potentially contaminated waste.
- Ensure the Steam Vent is fitted to the top of the autoclave. Refer to Fig 1, Item 18.
- DO NOT cover the Steam Vent on the top of the autoclave. Refer to Fig 1, Item 18.

1.6 Warnings, cautions & notes

Various warnings, cautions and notes are made throughout this manual. Each of these carries a special meaning and should be read carefully.

⚠ A WARNING is given when the safety of the patient or user may be involved. Disregarding this information could result in injury to the patient or user.

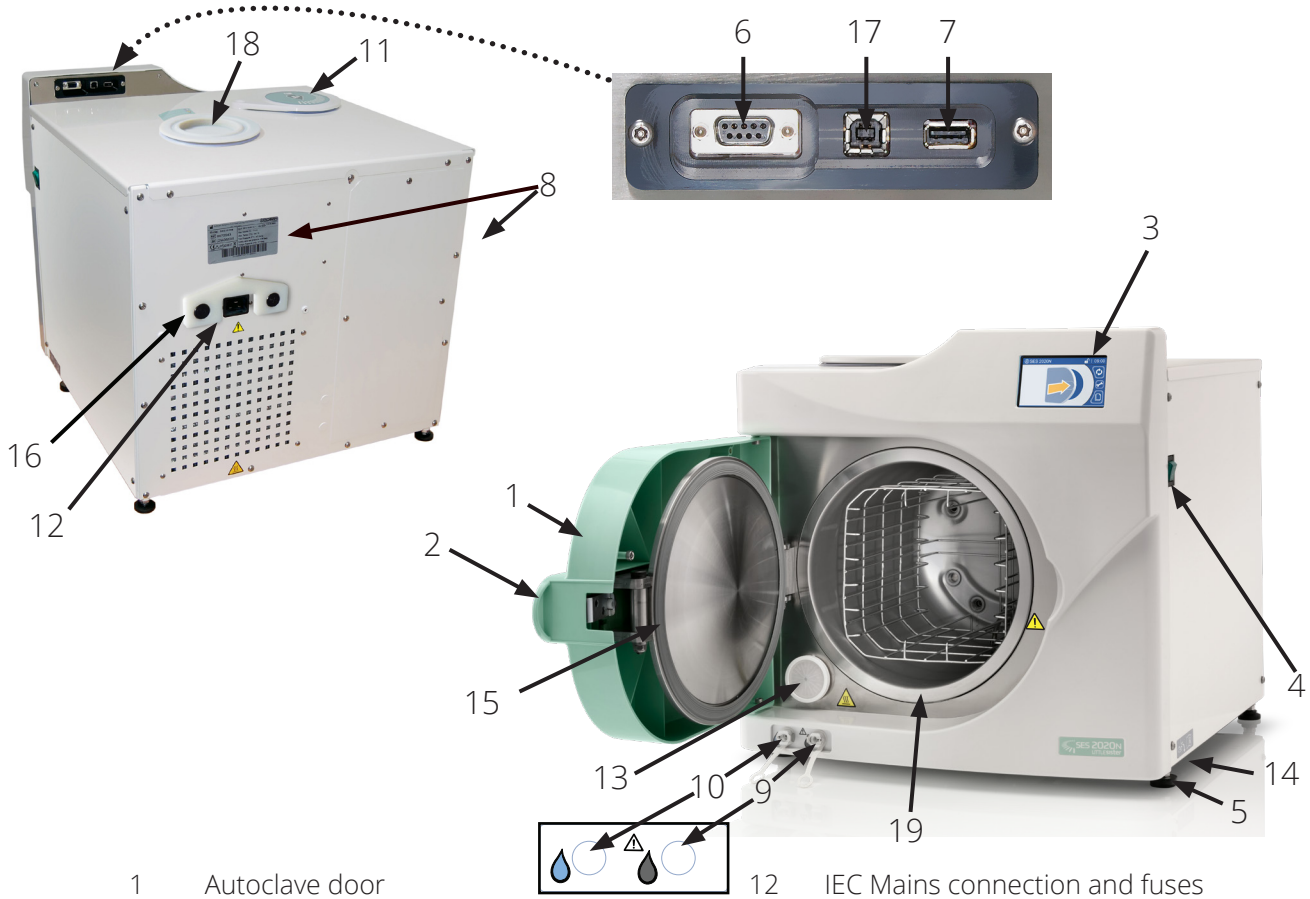
A CAUTION is given when special instructions must be followed. Disregarding this information could result in permanent damage to the product.

A NOTE provides specific information that makes important instructions clear.

1.7 Usability

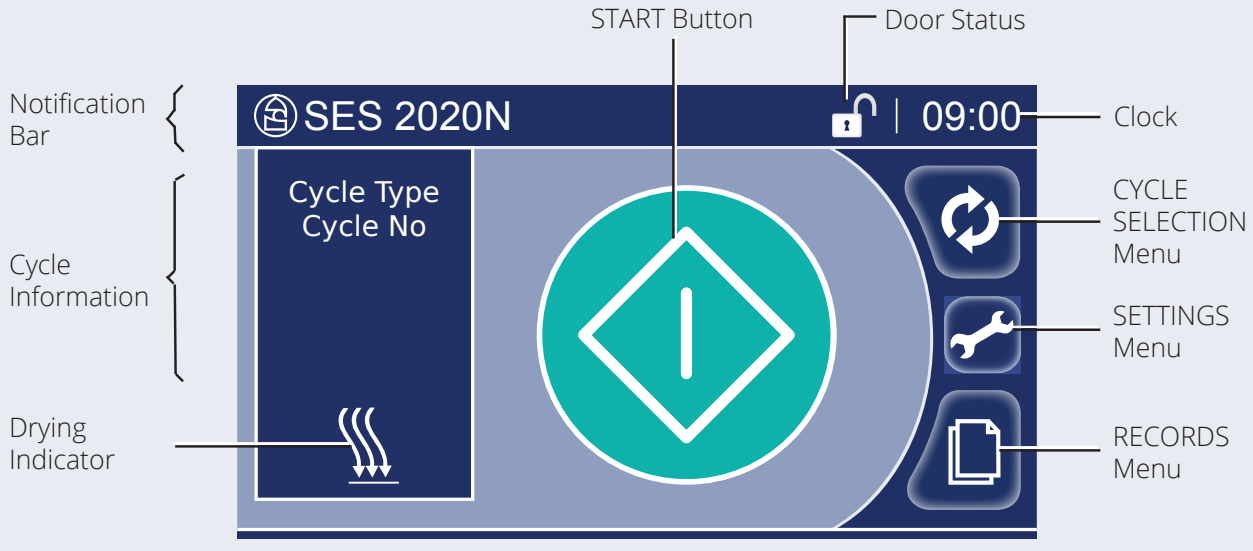
Intended User	Trained medical professionals. The product is not used by the patient.
Medical Purpose	Sterilisation of medical instruments using saturated steam.
Contraindications	There are no direct contraindications. The autoclave does not provide direct treatment to a patient. Indirect contraindications include cycle failure, incorrect loading, incorrect cycle selection, and incorrect servicing/ repair, leading to a non sterile load. The risk of non-sterilisation has been assessed through risk management and mitigated through product design, verification/ validation product testing, and instructions for use, in accordance with the standards listed in Appendix 5. In the event of cycle failure, the autoclave is designed to alert the operator that the cycle has failed and the load is not sterilised. To ensure a sterlised load, the autoclave must be operated by trained medical staff and used in accordance with the instructions and safety warnings contained within this manual. Servicing and repairs must be performed by Eschmann, or Eschmann trained engineers.
Patient Population	The autoclave sterilises medical instruments and therefore does not provide treatment directly to a patient.
Intended use	Designed and tested for compliance to BS EN 13060, the product is a bench top small steam steriliser for the sterilisation of medical instruments using saturated steam. The autoclave has a 17 litre chamber and operates using N Type cycles at nominal temperatures of 121 or 134°C, either with or without drying. The product is intended for the sterilisation of unwrapped solid instruments. Refer to Appendix 2 for full details of the loading requirements and capacity. Refer to Appendix 5 for Technical data. The product is intended to sterilise clean items only. The product is not suitable for hollow, porous, pouched or wrapped items. The product is not suitable for sterilising liquids or pharmaceutical products. The product is not suitable for sterilising items which are not rated for steam sterilisation at the stated cycle temperatures. The product has a technical lifetime of 10 years.
Device Application	The autoclave is suitable for the sterilisation of solid, unwrapped medical instruments in the following applications: Hospitals, doctors surgeries, medical centres, dental practices, podiatry practices, veterinary practices, hair salons, and tattooists.
Device Classification	Devices specifically to be used for sterilising medical devices are classified as Class IIa, as derived from Rule 16 of Annex VIII of the EU Medical Devices Regulation 2017/745.
Frequently used functions	• Switching the autoclave on/ off • Filling, emptying and changing the water in the reservoirs • Opening and closing the door • Loading and unloading the autoclave • Selecting the appropriate cycle via the touchscreen display • Cycling through the menus on the touchscreen display • Starting the cycle via the touchscreen display • Selecting drying and non drying modes via the touchscreen display • Cleaning the autoclave • Replacing filters and door seals • Downloading cycle data • Running daily and weekly test cycles

Fig. 1 Main Components



1	Autoclave door	12	IEC Mains connection and fuses (Warning, consult manual, Section 1)
2	Door handle	13	Bacterial air filter
3	Touch screen display (Fig. 2)	14	Overheat RESET button
4	Mains 'on/off' switch	15	Door seal
5	Adjustable foot x 4	16	Mains Inlet Shield
6	RS232 port (for data logger/ printer)	17	*Not used*
7	USB host port (for USB memory stick)	18	Steam vent (Do not remove) (Warning, consult manual, Section 1)
8	Serial Label (rear and side)	19	Autoclave chamber (Warning, consult manual, Section 1)
9	Waste water drain (Warning, consult manual, Section 1)		
10	Fresh water drain		
11	Fresh water reservoir (rotate fill cap to open)		

Fig. 2 Typical START Screen



2 Introduction and Installation

The autoclave should be installed and commissioned by an Eschmann or Eschmann Trained Engineer. Contact Eschmann for installation, User Training and Warranty Registration.

These installation instructions do not include configuration setup and removal of a transit bracket, which can only be performed by Eschmann, or an Eschmann trained engineer.

2.1 Introduction

The Eschmann SES 2020N is an 'N' type non-vacuum autoclave with a 17 litre chamber. It is capable of 'N' type cycles, with and without selectable drying.

It is intended for the sterilisation of solid instruments. It has been designed in accordance with applicable standards (e.g. BS EN 13060).

2.2 Unpacking

Remove the outer packaging and all packaging pieces.

Recycle packaging in accordance with local recycling practices.

CAUTION

Always move or lift the autoclave using at least two people. Observe good manual handling techniques at all times, with hands placed under the base on each side of the autoclave.

Remove the tape that is securing the door.

Check for the following items (some are packed inside the chamber - remove these):

User Manual	Mains power cable
Drain tube	Tray carrier and tray lifter
Bubble Indicator	USB Memory Stick (Cycle Logger Application & Manuals)

Please note that contents may vary

2.3 Location

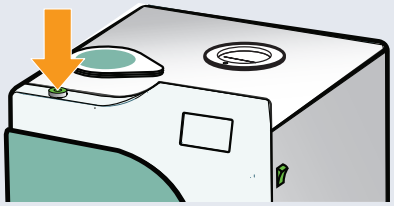
Environmental conditions must comply with those defined in Appendix 5. Technical Data.

Place the autoclave on a flat, clean, dry, level surface that is water resistant, heat resistant and suitable for the weight. Ensure that the mains plug and power switch will be easily accessible during use.

When installed, there must be a minimum working clearance of 25mm at the sides and 75mm at the rear. Vents must be clear of obstructions. Ensure that the door can be fully opened.

2.4 Adjusting the autoclave feet

Place the supplied bubble indicator on the autoclave as shown below. This surface is inclined.





Bubble indicator is level

When the bubble indicator shows it to be level, the autoclave will be at the correct incline.

- Adjust the feet (Turn clockwise to extend) so that the bubble level indicates level from side to side.
- Adjust the front feet so that the bubble level indicates level from front to back.

Ensure that all four feet are fully in contact with the work surface. Hand tighten the locking nuts on the feet.

2.5 Mains connection

Connect the autoclave to the mains power socket using the supplied Eschmann mains power cable.

Only use the supplied Eschmann mains power cable. DO NOT use any other mains power cable.

Eschmann recommend the use of a suitable RCD (Residual Current Device).

2.6 Information/ safety symbols

Product Safety Symbols			
or	Attention: See the instructions for use		
	Consult the instructions for use		DO NOT use tap water
	Mains input fuse rating		Potentially hot surfaces
Product Information Symbols			
	Manufacturer		Date of manufacture
SN	Serial number	REF	Catalogue number
	WEEE recycling: Do not dispose of product at end of life with other waste	MD	Medical Device
CE 2797	The CE marking of the product certifies that it complies with the EU Medical Devices Regulation 2017/745		
EU REP	EU authorised representative		

3 Controls

Before the cycle begins:

- **Know your PIN Code.**
- Thoroughly clean all instruments before sterilisation, ideally in an Eschmann Instrument Washer Disinfector.
- Check that the door seal is clean and free from debris.
- The bacterial air filter must be fitted.
- Do not use tap water in the autoclave.

Whilst the cycle is running:

- Drying may be enabled at any time during the cycle.

When the cycle has ended:

- Remove all loads immediately the door is opened. Take care! The load and the chamber will be very hot. Use the tray lifter.
- Use wet loads (drying turned off) immediately.
- Leave the door ajar between cycles, especially if running consecutive cycles.

3.1 Touch screen & menu operation

Touch screen

The autoclave must be switched on to use the touch screen.

The autoclave uses a resistive touch screen. This requires a light pressure to operate. You can use a gloved or non-gloved hand.

Use the touch screen to view and navigate all the menus and pages contained in the menu system.

