

Operating manual

Labor-Table-Autoclave

Series LabStar 40&70

Table of contents

TABLE OF CONTENTS	2
1 FOREWORD	5
1.1 About this manual	5
1.1.1 Responsibility of the owner	6
1.1.2 Note	6
1.2 EC declaration of conformity	7
1.2.1 Note	7
2 SAFETY	8
2.1 Notes on the instructions	8
2.2 Notes and symbols in this manual	8
2.3 Intended use	9
2.4 Misuse	10
2.5 Responsibility of the operator	11
2.5.1 Operator	11
2.5.2 Operator's obligations	11
2.6 Personnel requirements	12
2.7 Personal protective equipment	13
2.8 Work areas and danger zones	14
2.9 Residual hazards	17
2.10 Safety equipment	19
2.11 Warning signs on the device	20
2.12 Product requirements	21
3 STRUCTURE AND FUNCTION	22
3.1 Overview	22
3.2 How it works	24
3.3 Device Equipment	25
4 TRANSPORT, SET-UP AND CONNECTION	26
4.1 Transporting the device	27
4.2 Scope of delivery	27
4.3 Setting up the device	27
4.4 Environmental conditions	28
4.5 Unpacking	28
4.6 Positioning the device	28
4.7 Aligning the device	28
5 INITIAL COMMISSIONING	29
5.1 Connecting the device	31
5.1.1 Electrical connection	31
5.1.2 Air pressure connection	32
5.1.3 Water connection	32
5.1.4 Connecting the drain tap chamber	32
6 OPERATE AUTOCLAVE	33
6.1 Switching on and off	36
6.1.1 Switching on	36

6.1.2	Switching on after power failure	37
6.1.3	Switching off	37
6.2	Loading the device	38
6.3	Program sequence	39
6.4	Removing the sterile materials	40
7	TOUCHSCREEN AND VISUALIZATION	41
7.1	Headers in control screens	41
7.2	Entering text and numbers	42
7.3	Representation buttons	42
7.4	"Login" control screen	43
7.5	"Start program" control screen	44
7.6	"Automatic start" control screen	46
7.7	Program parameters	47
7.7.1	"Edit program" control screen (1)	47
7.7.2	"Edit program" control screen (2) – program type Steaming	49
7.7.3	"Edit program" control screen (3) – program type Solid/WASTE Solid	50
7.7.4	"Edit program" control screen (3) – program type LIQUID/WASTE LIQUID	52
7.7.5	"Edit program" control screen (4) – program type Solid/WASTE Solid	54
7.7.6	"Edit program" control screen (4) – Program type LIQUID / WASTE LIQUID	55
7.8	"Program sequence" control screens	57
7.9	"End of program" control screen	58
7.10	Control screens „Main menu“	59
7.10.1	“Program“ control screen	60
7.10.2	“Overview“ control screen	61
7.10.3	"Messages" control screen	62
7.10.5	"Process" control screen	63
7.10.6	"Flow chart" control screen	64
7.11	Control screens "System"	66
7.11.2	"Manual functions" control screen	67
7.11.3	"Date / time" control screen	68
7.11.5	"System values" control screen	69
7.11.6	"Calibration" control screen	70
7.11.7	"Programs" control screen	71
7.11.8	“Operating hours” control screen	72
7.11.9	“Information“ control screen	73
7.12	Edit program	74
7.13	Lock/Release programs	75
7.14	Naming programs	76
7.15	Change date and time	77
7.16	Changing the language of the visualisation	78
7.17	Switch on ‘Automatic start’	79
8	DECOMMISSIONING	80
8.1	Decommissioning the autoclave	82
8.2	Storage conditions	82
9	MAINTENANCE AND CARE	83
9.1	Basic maintenance	85
9.2	Maintenance work	86
9.2.1	Visual inspection of the door seal for contamination and wear	86
9.2.2	Visual inspection of the product sensor for damage	86
9.2.3	Cleaning the chamber	86
9.2.4	Cleaning the deionised water tank	86

10	ERRORS, CAUSES AND REMEDY	88
10.1	Error messages	91
11	DISMANTLING AND DISPOSAL	94
12	TECHNICAL DATA	97
12.1.1	Dimensions and weights.....	97
12.2	Loading capacities	97
12.2.1	Connection data	97
12.3	Emissions	98
12.4	Type plates	98
13	SERVICE	100
13.1	Contact	100
14	TECHNICAL APPENDIX	101
14.1	List of abbreviations	101
14.2	Set-up plan	102
14.2.1	LabStar 40	102
14.2.2	LabStar 70	103

1 Foreword

1.1 About this manual

This manual enables safe and efficient use of the device. This manual is part of the device and must be kept accessible to personnel at all times.

Personnel must read this manual carefully and understand it before starting any work.

Compliance with all safety instructions and operating instructions in this manual is a basic requirement for safe working.

In addition, the local accident prevention regulations and general safety regulations for the area of application of the device apply.

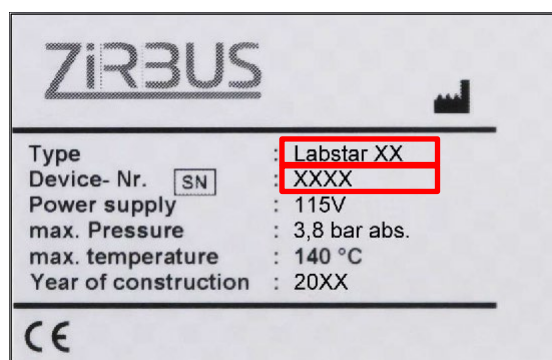
Illustrations in this manual are for basic understanding and may differ from the actual design.

Manufacturer contact information

Mail: info@zirbus.de

Tel.: +49 5327 8380-0

For service requests, please provide the device type and serial number. This information can be found on the type plate, marked in red here.



1.1.1 Responsibility of the owner

The device is built to the current state of the art and is safe to operate. Nonetheless, the device may pose hazards that can not be prevented through design.

For safe operation, the owner must ensure that:

- Everyone involved in the set-up, operation, maintenance or repair of the device is familiar with the device's safety equipment and knows what to do when there is a malfunction.
- Everyone involved with the set-up, operation, maintenance or repair of the device wears personal safety equipment (safety goggles, close-fitting safety clothing, safety shoes, safety gloves, etc.).
- Everyone involved with set-up, operation, maintenance or repair of the device has read the relevant portions of the operating manual and understands them.
- The operating manual is always stored within reach.
- Only those people work on the device who are familiar with the fundamental work safety and accident prevention regulations, are trained in handling the device and are authorized for their respective activity.
- When the machine is being operated, qualified first aid technicians can be called in and can perform any necessary first aid.
- All procedures, authorities and responsibilities in the area of the device are unmistakably specified.
- The personnel's safety-conscious work is regularly checked.
- The device is always in operational condition.
- The device and entire work area are always clean and tidy.
- All safety equipment is operational.
- All prescribed maintenance/inspections are performed at the specified intervals.
- No modifications, additions or conversions are made to the device without the manufacturer's consent. This also applies to changes to the software in the programmable control systems.
- All laws, regulations and accident prevention rules that apply to the device are adhered to — even if they are not explicitly stated here.

1.1.2 Note

When in doubt, or if further questions arise, please contact our service department, see chapter 13.

1.2 EC declaration of conformity

1.2.1 Note

The following contains samples of the EC declarations of conformity. The originals for your device can be found in the documentation for your device.

Revision 01 Gültig ab 07.07.2020 F 410.C	EU-Konformitätserklärung <i>EU-Conformity Declaration</i>	
Seite 1 von 1		
Der Hersteller/The Manufacturer Zirbus technology GmbH Hilfe Gottes 1 37539 Bad Grund		
erklärt hiermit, dass der nachstehende Druckbehälter <i>hereby declares that the following pressure vessel</i>		
Bezeichnung/Description	:	
Typ-/Zeichnungs-Nr./ Type-/Drawing no.	:	
Serien-Nr./Serial no.	:	
Baujahr/Year of construction	:	
allen einschlägigen Bestimmungen der nachfolgenden EU-Richtlinien entspricht: <i>Complies with all relevant provisions of the following EU directive</i> Druckgeräte-Richtlinie 2014/68/EU/Pressure Equipment Directive 2014/68/EU		
Angewendete nationale Normen und technische Spezifikationen	:	AD2000
<i>National standards and technical specifications applied</i>		
Angewandte Konformitätsbewertungsverfahren	:	
<i>Applied conformity assessment procedures</i>		
EU- Entwurfsprüfbescheinigung-Nr./EC Design examination Certificate- No.	:	
Eingeschaltete benannte Stellen zur Überwachung des QS-Systems	:	HSB IE - 2833
<i>Notified bodies to monitor the QS-Systems</i>		
Detailangaben zum Druckbehälter/Details of pressure vessel		
Angabe/Description	Kammer/Chamber	Doppelmantel/Jacket
Volumen/Volume		
Zulässiger max. Druck PS: <i>Permissible max. pressure</i>		
Zul. max./min. Temperatur TS <i>Permissible min./max. temperature TS</i>		
Fluidgruppe/Fluid group		
Kategorie/Category		
Bad Grund, Ort, Datum/Place, Date		
Funktion, Name Funktion engl.	_____ Unterschrift/Signature	

2 Safety

2.1 Notes on the instructions

This operating manual from the manufacturer is intended for the operator of the device and for all persons involved in the life cycle of the device.

In this manual, the term 'product' is used for products that are still to be sterilised and the term 'sterile goods' is used for products that have already been sterilised.

This manual describes the LabStar 40 and 70 tabletop autoclaves (with the Basic Lab and Quick Lab Basic equipment configurations), hereinafter referred to as 'tabletop autoclave', "autoclave" or 'device'. The devices are essentially identical in design and differ only in the size and shape of the usable space and in their equipment configurations.

This manual describes all possible optional equipment. It is therefore possible that this document describes equipment that does not apply to the device in question. The possible equipment is listed in the chapter 'Device equipment', see page 26.

The equipment of the device can be found in the order specifications.

2.2 Notes and symbols in this manual

Safety instructions

Safety instructions are indicated by symbols in this manual. The safety instructions are preceded by signal words that indicate the extent of the hazard.

To avoid accidents, personal injury and property damage, it is essential to follow the safety instructions and act with caution.



DANGER!

This combination of symbol and signal word indicates an immediately dangerous situation that will result in death or serious injury if not avoided.



WARNING!

This combination of symbol and signal word indicates a potentially dangerous situation that could result in death or serious injury if not avoided.



WARNING!

This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



NOTE!

This combination of symbol and signal word indicates a potentially dangerous situation that could result in damage to property and the environment if not avoided.



TIP/INFO!

This symbol highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

Additional markings

The following markings are used in this manual to highlight instructions, results, lists, buttons and other elements.

Labeling	Explanation
•	Lists without a fixed order
1.	Step-by-step instructions
•	Result of an instruction
CAPITAL LETTERS	Buttons
"Quotation marks"	Control screens

2.3 Intended use

The device is intended exclusively for sterilising or heating solid materials or liquids in accordance with the device's specifications (see chapter 'Device specifications' on page 26).

Any other use or use beyond this is considered improper. ZIRBUS TECHNOLOGY GmbH is not liable for personal injury and/or damage to the device resulting from improper use of the device.

The following is included in the intended use:

- All safety instructions in this manual are observed.
- Inspection and maintenance instructions are followed.
- General, national and operational safety regulations are observed.

2.4 Misuse

Incorrect operation



WARNING!

Risk of injury due to improper use of the device!

Incorrect use of the device can lead to serious injury and damage to the device.

- Only use the autoclave after receiving appropriate training and authorisation.

Misuse



WARNING!

Danger if misused!

Incorrect use of the LabStar 40 and LabStar 70 autoclaves can lead to dangerous situations.

- Never fill the autoclave with explosive products.
- Never fill the autoclave with acidic products.
- Never fill the autoclave with chemicals.
- Never use the autoclave to heat or keep food warm.
- Never use the autoclave to disinfect living organisms.
- Never fill the autoclave with solid and liquid products at the same time.
- Never modify the electrical components of the device.
- Never operate the autoclave with spare parts that do not meet the specified requirements.
- Never operate the autoclave at a temperature that is not suitable for the product.
- Never operate the autoclave with a programme that is not suitable for the product.
- Never fill the autoclave with loose products; products must always be placed in buckets or baskets.
- Never operate the autoclave with liquid products without a product temperature sensor in the reference bottle with the correct liquid level.
- Never operate the autoclave without a gravity-based air venting system for liquids above 30 °C.

2.5 Responsibility of the operator

2.5.1 Operator

The operator is the person who operates the LabStar 40 and 70 tabletop autoclaves for commercial or economic purposes or allows a third party to use/apply them and who bears legal responsibility for the protection of the user, staff or third parties during operation.

2.5.2 Operator's obligations

The LabStar 40 and 70 tabletop autoclaves are used in commercial settings. The operator of the tabletop autoclaves is therefore subject to the statutory occupational safety regulations. In addition to the safety instructions in this manual, the safety, accident prevention and environmental protection regulations applicable to the area of application of the tabletop autoclaves must be observed.

The following applies in particular:

- The operator must familiarise themselves with the applicable occupational health and safety regulations and, in addition, identify any hazards arising from the specific working conditions at the place of use of the tabletop autoclaves in a risk assessment. They must implement this in the form of operating instructions for the operation of the tabletop autoclaves.
- The operator must inform themselves about the hazards posed by the tabletop autoclaves and provide the appropriate personal protective equipment. Furthermore, the operator may only use qualified personnel to operate the tabletop autoclaves.
- Throughout the entire period of use of the tabletop autoclaves, the operator must check whether the operating instructions it has drawn up comply with the current regulations and, if necessary, adapt them.
- The operator must clearly define and specify responsibilities for operation, maintenance and other work.
- The operator must ensure that all persons who use the tabletop autoclaves have read and understood these instructions. In addition, the operator must train staff at regular intervals and inform them of the hazards.
- The operator must provide staff with the necessary protective equipment and instruct them to wear it.
- The operator must ensure that there is sufficient space and adequate lighting for safe working, and that the entire table autoclave area is kept tidy and clean at all times.
- The operator must ensure that the traffic routes are kept clear.

Furthermore, the operator is responsible for ensuring that the tabletop autoclaves are always in perfect technical condition. Therefore, the following applies:

- The operator must ensure that the maintenance intervals described in these instructions are observed. If regular inspections reveal increased wear, the required maintenance intervals must be shortened in accordance with the actual signs of wear.
- The operator must regularly check all safety devices to ensure that they are in good working order and complete.
- The operator must replace defective or damaged control elements immediately.
- Before starting work, the operator must check that all controls are functioning properly.
- If any of the controls are defective, the operator must shut down the device immediately and take it out of service.
- The operator must replace defective or damaged optical devices immediately.
- Before starting work, the operator must check that all optical devices are functioning properly (lamp test).

- If any of the optical devices are defective, the operator must immediately shut down the device and take it out of service.



If in doubt or if you have further questions for the service department, see page 7.

2.6 Personnel requirements

Insufficient qualifications



WARNING!

Risk of injury if staff are not adequately trained!

If unqualified personnel carry out work on the device or remain in the danger zone, hazards arise which can cause serious injuries and considerable damage to property.

- Only allow qualified personnel to carry out all activities.
- Keep unqualified personnel away from the danger zone.

Staff qualifications

This guide lists the qualifications required of staff for the various areas of activity:

Designation	Qualification
electrician	Due to their professional training, knowledge and experience, as well as their knowledge of the relevant standards and regulations, electricians are able to carry out work on electrical systems and independently identify and avoid potential hazards.
Trained person	The trained person has been demonstrably instructed by the operator in the tasks assigned to them and the possible dangers of improper behaviour. The trained person must be familiar with the device, its specifications and the available programmes. Furthermore, the trained person must be able to reliably assess which solid or liquid products may be sterilised or heated in which containers. Furthermore, the trained person must be able to reliably assess which solid or liquid products may be sterilised or heated in which containers. The operator of the device must clearly define the responsibilities of the trained person for operation, maintenance and repair.
Service technicians at ZIRBUS TECHNOLOGY GmbH	Specialised employees of ZIRBUS TECHNOLOGY GmbH or ZIRBUS

Unauthorised persons



WARNING!

Danger to life for unauthorised persons due to hazards in the danger and work area!

Unauthorised persons who do not meet the requirements described here are not familiar with the hazards in the work area. Therefore, there is a risk of serious injury for unauthorised persons.

- Keep unauthorised persons away from the danger zone and work area.
- If in doubt, speak to people and instruct them to leave the danger zone and work area.
- Stop work if unauthorised persons are in the work area.

Training

The operator must provide regular training for staff. For better tracking, a training log must be created with the following minimum content:

- Date of training
- Name of the person trained
- Content of the training
- Name of the trainer
- Signatures of the person trained and the trainer

2.7 Personal protective equipment

Protective equipment

Personal protective equipment serves to protect persons from impairments to their safety and health at work.

During the various tasks performed on and with the device, personnel must wear personal protective equipment, which is referred to separately in the individual sections of these instructions.