Menu operation

In the menus:



Use the up/down buttons to highlight your chosen setting in the blue area of the screen. For example, pressing the up arrow will effectively move the blue area upwards.



Press to accept a setting or selection



Press to return without change



Press to edit a selection

3.2 The Keypad



At points throughout the menu, whenever the keypad is displayed, you must enter the required information. For example; a PIN code (Personal Identification Number), a date, a time, a delay time, a cycle number.

Each type of keypad expects the input to be in a certain format and will prevent incorrect input.

The formats are:

PIN code	1234	four digits
Date	dd/mm/yy	day/month/year
Time (24hr clock)	hh/mm	hours/minutes
Delay time	hh/mm	hours/minutes
Cycle number	123456	six digits

Below are the details for entering a four digit PIN code, and the process is similar for all other keypads.

Type your four-digit PIN code:

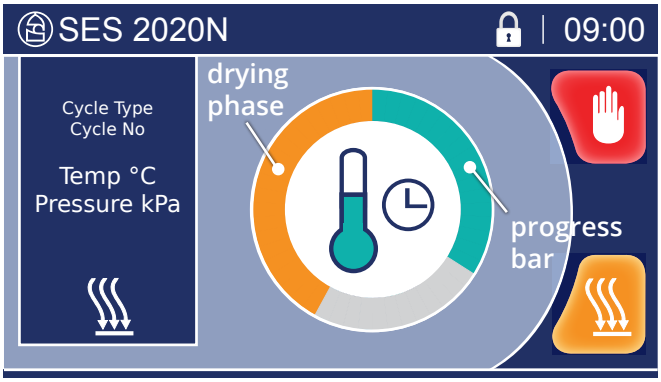
Each time a number is pressed, the flashing line (underscore) is replaced with the number typed. The line then highlights the next number.

- Press **OK** to accept the PIN code.
  - If the PIN code is accepted, the next screen will be displayed.
  - If the PIN code is not accepted the screen beeps and starts the process of entering a PIN code again.
- Press Backspace (⮌) to re-enter an incorrectly typed number. A final backspace will display the previous screen.

If your PIN code did not work:

- You may have entered it incorrectly.
- You may not have entered four digits. Pressing OK with less than four digits displayed will start the process of entering a PIN code again.
- The system may require a higher level of PIN code. For example, certain Menus and Warnings require a Manager PIN. However, the main process of running a cycle only ever requires a User PIN.

3.3 The Progress Screen



As its name suggests, the Progress Screen indicates how the cycle is progressing; the phase of the cycle that the autoclave is completing; and the cycle information, for example, the ambient temperature and pressure.

To do this, a green circular progress bar is drawn on the screen until it is completed for the selected cycle. At this point the cycle ends.

When drying is deselected for a cycle, the progress bar does not include the (orange) drying phase.

The phases of the cycle are indicated by the following:

	Preconditioning Phase
	Sterilisation Phase
	Post Sterilisation Cooling Phase
	Drying Phase

Two-minute indication

The autoclave marks the two-minute point in the Sterilisation Phase for manual record keeping.

It displays the following, in order, to count down to the two minute mark:



The two-minute mark has been reached the moment 2 is displayed.

3.4 Notification screens

These may be displayed before and during a cycle.

Complete the actions requested to continue using the autoclave.

There are three types of notification screen:

Water Management Screens	
Fill Water Reservoir	Section 4, stage 2
Change The Water	Section 4, stage 3
Empty Waste Reservoir	Section 10
Service Screens	Section 11
Advisory Screens	Section 12

3.5 Autoclave manager

Appoint a staff member to be the Autoclave Manager.

The Autoclave Manager, who must be trained in the use of the autoclave, will control the use of the Autoclave. This person will be responsible for making sure that all users are regularly trained in the use and maintenance of the autoclave. Records of attendance at training must be maintained, and evidence of understanding demonstrated.

Refer to Section 14: “Security” to set up security PINS and choose a security level for the autoclave.

Note: ***REMEMBER YOUR “MANAGER” PIN CODE! A forgotten Manager PIN code will require a Service call-out to access the menus.***

4 Preparing the autoclave

Water Quality Requirements

THE FRESH WATER RESERVOIR MUST ONLY BE FILLED WITH WATER OF AN APPROPRIATE QUALITY THAT IS LOW IN DISSOLVED SOLIDS AND HAS A LOW MICROBIAL COUNT.

We recommend the use of:

- water treated by the reverse osmosis process
- distilled water
- deionised water

- TDS (Total Dissolved Solids) to be less than 7mg/l (milligrams per litre), or 7ppm (parts per million)
- pH to be between 5.0 - 7.5
- conductivity <15 µS/cm at 20°C

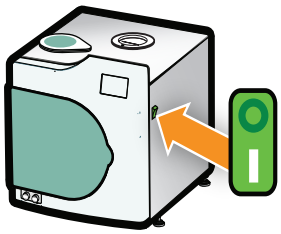
Refer to local authority requirements if in doubt.

The autoclave water quality sensor prevents operation if the water in the fresh water reservoir exceeds 30 µS/cm.

DO NOT FILL THE FRESH WATER RESERVOIR WITH TAP WATER, CHEMICALS OR CHEMICAL SOLUTIONS.

⚠ WARNING!
Be careful not to splash water on the top of the autoclave.
In the unlikely event that the reservoir is overfilled, the unit is designed to overflow water onto the worktop. If water is poured onto the autoclave, or a leak is found, disconnect the autoclave from the mains socket and dry the autoclave thoroughly. Allow time to dry.

1



Switch the autoclave on



The welcome screen displays available languages. Select the language by pressing the desired language option.

Note that the autoclave may take about one minute to initialise.

Mains Switch: Fig. 1, item 4.

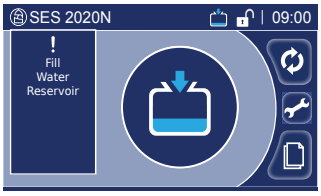
If a single language option is provided, this is used by default, and need not be selected.

The language selected is remembered on power-down.

2



Fill the fresh water reservoir, if required



The fresh water reservoir should be filled whenever this screen is displayed.



1. Rotate the fresh water reservoir fill cap on the top of the autoclave (clockwise).
2. Carefully pour in water to the level of the **RED LINE (Red rubber ring)** which indicates the **MAXIMUM FILL LEVEL.**
3. Rotate the reservoir fill cap back into the closed position. (anti-clockwise)

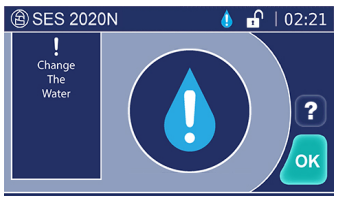
DO NOT use tap water!

Only fill the fresh water reservoir with water that meets the water quality requirements.

DO NOT fill the fresh water reservoir with chemicals or chemical solutions.

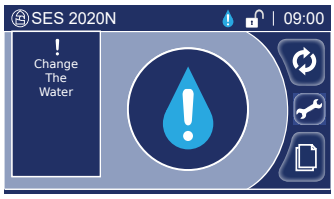
Note: You can fill the fresh water reservoir with the autoclave switched on.

3



If this 'CHANGE THE WATER' screen is displayed, the **alert level** fresh water quality requirements have been exceeded (15µS/cm).

It is recommended to change the water to prevent reliability issues. Either drain the fresh water reservoir (Refer to Section 10) and re-fill, or chose to continue with the current water, by pressing the **OK** button.



If this 'CHANGE THE WATER' screen is displayed, the **action level** fresh water quality requirements have been exceeded (30µS/cm).

The autoclave will not run until the fresh water reservoir has been drained (Refer to Section 10) and re-filled with water complying with the Water Quality requirements.

4



Drain the waste water reservoir, if required

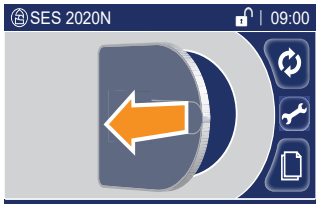
The **Waste Water Reservoir** should be drained when the 'EMPTY WASTE RESERVOIR' advisory screen is displayed. Refer to Section 10.

5



Pre-use checks:

DOOR SEAL AND BACTERIAL AIR FILTER



1. Open the door.
2. Check that the **DOOR SEAL** is clean, undamaged and free of debris.
3. Check that the **BACTERIAL AIR FILTER** is fitted. (Refer to Figure 1, pg 4)

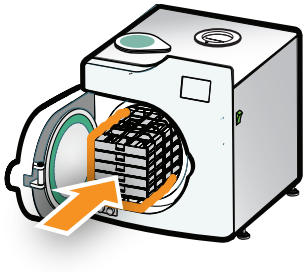
Clean the door seal and chamber face every day. Refer to Appendix 3 for the correct cleaning method.

Refer to section 11.1 to fit or change the bacterial air filter.

Refer to section 11.2 to fit or replace the door seal.

5 Loading the autoclave

1



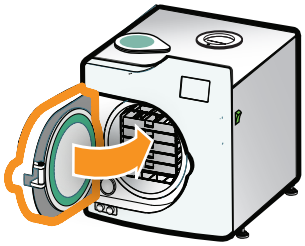
Load the instruments to be sterilised.

Load	Cycle type
Solid, non-wrapped instruments for immediate use	N

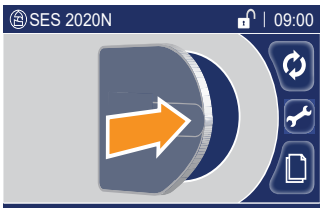
Refer to Appendix 2 for loading information.

All instruments must be thoroughly cleaned before sterilisation, ideally in an Eschmann Instrument Washer Disinfector.

2



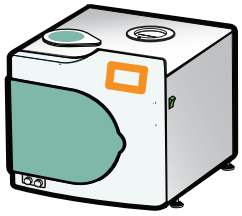
Close the door



Check there are no obstructions.

Be careful not to trap your fingers when closing the door.

6 Selecting the cycle



Cycle Selection



Press to view the Cycle Selection menu.

Use the up/down buttons to highlight your chosen cycle in the blue area of the screen.

OK Press to accept.

Refer to the Cycle chart below.

Always select a cycle that is suitable for the load.

The 134° N type cycle is the factory default when powering up.

The autoclave retains the previous cycle settings until turned off.

Press to return without change.

You may be prompted to enter a PIN code. Refer to Section 3.2: "The Keypad".

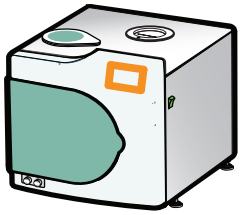
Cycle Chart

Cycle type	Load type
134° N	Solid instruments (unwrapped) - with drying. *
121° N	Solid instruments (unwrapped) - with drying. *

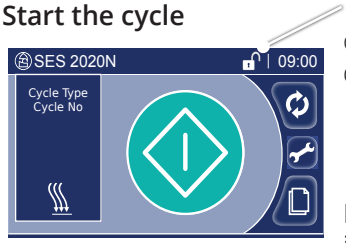
* Drying can be toggled STD/EXT/ECO/OFF at any time during the cycle

7 Starting the cycle

1



Start the cycle



The padlock symbol on screen Indicates door lock status:

door locked

door unlocked

Door lock operation is automatic.

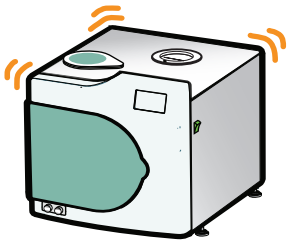
Press and hold for 1 second to start the cycle.

The door will lock and the cycle will start.

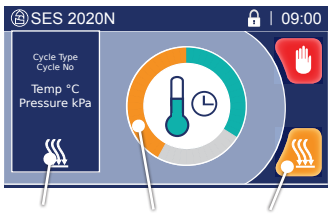
You may be prompted to enter a PIN code. Refer to Section 3.2: "The Keypad".

Note: If the autoclave too hot symbol is displayed, the autoclave will cool before starting the cycle.

2



Turn drying On / Off (optional)



Drying is OFF by default.

You can select various options for drying by toggling the drying button.

The Drying Phase portion of the progress bar is orange when a drying type is selected, and it is grey when drying is not selected.

The drying button toggles between the following options:

STD: Standard Drying (20 mins of drying time)

EXT: Extended Drying (30 mins of drying time)

ECO: Economy Drying (10 mins of drying time)

OFF : Drying is disabled

The selected drying option is applied to all cycles until the selection is changed, or the autoclave is powered off. Drying defaults to OFF when the the autoclave is powered on.

You can turn drying on or off at any time during the cycle.

⚠ WARNING!

During operation:

Do not remove the steam vent (Fig 1, Item 18

Do not cover the steam vent

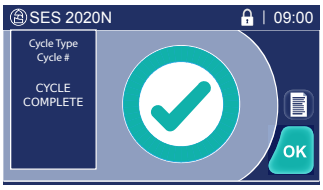
Caution: Hot steam vented

8 Unloading the autoclave

1



Cycle complete

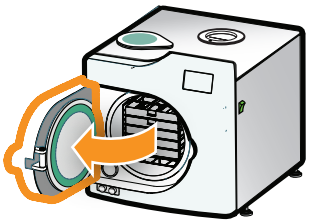


OK Press to unlock the door.

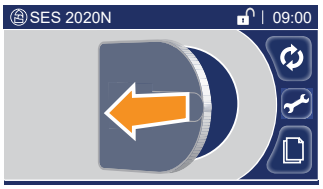
You will be prompted to enter a PIN code. Refer to Section 3.2: "The Keypad".

Press to view the completed cycle log.

2



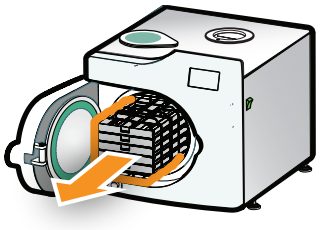
Open the door



If an action is required, for example, the Fill Water Reservoir screen is displayed, you can still open the door.

Leave the door ajar between cycles, especially if running consecutive cycles, as this allows the chamber conditions to stabilise.