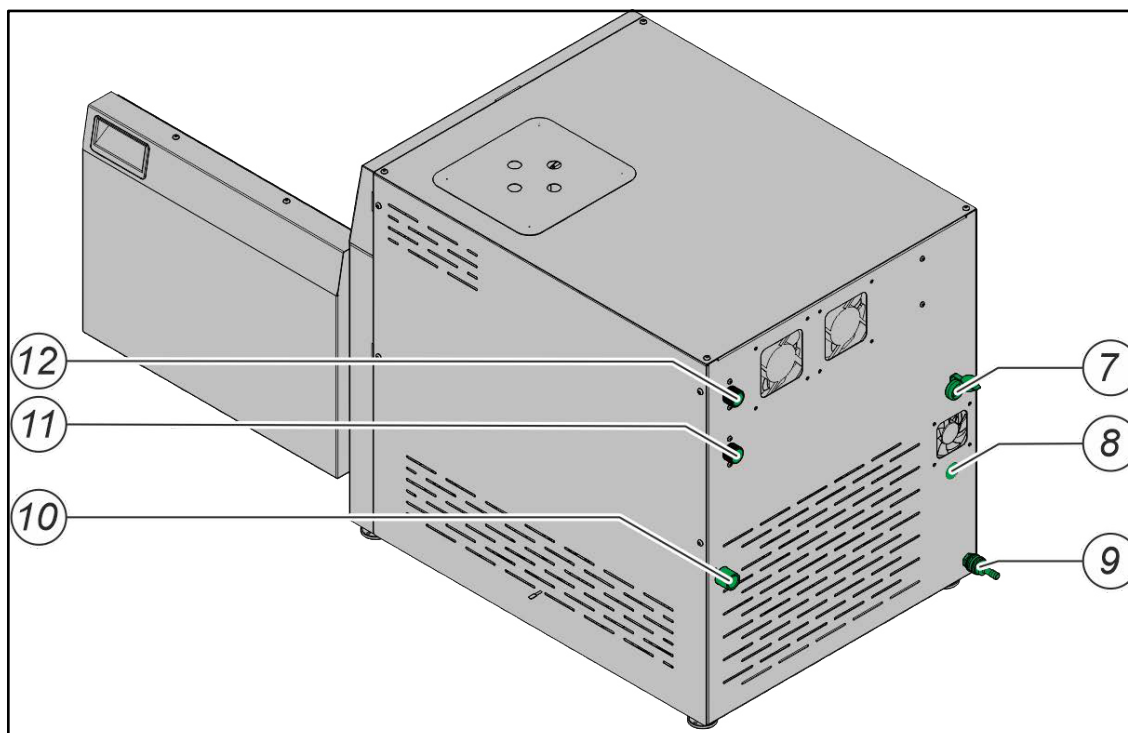
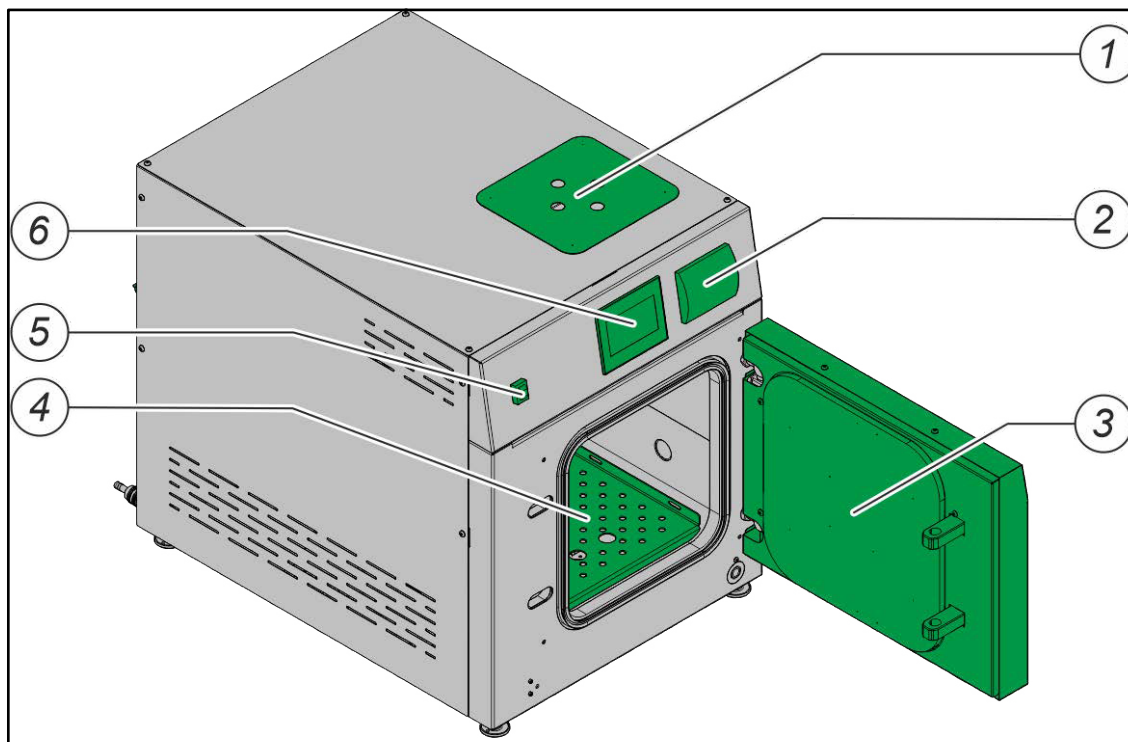
Description of personal protective equipment

Personal protective equipment is explained below:

	Designation	Description
	Heat-resistant protective gloves with arm protection	The protective gloves are designed to protect the hands and forearms from contact heat when touching high-temperature components and substances.
	Safety goggles	Safety goggles are used to protect the eyes from flying debris and liquid splashes.
	Safety footwear	Safety shoes protect the feet from crushing, falling objects and slipping on slippery surfaces. Safety shoes are designed to protect the feet from crushing, falling objects and slipping on slippery surfaces.

2.8 Work areas and danger zones

Work areas

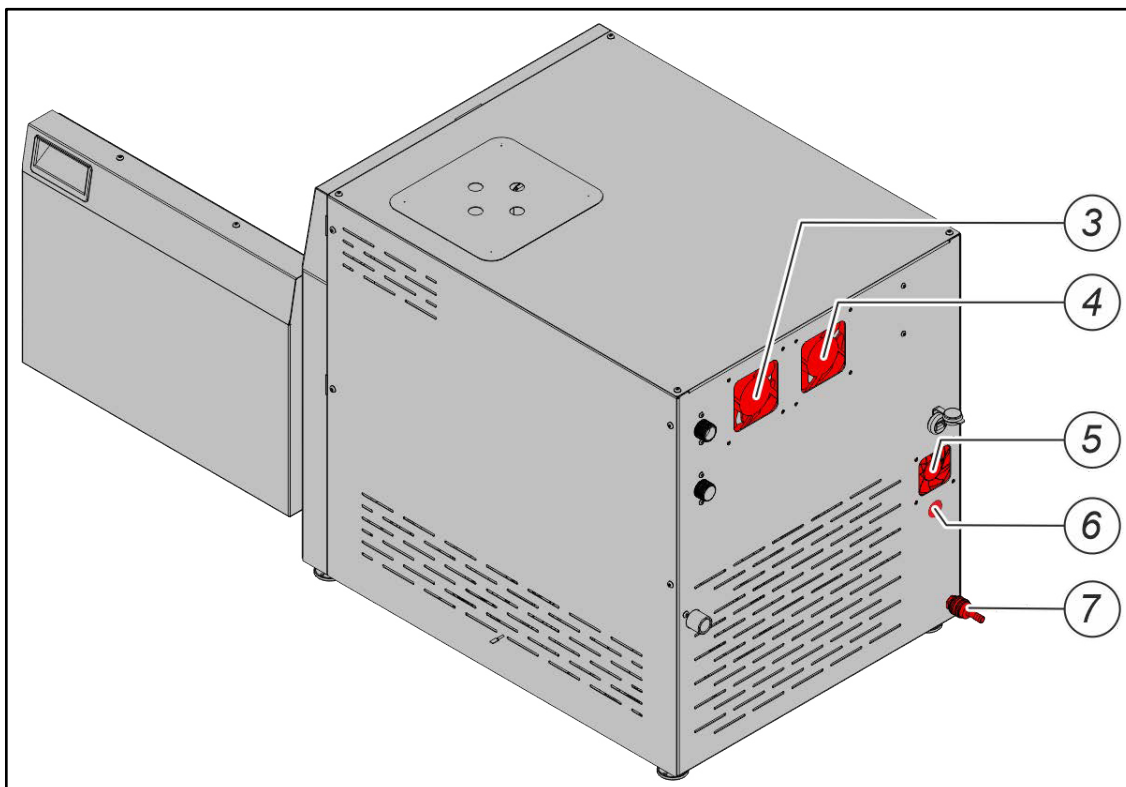
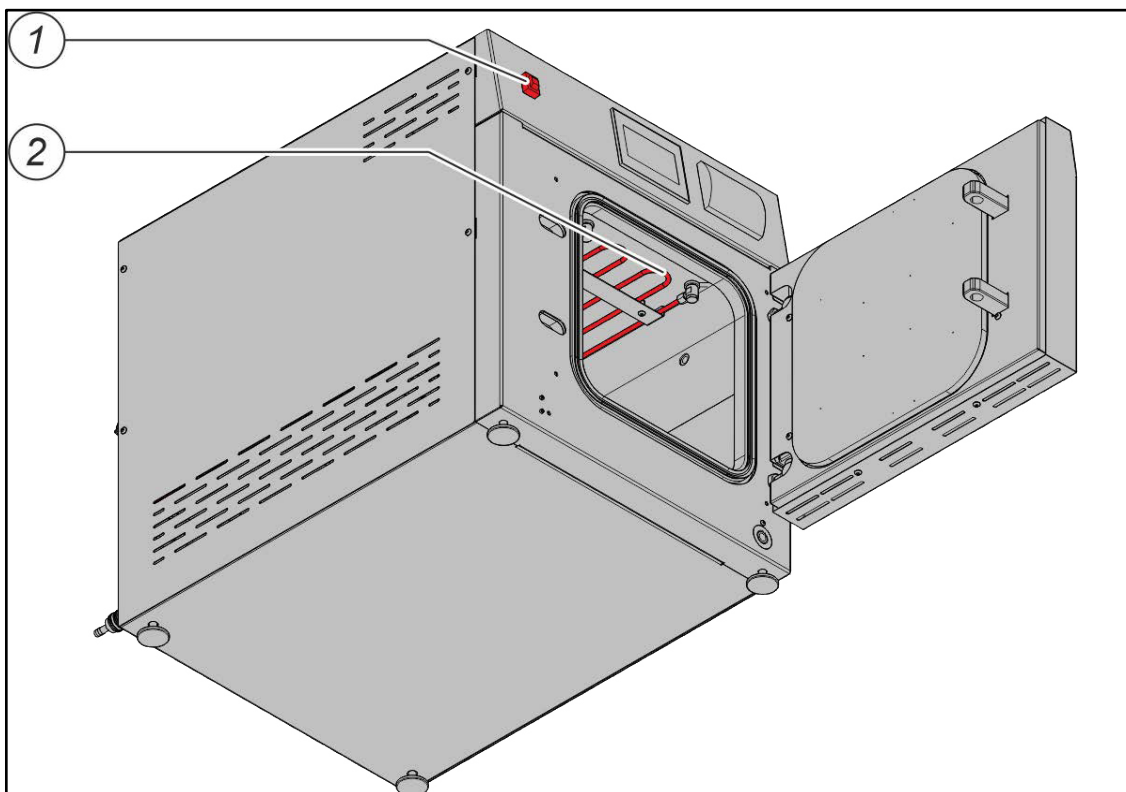


Pos.	Designation
1	Deionised water tank
2	Log printer (optional)
3	Protective door
4	Base plate
5	On/off switch
6	Touchscreen
7	USB and Ethernet interface
8	Electrical connection
9	Compressed air supply
10	Waste water connection
11	KW supply
12	Deionised water supply

The working area includes the operating controls during operation, including the deionised water tank (1), the log printer (2), the safety door (3), the base plate (4), the on/off switch (5) and the touchscreen (6). The USB and Ethernet interface (7) is used for data output. During connection, the working areas are located at the electrical connection (8), the compressed air supply (9), the waste water connection (10), the KW supply (11) and the deionised water supply (12).

The deionised water supply (12) is used for data output.

Danger areas



Pos.	Designation
1	ON/OFF switch
2	Cooling plate
3	Fan
4	Fan
5	Fan
6	Electrical connection
7	Air pressure connection

During operation, the hazardous areas include the cooling plate (2), the fans (3 – 5), the electrical connection (6) and the compressed air supply (7). Another hazardous area is located at the on/off switch (1) if it could be conducting electricity due to a defect.

2.9 Residual hazards

The autoclave is designed in accordance with the latest technology and current safety requirements. Nevertheless, residual risks remain that require careful handling. The residual risks and the resulting behaviours and measures are listed below.



DANGER!

Risk of injury from live parts when the device is switched off!

The cable to the on/off switch always carries voltage. Even when the device is switched off, individual components may still carry voltage. Contact with live parts, e.g. with a tool, may result in injury from electric shock.

- Always use suitable tools and personal protective equipment (PPE) when working on electrical components.
- Ensure that the power supply is completely disconnected before carrying out maintenance or repair work.
- Never use metal tools on live electrical parts.



DANGER!

Risk of burns from hot surfaces or steam!

If the device has not cooled down, there is a risk of burns from hot surfaces and hot pipes, especially in the chamber, on the heating element and on the inside of the protective door. There is also a risk of burns from hot sterilised items.

When steam is generated, a hot cloud of steam may escape when the safety door is opened.

- When handling the autoclave, wear heat-resistant protective gloves and safety goggles.
- Allow the autoclave to cool down before opening.
- Check the temperature of surfaces or pipes before touching them.
- Maintain a sufficient safety distance when handling the autoclave.
- Strictly follow the instructions and the safety protocols specified therein.



DANGER!

Danger to life due to electric current!

Safety devices must not be modified, dismantled or deactivated. Unprotected parts of the device pose an immediate risk of death from electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the relevant safety regulations when working with live equipment for functional reasons.
- Comply with general, national and company safety regulations, e.g. wearing safety goggles and protective gloves.
- Only operate the device when it is in perfect condition. Report any changes to the device immediately to the next person in charge.
- Clearly define and comply with responsibilities for operation, maintenance and repair so that there is no ambiguity regarding safety.
- Disconnect electrical components from the power supply before working on them.
- Observe the safety instructions in the individual chapters of this manual and in the manuals provided by suppliers.
- Work on electrical cables may only be carried out by qualified electricians or employees of ZIRBUS TECHNOLOGY GmbH.



WARNING!

Risk of injury and damage to equipment due to unsuitable products or procedures!

Using the wrong product can result in inadequate sterilisation and thus lead to infections or other health problems. Incorrect products can cause reactions that damage the device.

- The product must be suitable for sterilisation in an autoclave.
- The product must be able to be sterilised using the selected programme.
- Follow the manufacturer's instructions for sterilising the product.
- Use appropriate protective equipment, including gloves and safety goggles.

2.10 Safety equipment



CAUTION

INJURY HAZARD!

Safety equipment is not to be modified, removed or disabled. Unprotected parts of the device can cause injury or death.

Safety functions of the door

The door lock must be released by the control for the door to opened.

Conditions:

- temperature at liquids below 80°C,
- at solids no temperature control,
- chamber pressure 950...1080mbar.

Chamber safety valve

If overpressure arises in the chamber, the safety valve opens and relieves the overpressure in a controlled manner and then closes again.

Condition: Chamber pressure above 2.8 bar rel.

Temperature limiter for steam generator

If the steam generator heater overheats due to a malfunction, the temperature limiter shuts off the heater.

Condition: Heater temperature above 220°C.

Liquid water sensor steam generator

If the steam generator has no water, the heating element is switched off.

2.11 Warning signs on the device

The following symbols and warning signs are located on or in the device. Symbols and warning signs refer to the immediate environment in which they are affixed.



WARNING!

Danger of illegible signage!

Over time, stickers and labels can become dirty or otherwise illegible, making it impossible to recognise hazards and follow necessary operating instructions. This poses a risk of injury.

- Keep all safety, warning and operating instructions in a clearly legible condition at all times.
- Replace damaged signs or stickers immediately.