3



Remove the load

Use the tray lifter - refer to Appendix 2.

THE UNIT IS NOW READY TO RUN ANOTHER CYCLE.

Take care!
The load and the chamber will be very hot.

Use/store the instruments immediately the door is opened.

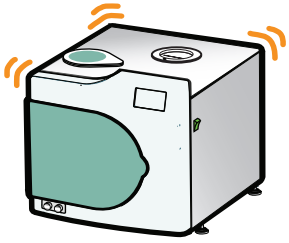
9 How to stop the cycle

⚠ WARNING!

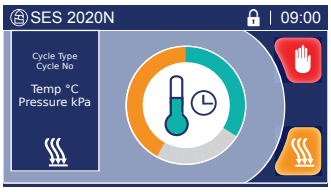
Press and hold for 2 seconds to stop the cycle.

The load is NOT sterilised.
When a sterilising cycle is aborted the load must be treated as non-sterile. The load must be sterilised by running the cycle again.

1

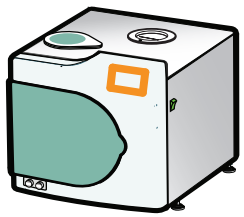


Stop the cycle

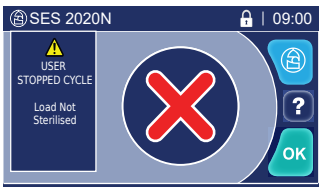


Press and hold for 2 seconds to stop the cycle.

2



The cycle has stopped



There may be a delay whilst the chamber stabilises, allowing the door to be opened.

OK When OK appears after a short delay, press it to acknowledge the warning and clear the screen.

? You can press this to display details of the cycle.

You may be prompted to enter a PIN code. Refer to Section 3.2: "The Keypad".

10 After use

10.1 Draining the Reservoirs

⚠ WARNING!
Water in the waste reservoir can be very hot. Take care when draining to avoid contact with the hot water.

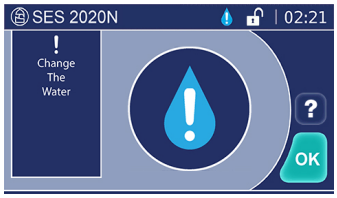
The autoclave is fitted with a fresh water reservoir and a waste water reservoir. Both need to be drained periodically. The reservoirs can be drained with the autoclave switched on.

When to Drain a Reservoir:

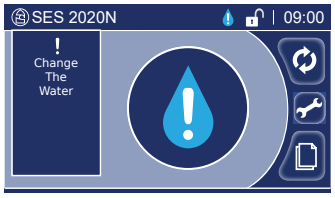
Fresh Water Reservoir:

The Fresh Water Reservoir should be:

- Drained at the end of each day.
- Drained and refilled if a 'CHANGE THE WATER' screen is displayed (See below), due to impurities that could damage the autoclave. For further information, refer to Section 4.



Water quality at alert level. Either drain the reservoir and refill (Recommended), or press OK to accept.



Water quality at action level. Drain the reservoir and refill.

Waste Water Reservoir:

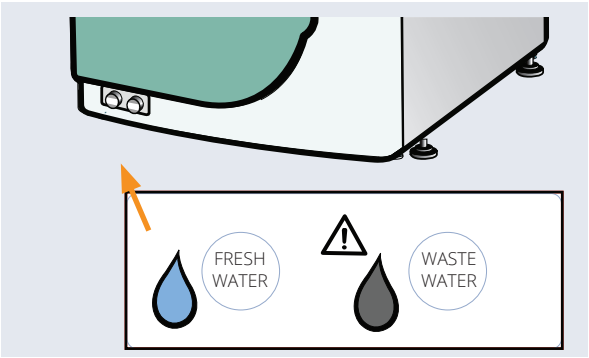
The Waste Water Reservoir should be:

- Drained at the end of each day.
- Drained when the 'EMPTY WASTE RESERVOIR' advisory screen is displayed.

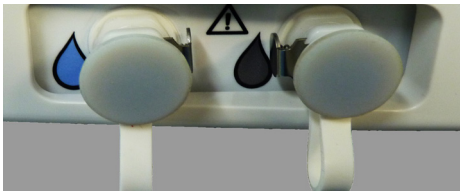


How to Drain a Reservoir:

Fresh water and waste water reservoir drain sockets are located as shown below:

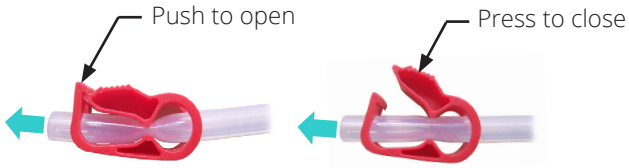


To drain a reservoir, first remove the drain plug (If fitted) from the fresh water or waste water reservoir drain socket by pressing the metal thumb release on the side.



Place the cut end of the supplied drain tube into a sink or container on a surface below the level of the autoclave (Capacity: 5 litres or more).

Ensure that the red drain tube clip is closed.



Connect the drain tube connector into the fresh water or waste water drain socket, as required. This action opens the valve and allows the water to drain, however, the red drain tube clip is now holding the water back.

Open the red drain tube clip to drain the water.

If using a container, remember to empty it.

Once drained, release the drain tube from the socket by pressing the metal thumb release on the side. Refit the drain plug.

Check that the red drain tube clip is not damaged or leaking. If so, **replace as soon as possible.**

On completion, leave the red drain tube clip in the closed position on the pipe.

If applicable, refer to Section 4 to re-fill the fresh water reservoir.

10.2 Switching Off

Switch off the autoclave at the mains switch (Fig. 1, item 4) when not in use.

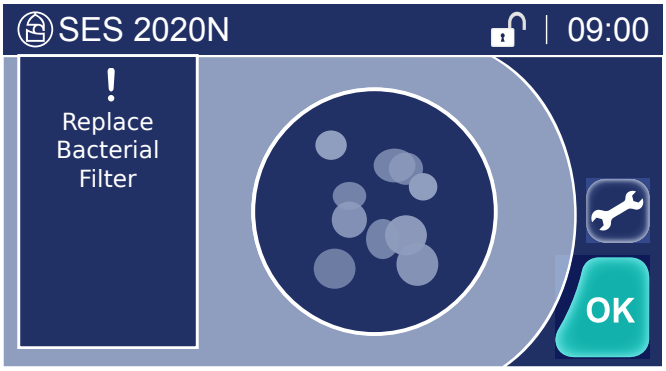
Leave the autoclave with the door ajar and the chamber empty.

10.3 Cleaning

At the end of each day carry out the Cleaning and Care instructions. Refer to Appendix 3.

11 Service Screens

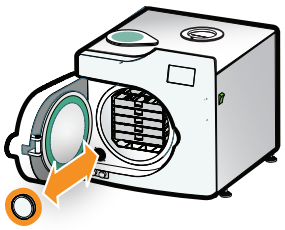
11.1 Replace the bacterial filter



The bacterial filter needs replacing when this screen is displayed.

You can replace the filter with the autoclave switched on.

The screen will clear when the task is complete.



⚠ WARNING!
The water, chamber and load could be very hot and potentially non-sterile.

1. Open the autoclave door.
2. Gently pull the filter to remove it.
3. Replace with a new filter, pushing it firmly into place.
4. Discard the old filter in normal waste.
5. Update the Settings Menu counter for the filter.

Updating the Settings Menu

It is important to update the counters for the parts in the Maintenance Menu. The counters count the number of cycles performed for each part. This allows the autoclave to warn you when routine maintenance is required.

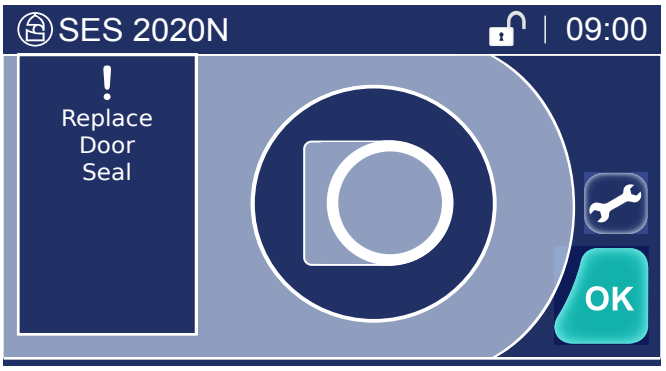
Press to display the Maintenance Menu from the Replace Bacterial Filter screen.

or

Press to display the Settings Menu from the Open Door, Close Door, or Cycle Start screens and select Maintenance.

Refer to Section 13.2 : “Settings Menu” - Maintenance.

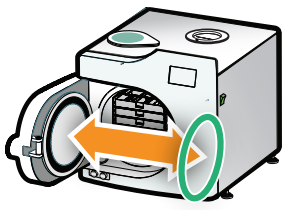
11.2 Replace the door seal



The door seal needs replacing when this screen is displayed.

You can replace the door seal with the autoclave switched on.

The screen will clear when the task is complete.



⚠ WARNING!
The water, chamber and load could be very hot and potentially non-sterile.

1. Open the autoclave door. Allow to cool if necessary.
2. Gently pull the door seal away from the door.
3. Clean the door surface and door seal groove using distilled, deionised or reverse osmosis (RO) water and a clean, soft, non-abrasive, lint-free cloth suitable for use on stainless steel.
4. Fit the new door seal into the recess. Press to secure it at the 12, 6, 3 and 9 o’clock positions, then press firmly into place all around. Support the back of the door as you press. It must sit flush to the door surface.
5. Follow local biohazard procedures for cleaning and decontamination when disposing of the door seal.
6. Update the Settings Menu counter for the door seal.

Updating the Settings Menu

It is important to update the counters for the parts in the Maintenance Menu. The counters count the number of cycles performed for each part. This allows the autoclave to warn you when routine maintenance is required.

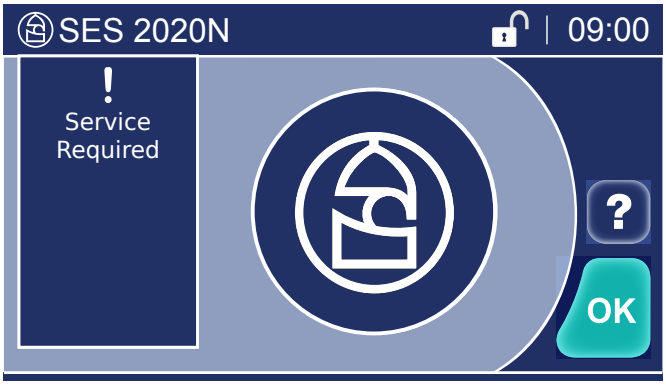
Press to display the Maintenance Menu from the Replace Door Seal screen.

or

Press to display the Settings Menu from the Open Door, Close Door, or Cycle Start screens and select Maintenance.

Refer to Section 13.2 : “Settings Menu” - Maintenance.

11.3 Service required



The autoclave requires servicing by a qualified Eschmann engineer. Contact Eschmann as soon as possible.

? Press to display the details required for contacting Eschmann.

OK Press to acknowledge the warning and clear the screen. The screen will reappear at the beginning of each cycle until the autoclave is serviced.

12 Advisory Screens

Advisory screens may be displayed at any time to protect the autoclave.

When the Advisory screen is first displayed some touch screen buttons are not available whilst the autoclave is depressurising in preparation for the door being opened.

This may take up to two minutes, at which point one of the following Advisory screens will be displayed.

CAUTION

The water, chamber and load could be very hot and potentially non-sterile.

After clearing any warning, always allow the chamber to dry before starting another cycle.

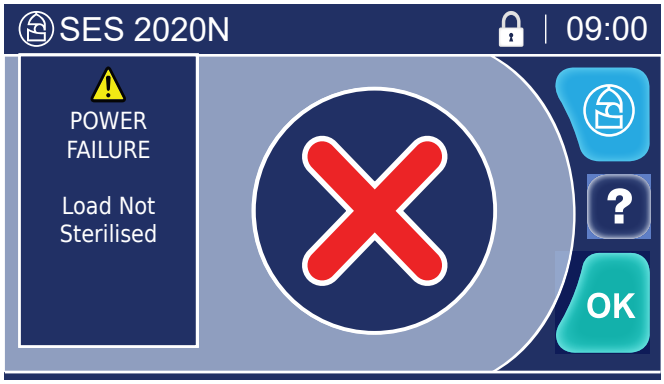
⚠ WARNING!

The load is NOT sterilised.
If an advisory screen is displayed, the load must be treated as non-sterile.

Sterilise the load by running the cycle again.

Do not attempt to solve the problem using tools or by tampering with the autoclave.

POWER FAILURE



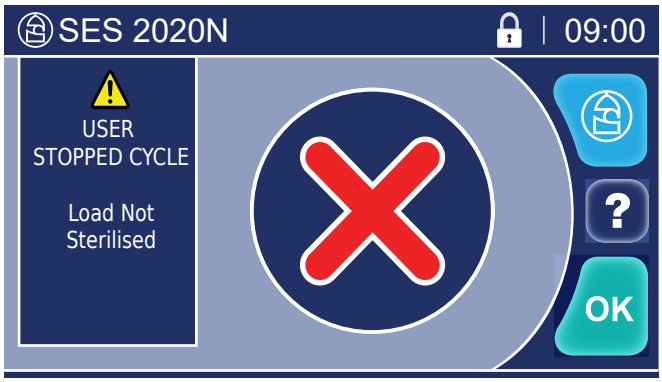
Displayed if the autoclave experiences a power interruption.

? Press to display the details required for contacting Eschmann.

OK
1. When OK appears after a short delay, press to acknowledge the warning and clear the screen.
2. Check mains supply, mains connections, autoclave fuses and mains cable fuse.
3. Run the cycle again. If the warning persists, contact Eschmann.

Eschmann use only (PIN protected).