The following symbols and signs are located on the autoclave:

Symbol	Meaning	Mounting location
	Hot surface warning	Door
	Vor Öffnen des Gerätes Netzstecker ziehen. Before opening disconnect mains. Avant d'ouvrir l'appareil retirez la fichemâle. Antes de abrir el aparato sacar el enchufe.	Device cover

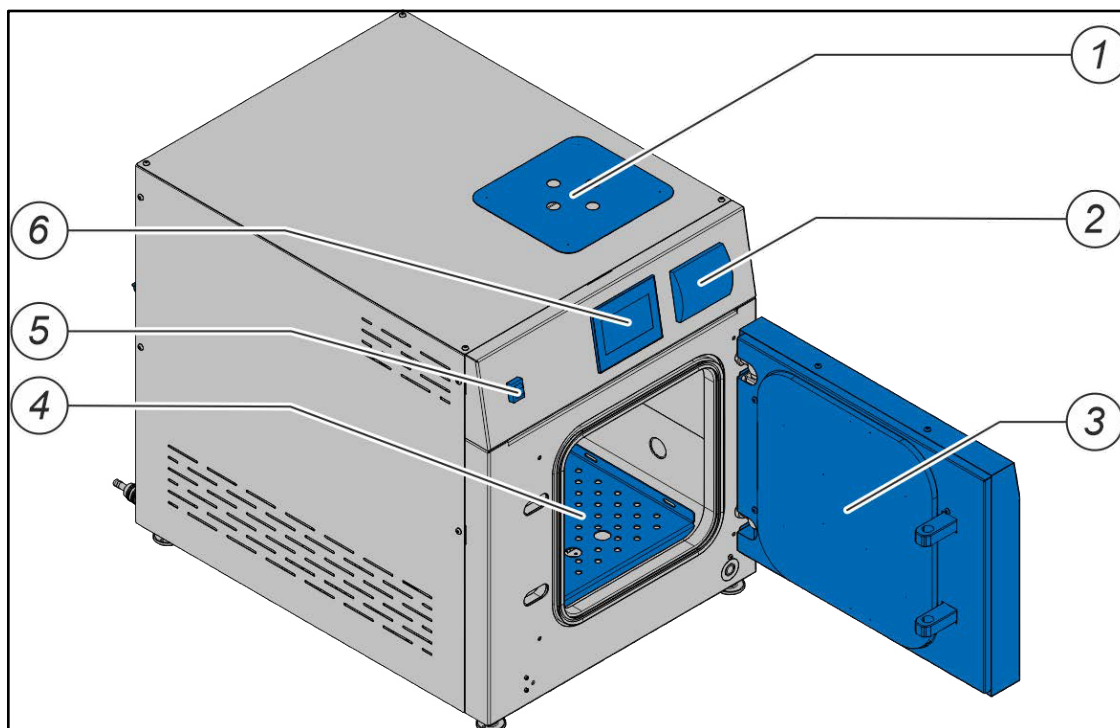
2.12 Product requirements

Products to be sterilised must belong to at least one of the following categories:

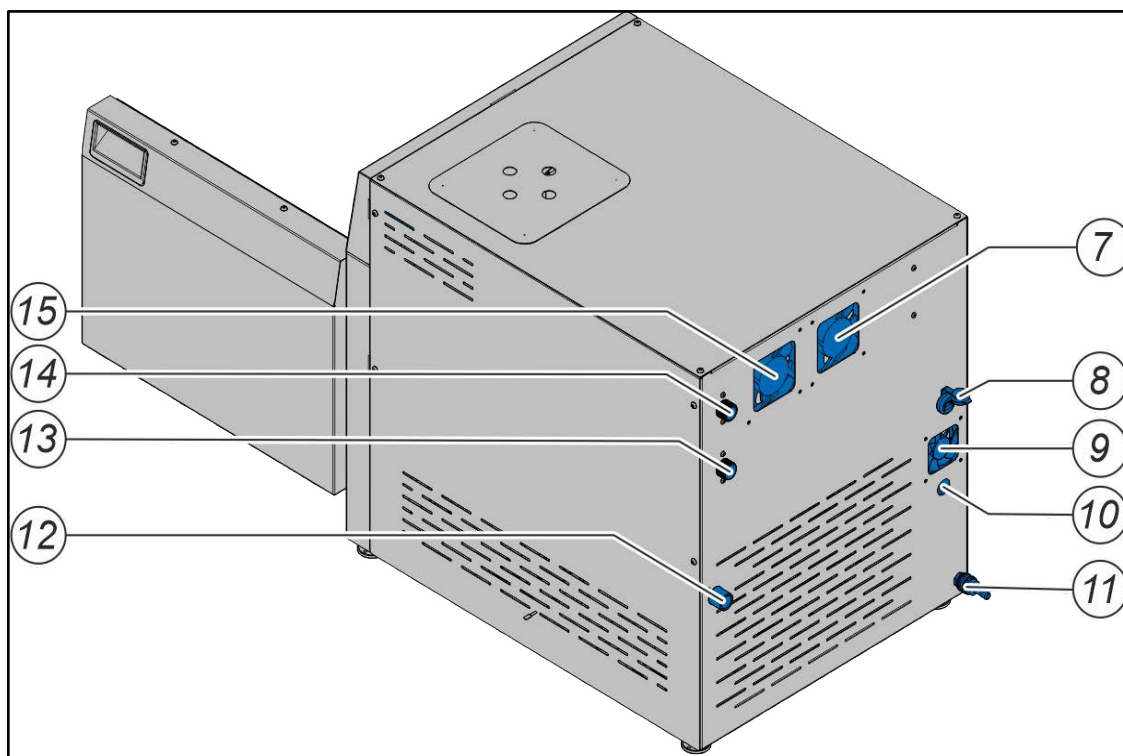
- Liquids in open or closed, pressure-resistant containers
- Solid objects
- Goods with free cavities
- Empty glassware
- Non-infectious waste bags and goods
- Infectious waste bags and goods (S2 or higher)
- Fermenters
- Infectious/non-infectious mixed waste
- Infectious/non-infectious waste bags containing liquids

3 Structure and function

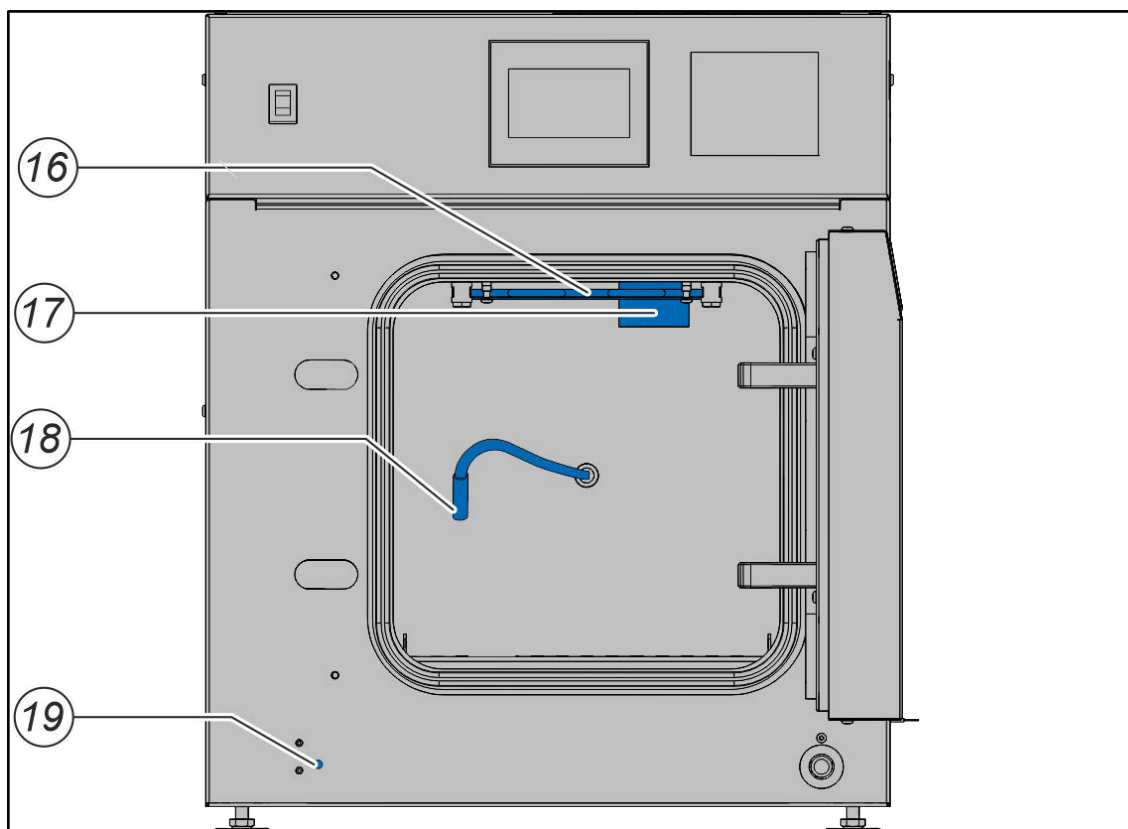
3.1 Overview



Pos.	Designation
1	Deionised water tank
2	Log printer (optional)
3	Protective door
4	Base plate
5	On/off switch
6	Touchscreen



Pos.	Designation
7	Fan
8	USB and Ethernet interface
9	Fan
10	Electrical connection
11	Compressed air supply
12	Waste water connection
13	Cold water supply
14	DI- water supply
15	Fan



Pos.	Designation
16	Cooling plate
17	Inline filter
18	Product temperature sensor
19	Reset button Overheating protection

3.2 How it works

An autoclave is a device used to sterilise materials and liquids using hot steam under pressure. Autoclaves are mainly used in laboratories and small medical facilities. The products to be sterilised are placed in the autoclave chamber and exposed to high-temperature steam. Under these conditions, microorganisms, including heat-resistant spores, are reliably killed.

The autoclave is operated via a touchscreen on the front of the device. The touchscreen allows the sterilisation process to be programmed and monitored.

3.3 Device Equipment

This manual describes the LabStar 40 and 70 tabletop autoclaves. The devices are essentially identical in design and differ only in the size and shape of the usable space and in their features.

The features of the device in question can be found in the order specifications.

The six standard features are described below:

BASIC LAB For simple solid or liquid products without dry extraction.	• Steam generator
DRY LAB For non-infectious solid products that require post-drying.	• Steam generator • Vacuum pump
QUICK LAB BASIC For large quantities of liquid products.	• Steam generator • Water quick recooling system with cooling plate
QUICK LAB For non-infectious solid or liquid products that require post-drying – not suitable for liquids in closed containers.	• Steam generator • Water quick recooling system with cooling plate • Vacuum pump
SAFE LAB For use in S2 laboratories. For infectious solid products that require post-drying.	• Steam generator • Vacuum pump • Exhaust air filter
COMPLETE LAB For use in S2 laboratories. For infectious solid and liquid products that require post-drying.	• Steam generator • Vacuum pump • Exhaust air filter • Water quick recooling system with cooling plate.

4 Transport, set-up and connection



DANGER!

Danger to life due to electric current!

Safety devices must not be modified, dismantled or deactivated. Unprotected parts of the device pose an immediate risk of death from electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the relevant safety regulations when working with live equipment for functional reasons.
- Comply with general, national and company safety regulations, e.g. wearing safety goggles and protective gloves.
- Only operate the device when it is in perfect condition. Report any changes to the device immediately to the next person in charge.
- Clearly define and comply with responsibilities for operation, maintenance and repair so that there is no ambiguity regarding safety.
- Disconnect electrical components from the power supply before working on them.
- Observe the safety instructions in the individual chapters of this manual and in the manuals provided by suppliers.
- Work on electrical cables may only be carried out by qualified electricians or employees of ZIR-BUS TECHNOLOGY GmbH.



WARNING!

Injuries and property damage caused by tipping!

There is a risk of tipping when transporting the device with a pallet truck.

- Only use pallet trucks that completely cover the frame of the device.
- Stabilise the device before starting transport.
- Drive slowly and carefully, especially when cornering.



NOTE!

Property damage due to improper transport!

If transported improperly, items may fall or tip over. This can result in considerable damage to property.

- Take care when unloading the items upon delivery and during internal transport, and observe the symbols and instructions on the packaging.
- Only transport the device in an upright position.
- Do not remove the protective film and transport locks until you have reached the final installation location.

Designation

Service technician der ZIRBUS TECHNOLOGY GmbH

	Designation
	Safety footwear

4.1 Transporting the device

Transport and handling instructions

Due to its size and weight of up to 155 kg, the device is delivered packed on a pallet. Only use industrial trucks for transport to prevent damage to the device and to ensure the safety of personnel. This ensures that the device is moved in a stable and controlled manner.

All relevant internal safety regulations must be observed during transport, lifting and moving. This includes wearing protective equipment and ensuring that all persons involved have the necessary qualifications. Compliance with these guidelines ensures the integrity of the device and enables its proper installation and operation.

Transport inspection

Check the delivery immediately upon receipt for completeness and transport damage. In the event of externally visible transport damage, proceed as follows:

- Do not accept the delivery or only accept it with reservation.
- Note the extent of the damage on the transport documents or on the carrier's delivery note.
- Initiate a complaint.

4.2 Scope of delivery

After unpacking, check the delivery for completeness and integrity. The scope of delivery consists of:

- Components according to the order specifications
- Instructions in the local language
- Technical documentation

4.3 Setting up the device



Note!

Installation plans for the devices can be found in Chapter 14.

- Set up plan LabStar 40, chapter 14.2.1
- Set up plan LabStar 70, chapter 14.2.2

4.4 Environmental conditions

Before setting up and installing the device, ensure that the requirements for the installation site are met.

Temperature	+10 °C – +30 °C
Humidity	max. 75 %
Air pressure	700 hPa – 1060 hPa

4.5 Unpacking

The device is delivered packaged on a pallet.

1. Carefully open the box using a suitable tool. Use a blade no longer than 15 mm.
2. Remove the box.
3. Remove the packaging material from around the device.
4. Remove the bubble wrap from the device.
5. Dispose of the packaging materials in accordance with country-specific regulations.

4.6 Positioning the device

The device can be placed anywhere suitable for its dimensions and weight.

4.7 Aligning the device

The device can be set up anywhere; no anchoring is required. For operation, the device must be level.

You can level the device by adjustment of the adjustable feet.

5 initial commissioning



DANGER!

Danger to life due to electric current!

Safety devices must not be modified, dismantled or deactivated. Unprotected parts of the device pose an immediate risk of death from electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the relevant safety regulations when working with live equipment for functional reasons.
- Comply with general, national and company safety regulations, e.g. wearing safety goggles and protective gloves.
- Only operate the device when it is in perfect condition. Report any changes to the device immediately to the next person in charge.
- Clearly define and comply with responsibilities for operation, maintenance and repair so that there is no ambiguity regarding safety.
- Disconnect electrical components from the power supply before working on them.
- Observe the safety instructions in the individual chapters of this manual and in the manuals provided by suppliers.
- Work on electrical cables may only be carried out by qualified electricians or employees of ZIR-BUS TECHNOLOGY GmbH.



DANGER!

Danger to life due to electrical connection!

Unauthorised modifications to the electrical connection may result in electric shock, burns, or even death.

- Only allow a qualified electrician to connect the appliance to the mains supply.
- Before making any changes to the electrical connection, disconnect the power supply and check that there is no voltage present.
- In the event of an accident involving electricity, or if you suspect that an accident involving electricity has occurred, consult a doctor immediately.



DANGER!

Risk of injury from live parts when the device is switched off!

the cable to the on/off switch always carries voltage. Even when the device is switched off, individual components may still carry voltage. Contact with live parts, e.g. with a tool, may result in injury from electric shock.

- Always use suitable tools and personal protective equipment (PPE) when working on electrical components.
- Ensure that the power supply is completely disconnected before carrying out maintenance or repair work.
- Never use metal tools on live electrical parts.



DANGER!

Danger to life due to incorrect installation and initial commissioning!

Errors during installation or initial commissioning can lead to life-threatening situations and cause significant damage to property.

- Installation and initial commissioning must be carried out exclusively by the manufacturer's employees or by persons authorised by the manufacturer.
- The manufacturer must also be consulted in the event of subsequent changes of location.
- Refrain from unauthorised installation and changes of location.



WARNING!

Risk of scalding from hot waste water!

In the event of a malfunction, the wastewater in the chamber can reach temperatures of up to 100 °C and be under pressure.

- Only open the chamber drain cock when the chamber is depressurised.



NOTE!

Touchscreen damage due to incorrect handling!

Objects can cause scratches and other damage to the touchscreen surface that are irreparable and can impair the function of the touchscreen.

- Only operate the touchscreen with your finger or a suitable stylus.
- Do not use sharp, pointed or acidic objects to operate the touchscreen.
- Use a suitable protective film for the touchscreen to prevent scratches and dirt.



TIP/INFO!

It is recommended that future operators participate in the initial commissioning. This promotes understanding of the new device and allows any open questions to be clarified.

Personal protective equipment

	Designation
	Heat-resistant protective gloves with arm protection
	Safety goggles

Personal qualification

Designation
Service technician der ZIRBUS TECHNOLOGY GmbH

5.1 Connecting the device



NOTE!

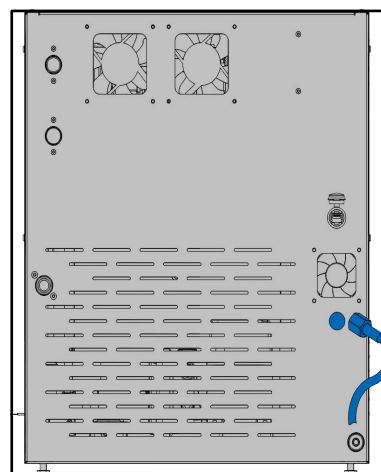
The arrangement of the connections may vary depending on the device configuration and type. Each connection is clearly labelled with a sticker.

The initial commissioning of the device is usually carried out by trained service technicians from ZIRBUS TECHNOLOGY GmbH.

If the device is not commissioned in Germany, the operator must ensure compliance with the country-specific laws, regulations and guidelines for autoclaves.

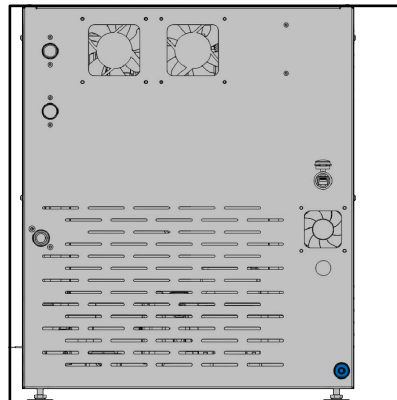
5.1.1 Electrical connection

1. Connect the supply cable to the electrical connection.
2. Observe the following specifications:
 - LabStar 40:
 - 400 VAC, 50 Hz, 16 A
 - optional 230 VAC, 60 Hz, 20 A
 - LabStar 70:
 - 400 VAC, 50 Hz, 16 A
 - optional: 230 VAC, 60Hz, 20 A
- The power supply is established.



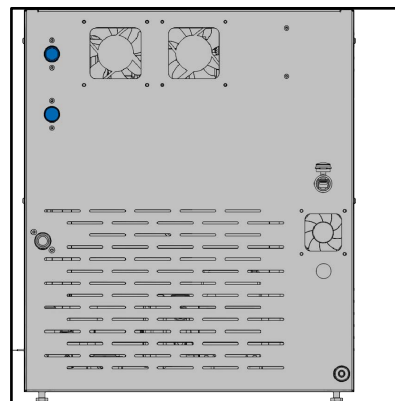
5.1.2 Air pressure connection

1. Connect the supply line to the compressed air connection on the chamber.
- The compressed air supply is now established.

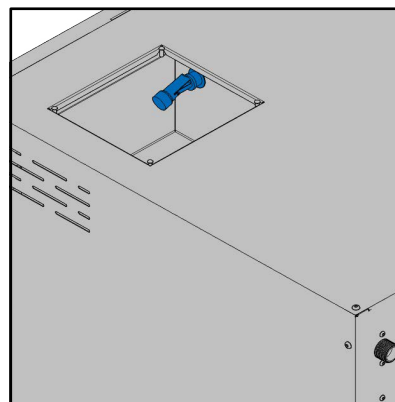


5.1.3 Water connection

1. Connect the supply line to the VE water supply interface.
2. Connect the supply line to the KW supply interface.

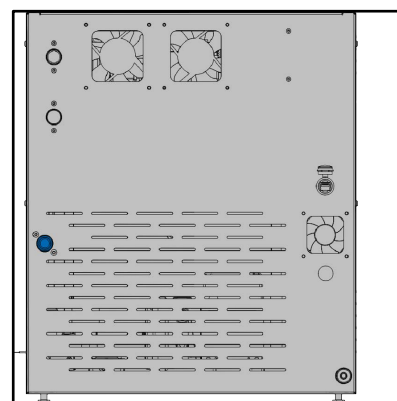


3. Fill the deionised water tank with deionised water until the float switch is raised to the horizontal position by the deionised water. (Only by device option manual filling)
- The water supply is now established.