USER STOPPED CYCLE



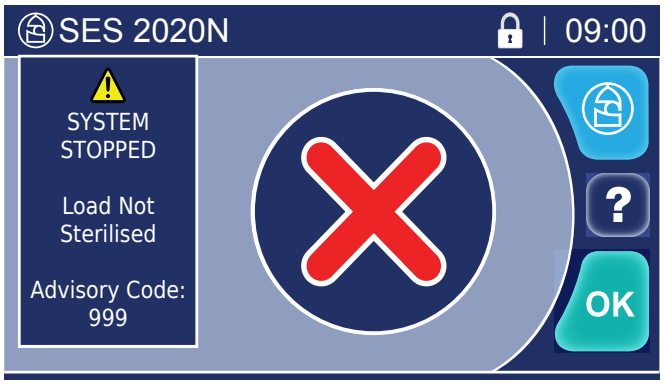
Displayed when the STOP button is pressed to stop a cycle.

? Press to display the details required for contacting Eschmann.

OK When OK appears after a short delay, press to acknowledge the warning and clear the screen.

Eschmann use only (PIN protected).

SYSTEM STOPPED



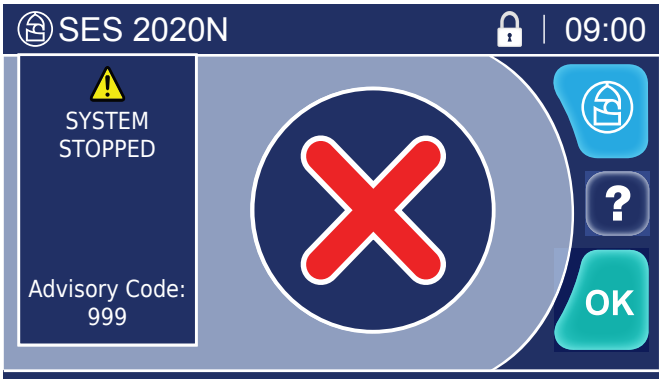
Displayed when the autoclave prevents operation **during a cycle**.

Press to display the details required for contacting Eschmann.

1. Note the Advisory Code. When OK appears after a short delay, press to acknowledge the warning and clear the screen.
2. Refer to Appendix 4 and complete the Actions against the relevant Advisory Code.
3. Run the cycle again. If the warning persists, contact Eschmann.

Eschmann use only (PIN protected).

SYSTEM STOPPED



Displayed when the autoclave prevents operation when a **cycle is not in progress**.

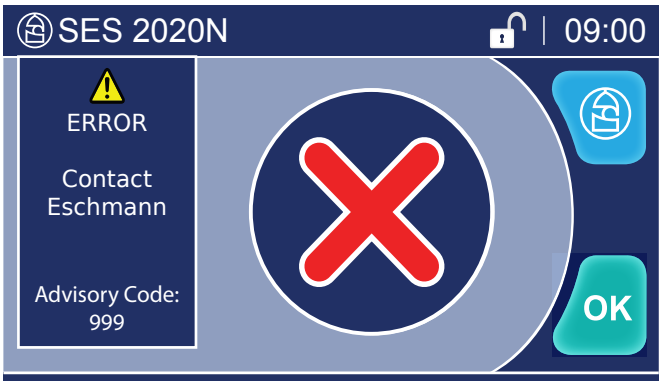
Press to display the details required for contacting Eschmann.

1. Note the Advisory Code. When OK appears after a short delay, press to acknowledge the warning and clear the screen.
2. Refer to Appendix 4 and complete the Actions against the relevant Advisory Code.
3. Run the cycle again. If the warning persists, contact Eschmann.

Eschmann use only (PIN protected).

ERROR

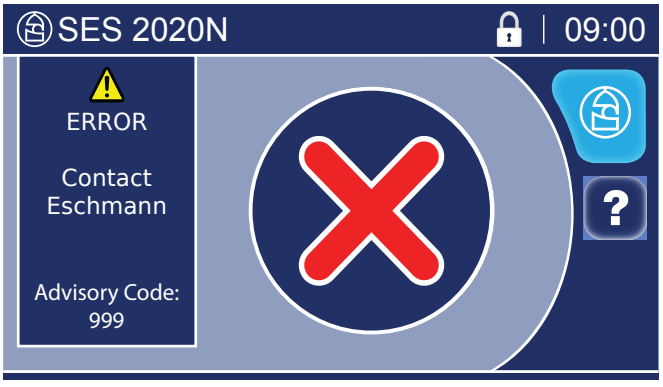
All errors require you to contact Eschmann.



Displayed when the autoclave experiences an Error.

1. When OK appears after a short delay, press to acknowledge the warning and unlock the door.
2. The door locked symbol at the top of the screen will change to the door unlocked symbol when the door is ready to be opened to retrieve instruments.

The screen changes to:



The autoclave is prevented from being used as this Error screen cannot be cleared.

Press to display the details required for contacting Eschmann.

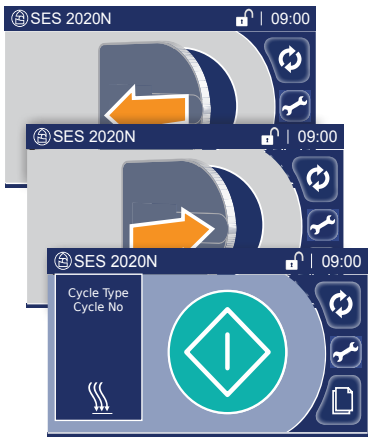
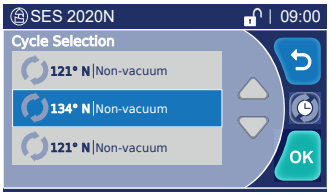
Switch the autoclave off and unplug from the electrical wall socket.

Eschmann use only (PIN protected).

13 Menus

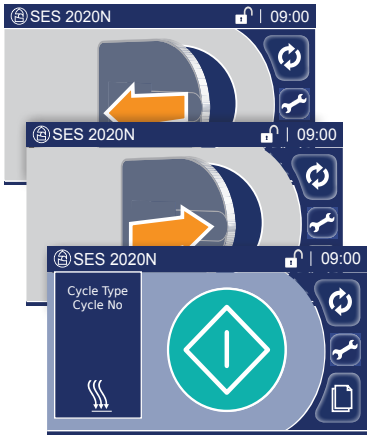
13.1 Cycle Selection Menu

Selecting a cycle

1		**The cycle has not yet started** From the Open Door, Close Door, or Cycle Start screens: Press to view the Cycle Selection menu.	**The 134° N cycle is the factory default for each new cycle.** **You don't need to select a new cycle if you are using the default cycle. Refer to Section 13.2 to change the default cycle.** **The current cycle type is shown on the Start screen.**
2		**Select the cycle** Use the up/down buttons to highlight your chosen cycle in the blue area of the screen. OK Press to accept and return to your starting screen in **1** above.	Press to return without change. **Refer to Section 6 for the Cycle Chart.**

Setting a delayed start

1



The cycle has not yet started
The Autoclave is loaded

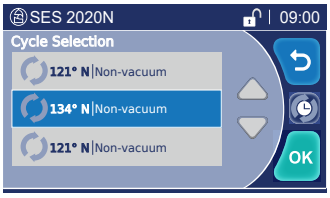
From the Open Door, Close Door, or Cycle Start screens:

Press to view the Cycle Selection menu.

Delayed Start allows you to delay the start of a cycle by up to 23 hours and 59 minutes.

A delayed start is set at the time of selecting a new cycle.

2



Select the cycle to delay

Use the up/down buttons to highlight your chosen cycle in the blue area of the screen.

OK — Do not press.

Press to view the Delay Start screen.

Press to return without change.

3



Set a delayed start time

OK — Press to accept the delay time shown and go to **5** below

or

Press to enter a new delay time.

Press to return without change.

4



Insert the Delay Time

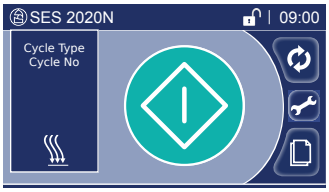
Enter the delay time in hours and minutes using the 24 hour clock.

Press **OK** to accept.

The maximum delay time is 23 hours and 59 minutes.

Press to return without change.

5

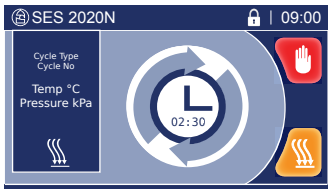


Start the Delayed Cycle

Press to start the delay cycle
The door will lock and the delayed cycle will start.

The delay time begins when the Start button is pressed.

6



Delayed Cycle Running

When the count down is complete (0:00), the Run Screen will be displayed for the duration of the cycle.

Press to stop the cycle.

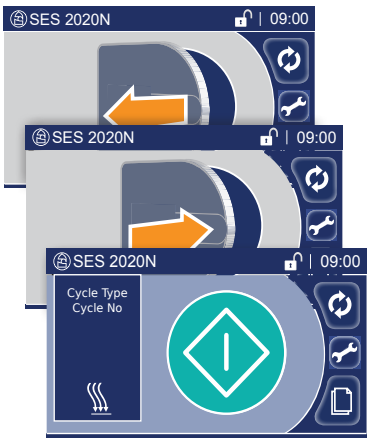
Toggle to select drying STD/EXT/ECO/OFF

A count down is shown on the screen.

13.2 Settings Menu (Managers only)

Viewing the Settings Menu

1



The cycle has not yet started

From the Open Door, Close Door, or Cycle Start screens:

Press to view the Settings menu.

The Settings menu contains:

- Date / Time
- Sounds
- PIN Management
- Security Level
- Service
- Maintenance
- About SES 2020N

2



Select the required setting

Use the up/down buttons to highlight your chosen setting in blue.

OK

Press to view the setting screen.

Press to return without change.

Date / Time

1



Set the autoclave's date and time

Use the up/down buttons to highlight your chosen setting in blue.

Press to edit the highlighted setting: Date or Time.

Press to return without change.

You must set the correct date and time as this is logged by the cycle records.

2



Insert the date or time

Enter date or time in the relevant keypad.

Press **OK** when complete.

The date format is Day/Month/Year.

The time setting uses the 24 hour clock.

Press to return without change.

3



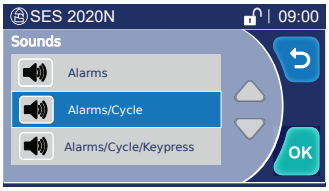
Set the autoclave's date and time

OK

Press **OK** to accept.

Press to return without change.

Sounds



Select the sounds

Use the up/down buttons to highlight your chosen setting in blue.

OK Press **OK** to accept.

Alarms	Warning screens are announced by 5 short beeps
Cycle	Cycle start: short beep Cycle end: long beep
Keypress	Short beep with each key press

Press to return without change.

There are three sound types to choose from:

Alarms
Alarms/Cycle
Alarms/Cycle/Keypress

Note that alarms are always sounded.

The selection highlighted in blue is the current selection.

PIN management

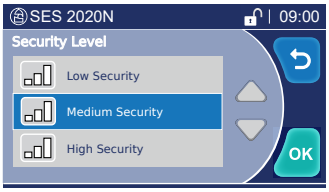


Setting a PIN Code

Refer to Section 14.3: “Setting a PIN code”.

Press to return without change.

Security level



Selecting the Security Level

Refer to Section 14.4: “Selecting the security level”.

Press to return without change.

Service

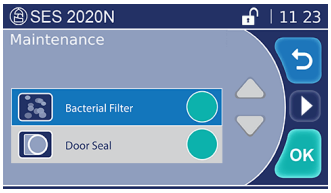


Service

The Service menu is protected by a Service PIN Code that is for Eschmann use only.

Press to return without change.

Maintenance



Resetting the Bacterial Air Filter and Door Seal Counters

The autoclave counts the number of cycles performed by the Bacterial Air Filter and Door Seal. From this, it determines when the item will need to be renewed.

The autoclave uses a simple traffic light system to indicate the usage of the parts:

Possible cycle quality impact - replacement overdue.

Immediate replacement required.

Cycle count not high enough to require replacement, although if the part is damaged, replace immediately.

Use the up/down buttons to highlight the chosen selection in blue.

Press to reset the highlighted selection.

OK Press **OK** to accept.

Press to return without change.

Replace the filter and/ or seal before resetting the counter(s).

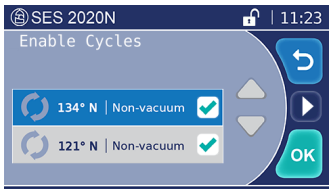
When you reset an item on this screen, it is marked with an arrow to indicate that you have selected to reset it.

Item(s) are reset when you press **OK.**

The **Replace the Bacterial Air Filter** and **Replace the Door Seal** service screens begin to display when an amber warning is in force.

Configure Cycles

1



Enable Cycles

Use this screen to enable the cycles available to the user on the Cycle Selection screen.

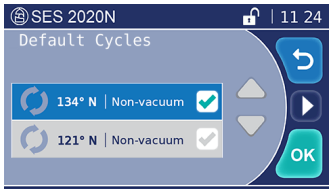
Use the up/down buttons to highlight the chosen selection in blue.

Press to toggle the check box. A green tick indicates the cycle type is enabled. A greyed out tick indicates the cycle is not enabled.

OK — Press **OK** to accept. The default cycles screen (See below) will be displayed.

Press to return without change.

2



Default Cycles

Use this screen to select the autoclave default cycle. Only one default cycle can be selected.

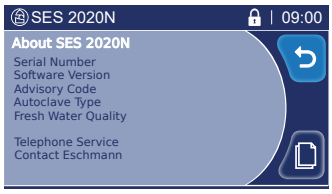
Use the up/down buttons to highlight the chosen selection in blue.

Press to toggle the check box. A green tick indicates the cycle is selected as the default cycle. A greyed out tick indicates the cycle is not selected as the default cycle.

OK — Press **OK** to accept.

Press to return without change.

About SES 2020N



About SES 2020N

Contains useful information about your autoclave when contacting Eschmann.

Press to return to the starting screen.

Press to view the Records menu.

Fresh water quality information and the last advisory code may also be presented on this screen.

13.3 Records Menu

Cycle records can be downloaded onto a USB memory stick. Follow the 'Downloading Records' instructions in this section. (Note: The USB memory stick should be <16Gbs USB FAT32 format only).

The USB memory stick should only be inserted into the autoclave for the cycle record downloading process and should be removed, once finished.

Cycle records can also be viewed directly on the screen. Follow the 'View Cycle' instructions in this section.

Downloading Records

1

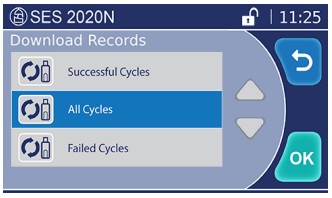


From the Open Door, Close Door, or Cycle Start screens:

Press to view the Records menu.

Insert a USB memory stick into the USB port. (Fig. 1, item 7)

2



Download records

Use the up/down buttons to highlight the chosen selection in blue.

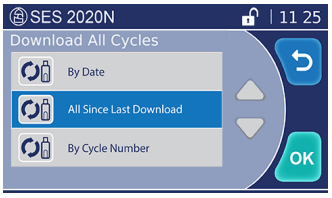
OK — Press to accept and view the next screen.

Select from:

Successful Cycles
All Cycles
Failed Cycles

Press to return without change.

3



Download records

Use the up/down buttons to highlight the chosen selection in blue.

OK — Press to accept and view the next screen.

All Since Last Download will start download of all cycle records since the last download.

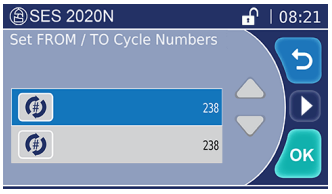
See below when selecting By Cycle Number and By Date.

Select from:

By Date
All since last Download
By Cycle Number.

Press to return without change.

- By Cycle Number



Set FROM / TO Cycle Numbers

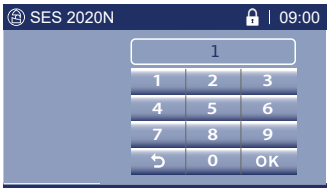
Use the up/down buttons to highlight the chosen selection in blue.

Press to enter the selected cycle number (See below).

OK — Press to accept the cycle numbers shown and begin download.

Press to return without change.

Input boxes default to the most recent cycle number, but can be changed.



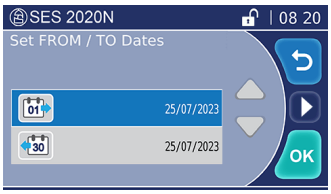
Enter the cycle number

Enter the cycle number in the keypad. Zero and numbers prefixed by zeros are not accepted.

Press **OK** to accept the cycle number entered.

Press to return without change.

- By Date



Set FROM / TO Dates

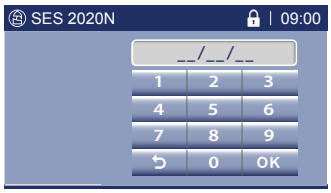
Use the up/down buttons to highlight the chosen selection in blue.

Press to enter the selected date. (See below)

OK Press to accept the dates shown and begin download.

Press to return without change.

Input boxes default to today's date, but can be changed.



Enter the date

Enter the date in the keypad.

Press **OK** to accept the date entered.

The date format is Day/Month/Year.

Press to return without change.

Download

4



Downloading Records

The records are being downloaded via the USB port.

Press to stop the download before download is complete.

If **Plug In USB** is displayed, check that a USB memory stick is correctly connected.

Do NOT remove the USB memory stick during download.

5



Downloading Complete

Download is complete. Exit the Records menu before removing the USB memory stick.

OK Press **OK**

Always ensure that the USB stick is removed once downloading is completed

If **Download Failed** is displayed, check for the following:

Memory stick not formatted

Memory stick is full

Memory stick not plugged in

Search returned no data

View Cycle



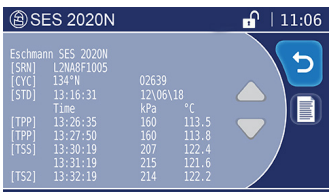
To view a cycle record directly on the screen:

From the Download Records menu (See instructions 1 and 2 in this section), select 'View Cycle'.

Enter the cycle number in the keypad. Zero and numbers prefixed by zeros are not accepted.

Press **OK** to accept the cycle number entered.

Press to return without change.



The cycle record can now be viewed on the screen.

Press to view the detailed cycle record

Press If a printer is enabled, to obtain a printout of the cycle record.

14 User security

14.1 Overview

The autoclave can be configured to provide varying levels of security.

This takes the form of a four digit PIN code (Personal Identification Number) which must be entered into the Keypad at different points in the touch screen menu.



Levels of Security

The autoclave provides for three types of user:

Type	Description
User	Basic day-to-day user
Manager	The Autoclave Manager (more than one if required)
Service	Eschmann use only

- A User PIN will only work at a User location.
- A Manager PIN will work at both a User or Manager location.

There are fixed points in the touch screen menu that require you to enter a PIN code that cannot be disabled:

Fixed PIN Locations	Type
End of cycle	User/Manager
All Warnings	User/Manager
Service Required screen	User/Manager
Settings Menu	Manager
Records Menu	Manager

Default setting

The autoclave has twelve PINs. PIN 0001 is configured as a Manager allowing full access to the autoclave (except Eschmann Service screens). For security, this number should be changed by the Manager when first receiving the unit.

Note: ***REMEMBER YOUR "MANAGER" PIN CODE! A forgotten Manager PIN code will require a Service call-out to access the menus.***

All other PINs are disabled by being set to 0000.

Security PINs are configured in the Settings\PIN Management menu. The Settings menu is protected by the Manager PIN.

14.2 Autoclave manager

Appoint a staff member to be the Autoclave Manager.

The Autoclave Manager, who must be trained in the use of the autoclave, will control the use of the Autoclave.

The Autoclave Manager is responsible for ensuring that the correct sterilisation cycle is used for the items being sterilised, ensuring that records are kept correctly, and for keeping the PIN code(s) confidential.

We recommend that you set up the security so that you have:

- 1 Autoclave Manager (perhaps more in large departments).
- 1 or more Users.

Reasons for security

Standard BS EN 13060 specifies the general requirements and test methods for small steam sterilisers and sterilisation cycles used for medical purposes, or for materials that are likely to come into contact with blood or body fluids.

The choice of sterilisation cycle must be appropriate for a particular load type.

HTM guidelines state that:

- Permanent records of every sterilisation cycle should be kept.
- Written records of all testing and maintenance should be kept
- Sterilisation performance must be checked frequently.

The security offered by the SES 2020N Autoclave captures all of these elements. The PIN codes that you create form a major part of the record keeping for this autoclave. They appear in the cycle records (Section 13.3 : "Records Menu"), and in records printed using the Cycle Logger application (Section 15).

The PIN codes will allow you to know:

Who started a cycle	High security level
Who stopped a cycle	All security levels
Who unlocked the door at the end of a cycle	All security levels
Who cleared Service screens	Medium and High security levels
Who needs training	All security levels

14.3 Setting a PIN code

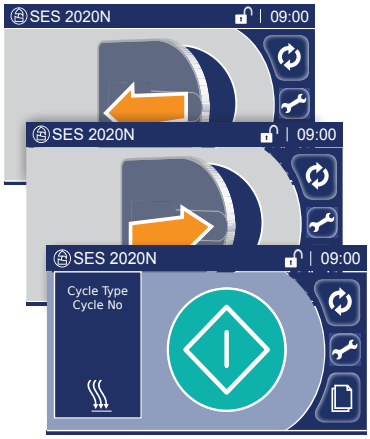
To set a PIN	Enter a four digit number (except 0000)
To disable a PIN	Enter 0000

The PIN won't set?

If you type in a PIN but the screen reverts to 0000, then that PIN is already in use. Enter a different four digit number.

Note: Eschmann reserve a number of PINS.

1

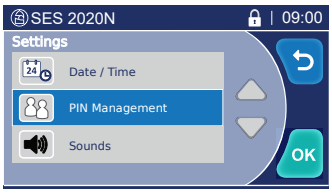


The cycle has not yet started

From the Open Door, Close Door, or Cycle Start screens:

Press to view the Settings menu.

2



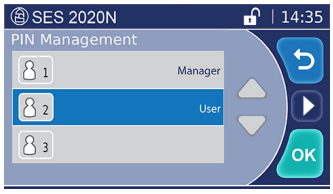
Select PIN Management

Use the up/down buttons to highlight PIN Management in the blue area of the screen.

OK — Press to accept.

Press to return without change.

3



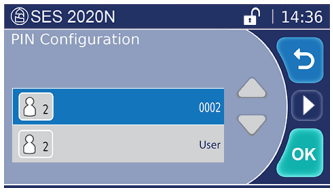
Select the PIN to edit

Use the up/down buttons to highlight your chosen PIN in the blue area of the screen.

Press to edit PIN or status level.

Press to return without change.

4

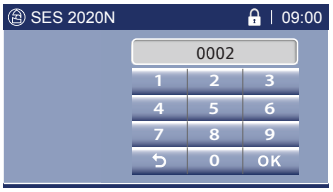


Select to Edit PIN or Status Level

Use the up/down buttons to highlight the PIN or status level in the blue area of the screen.

Press to edit: toggles between User/ Manager, or displays a PIN code keypad.

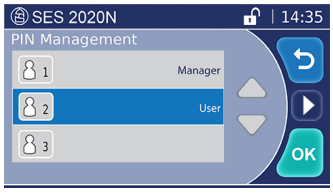
Press to return without change.



Enter a new PIN code to replace the PIN displayed and press **OK** to accept.

Press to return without change.

5



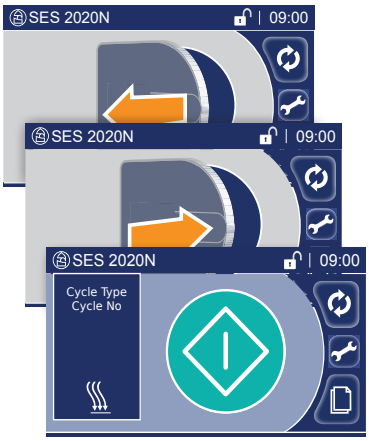
PIN Management

OK — Press to accept and save all changes.

Press to return without change.

14.4 Selecting the security level

1

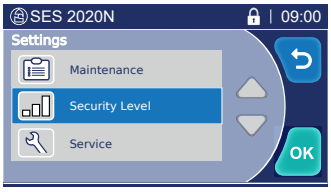


The cycle has not yet started

From the Open Door, Close Door, or Cycle Start screens:

Press to view the Settings menu.

2



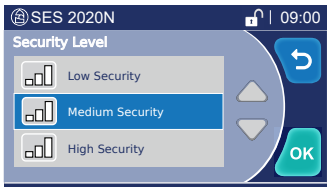
Select Security Level

Use the up/down buttons to highlight Security Level in the blue area of the screen.

OK Press to accept.

Press to return without change.

3



Select Required Security Level

Use the up/down buttons to highlight the required Security Level in the blue area of the screen.

OK Press to accept and return to your starting screen in **1** above.

Press to return without change.

MEDIUM security is recommended.

USER PIN locations enabled by selecting LOW, MEDIUM and HIGH Security Levels

Security level	Service screens	Cycle select	Cycle start	Drying	Cycle end
LOW					✓
MEDIUM Recommended	✓				✓
HIGH	✓	✓	✓		✓

15 Cycle Logger application

The digital storage of cycle data replaces the need for a traditional paper printer.

To view and print the files, transfer the files onto a PC using the USB memory stick.

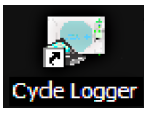
(Note: The USB memory stick should be <16Gbs USB FAT32 format only).

15.1 Install the software

Suitable for use with Windows® XP, 2000, Vista, and 7. Requires one USB port. Read the Licence Agreement at the rear of this book.

1. Disconnect the PC from the internet and any local area network (to prevent Windows® from installing the incorrect drivers).
2. Ensure there is no USB connection between the PC and the autoclave.
3. Insert the supplied USB memory stick that contains the Cycle Logger Application Software in to your PC. Follow the Installation Wizard's instructions.

   If an older version is found, it will be uninstalled first. After this, remove and replace the USB memory stick to restart the installation.
4. When the Wizard has finished, remove the USB memory stick and shut down your PC.
5. Restart your PC.



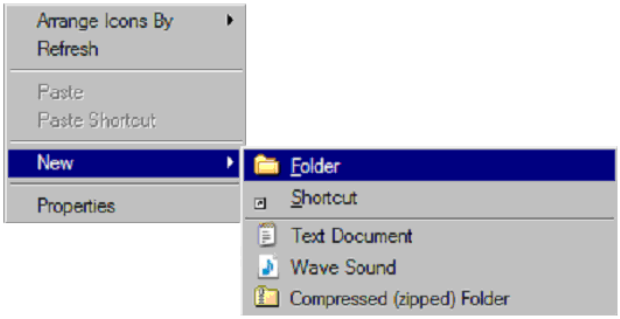
The installation process is complete.

There is now a shortcut on your desktop to open the software.

15.2 Create a PC back-up

On a regular basis, say weekly, it is sensible to back-up your data from the USB memory stick to your PC, putting it into a back-up folder on your PC desktop.

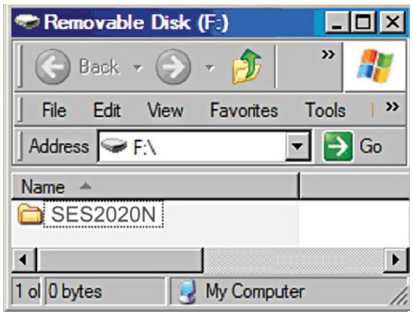
To create the back-up folder, right-click on the desktop and select ***New***, then ***Folder***.



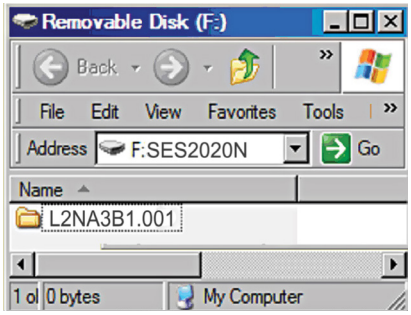
Type in the name of the new folder. We suggest **SES 2020N**. If you are backing-up more than one unit, you may want to add the unit's Serial Number to the title as well.