5.1.4 Connecting the drain tap chamber

1. Connect the supply line to the chamber's drain tap.
2. Observe the following specifications:
 - Connection size: 3/8"
 - Waste water temperature: min. 60 °C, up to 100 °C in the event of a malfunction. Any connected drain hose must be designed for these temperatures.
- The waste water connection is now complete.



6 Operate autoclave



DANGER!

Risk of burns from hot surfaces or steam!

If the device has not cooled down, there is a risk of burns from hot surfaces and hot pipes, especially in the chamber, on the heating element and on the inside of the protective door. There is also a risk of burns from hot sterilised items.

When steam is generated, a hot cloud of steam may escape when the safety door is opened.

- Wear heat-resistant protective gloves and safety goggles when handling the autoclave.
- Allow the autoclave to cool down before opening it.
- Check the temperature of surfaces or pipes before touching them.
- Maintain a safe distance when handling the autoclave.
- Strictly follow the instructions and the safety protocols specified therein.



DANGER!

Danger to life due to electric current!

Safety equipment must not be changed, dismantled or put out of service. In the case of unprotected parts of the device, there is an immediate danger to life due to electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the appropriate safety regulations when working under voltage for functional reasons.
- Comply with general, national, and operational safety regulations, such as wearing goggles and protective gloves.
- Only operate the device in perfect condition. Report any changes to the device immediately to the next person responsible.
- Clearly regulate and comply with responsibilities for operating, maintenance and repairs so that no unclear competences arise from the point of view of safety.
- Before working on electrical components, de-energize them.
- Observe safety instructions in the individual chapters of this manual and in the instructions of the suppliers.
- Work on electrical cables should only be carried out by qualified electricians or employees of ZIRBUS TECHNOLOGY GmbH.



DANGER!

Risk of injury due to live parts when the device is switched off!

The supply line to the on/off switch always carries voltage. Even when the device is switched off, individual components can carry voltage. Contact of live parts, e.g. with a tool, can lead to injuries caused by electricity.

- Always use appropriate tools and personal protective equipment (PPE) when working on electrical components.
- Ensure that the power supply is completely cut off before performing any maintenance or repair.
- Never use metal tools on live electrical parts.



WARNING!

Risk of injury and equipment damage due to improper work with the autoclave!

Improper work or handling of the autoclave can lead to injuries, burns or equipment damage.

- Ensure that the device is operated only by authorized and trained persons.
- Before starting each program, ensure that the products in the chamber are suitable for sterilization with the device.
- Before starting each program, make sure that a program is used that is appropriate for the products in the chamber.
- If there is uncertainty, do not start the program.
- Do not sterilize solid and liquid products together.
- Load the device only with products in the baskets or buckets provided. Do not fill loose products into the chamber.



WARNING!

Risk of injury and equipment damage due to unsuitable product or process!

Using the wrong product can lead to inadequate sterilization and thus to infections or other health problems. Incorrect products can trigger reactions that damage the device.

- Product must be suitable for sterilization in an autoclave.
- Product must be able to be sterilized with the selected program.
- Use manufacturer's instructions for sterilizing the product.
- Use appropriate protective equipment, including gloves and goggles.



NOTE!

Touchscreen damage due to incorrect handling!

Objects can cause scratches and other damage to the touchscreen surface, which is irreparable and can affect the function of the touchscreen.

- Use the touchscreen only with your finger or a suitable stylus.
- Do not use pointed, sharp or acidic objects to operate the touch screen.
- Use a suitable screen protector to prevent scratching and soiling of the touchscreen.

Personal protective equipment

	Designation
	Heat-resistant protective gloves with arm protection
	Safety goggles

Personal qualification

Designation
Trained Person

6.1 Switching on and off

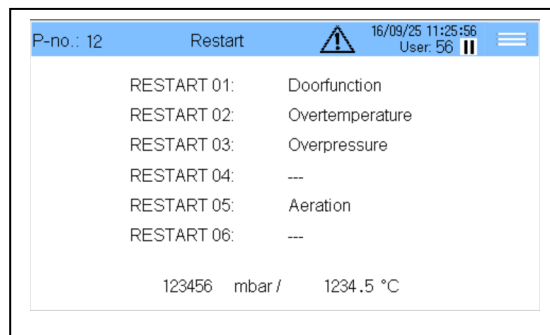
6.1.1 Switching on

1. Press the On/Off illuminated button
 - The control launch.
 - The On/Off illuminated button lights up.
 - The indicator lights on the touchscreen flash.

- A "Start screen" with the device type and number appears briefly
- A system check takes place.



- The restart conditions are checked one by one.
 - At a step highlighted red, the start conditions are not met, e.g. if readings are not yet below the limit values.
2. According to the highlighted message wait until the device finds the cause eliminated for the message itself. If the device the possible measure not carried out, there is a defect and the Zirbus service must be contacted, see Chapter 13. Once all restart conditions have been met, the words "Restart END" are displayed in green.
 3. Tap the button „“ to go to the individual control screen.

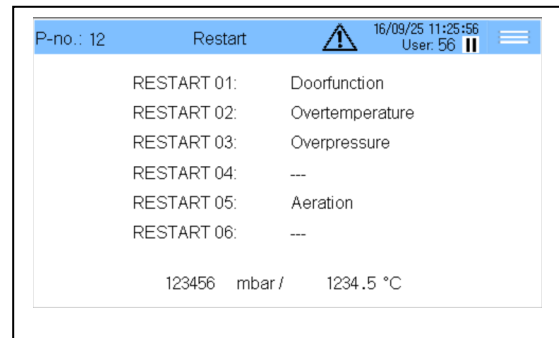


6.1.2 Switching on after power failure

If a power failure has interrupted a running program, after the controls boot up, the control screen "Power failure" appears on the touch-screen

The interrupted program can be restarted or the door opened.

If no running program was interrupted by the power failure, no action needs to be taken.



6.1.3 Switching off

1. Wait until the program has quit or cancel the program.



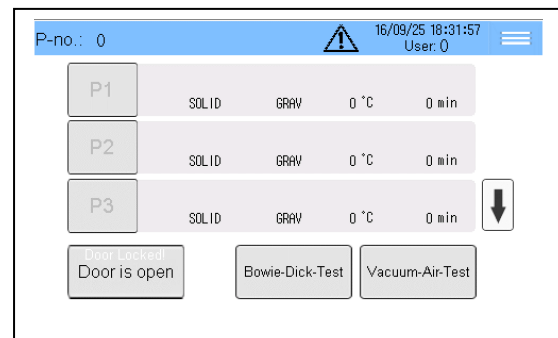
NOTE

When cancelling a program, check whether the sterilization process has not completed and needs to be repeated.

2. Press the On/Off illuminated button.
3. Based on company specifications, close the supply lines, if necessary.

6.2 Loading the device

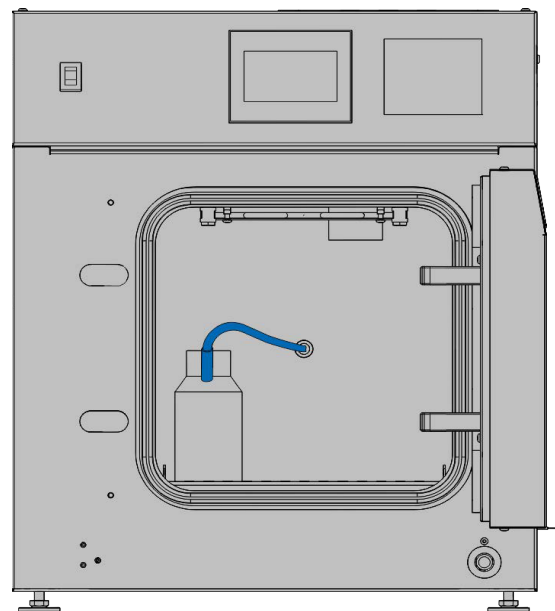
1. Press the On/Off illuminated button.
 - The controls launch.
 - The On/Off illuminated button lights up.
 - The indicator lights on the touchscreen
- A „Start screen“ with the device number and appears briefly.
- A system check takes place.
- After the system check is over (with no errors), the “program selection” control screen appears.
2. Tap the door control button to unlock the door. (The current situation of the door is present on the door button, Door is locked/Door is open)



ATTENTION

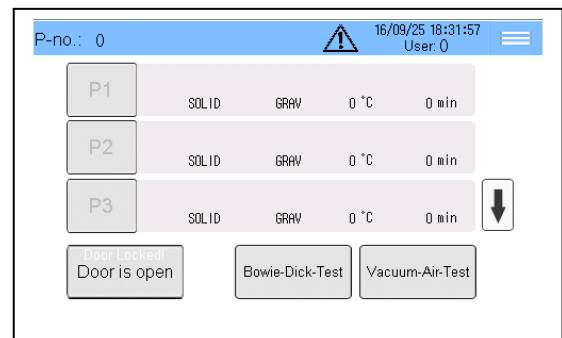
Load the device with products only in the containers provided. Never fill the chamber with loose products. Never sterilise solid and liquid products together.

3. Position the product on the surface, do not touch the chamber wall.
 - When sterilising liquid media, position the product temperature sensor in a reference bottle. The reference bottle must correspond to the largest single volume.
 - When sterilising solid goods, position the product temperature sensor in the centre of the products.
4. Check the sealing surface of the door seal for cleanliness, clean the sealing surface if necessary.
5. The door locks automatically when closed.
 - The autoclave is loaded for operation.

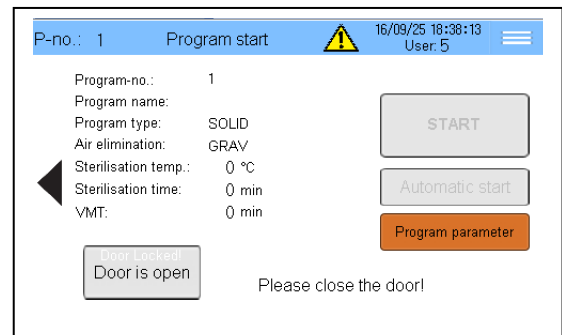


6.3 Program sequence

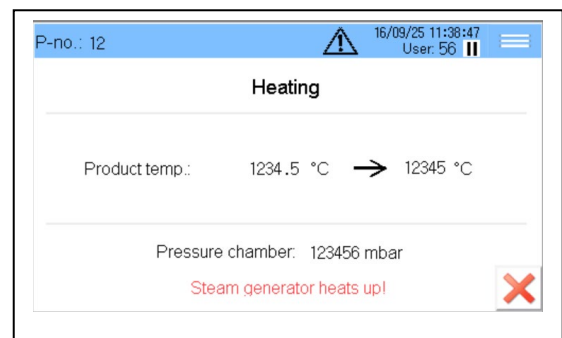
1. In the "Program selection" control screen, press the P[X] button for the appropriate program.



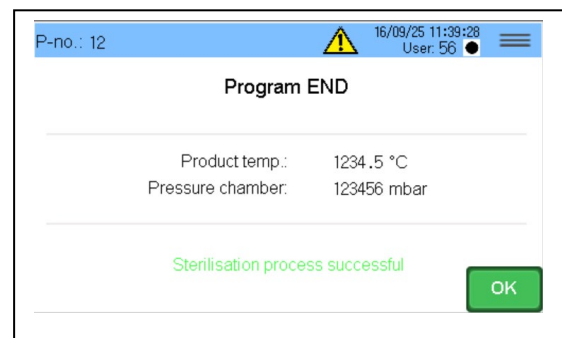
- The "Start program" control screen is displayed.
2. Tap the start button.
 - Sterilisation with the selected program starts.



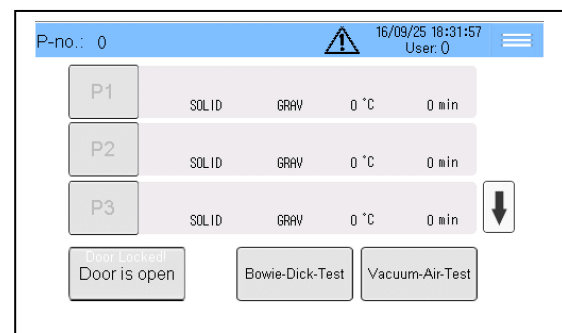
- The „Program sequence“ control screens are shown.
- The program-specific sterilisation steps are performed
- On the touchscreen, the sterilisation steps and the relevant actual values are shown.



- After the program has finished, the "Program END" control screen is displayed.
3. Tap the OK-button.



- The "Program selection" control screen is displayed.



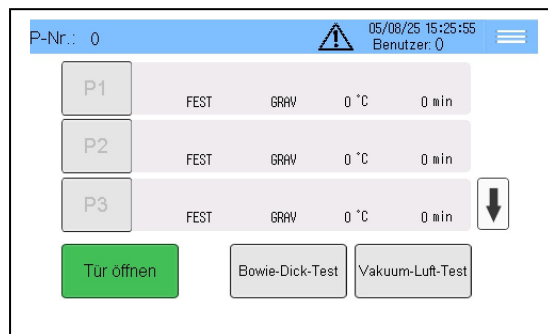
6.4 Removing the sterile materials

1. Tap the open door button (door open).
 - The door is inlocked.

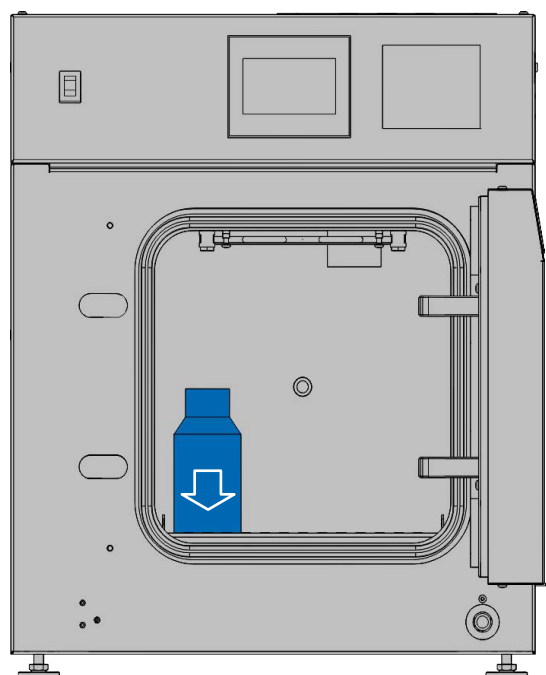
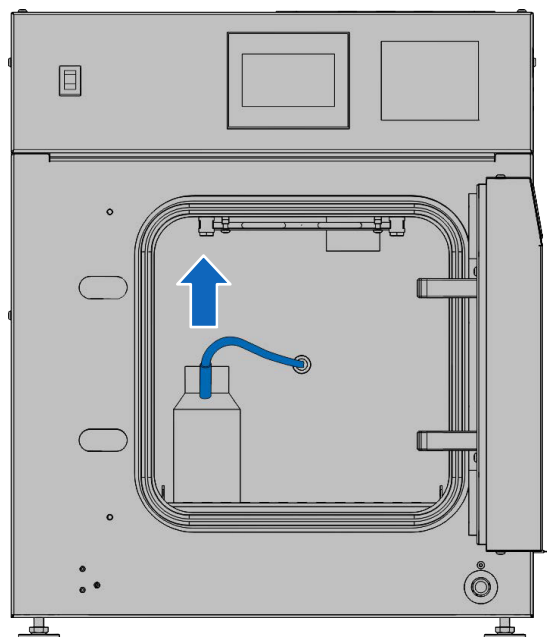


DANGER!

Risk of burns due to hot surfaces or steam development!



2. Open the door.
3. Remove the product temperature sensor from the sterilisation chamber.
4. Remove the sterile goods from the chamber.



7 Touchscreen and visualization

The device is controlled from the touchscreen. All necessary settings can be made from the touchscreen.

All entries are made by touching the touchscreen with a finger or with an entry stylus suitable for touch-sensitive operating panels.



ATTENTION

DAMAGE TO THE TOUCHSCREEN!

Use of pointed, sharp or acidic objects for operating the touchscreen can cause irreparable damage to the surface.

- Operate the touchscreen with a finger or with a suitable entry stylus.
- There are protective films for the touchscreen. The film prevents the touchscreen from being scratched or soiled. A protective film should always be adhered.



Note

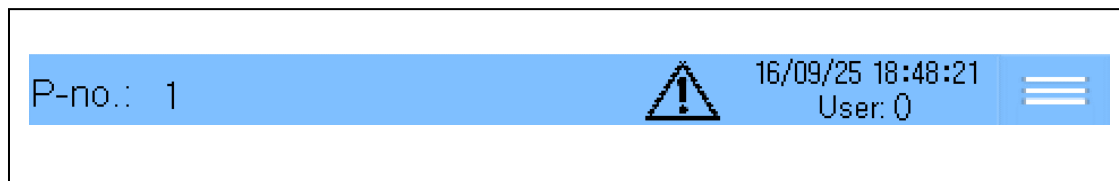
The control screens are adapted to the device's equipment and therefore show only the functions and settings possible on your device.

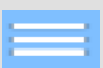
This chapter describes all possible control content. It is therefore possible that the chapter contains content that does not apply to your device.

The control screens shown can therefore differ from those of your device.

7.1 Headers in control screens

The header is the same in all control screens.