To back-up the files:

1. Insert the USB memory stick directly into the USB port on your PC.
2. A window will appear saying AUTOCLAVE.



3. Double-click the AUTOCLAVE folder to display a folder similar to the one shown below. It will be named with the unit's Serial Number.



4. To back-up the files, simply drag the folder onto your back-up folder on the desktop.

You are copying files in the same way you might copy photos from your camera. Partially minimise the windows on the PC to make drag-and-drop easier to use.

15.3 Viewing files

To view files in your back-up folder, use Windows® Explorer to view the folder contents.

Open single or multiple files by double-clicking any **.ELG** file.

Each file opens in its own window (opposite). Cycle files are ".ELG" files. They are named using the cycle number (e.g. 00186.ELG), or a code that is generated from the date and time (e.g. 1435874.ELG).

*If Windows does not recognise the file type, you can right-click the file and select Open With. Select the Cycle Logger program from the list. It will then recognise all **.ELG** files in the future.*

Viewing options



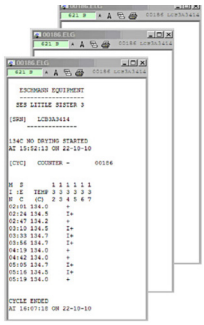
A click to reduce the text size

A click to enlarge the text size

toggle to display all the data in the cycle, or only major events

Application Software

When an .ELG file is viewed, the Application Software is launched. It reads .ELG files and provides the following shortcuts, but you don't need to use it other than that.



Use these shortcuts when you have more than one window open:

List the open windows by right clicking in the Application Window. The open windows are listed in the Logs In Memory screen.

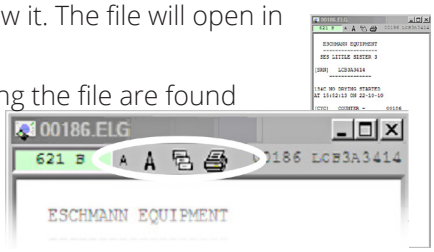


Bring a window to the front in the Logs In Memory screen by double-clicking its filename. Double-click it again to move the window to the top left of the PC screen.

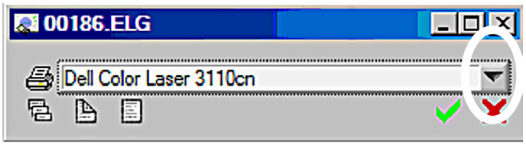
15.4 Printing files

Select a file and view it. The file will open in its own window.

The tools for printing the file are found at the top of this window, as shown.



1. Click to display the print options screen below.
2. Click the arrow to select your printer.



3. Click to print the file.

Printing options



toggle to display all the data in the cycle, or only major events

toggle to select double-sided or single-sided printing

toggle to select portrait or landscape format

print the file

cancel printing

Fault finding

Application Not Loading

You must have Administrator rights to load programs. This is accessed on your PC via Start/ Control Panel/User Accounts.

Compatibility Mode (Windows 7/Vista)

To change the compatibility mode of the software, select Start/All Programs/Eschmann Equipment/ Cycle Logger, and right-click on the second Cycle Logger.

Click on Properties. In the window click on the Compatibility tab. Check the Compatibility Mode check-box.

Select Windows XP from the drop-down menu. Click Apply and OK.

If problems still persist and you contact Eschmann we will need to know about your computer system.

We will need to know about the:

Windows version
Service Pack
Processor type

This is identified by clicking the Start button on your PC. Right-click on My Computer (or Computer). Select Properties. Select the General tab to view the information.

Cycle output

The cycle output (opposite) can provide the following information:

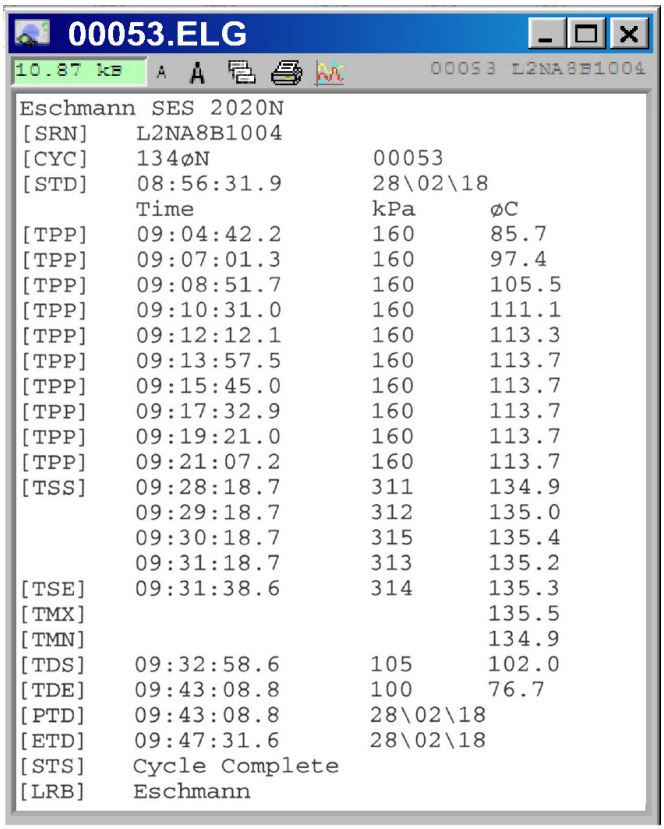
[SRN]	autoclave serial number
[CYC]	cycle type (e.g 134°N) and cycle count (e.g. 00022)
[STD]	start time and date (hh:mm:ss, dd\mm\yy)
Sterilisation information (time, pressure and temperature every 60 seconds during sterilisation)	
[TPP]	time of pressure point
[TSS]	time of sterilisation start
[p]	print sterilisation line ("all data" viewing only)
[TSE]	time of sterilisation end
[TMX]	maximum sterilisation temp
[TMN]	minimum sterilisation temp
[TDS]	time drying start
[TDE]	time drying end
[PTD]	time cycle finished processing ("all data" viewing only) (hh:mm:ss, dd\mm\yy)
[ETD]	end time and date (hh:mm:ss, dd\mm\yy)
[ERR]	error
[STS]	status at cycle end
[PCV]	pressure change value
Service and certification tags	
[SVC]	service expired (date/cycle count of service expiry)
[CRT]	certification expired (date of certification)
Security log additions (displays the number of the PIN: 1-12, 0 = not entered)	
[DCB]	drying cancelled by
[CSB]	cycle started by
[CAB]	cycle aborted by
[LRB]	load retrieved by
[LRT] (pin not displayed)	time user retrieved load ("all data" viewing only) (hh:mm:ss, dd\mm\yy)

Interpreting the output

To indicate a successful cycle, [STS] displays "Cycle Complete" for 134°C N cycles, or "Calibration Complete" for calibration cycles.

If any cycle parameters are incorrect, [STS] displays ***FAIL***, followed by an Advisory Code. Refer to Appendix 4.

For 134°C N cycles, you can check that:
Temperature [TMX] and [TMN] is between 134-137°C
Time between [TSS] and [TSE] is >3min.20secs
Pressure @134°C = 303.1kPa, @137°C = 330.7kPa



15.5 Connecting a printer

RS232 Printer



Eschmann can supply this optional RS232 printer.

The Printer plugs into a standard domestic mains socket. It connects to the autoclave via an RS232 cable connected to the RS232 port (Fig. 1 item 6).

It is permanently attached to the autoclave, and will print a cycle record as each cycle progresses.

Note: ***In order for the printer to work it must first be activated by an Eschmann Engineer***

With careful storage, and avoiding sunlight, printed records are able to be stored for many years.

To order:

REF 87-213-67	RS232 Printer
REF 87-270-78	Printer Rolls (5)

Appendix 1 : Daily/weekly testing

Manufacturer's testing must be carried out as outlined below.

We recommend a daily Automatic Control Test, and the completion of a Daily/Weekly Log Book (available from Eschmann - 119857 Log Book (N Type).

All tests must be completed successfully.

Daily Testing

Automatic Control Test (with TST Indicator)

1. Load the autoclave and the TST Indicator as per the manufacturer's instructions.
2. Run the 134°C N type cycle.
3. Remove the TST Indicator at the end of the cycle.
4. Compare the TST Indicator with the Device's instructions.

⚠ WARNING!
If errors are detected when running test cycles, or if the TST Indicator indicates a failure, the cause of the failure MUST be corrected and the test must be repeated successfully before the autoclave is used to process loads.

CAUTION

The TST Indicator must only be used and stored as detailed in the Instructions For Use supplied with the Device. Failure to do so could lead to failure of the Device and dangerously misleading results.

This device satisfies the requirement to perform a daily steam penetration test as given in:

HTM01-05 Decontamination in primary care dental practices.

EN 17665-1 Sterilisation of health care products. Moist heat. Requirements for the development, validation and routine control of a sterilisation process for medical devices.

DB 2002(06) Device Bulletin, Benchtop Steam Sterilisers - Guidance on purchase, Operation and Maintenance, Medical Devices Agency, clause 5.3.1.

HTM01-01 (HTM2010/DB2002(06)) testing

If required, further Daily, Weekly, Quarterly and Annual Testing may be necessary to satisfy this guidance. Contact Eschmann for details on the automatic control test.



Fig. 13. TST Indicators (Class 6)

To order:

REF 87-935-47 TST Indicators (Class 6) - 250 uses

Routine processing

A TST Indicator is to be placed into the centre of the load for every cycle processing instruments.

Appendix 2 : Loading the autoclave

⚠ WARNING!
When loading the autoclave take care not to damage the door or front face of the chamber, especially the door seal and mating face. Damage to these parts can adversely affect performance.

Do not reprocess single-use items.

- Thorough cleaning of all items prior to sterilisation is imperative to ensure instruments can be effectively sterilised. If visible debris or bio-burden is not removed prior to sterilisation it will interfere with microbial deactivation and will compromise the sterilisation process.
- Eschmann always recommend the use of a validated, automated cleaning process, i.e. thermal washer disinfector. Always follow the instrument manufacturer's instructions.
- Ensure all instruments are rinsed thoroughly prior to sterilisation to remove any traces of chemical detergents/disinfectants as these may cause corrosion during the sterilisation process. Ensure instruments are dried prior to being placed in the autoclave.
- When placed in an autoclave, open and unlock all items fitted with hinges or ratchets.
- Dismantle, or only loosely assemble, any multiple-part items to allow steam penetration.
- Once loaded, start the autoclave cycle. Do not leave items awaiting processing in the autoclave.
- Check the suitability of non-metallic items for processing in an autoclave. Check that the temperatures are acceptable.
- Load types and load arrangements should conform to that specified below and detailed in Appendix 5 : "Maximum Loads". If in doubt about loads and processing details, contact Eschmann.

Unwrapped solid items

- Place unwrapped solid items loose on trays or into hands-free instrument transfer (HFiT) cassettes.
- Do not overload trays or HFiT cassettes (refer to Appendix 5: "Technical data" for details of maximum tray loads and maximum load).
- Avoid bunching items together and ensure all items are positioned so that they do not touch and can drain freely.
- Only use trays or HFiT cassettes supplied by Eschmann.
- Place loaded trays and HFiT cassettes in the sterilising chamber.
- Position all items so that they drain freely and do not trap rising air bubbles.
- Unwrapped items are for immediate use only.

Refer to Section 6: "Cycle chart" for details on the choice of cycle.

Using the tray lifter

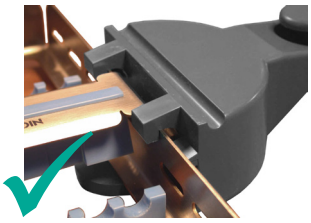
CAUTION

Take care when unloading.
The load and the chamber may be very hot.

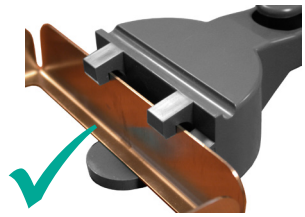
Remove the load safely using the tray lifter. Position the half-round base under the item to be lifted and hook on to the item using one of the pairs of top clips:

- Use the upper pair for HFiT (Hand Free instrument Transfer) cassettes - hold at the side or end of the cassette.
- Use the lower pair for trays - not the upper pair.

HFiT cassettes

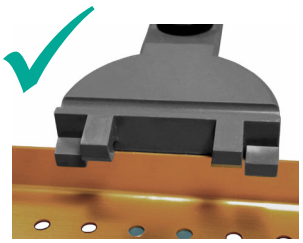


HFiT cassette gripped on its side.

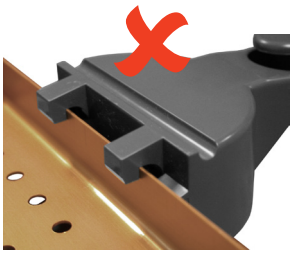


HFiT cassette gripped on its end.

Trays



Tray in bottom clips
CORRECT



Tray in top clips
INCORRECT

To order:

REF 87-271-21 Tray Lifter

Load capacity

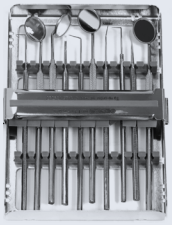
The tray carrier (load configuration) can be rotated through 90 degrees when inserted into the chamber to provide either three or five levels for holding trays/cassettes.

- The five level orientation can hold 5 x HFit 20 cassettes/full trays or 10 x HFit 10 cassettes/half trays, or any combination of these.
- The three level orientation provides for deeper trays.

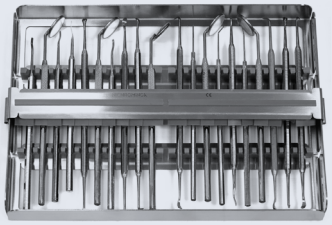
Note: ***Pull the tray carrier to unclip it from the chamber. The tray carrier requires a gentle push to clip it back into the autoclave chamber.***

The configuration of the load support system follows. The load should be confined to the usable space - refer to Appendix 5 : "Technical data".

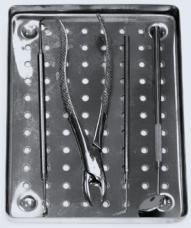
Typical loads



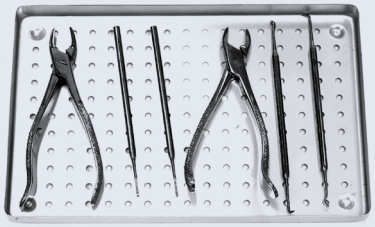
10 x
Hfit10
cassettes



5 x
Hfit20
cassettes



10 x
half tray



5 x
full tray

The SES 2020N Autoclave is used to sterilise medical instruments and consideration should be given to hazards inherent in the nature of the materials to be autoclaved. Any consumable (e.g. door seals, filters, trays and other chamber furniture) should follow local biohazard procedures for cleaning and decontamination prior to disposal.

This autoclave is used to decontaminate potentially pathogenic material from instruments used in the Health sector. Eschmann are able to advise on how to recycle and dispose of the product correctly.

Appendix 3 : Cleaning, Maintenance & Service

Cleaning

⚠ WARNING!

Disconnect from the mains electrical supply before cleaning the Autoclave.

Do not use tap water or cleaning products containing chlorides, chlorine, acids or other corrosive substances to clean the chamber, chamber face or door seal. These may cause corrosion, deterioration or other damage to the stainless-steel chamber, door seal and internal components.

Some cleaning and disinfectant wipes may contain chlorides or other substances that are unsuitable for use on stainless steel.

Always use distilled, deionised or reverse osmosis (RO) water for routine cleaning as specified in this section.

Do not use flammable liquids, abrasive powders, or solutions containing chlorine to clean the autoclave.

Even in the concentrations found in tap water, chlorine can cause damage to the autoclave.

Cleaning - Door seal, chamber and chamber face:

The door seal and chamber face should be cleaned regularly, ideally once each day before the first sterilisation cycle.

Clean using distilled, deionised or reverse osmosis (RO) water and a clean, soft, non-abrasive, lint-free cloth suitable for use on stainless steel.

Wipe the door seal to remove any dirt or debris. Thoroughly clean the chamber face, paying particular attention to any visible deposits or residue. More persistent deposits may require repeated gentle cleaning using the method described above.

Regular cleaning helps prevent the accumulation of deposits that may affect the door seal and could result in water or vacuum leaks.

Cleaning - Trays:

- Keep chamber trays clean.

Cleaning - Tray Lifter:

- Clean and sterilise the tray lifter regularly (e.g. once a week).

Cleaning - Exterior:

- Clean the exterior of the autoclave regularly.

Maintenance

⚠ WARNING!

Should the autoclave ever leak, disconnect from the mains electricity supply, drain the reservoirs and contact Eschmann.

In common with other systems containing static water reservoirs, the water in this autoclave can become contaminated over a period of time and should be treated as a potential risk of infection.

- Check the door seal and chamber face for damage daily
- Drain the fresh water and waste water reservoirs daily.
- Check the drain tube (Part No. 115036) and the connector regularly. Replace if damaged.
- Always leave the chamber empty and the door ajar when not in use.
- Fully drain the reservoirs if preparing the autoclave for transit or storage.
- In-service inspection and testing of electrical equipment must be carried out routinely in accordance with local legislation.

Autoclave Fuses ⚠

Fuse x 2 (Fig. 1, item 12).

1. Switch off the autoclave. Safely isolate the autoclave from the electrical mains supply by physically unplugging BOTH ends of the power cable.
2. Remove the fuse cover using a screwdriver or small coin (turn anti-clockwise).
3. Inspect and renew the fuse if necessary. **USE THE CORRECT FUSE TYPE AND RATING.** Refer to Appendix 5: "Technical data".
4. Refit the fuse cover (turn clockwise).

Mains Cable Fuse ⚠

Fuse x 1

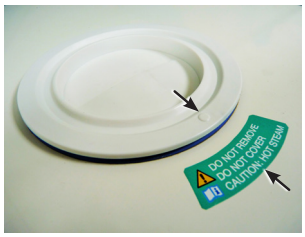
Refer to Appendix 5: "Technical data".

1. Switch off the autoclave. Safely isolate the autoclave from the electrical mains supply by physically unplugging BOTH ends of the power cable.
2. Remove the fuse from the mains plug.
3. Inspect and renew the fuse if necessary. USE THE CORRECT FUSE TYPE AND RATING. Refer to Appendix 5: "Technical data".
4. Refit the plug.

Fitting the steam vent

If removed for maintenance, the steam vent (Fig 1, item 19) must be refitted and correctly orientated before running the autoclave.

Align the raised circle on the vent rim with the centre of the adjacent warning label. Push the vent down into position. This ensures steam is directed to the rear of the autoclave.



WEEE Regulations (Waste Electrical & Electronic Equipment Regulations)

The aim of the WEEE Regulations is to reduce the amount of waste going to landfill. All Eschmann products that must be recycled in accordance with the WEEE Regulations are marked with the "wheelie bin" symbol opposite.

Please contact Eschmann when one of our products, marked with the symbol, reaches the end of its working life. We will be able to advise on how to recycle and dispose of the product correctly.

Note: If we request that the product is returned to Eschmann, it must be decontaminated first. We will request a certificate.

Under the WEEE Regulations, manufacturers are held responsible for recycling waste electrical and electronic equipment (WEEE) placed on the market after 13 August 2005 that has reached the end of its working life. The regulations also place obligations to comply on distributors, retailers and end users of the equipment.

Service, Calibration & Certification

Please contact Eschmann to discuss servicing and certification requirements. The autoclave must be serviced and calibrated by Eschmann or Eschmann trained engineers at 12 month intervals, or when the Service Required screen is displayed, whichever occurs sooner. Refer to Section 11. The autoclave must be periodically examined and certified against the Pressure Systems Safety Regulations 2000 (PSSR). Eschmann recommends this is performed 18 months from manufacture and every 14 months thereafter.

Appendix 4: Trouble shooting

Trouble shooting table

Fault	Action
Autoclave will not power-up	Check the mains supply, mains connections, autoclave fuses and mains cable fuse.
Autoclave powers-up but the screen is blank	Power autoclave off. Remove any item plugged into the USB port (Fig. 1, item 7). Power autoclave on. If unsuccessful, contact Eschmann.

Advisory code table

The autoclave continually checks that it is able to run a cycle and sterilise the load to the required standard.

If it encounters a problem it will inform you via the Advisory Screens:

- Water Management Screens.
- Service Screens.
- Advisory Screens:
  - POWER FAILURE
  - USER STOPPED CYCLE
  - SYSTEM STOPPED
  - ERROR

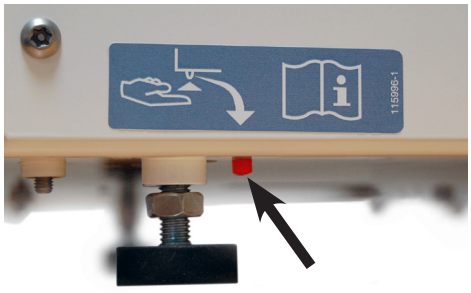
All Advisory Screens are identified internally using an Advisory Code. These are shown in the Advisory Screens Table below.

Most of the problems referred to by the Advisory Screens can be rectified, allowing the cycle to continue.

In most cases, **press OK to clear the Advisory Screen** and follow the advice in the table below.

Note: ***The screens that cannot be cleared by the operator are the ERROR screens. Contact Eschmann. Eschmann require the Advisory Code from these screens to determine the problem.***

Advisory screens	Advisory code	Description	Action
POWER FAILURE	1	Power Failure	Check for intermittent mains supply and mains connections. Run cycle again.
USER STOPPED CYCLE	2	User Abort	Run the required cycle.
SYSTEM STOPPED	3	Door Lock Fail	Check for obstructions. Run cycle again.
	11	Temperature Synchronisation Fail	Power autoclave off / on. Run cycle again.
	15	Arbiters Disagree	Power autoclave off / on. Run cycle again.
	16	Invalid Cycle Type	Power autoclave off / on. Run cycle again.
	19	Temperature and Pressure Disagree	Visually check door seal. Clean mating face. Run cycle again.

Advisory screens	Advisory code	Description	Action
	20	Temperature Sensors Disagree	Power autoclave off / on. Check chamber and load is dry. Run cycle again.
	21	T1 High During Sterilisation	Power autoclave off / on. Run cycle again.
	23	T1 Low During Sterilisation	Power autoclave off / on. Run cycle again.
	25	Not Enough Fresh Water	Fill with fresh water. Run cycle again.
	26	Too Much Waste Water	Empty waste water. Run cycle again.
	33	Door Not Closed	Power autoclave off / on. Run cycle again.
	34	CO Door Lock Fail	Power autoclave off / on. Run cycle again.
	35	Water Quality Fail mid-cycle	Change the water. Run cycle again.
	36	PR and/or GI Not In Running	Power autoclave off / on. Run cycle again.
	41	Error CO Errored Out	Power autoclave off / on. Run cycle again.
	42	Error Wrong Hold Time	Power autoclave off / on. Run cycle again.
	43	Error CO Missed First Pat No.	Power autoclave off / on. Run cycle again.
	44	Error CO Process Sequence Error	Power autoclave off / on. Run cycle again.
	45	Error Unexpected End of Pat List	Power autoclave off / on. Run cycle again.
	48	Error Process Stage Failed	Power autoclave off / on. Run cycle again.
	49	Drying Stage Failed	Power autoclave off / on, run cycle again. Check the air filter for blockages. Run without drying.
	50	Pressure pulse stage failure	Power autoclave off / on. Run cycle again.
	51	Pressure pulse stage failure	Power autoclave off / on. Run cycle again.
	155	CanBus Fail	Power autoclave off / on. Run cycle again.
	156	CanBus Request	Power autoclave off / on first, then press OK to clear the SYSTEM STOPPED screen. Run cycle again.
	157	CanBus Remove	Power autoclave off / on first, then press OK to clear the SYSTEM STOPPED screen. Run cycle again.
	160	State Synch Failed	Power autoclave off / on. Run cycle again.
	175	Pressure Not Equalised	Power autoclave off / on. Run cycle again.
	176	Safety Relay Fail	Visually check door seal. Clean mating face. Run cycle again or Leave autoclave to cool. Press the RESET button (Fig 1, item 14) Run cycle again. 
	201	Enclosure Temperature Too High	Leave autoclave to cool. Run cycle again.
	202	Temperature Too High	Power autoclave off / on. Run cycle again.
	203	Temperature Too Low	Power autoclave off / on. Run cycle again.
	204	Pressure Too High	Power autoclave off / on. Run cycle again.

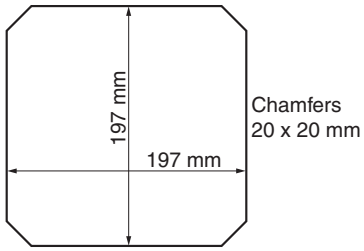
Advisory screens	Advisory code	Description	Action
	205	Pressure Too Low	Power autoclave off / on. Run cycle again.
	209	Stage Took Too Long	Power autoclave off / on. Run cycle again.
	210	Sterilisation Temperature Too Low	Power autoclave off / on. Run cycle again.
	211	Sterilisation Temperature Too High	Power autoclave off / on. Run cycle again.
	217	Data Corrupt	Power autoclave off / on first, then press OK to clear the SYSTEM STOPPED screen. Run cycle again.
	223	Touch Screen Continuously Pressed	Power autoclave off / on. If persistent contact Eschmann.
	226	Cycle Check Failed	Power autoclave off / on. Run cycle again.
	228	Start Up Test Failed	Power autoclave off / on first, then press OK to clear the SYSTEM STOPPED screen. Run cycle again.
	231	Calculated Temperature Too High	Power autoclave off / on. Run cycle again.
	232	Calculated Temperature Too Low	Power autoclave off / on. Run cycle again.
	233	Difference between Calculated Temperature and Chamber Temperature too large	Power autoclave off / on. Run cycle again.
	909	Chamber Temperature Sensor	Power autoclave off / on. Run cycle again.
	910	Chamber Pressure Sensor	Power autoclave off / on. Run cycle again.
	911	Band Heater Temperature Sensor	Power autoclave off / on. Run cycle again.
	912	Steam Generator Temperature Sensor	Power autoclave off / on. Run cycle again.
	913	Ambient Temperature Sensor	Power autoclave off / on. Run cycle again.
	914	Water Temperature Sensor	Power autoclave off / on. Run cycle again.
	916	Unknown Sensor	Power autoclave off / on. Run cycle again.
	919	Wrong unit type	Press OK to clear the system stop screen. If persistent contact Eschmann.
	920	Unknown unit type	Press OK to clear the system stop screen. If persistent contact Eschmann.
	921	CO not fully configured	Press OK to clear the system stop screen. If persistent contact Eschmann.
	924	Water quality system fault	Check water quality. Power autoclave off / on. Run cycle again.
	996	Protective system temperature fault	Power autoclave off / on. Run cycle again. If persistent contact Eschmann.
	997	Protective system temperature fault	Power autoclave off / on. Run cycle again. If persistent contact Eschmann.
	998	Protective system pressure fault	Power autoclave off / on. Run cycle again. If persistent contact Eschmann.
ERROR	18	Protective system pressure fault	Power autoclave off / on. Run cycle again. If persistent contact Eschmann.
	177	Failed To Update Calibration Record	Contact Eschmann.
	178	Calibration Invalid	Contact Eschmann.
	206	Safety Valve Failure	Contact Eschmann.
	208	Safety Valve Failure	Contact Eschmann.