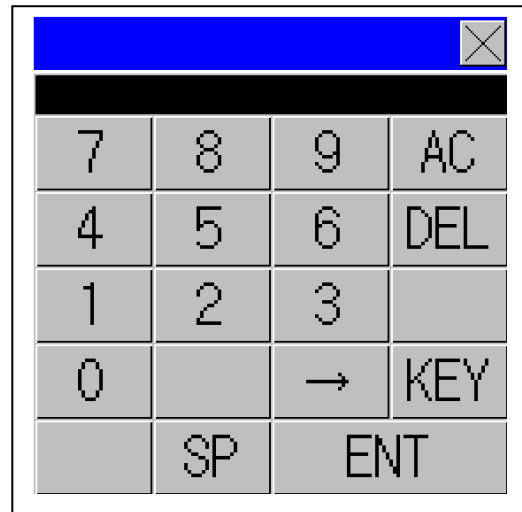


Pos.	Designation
P-no.:	Number of the last selected program.
	Warning icon: When a problem occurs, the warning icon will flashing. • Tapping on the warning symbol displays the "Alarm list" control screen, See chapter 10.5.10
User	Registered user (user level)
16/09/25	Current date
18:48:21	Current time
	Main menu button to access further submenus and execute additional functions. You can only switch between the individual menus using this button.

7.2 Entering text and numbers

When needed, one of the virtual keyboards is shown for entering text or numbers

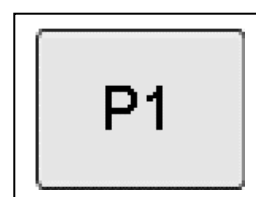
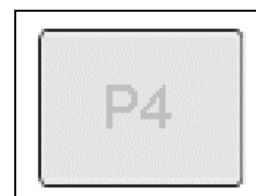
- The upper area of the numeric keypad shows the range of possible values. Entries beyond the defined value range are not adopted by the controls.
- After the text or numbers have been entered, and the OK key has been tapped, the virtual keyboard goes away.



7.3 Representation buttons

Buttons are operational or non-operational depending on the status of the machine and program sequences.

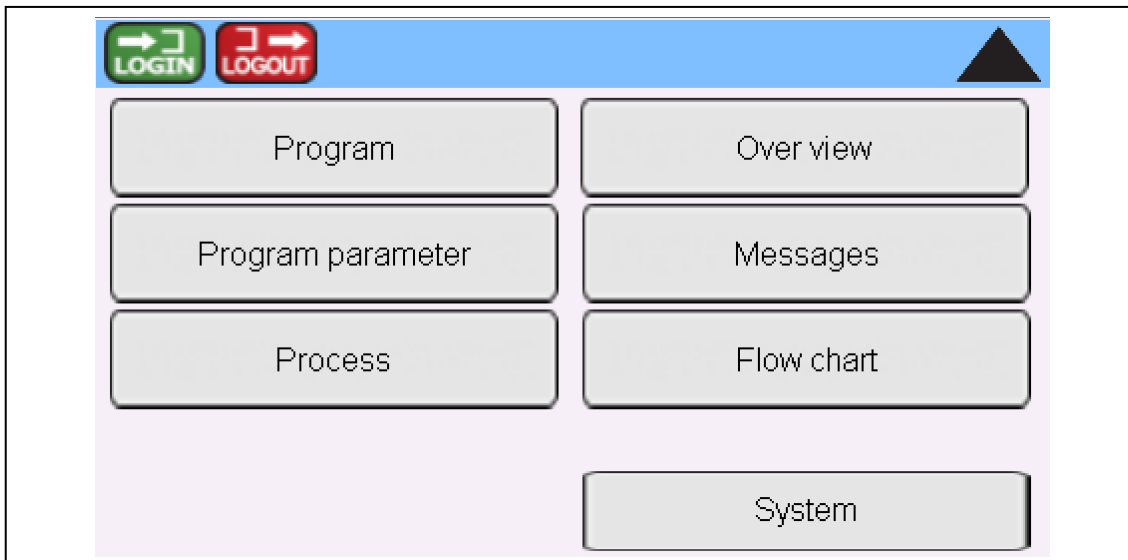
- Text greyed out:
The button cannot be operated.
- Text black:
The button can be operated.



7.4 "Login" control screen

In order to be able to make functions or settings on the device, you have to log in to the device. After pressing the „“ button in the header, the „Login“ button is displayed on the touchscreen.

Explanation of the control screen



Pos.	Designation
	LOGIN to the system to make further functions. The keyboard for entering the password for the corresponding user rights opens.
	LOGOUT of the current login user.
User rights / user levels	The following user rights/levels with the corresponding passwords are available: User level 1 - Password 255 User level 3 - Password 9200 User level 5 - Password 9222 User level 7- Password: On request

User rights/levels

User-level	Change program	Date & time	Manual functions	Calibration	System parameter
1	✓	✗	✗	✗	✗
3	✓	✓	✓	✗	✗
5	✓	✓	✓	✓	✗
7	✓	✓	✓	✓	✓

7.5 "Start program" control screen

In this screen you can start or change the selected program. Starting from the "Program selection" control screen, the following button must be pressed to get to this control screen:

P1

Explanation of the control screen

P-no.: 1
Program start


16/09/25 20:31:24
User: 0

Program-no.: 1
Program name: TEST
Program type: SOLID
Air elimination: FRW
Sterilisation temp.: 121 °C
Sterilisation time: 20 min
VMT: 5 min

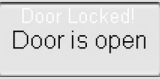
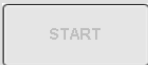
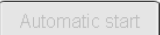
START

Automatic start

Program parameter

Door Locked!
Door is open

Please close the door!

Pos.	Designation
Program-No.:	Program number of the selected program.
Program name:	Name of the selected program.
Program type	Type of the selected program
Air elimination	Air elimination of the selected program
Sterilisation temp:	Shows sterilization temperature of the selected program.
Sterilisation time:	Shows sterilization time of the selected program.
VMT	Shows the drying time of the selected program.
	"Program selection" control screen is displayed.
	Door control button. The door is unlocked after pressing the button. When the door is closed the status "Door locked" is shown on the button.
	program is started. - Yellow: Program can be started. - Depending on the program, control screens showing the current status of the program sequence are displayed.
	The "Automatic start" control screen is displayed.

Pos.	Designation
Program parameter	"Edit program" control screen is displayed.
Please close the door!	Advisory text, call to action.

7.6 "Automatic start" control screen

The time for an automatic execution of a program can be entered in this control screen. Starting from the "Program selection" control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

Pos.	Designation
Automat-Start OFF	Display of the current situation of the Automatic-Start.
Start time: 12 : 12	Date on which the program should be started automatically. After tapping on the input field, a pop-up window for entering the date is displayed.
Actual time: 12 : 12	Time at which the program should be started automatically. After tapping on the input field, the temperature can be entered.
ON / OFF	Display: automatic start switched on or switched off. - On: Automatic start is switched on. - Off: Automatic start is switched off.

7.7 Program parameters

7.7.1 "Edit program" control screen (1)

Starting from the "Program selection" control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1
 16/09/25 20:35:04
User: 1

Program type:

Air elimination:

Program name:

Vacuum steps:

1. Step Vacuum / Heating:

2. Step Vacuum / Heating:

3. Step Vacuum / Heating:

4. Step Vacuum / Heating:

5. Step Vacuum / Heating:

70	100
70	100
70	100
0	0
0	0

Pos.	Designation
Program type	Selection of the program type. - SOLID: solid program - LIQUID: liquid program - WARMING - SOLID WASTE: Solid waste program - WASTE LIQUID: Waste program for liquids
Air elimination	Choose of the air evacuation. - GRAV: Gravitation Evacuation of the chamber without drawing vacuum, only by supplying steam. - VOVV: Pre-vacuum The chamber is emptied of air by pulling a vacuum once and then supplying steam. - FRVV: Fractional vacuum The chamber is emptied of air by pulling a vacuum several times and then supplying steam each time. - DLGV: Steam-air-mixture The air stays inside the chamber and will be mixed with steam.
Program name	Editable program name.
Vacuum steps	Number of vacuum steps by FRVV. - After tapping on the input field, the number can be entered. - A maximum of 10 vacuum steps are possible.

Pos.	Designation
1.Step Vacuum Heating	Vacuum and heating pressures for the vacuum stages. • GRAV: No information possible. • VOVV: Vacuum pressure for one stage can be entered. • FRVV: Pressures can be entered according to the specified number of vacuum levels. • After tapping on the input fields, the values can be entered. • The holding time for each vacuum step can be set.
	"Edit program (1)" control screen is displayed.
	Depending on the selected program type, a different control screen is displayed. • SOLID/WASTE SOLID • "Edit program (3)" control screen is displayed. • LIQUID/WASTE LIQUID • "Edit program (3)" control screen is displayed.

7.7.2 "Edit program" control screen (2) – program type Steaming

Starting from the "Program selection" control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

Pos.	Designation
Warming	Sterilization temperature / holding temperature After tapping on the input field, the temperature can be entered.
Time	Sterilization time/warming time - Only visible if e.g. is sterilized by time (1). - After tapping on the input field, the time can be entered.
Cooling	cooling temperature After tapping on the input field, the cooling temperature (removal temperature) can be entered.
	"Edit program (1)" control screen is displayed.
	The program is saved and the "Start program" control screen is displayed.

7.7.3 "Edit program" control screen (3) – program type Solid/WASTE Solid

Starting from the "Program selection" control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1				16/09/25 20:35:24			
Sterilisation by:	Time						
Sterilisation temperature:	121	°C					
Sterilisation duration:	20	min					
F0-Value:	0.0	Z-Value:	0.0				
Temperature offset:	0.0	°C					
Compensation time:	15	sec					
Drying with vacuum:	without	5	min				

Pos.	Designation
Sterilisation by	Choice of sterilization. - TIME It is sterilized until the end of the sterilization time STt. - F0 It is sterilized until the F0 value is reached. - TIME and F0 It is sterilized until the F0 value is reached and the sterilization time STt has expired. - TIME or F0 It is sterilized until either the F0 value is reached or the sterilization time STt has expired.
Sterilisation temperature	Sterilisation temperature After tapping on the input field, the temperature can be entered.
Sterilisation duration	Sterilisation duration - Only visible if e.g. is sterilized by time (1). - After tapping on the input field, the time can be entered.
F0-Value	F0 - Only visible if e.g. is sterilized according to the F0 value (1). - After tapping on the input field, the F0 value can be entered.
Temperature offset	Temperature offset of the regulation in the sterilisation.

Pos.	Designation
Compensation time	Compensation time before sterilisation time begins.
VMT	Vacuum drying (duration) After tapping on the input field, the time can be entered.
Drying with vacuum	Drying process selection. - TIME Vacuum drying without interim aeration. Drying continues until the VDT has elapsed. - WITH AIR INLET Vacuum drying with interim aeration (air). The VDT runs only during the vacuum retention time. So long as a vacuum is drawn, maintained, aerated, maintained. - WITH STEAM Vacuum drying with interim aeration (steam). The VDT runs only during the vacuum retention time. So long as a vacuum is drawn, maintained, aerated, maintained.
	"Edit program (2)" control screen is displayed.
	Depending on the selected program type, a different control screen is displayed. - SOLID/DROP SOLID "Edit program (4)" control screen is displayed. - LIQUID/WASTE LIQUID "Edit program (4)" control screen is displayed.

7.7.4 "Edit program" control screen (3) – program type LIQUID/WASTE LIQUID

Starting from the "Program selection" control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1
 16/09/25 20:58:01
User: 1

Sterilisation by: Time

Sterilisation temperature: 121 °C

Sterilisation duration: 20 min

F0-Value: 0.0 Z-Value: 0.0

Temperature offset: 0.0 °C

Compensation time: 60 sec

Drying with vacuum: 40 min

Pos.	Designation
Sterilisation by	Choice of sterilization. - TIME It is sterilized until the end of the sterilization time STt. - F0 It is sterilized until the F0 value is reached. - TIME and F0 It is sterilized until the F0 value is reached and the sterilization time STt has expired. - TIME or F0 It is sterilized until either the F0 value is reached or the sterilization time STt has expired.
Sterilisation temperature	Sterilization temperature After tapping on the input field, the temperature can be entered.
Sterilisation duration	Sterilisation duration Only visible if e.g. is sterilized by time (1). After tapping on the input field, the time can be entered.
F0	F0 Only visible if e.g. is sterilized according to the F0 value (1). After tapping on the input field, the F0 value can be entered.

Pos.	Designation
Temperature offset	Temperature offset of the regulation in the sterilisation.
Compensation time	Compensation time before sterilisation time begins.
	"Edit program (2)" control screen is displayed.
	Depending on the selected program type, a different control screen is displayed. • SOLID/WASTE SOLID "Edit program (4)" control screen is displayed. • LIQUID/WASTE LIQUID "Edit program (4)" control screen is displayed.

7.7.5 "Edit program" control screen (4) – program type Solid/WASTE Solid

Starting from the "Program selection" control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1
 16/09/25 20:46:02
User: 1

Warming:

min

Cooling:

°C

Overtemperature:

°C

pressure drop:

Pos.	Designation
	The "Change parameter" control screen (3) – Program type Solid/Waste solid appears.
	The program is saved and the "Program start" control screen appears.

7.7.6 "Edit program" control screen (4) – Program type LIQUID / WASTE LIQUID

Starting from the "Program selection" control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1
 16/09/25 21:02:16
User: 1

Warming: min

Backpressure:

Cooling: °C

Overtemperature: °C

pressure drop:

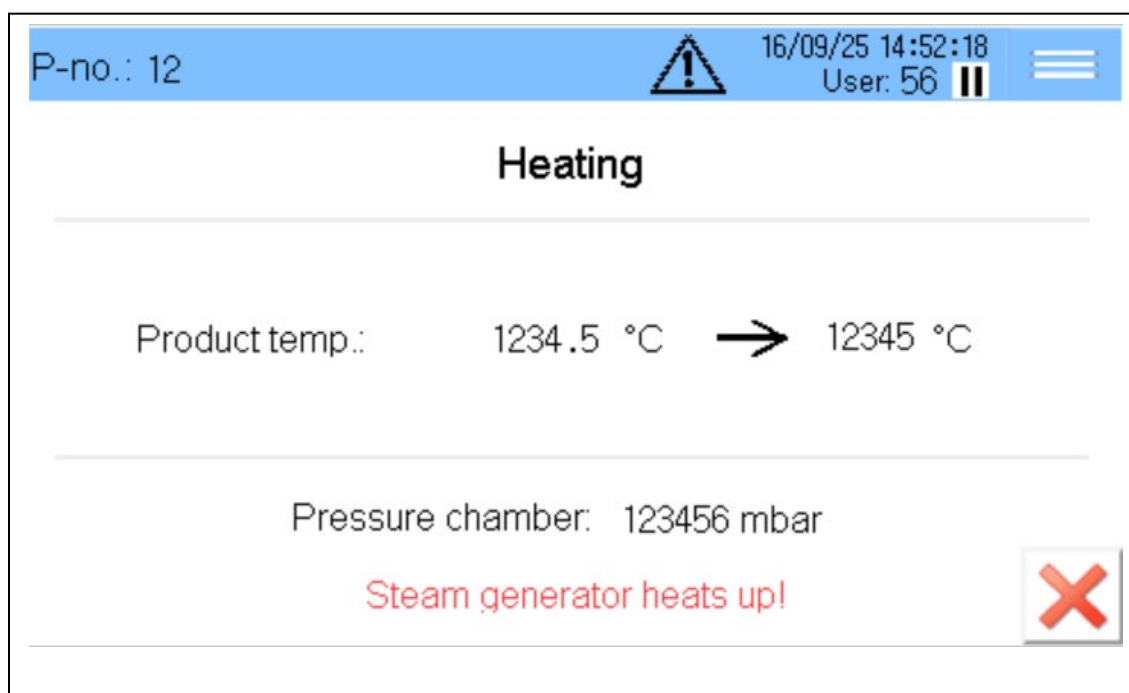
Pos.	Designation
Warming	Warming Enter the warming time after reaching the set cooling temperature.
Backpressure	Back pressure selection. • Back pressure can be used to prevent liquids from boiling over. • -O: None Without back pressure, self-cooling • -S: Continuous Constant: The pressure from the sterilization is maintained with air until the cooling temperature is reached. • -R: regulation Ramp: Dynamic counter-pressure process, the pressure also falls as the temperature falls
Cooling	Cooling • Temperature to which the product will be cooled at the end of the program before the door can be opened. After tapping on the input field, the temperature can be entered.
Overtemperature	Over temperature • In order to achieve faster heating and to avoid falling below the sterilization temperature, an overtemperature can be entered. • The excess temperature is specified relatively. After tapping on the input field, the temperature can be entered.
	The "Change parameter" control screen (3) – Program type Liquid/Waste liquid appears.

Pos.	Designation
	The program is saved and the "Program start" control screen appears.

7.8 "Program sequence" control screens

The progress in the program flow is shown in different control screens.

Explanation of the control screen

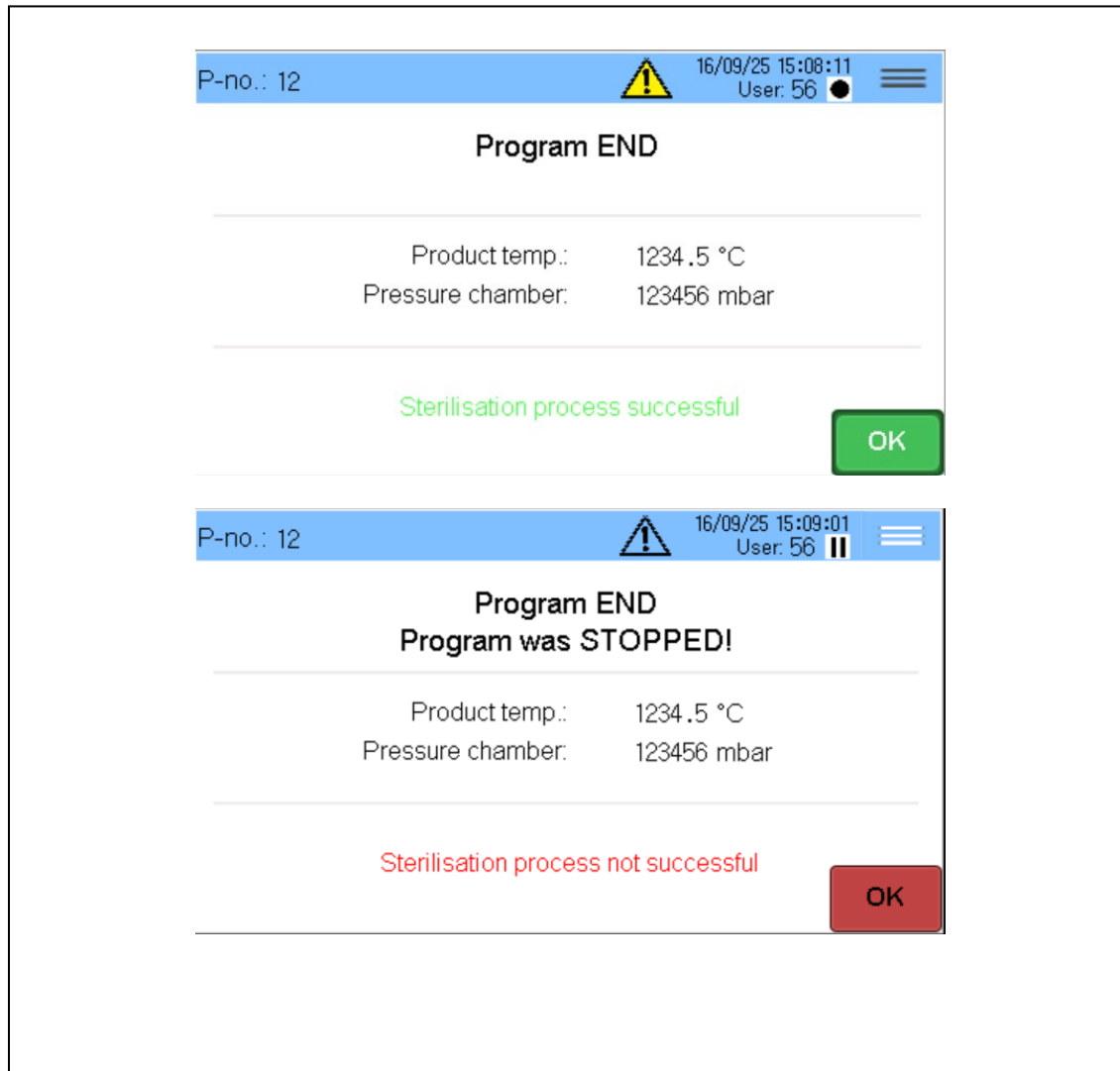


Pos.	Designation
Heating:	Current program step
Product temp.:	Display of the current actual and target values of the program step. If the target value is reached, the next program step starts.
Pressure chamber	Display of the current actual value of the program step.
Steam generator heats up	Information until the program starts.
	abort program. After a security query, the program is aborted. "End of program" control screen is displayed.

7.9 "End of program" control screen

Different control screens are displayed depending on whether the program was run without errors or was aborted.

Explanation of the control screen



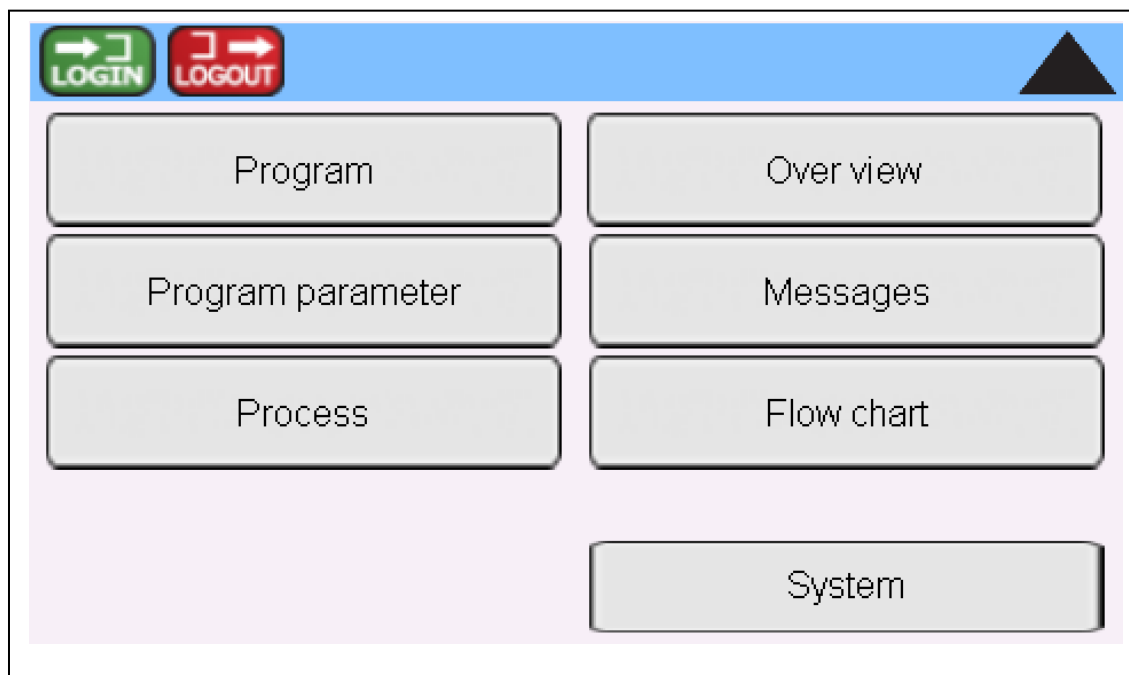
Pos.	Designation
 	"Program selection" control screen is called up.

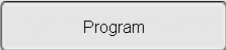
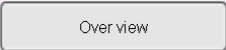
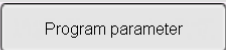
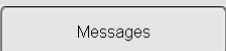
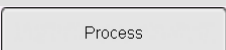
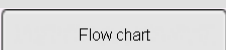
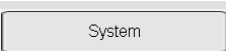
7.10 Control screens „Main menu“

Control screens of various functions and settings are called up in this control screen. The following buttons must be pressed one after the other in order to get to this control screen:



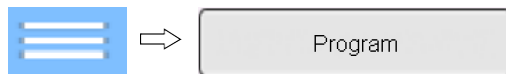
Explanation of the control screen



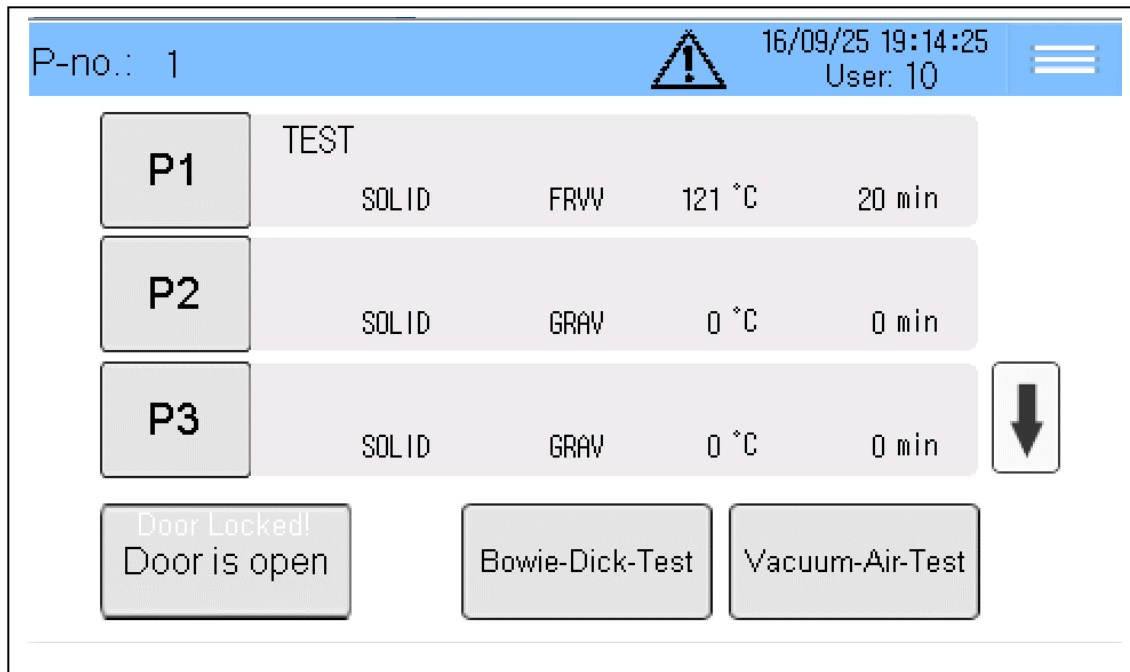
Pos.	Designation
	"Program" control screen is displayed.
	"Overview" control screen is displayed
	"System values" control screen is displayed. (Only for service technicians)
	"Messages" control screen is displayed.
	"Process" control screen is displayed.
	"Flow-chart" control screen is displayed.
	"System" overview is displayed.

7.10.1 "Program" control screen

Once the device has been turned on with the On/Off illuminated button, the "Program selection" control screen appears on the touchscreen. From another menu, the following buttons must be pressed one after the other in order to get to this control screen:



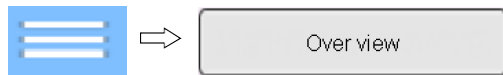
Explanation of the control screen



Pos.	Designation
	"Start program" control screen of the selected program is called up. A program must be enabled in order to be started.
	Program list with additional programs is displayed. Scroll in the program list.
SOLID, FRVV, 121°C, 20min.	Program parameters of the respective program
TEST	Program name of the respective program
	door control: Chamber door is open or locked. If the door is locked, it can be unlocked by pressing the button.
	"Start program" control screen of the selected program (Bowie-Dick-Test) is called up. A program must be enabled in order to be started.
	"Start program" control screen of the selected program (Vacuum-Air-Test) is called up. A program must be enabled in order to be started.

7.10.2 “Overview“ control screen

The actual values are displayed in this control screen. The following buttons must be pressed one after the other in order to get to this control screen:



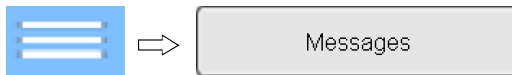
Explanation of the control screen before log on

P-no.: 1	Over view		16/09/25 18:56:48 User: 7	
Pressure chamber:	0 mbar	Auto-Logout: 298 sec		
Product temperature:	0.0 °C	Program-time:		
Chamber top temperature:	0.0 °C	0 min		
F0-Value:	0.00			
Regulation:	0 / 0 mbar	Batches: 0		

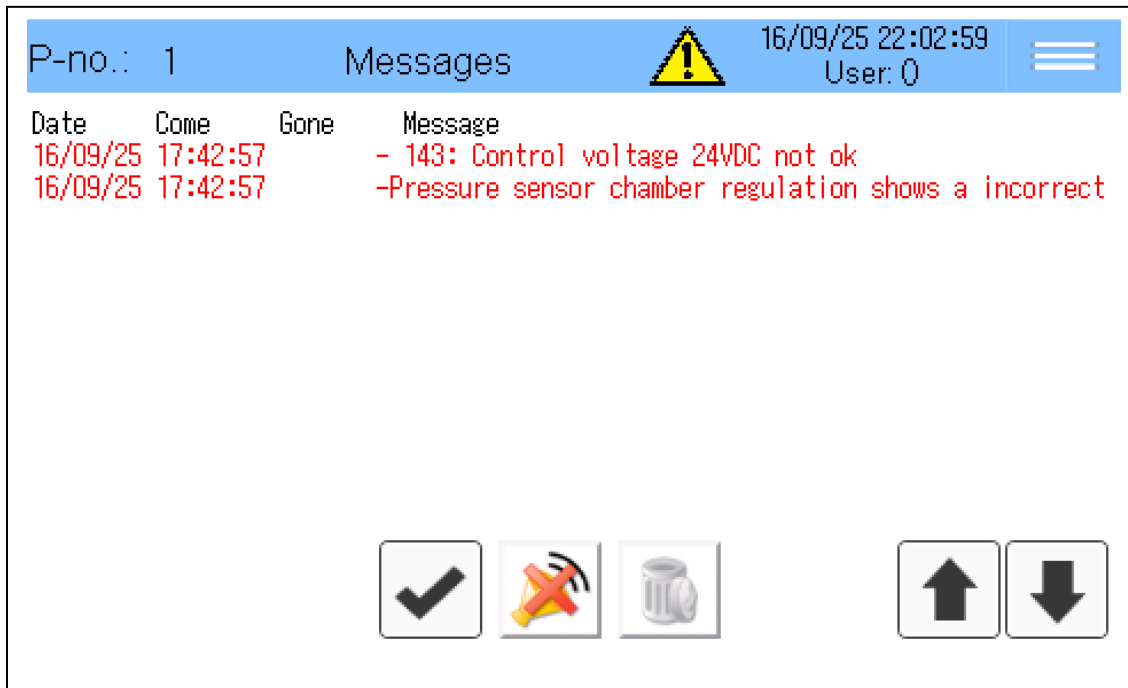
Pos.	Designation
Product temp. etc.	Display of the process-relevant actual values - The following process-relevant actual values are displayed: Product temperature, bottom chamber temperature, top chamber temperature, filter temperature, chamber pressure, steam pressure - The following actual values are also displayed: Jacket temperature, jacket pressure, WFI water, F0 value, temperature tank vacuum pump
Regulation	Control value of the currently running program step
Batches	Cycle counter, counts every program start
Program time	Running time of the current program. Editable value. Due to many variables in the timing of the program, only an empirical value can be given as an approximate runtime.
Auto-Logout	Time until the logged-in user is automatically logged out if no function is performed when the display is no longer operated.

7.10.3 "Messages" control screen

The messages are displayed in this control screen, the following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen



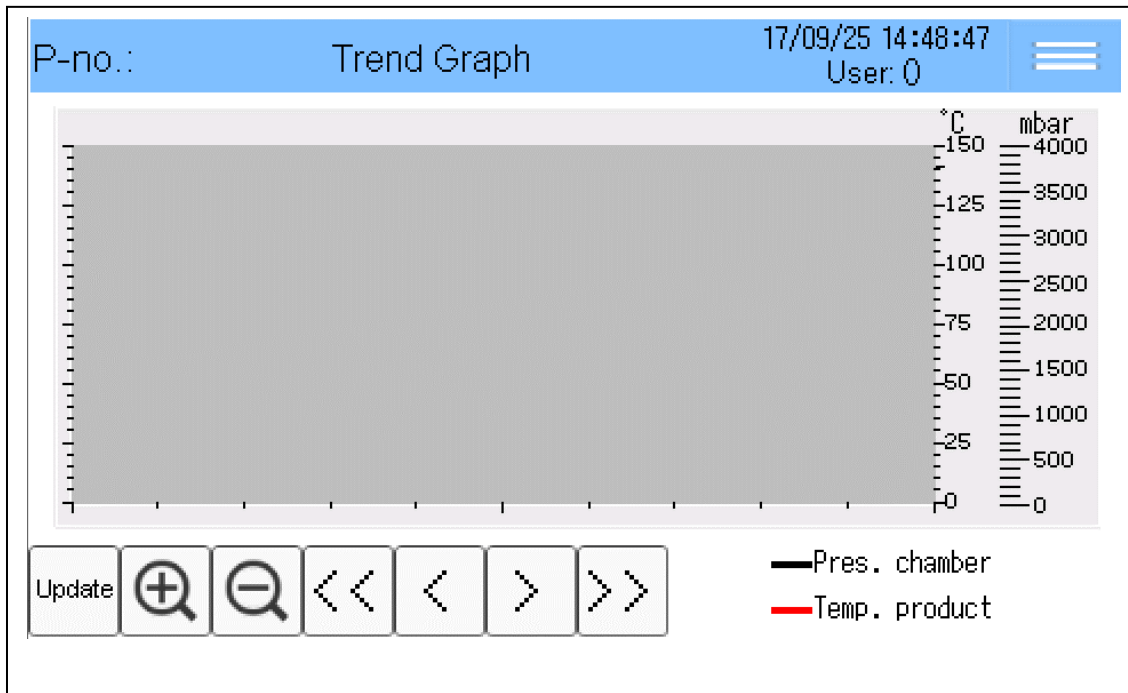
Pos.	Designation
	Pending messages are acknowledged after a new check if the cause of the message is no longer present.
	Switching off the acoustic signal that sounds when an alarm message is issued.
	Delete alarm list.
	Scroll in the alarm list

7.10.5 "Process" control screen

In this control screen, the program sequence is represented graphically and in tabular form using the parameters. The following buttons must be pressed one after the other in order to get to this control screen:



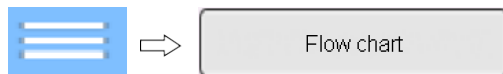
Explanation of the control screen



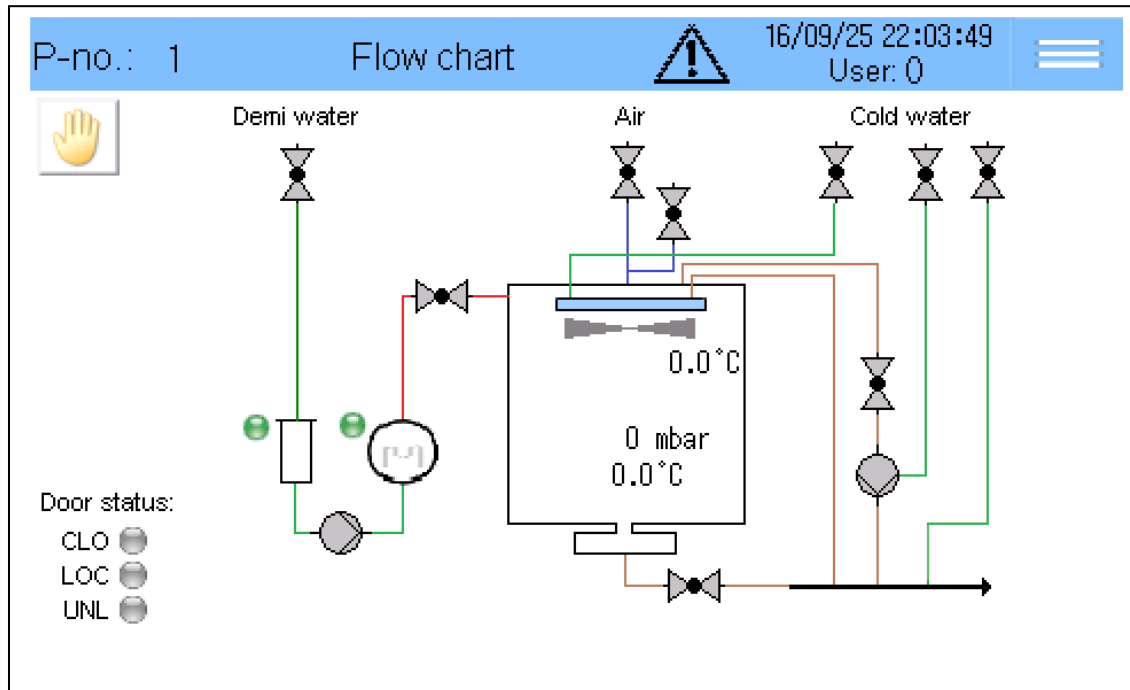
Pos.	Designation
	Updating the graphic
	Zooming in on the graphic (enlarging or reducing the size of the graphic)
	Move the cursor in the direction of the arrow in the graphic.
	Move the cursor to the beginning or end of the graphic.
	Key to the displayed measurements.