Appendix 5 : Technical data

POWER SUPPLY	
Supply Voltage	Supply 230 V (±10%) or 220 V (-6%, +15%) See rating plate. 50/60 Hz a.c. ~ For use with alternating current
Fuse Rating (panel)	2 x T12.5 A, 440 V (Part No. 112474)
Fuse Rating (plug)	13 A
SAFETY CONDITIONS	
Electric Shock Protection	Class 1
Pressure Relief Valve	Set pressure: 2.85 barg
STERILISING AND TEST DATA	
Sterilising Time	3 minutes 20 seconds at 134/137°C *Sterilisation times above can be increased to a maximum of 30 minutes by an Eschmann trained engineer.* 15 minutes at 121/124°C.
Drying Time (approximate)	134° N type cycle: 10/20/30 minutes 121° N type cycle: 10/20/30 minutes
Operating Pressure	303.1 kPa at 134°C, 330.7 kPa at 137°C 204.1 kPa at 121°C, 224.2 kPa at 124°C
MAXIMUM LOADS	
Maximum load per tray, pouch rack or cassette	1.5 kg
Maximum load for the porous load basket	1.0 kg
Maximum weight per item	1.5 kg
Maximum total load	5 kg
WATER AND RESERVOIR	
Fresh Water Reservoir capacity	3800 ml (maximum)
Waste Water Reservoir capacity	4400 ml (maximum)
Minimum initial fill	1200 ml (approximate)
Volume used per cycle	700 ml (maximum) for N type cycle, full load
Flow rate of drained water	800 ml/min
Temperature of drained water	60°C
Heat transmitted by autoclave in one hour	2016 kJ
DIMENSIONS AND WEIGHT	
Depth	540 mm
Width	500 mm
Height	500/460 mm
Weight (empty)	40 kg
Weight (full reservoirs and full load)	43.8 kg
SHIPPING DIMENSIONS AND WEIGHT (includes unit, accessories and packing)	
Depth	700 mm
Width	680 mm
Height	620 mm
Weight	46 kg

STANDARDS COMPLIANCE			
BS EN ISO 15223-1	BS EN ISO 14971	BS EN 61326	BS EN 61010-2-040
BS EN ISO 20417	BS EN 61010-1	BS EN 62366	BS EN 13445
BS EN 13060			

ENVIRONMENTAL REQUIREMENTS (contact Eschmann if required to operate outside these conditions)	
Transport and Storage:	
Ambient temperature range	-10°C to +50°C
Relative humidity range	30-70% RH non-condensing
Atmospheric pressure range	700 millibars to 1060 millibars
Operation:	
Ambient temperature range	+5°C to +40°C
Relative humidity range	20-80% RH non-condensing
Atmospheric pressure range	800 millibars to 1060 millibars

USABLE SPACE	
Trays carrier, cassettes, etc.	280 mm length x cross section shown 

MISCELLANEOUS	
Basic UDI-DI (BUDI-DI) Identifier	506069061AUTOCLAVEF9
Technical Lifetime	10 Years when used in accordance with these instructions, properly maintained and repaired.
Applicability	This manual applies to autoclave models: SES 2020N Non-Vacuum Autoclave (N type) from: Serial Number : L2NAXX1001
Door Seal / Bacterial Filter Replacement	Door Seal : 1000 cycles Bacterial Filter : 1000 cycles
Autoclave Sound Level	Maximum 65 dBA
Sounds	Autoclave Ready: 1 beep, 300 ms Keypress: 1 beep, 100 ms Cycle Start: 1 beep, 100 ms Cycle End: 1 beep, 500 ms Cycle Failed: 5 beeps, 100 ms Incorrect PIN: 2 beeps 100 ms
Chamber Label	Chamber Volume: 17 litres Max Design Pressure: Pd Max 3.0 bar Min Design Pressure: Pd Min -0.81 bar Design Temperature: Td 144°C Max Allowable Pressure: Ps 2.85bar Max Allowable Temperature: Ts Max 138°C Safety Valve Set Pressure: 2.85 bar Hydrostatic Test Pressure: 4.5 bar

SAFETY FEATURES

Eschmann autoclaves are designed to be safe and effective. No changes should be made to them except by an Eschmann engineer. In particular, the following safety features must not be interfered with, circumvented or overridden:-

- Door closed (position) sensor and door locks (position) sensors. These prevent a cycle starting if the door is not closed and locked.
- Pressure Relief Valve (safety valve) set at 2.85+10% barG.
- Independent cycle control and monitoring. There are two microcomputers independently monitoring each other and other autoclave components. Either is able to stop a cycle and place the autoclave into a safe condition in the event of a failure. In the case of a venting valve failure the autoclave may not be able to eject water and steam (i.e. pressure will remain until cool) and the door will remain locked until the pressure / temperature has dropped to a safe level.
- Overheat Control. The microcomputer operates in conjunction with an independent manual reset thermostat to protect the steam generator from overheating.
- Band Heater overheat cut out. This prevents the band heater exceeding a preset temperature.
- Pressure door switch. Prevents the door being opened when the residual chamber pressure is too high by removing power to a door lock so that it locks the door closed.

Cycle Compliance Chart

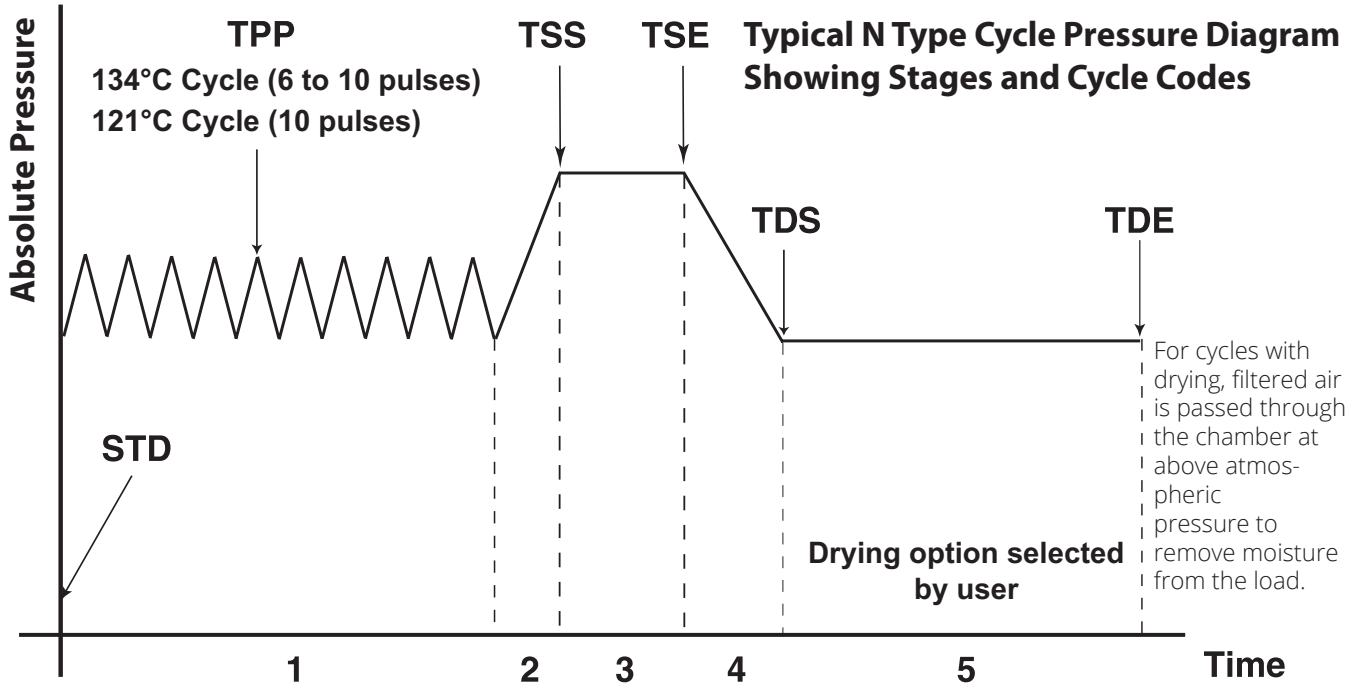
In accordance with BS EN 13060 the recommended type tests for the listed N type cycles are:

	Sterilisation Cycle Type and Cycle Number
Type Tests	**N type cycle**
Dynamic steriliser chamber pressure	
Air Leakage	
Empty chamber	✓
Solid load	✓
Small porous loads	
Full porous load	
Narrow Lumen	
Dryness, solid load	
Dryness, porous load	
Non-condensable gases	✓

Load Chart

	Sterilisation cycles	
	N 121	**N 134**
Sterilisation Temperature	121-124°C	134-137°C
Sterilisation Pressure	204.1-224.2kPa (abs)	303.1-330.7kPa (abs)
Duration of plateau phase	15min.	3min.20secs
Duration of drying phase	Economy 10min. Standard 20min. Extended 30min.	Economy 10min. Standard 20min. Extended 30min.
Total Cycle Duration (Excludes drying time) (Cycle durations will vary based upon conditions).	Empty: 32min. Full load: 40min. Full load, cold machine: 46min	Empty:12min. Full load:19min. Full load, cold machine: 29min
LOAD TYPE : Solid loads only	YES	YES
MAXIMUM LOAD : Weight Limits	5kg solid items	

Detailed N type cycle information



Progress Indicator	Key	Stage Detail
	1	Initial air removal, steam introduced, pressure increases to 160 kPa, venting to above atmospheric. This occurs 10 times for the 121°C cycle and is variable (adaptive) between 6 and 10 times (Based on conditions) for the 134°C cycle.
	2	Steam introduced into chamber, heating to sterilisation temperature.
	3	Sterilising, temperature and pressure held: 134-137°C approximately 318kPa 121-124°C approximately 214kPa
	4	Discharge phase.
	5	Drying phase. Drying options selectable : Standard (20 minutes) Extended (30 minutes) Economy (10 minutes) OFF

Appendix 6 : Accessories

For prices and ordering call Eschmann, telephone 01903 753322

Essential Test Devices and Logbook

8793547 TST Indicators - Class 6 (box of 250)
119857 Daily/ Weekly Test Logbook





RO Water System Including UV Light

8785154UVCSHW



HFiT Cassettes

HFiT 5 'Compact' Stainless Steel Cassette (9.5cm x 18cm)

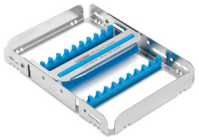
8722802	Stainless Steel Blue	8722805	Stainless Steel Yellow
8722803	Stainless Steel Red	8722806	Stainless Steel Silver
8722804	Stainless Steel Green	8722808	Stainless Steel White

HFiT 10 'Examination' Stainless Steel Cassette (13.5cm x 18cm)

8722812	Stainless Steel Blue	8722815	Stainless Steel Yellow
8722813	Stainless Steel Red	8722816	Stainless Steel Silver
8722814	Stainless Steel Green	8722818	Stainless Steel White

HFiT 20 'Standard' Stainless Steel Cassette (26cm x 18cm)

8722822	Stainless Steel Blue	8722825	Stainless Steel Yellow
8722823	Stainless Steel Red	8722826	Stainless Steel Silver
8722824	Stainless Steel Green	8722828	Stainless Steel White



Standard Trays (28cm x 18cm)

8724451	Aluminium Silver	8724454	Aluminium Green
8724452	Aluminium Blue	8724455	Aluminium Yellow
8724453	Aluminium Red	8724456	Aluminium Turquoise
8725450	Stainless Steel		

Examination Trays (14cm x 18cm)

8724461	Aluminium Silver	8724464	Aluminium Green
8724462	Aluminium Blue	8724465	Aluminium Yellow
8724463	Aluminium Red	8724466	Aluminium Turquoise
8725460	Stainless Steel		



MyEschmann Hub

The MyEschmann Hub captures cycle data and transmits to the MyEschmann Cloud. Users can access and review cycle data remotely, ensuring accurate monitoring and record-keeping for compliance and analysis.

8749020



Spares and Accessories

112733	Bubble Level	8727078	Printer Rolls (x5)
115036	Spare Drain Tube	115800	USB Memory Stick
113371	Mains Lead (UK)	113372	Mains Lead (EURO)
112474	Mains fuse	8721367	Thermal Printer
115190	Bacterial Air Filter	115946	Door seal
8727121	Tray Lifter		

Service

The Autoclave must only be serviced by an Eschmann or Eschmann trained engineer. We also recommend a program of ongoing service and maintenance using only Eschmann spare parts.

Eschmann products are supported by a worldwide network of fully trained engineers, offering high quality Eschmann spare parts. For further information on the range of Service Contracts available, please contact your local Eschmann representative.

Eschmann can be contacted during normal office hours. Please quote the model and serial number exactly as printed on the product label. Please use the contact details below.

IMPORTANT: The design of the autoclave pressure vessel is certified by a third party accredited test house to International Standards. In order to ensure safety and to comply with UK and/or International regulations, the vessel and fittings should be inspected by a competent person at regular intervals. We recommend that this is carried out at least once every 14 months by an Eschmann or Eschmann trained engineer.

Safety Reporting

Any serious incident that occurs with this medical device should be reported to Eschmann Technologies Limited and your local Competent Authority

Warranty

This product and purchased accessories are warranted for a minimum period of 12 months to be free from defects in materials and workmanship at the time of delivery.

Eschmann will be under no liability for any defect arising from fair wear and tear, negligence, wilful damage, misuse, abnormal working conditions, failure to follow the manufacturer's instructions, unauthorised alteration or repair of hardware, unauthorised or accidental alteration of software or configuration, lost profits, commercial loss, economic loss, or loss arising from personal injury. We may, at our discretion, raise a charge for any faults repaired that fall outside the warranty cover. Where charges are necessary, replacement parts will be charged at manufacturers' list prices and labour will be charged at the prevailing hourly rate. Repairs performed by Eschmann carry a 3-month parts and labour warranty.

The details in this manual are correct at time of going to press and supersede details previously published elsewhere. Information, technical specifications and statements made in this publication may be subject to change without prior notice. The Company reserves the right to modify or improve the product referred to.

EU Authorised Representative

Casus Europe B.V. Lange Viestraat 2b, 3511 BK Utrecht,
The Netherlands

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