7.10.6 "Flow chart" control screen

The structure of the system is shown graphically on this screen. You also have the option of controlling components manually. The following buttons must be pressed one after the other in order to get to this control screen:



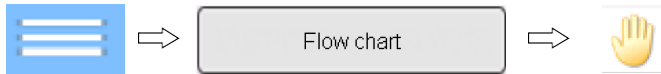
Explanation of the control screen



Pos.	Designation
	Activation of the manual control options (only possible with respective user right).
(Flow chart)	Overview of the functional elements (valves, pumps) of the device and their status. • Green: Element active. • Gray: Element not active. • Lines drawn in red are steam lines.

“Flowsheet manual control”

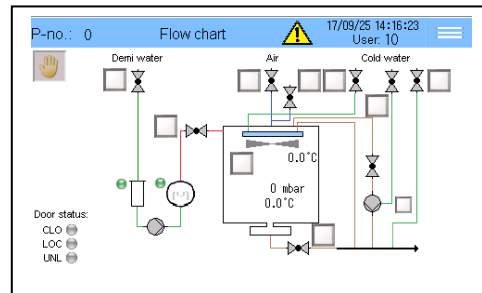
The following buttons must be pressed one after the other in order to get to this pop-up window:



You can manually select the element using the checkbox next to the corresponding element.

1. Function element is switched on/off
 - Green: Functional element switched on
 - Grey: Functional element switched off

Push the button “” to close the manual function.

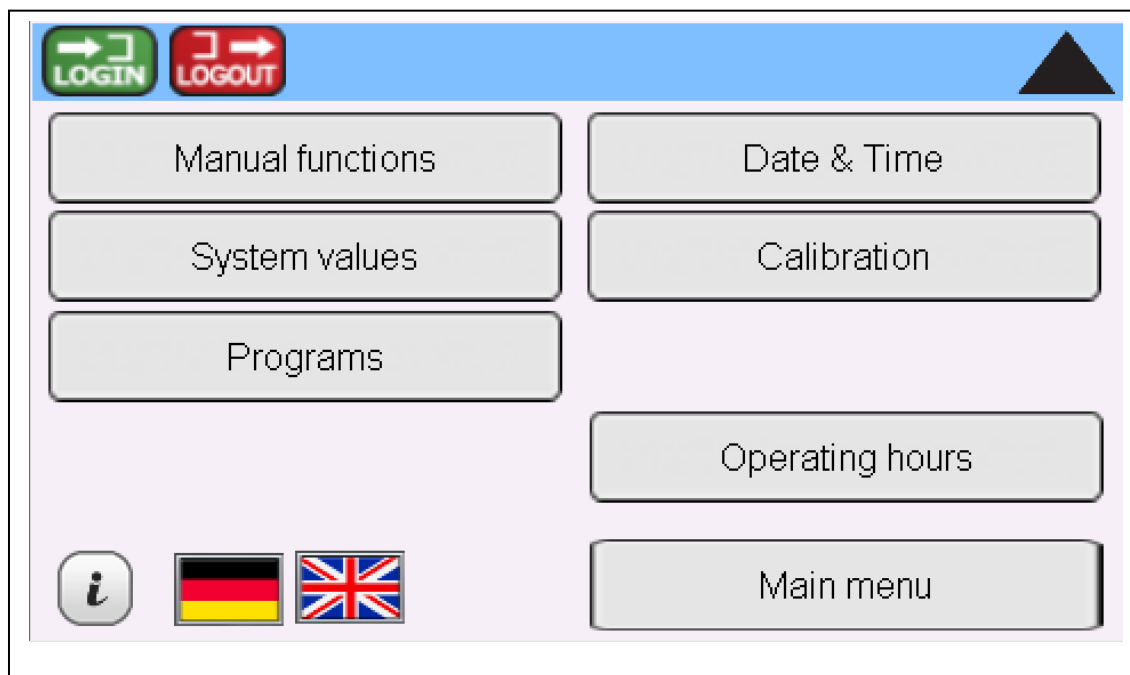


7.11 Control screens "System"

Control screens of various functions and settings are called up in this control screen. The following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen



Pos.	Designation
	"Special functions" control screen is displayed.
	"Date & Time" control screen is displayed
	"System values" control screen is displayed. (Only for service technicians)
	"Calibration" control screen is displayed.
	"Programs" control screen is displayed.
	"Operating hours" control screen is displayed.
	"Main menu" overview is displayed.
	Operating language is changed to German
	Operating language is changed to English
	"Information" control screen is displayed

7.11.2 "Manual functions" control screen

Manual functions that are required for maintenance purposes, for example, can be executed in this control screen. The following buttons must be pressed one after the other in order to get to this control screen:



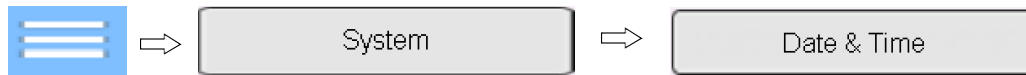
Explanation of the control screen

P-no.: 1		Manual functions				16/09/25 22:05:30 User: 5			
Next program step:				Environmental pressure:					
Reset all errors:				0					
Reset maintenance:									
Batches:	0								
Door locking manual:									
Emptying chamber:									

Pos.	Designation
Next program step	The current step in the program sequence is aborted and the next step in the program sequence is started.
Reset all errors	Reset all errors. • Certain errors can only be reset using this button
Reset maintenance Batches	Reset maintenance Batches counter.
Door locking manual	Manual control of the door motor with pulse (only open).
Emptying chamber	Valve: Automatically air inlet in the chamber, outlet occurs automatically via the chamber outlet valve into the drain. Manual: Automatically air in the chamber, outlet is performed manually using the hand valve.
Environmental pressure	Input of the current ambient pressure. INIT: Initialisation of the entered ambient pressure so that system parameters are adjusted automatically.

7.11.3 "Date / time" control screen

The date and time of the system can be entered in this control screen. The following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1
Date & Time
 16/09/25 22:05:58
User: 5

CPU-time:

14

05

55

CPU-date:

16

09

25

Actual TP-time:

Pos.	Designation
CPU-time: 07 49 33	Date: The date can be changed after tapping a button. Based on left-to-right order day, month, year.
CPU-date: 17 09 25	Time: After tapping a key, the time can be changed. Based on left-to-right order hours, minutes, seconds.
	Stop the PLC before entering the new date & time. Start the PLC after update the date & time in the PLC.
Actual TP-time:	Update the TP time by pressing the button.
	Update the new date & time in the PLC before starting the PLC.

7.11.5 "System values" control screen

The system parameters are set in this control screen. This menu is primarily intended for service technicians. Changes should be coordinated with the manufacturer. The following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1		System values		 16/09/25 22:06:32 User: 7			
C01: Druckablass bis:	0	mbar					
C02: Hysteresis C01:	0	mbar					
C03: Hysteresis regulation:	0	mbar					
C04: reserve							
C05: Start FO-value counting:	0.0	°C					
C06: free							
C07: Drop temp. in Cooling:	0	°C					
C08: Warming:	0	°C					
C09: Start outlet:	0	mbar					
C10: Flush time SOLID:	0	sec					

Pos.	Designation
C01: Druckablass bis	Description of the respective system parameter.
0	Current setting value of the respective system parameter. The setting value can be changed by pressing the button.
mbar	Unit of the respective system parameter.
 	Scroll in the system parameter list.
Device number	Entering the respective device number of the autoclave.

7.11.6 "Calibration" control screen

In this control screen, offset values can be entered for parameters that can be calibrated. The following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1		Calibration		16/09/25 22:06:56 User: 7	
		Offset	Actual value		
Pressure chamber:		0	0 mbar		
Product temperature:		0.0	0.0 °C		
Chamber top temperature:		0.0	0.0 °C		

Pos.	Designation
Product temp.: Chamber temp.:	Device parameters that can be calibrated. The parameters differ depending on the configuration of the device.
Actual value 0 mbar	Current actual value of the respective temperature sensor.
Offset 0	Offset for the parameters After tapping on the input field, the offset can be entered.

7.11.7 "Programs" control screen

In this control screen, the programs can be blocked or released for execution. The following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

P-no.: 1		Program names		16/09/25 22:07:23 User: 7	
P1:	TEST				
P2:					
P3:					
P4:					
P5:					
P6:					
P7:					
P8:					
P9:					
P10:					



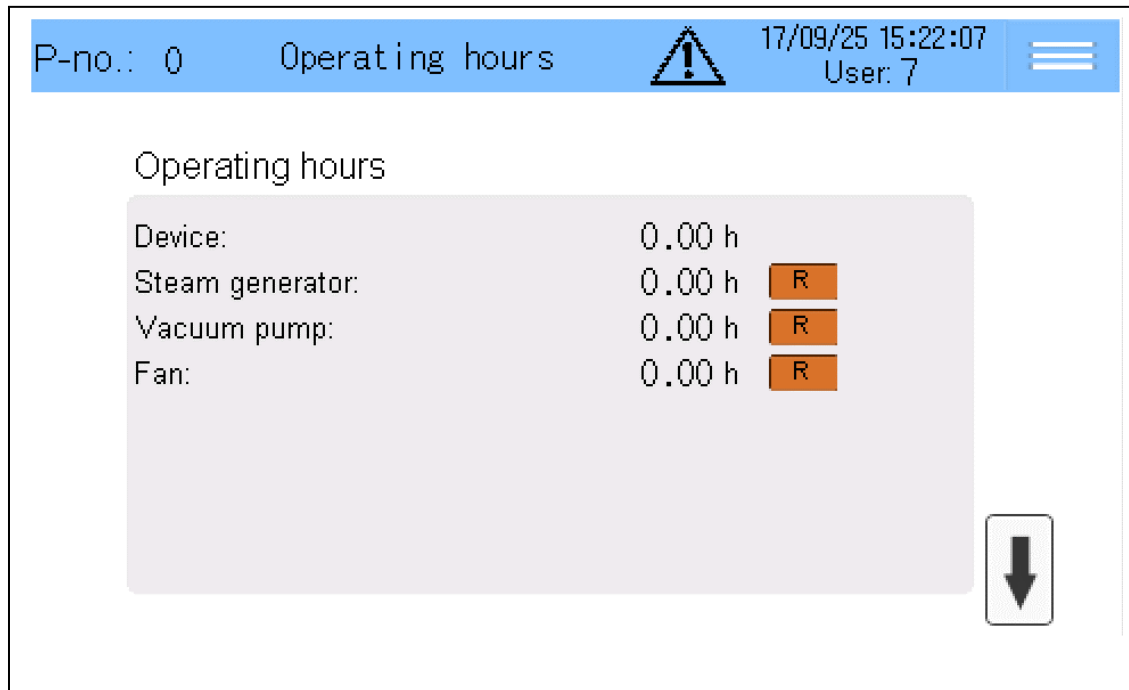
Pos.	Designation
	Program released
	Program locked
TEST	Program name
	Scroll in the program list

7.11.8 “Operating hours” control screen

The operating hours of the system and the important components are displayed in this control screen. The following buttons must be pressed one after the other in order to get to this control screen:



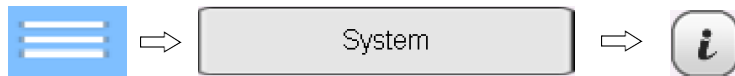
Explanation of the control screen



Pos.	Designation
Device: Steam generator: Vacuum pump: Fan:	Description of the respective assembly • System: Operating hours of the entire system • Vacuum pump: Operating hours of the vacuum pump • Steam generator: Hours of operation of the steam generator • Fan: Operating hours of the circulating air fan
0.00 h 0.00 h 0.00 h 0.00 h	Display of the respective operating hours
	Resetting the respective operating hours. E.g. when replacing the respective module.
	Overview of the switching counter of the important components is displayed.

7.11.9 “Information“ control screen

In this controller screen you can find information about the manufacturer and the controller. The following buttons must be pressed one after the other in order to get to this control screen:



Explanation of the control screen

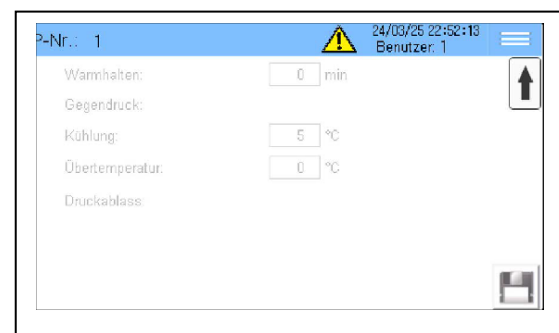
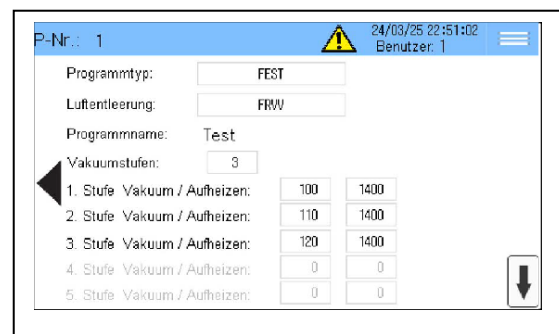
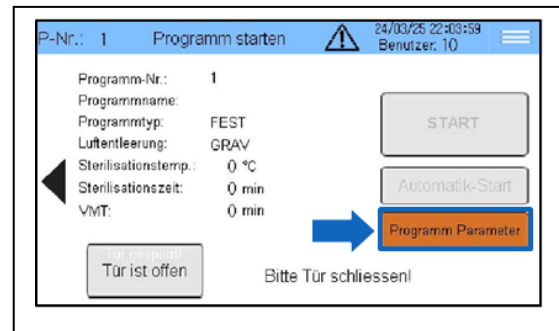
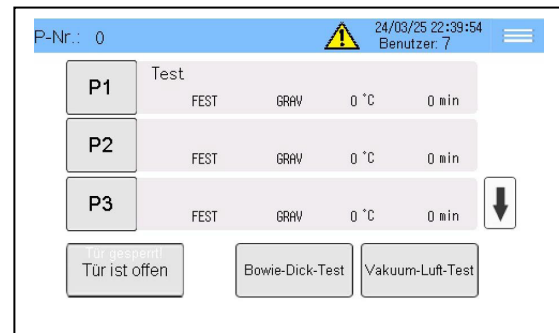
P-no.: 1		Info		16/09/25 19:18:42 User: 10		Menu Icon	
				ZIRBUS technology GmbH Hilfe Gottes 1 D-37539 Bad Grund			
Version: LAB_S001012_V1.1 Device number: 0				Tel.: +49 5327 8380-0 Fax.: +49 5327 8380-80			
				www.zirbus.de info@zirbus.de			

Pos.	Designation
×	Control screen is closed.

7.12 Edit program

How to edit a program:

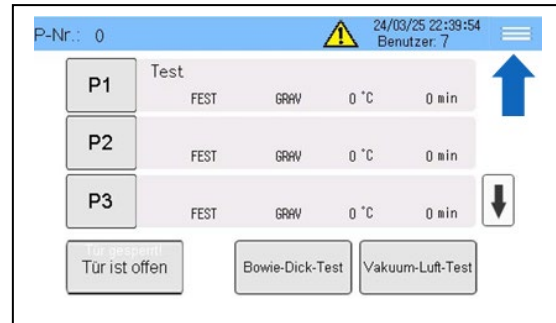
- On the "Program selection" control screen, tap the button (P[X]) for the program to be edited.
- The "Program start" control screen appears.
- Tap the CHANGE PARAMETER button.
- The "Edit program (1)" control screen appears.
- Make the desired settings, see chapter 7.7.
- Switch to the next control screen.
- The "Edit program (2)" control screen appears.
Based on the program type selected, a special control screen appears. Switch to the other control screen, if necessary, and implement additional settings
- Tap the save button in the "Edit program (4)" control screen.
- The program has been edited.



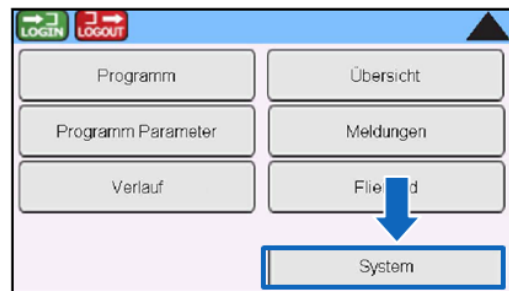
7.13 Lock/Release programs

How to lock or release programs:

1. Press the “Menu” button in the head line.



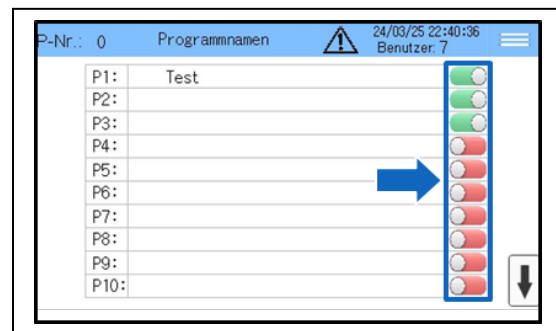
- The “Main Menu” control screen appears.
2. Tap the „System“ button.



- The “System” control screen appears.
3. Tap the PROGRAMS button.



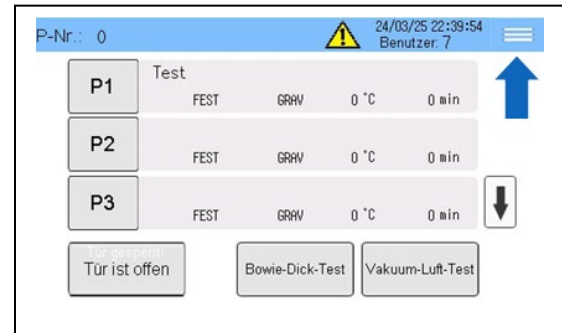
- The “Programs” control screen appears.
4. Tap the button to lock/release the program.
 - Red: Program locked. The program can no longer be selected on the “Program selection” control screen.
 - Green: Program released. The program can be selected on the „Program selection“ control screen.



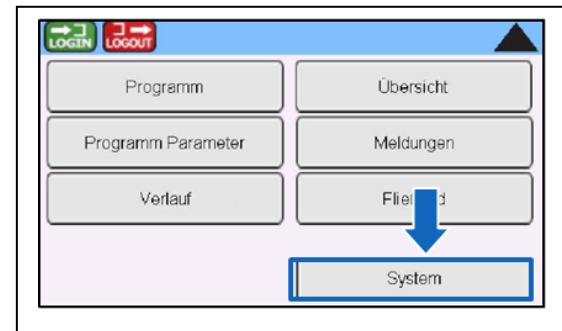
7.14 Naming programs

How to name a program:

1. Tap the "Menu" button in the head line.



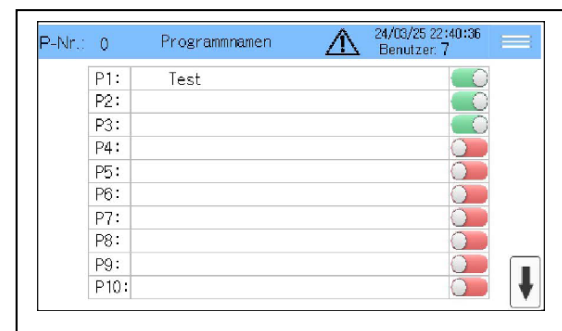
- The „Mein Menu“ control screen appears
2. Tap the „System“ button



- The "System" control screen appears.
3. Tap the "PROGRAMS" button.



- The "PROGRAMS" control screen is displayed.
4. Tapping the entry field allows a program name to be entered.
 5. The Keyboard is displayed.



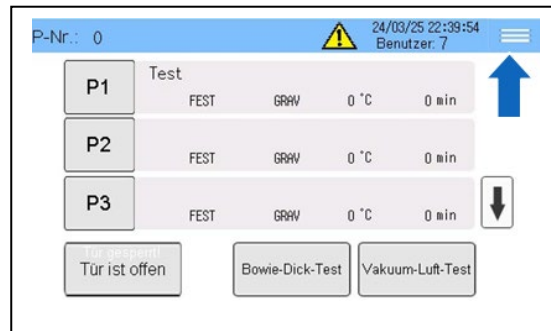
6. Enter program name
- Tap the "ENT" button.
 - The programme has been renamed.



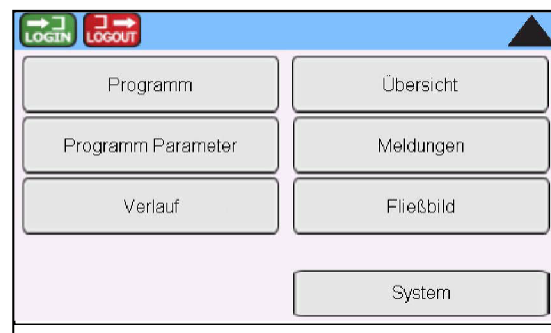
7.15 Change date and time

How to change the date and time:

1. Press the MENU button.
 - The 'Main menu' control screen is displayed.



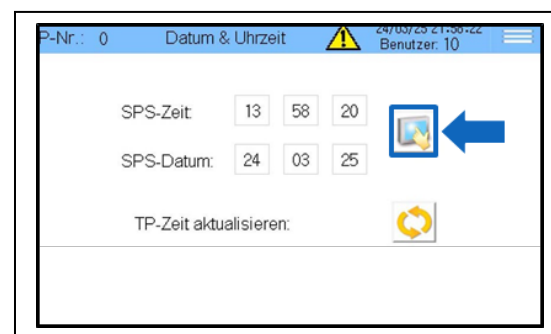
2. Tap the SYSTEM button
 - The 'System' control screen is displayed.



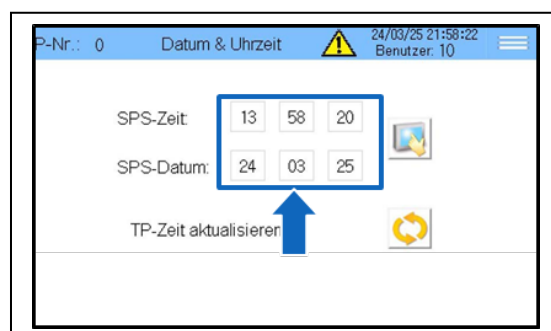
3. Tap the "Date & Time" button
 - The "Date & Time" control screen is displayed.



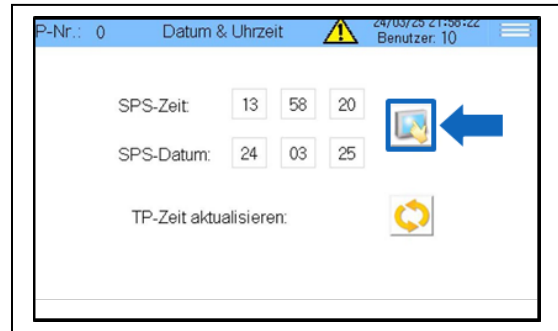
4. Press the PLC TIME STOP button.



5. Change the PLC time and PLC date in the input fields.



- Press the PLC TIME STOP button again to restart the timer.

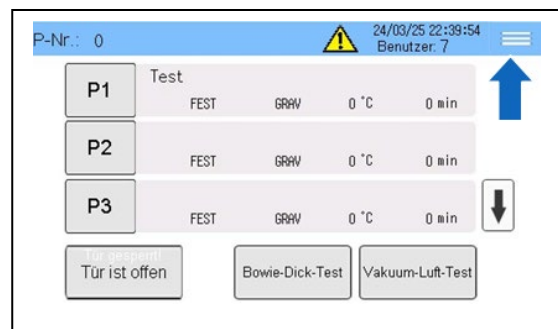


- Press the UPDATE TP TIME button.
 - The PLC time and date are updated.

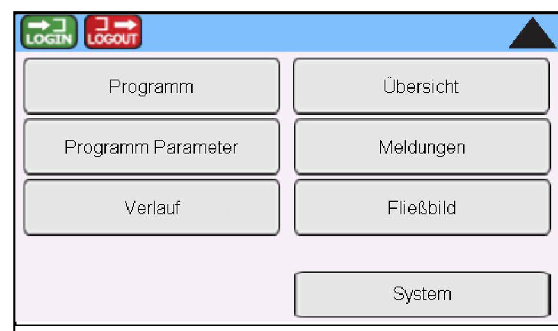


7.16 Changing the language of the visualisation

- Press the MENU button.
 - The 'Main menu' control screen is displayed.



- Tap the SYSTEM button
 - The 'System' control screen is displayed.



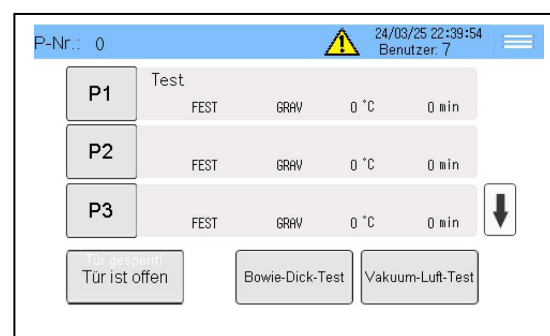
3. Tap the "German" or English" button
 - The language of the visualisation is changed.



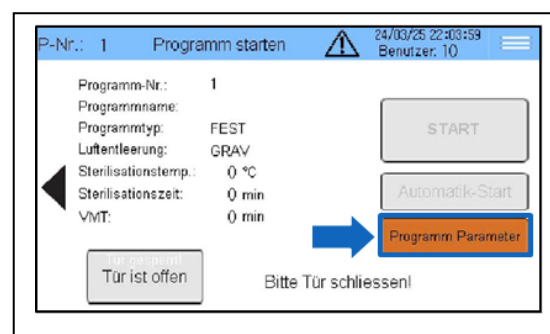
7.17 Switch on 'Automatic start'

How to edit a program:

1. On the "Program selection" control screen, tap the button (P[X]) for the program to be edited.



- The "Program start" control screen appears.
- 2. Tap the Automatic Start button.



3. Change start time in input fields



4. Press the ON/OFF button
 - The ON/OFF button is illuminated.
 - The programme will start automatically at the desired time.



8 Decommissioning



DANGER!

Risk of burns due to hot surfaces or steam development!

If the appliance has not cooled down, there is a risk of burns on hot surfaces and hot pipes, especially in the chamber, on the heating rod and on the inside of the safety door. There is also a risk of burning hot sterile goods.

In the event of steam development, a hot cloud of steam can disappear when the safety door is opened.

- When handling the autoclave, use heat-resistant protective gloves and safety goggles.
- Allow autoclave to cool before opening.
- Before touching surfaces or pipes, check their temperature.
- Keep a sufficient safety distance when handling the autoclave.
- Strictly follow the instructions and the safety protocols set out therein.



DANGER!

Danger to life due to electric current!

Safety equipment must not be changed, dismantled or put out of service. In the case of unprotected parts of the device, there is an immediate danger to life due to electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the appropriate safety regulations when working under voltage for functional reasons.
- Comply with general, national, and operational safety regulations, such as wearing goggles and protective gloves.
- Only operate the device in perfect condition. Report any changes to the device immediately to the next person responsible.
- Clearly regulate and comply with responsibilities for operating, maintenance and repairs so that no unclear competences arise from the point of view of safety.
- Before working on electrical components, de-energize them.
- Observe safety instructions in the individual chapters of this manual and in the instructions of the suppliers.
- Work on electrical cables should only be carried out by qualified electricians or employees of ZIRBUS TECHNOLOGY GmbH.



DANGER!

Risk of injury due to live parts when the device is switched off!

The supply line to the on/off switch always carries voltage. Even when the device is switched off, individual components can carry voltage. Contact of live parts, e.g. with a tool, can lead to injuries caused by electricity.

- Always use appropriate tools and personal protective equipment (PPE) when working on electrical components.
- Ensure that the power supply is completely cut off before performing any maintenance or repair.
- Never use metal tools on live electrical parts.



WARNING!

Risk of scalding from hot wastewater!

In the event of an incident, the wastewater in the chamber can be up to 100 °C hot and under pressure.

- Only open the drain tap of the chamber when the chamber is depressurized.



NOTE!

Device damage due to incorrect storage conditions!

Incorrect storage conditions, such as temperatures that are too high or too low, humidity or vibration, can lead to damage to electronic components, corrosion or other damage.

- Comply with storage conditions.

Personal protective equipment

	Designation
	Heat-resistant protective gloves with arm protection
	Safety goggles
	Safety footwear

Personal qualification

Designation

Trained person

8.1 Decommissioning the autoclave

If the device is taken out of service for longer than one week, the following steps must be carried out:

1. Switch off the device.
 2. Empty the chamber (drain tap).
 3. Clean the chamber.
 4. Close or disconnect the supply lines (electricity, water, compressed air).
 5. Clean the entire device.
 6. Empty and clean the deionised water tank.
 7. Protect the entire device from moisture and dust.
 8. Take appropriate corrosion protection measures.
 9. Prepare a decommissioning report and file it with the device documentation. This will facilitate recommissioning.
- The device is taken out of service.

8.2 Storage conditions

If the device is permanently taken out of service, stored before initial commissioning or temporarily stored during conversions, modifications, etc., the following environmental conditions must be observed:

Temperature	+10 °C – +40 °C
Humidity	max. 95 %
Air pressure	500 hPa – 1060 hPa

9 Maintenance and care



DANGER!

Risk of injury due to live parts when the device is switched off!

The supply line to the on/off switch always carries voltage. Even when the device is switched off, individual components can carry voltage. Contact of live parts, e.g. with a tool, can lead to injuries caused by electricity.

- Always use appropriate tools and personal protective equipment (PPE) when working on electrical components.
- Ensure that the power supply is completely cut off before performing any maintenance or repair.
- Never use metal tools on live electrical parts.



DANGER!

Danger to life due to electric current!

Safety equipment must not be changed, dismantled or put out of service. In the case of unprotected parts of the device, there is an immediate danger to life due to electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the appropriate safety regulations when working under voltage for functional reasons.
- Comply with general, national, and operational safety regulations, such as wearing goggles and protective gloves.
- Only operate the device in perfect condition. Report any changes to the device immediately to the next person responsible.
- Clearly regulate and comply with responsibilities for operating, maintenance and repairs so that no unclear competences arise from the point of view of safety.
- Before working on electrical components, de-energize them.
- Observe safety instructions in the individual chapters of this manual and in the instructions of the suppliers.
- Work on electrical cables should only be carried out by qualified electricians or employees of ZIRBUS TECHNOLOGY GmbH.



DANGER!

Risk of burns due to hot surfaces or steam development!

If the appliance has not cooled down, there is a risk of burns on hot surfaces and hot pipes, especially in the chamber, on the heating rod and on the inside of the safety door. There is also a risk of burning hot sterile goods.

In the event of steam development, a hot cloud of steam can disappear when the safety door is opened.

- When handling the autoclave, use heat-resistant protective gloves and safety goggles.
- Allow autoclave to cool before opening.
- Before touching surfaces or pipes, check their temperature.
- Keep a sufficient safety distance when handling the autoclave.
- Strictly follow the instructions and the safety protocols set out therein.



WARNING!

Risk of scalding from hot wastewater!

In the event of an incident, the wastewater in the chamber can be up to 100 °C hot and under pressure.

- Only open the drain tap of the chamber when the chamber is depressurized.



WARNING!

Risk of injury due to improperly performed maintenance work!

Improper maintenance can lead to serious injury and significant property damage.

- Ensure sufficient assembly freedom before the start of the work.
- Pay attention to order and cleanliness at the assembly site! Loose components and tools lying on top of each other or lying around are sources of accidents.
- If components have been removed, ensure that they are installed correctly, reinstall all fasteners and maintain screw tightening torques.

Before recommissioning, observe the following:

- Ensure that all maintenance has been performed and completed in accordance with the information and instructions in this guide.
- Make sure that no people are in the danger area.
- Ensure that all covers and safety devices are installed and working properly.

Personal protective equipment

	Designation
	Heat-resistant protective gloves with arm protection
	Safety goggles

Personal qualification

Designation
Trained person

Regular inspections and maintenance are necessary to ensure the long-term safe operation of the device and to detect signs of malfunction at an early stage.

The inspection and maintenance cycle depends on the importance of the device in the power supply system as well as the working environment and climate at the location.

The following maintenance and inspection work is required under normal operating conditions of the device. In addition, methods for troubleshooting malfunctions are described based on the manufacturer's experience.

9.1 Basic maintenance

NOTE!

The maintenance work "basic maintenance" is carried out exclusively by employees of ZIRBUS TECH- NOLOGY GmbH

Basic maintenance of the system is required every 750 cycles or annually. The number of cycles is listed in the actual value menu.

The company ZIRBUS TECHNOLOGY GmbH will be happy to provide a maintenance offer or an authorized service partner in the vicinity.

All other maintenance work may be carried out by instructed persons.

NOTE!

Failure to comply with the service intervals for basic maintenance will void the warranty!

9.2 Maintenance work

9.2.1 Visual inspection of the door seal for contamination and wear

1. Check the surface of the door seal for dirt particles.
2. If dirty, wipe the door seal and sealing surface for the chamber seal clean with a soft cloth.



NOTE!

There must be no signs on the seal or the sealing surface.

3. Check the surface of the door seal for signs of wear or damage.

9.2.2 Visual inspection of the product sensor for damage

1. Check the connection cable of the product temperature sensor for damage.
2. Check the measuring tip of the product temperature sensor for damage.

9.2.3 Cleaning the chamber



NOTE!

When cleaning the chamber, use demineralized water!



NOTE!

When cleaning the chamber, use a damp sponge and a non-aggressive cleaner.

1. Drain the water from the chamber using the drain tap.
 2. Remove coarse dirt particles with a cloth.
 3. Clean the chamber.
 4. Clean the base plate.
 5. Lift the base plate and clean the area underneath it.
 6. Replace the base plate.
- The chamber is now clean.

9.2.4 Cleaning the deionised water tank



NOTE!

When cleaning the demineralized water tank, use a damp sponge and a non-aggressive cleaner.



NOTE!

When cleaning the demineralized water containers, use demineralized water!

1. Drain the water from the drain hose of the deionised water tank.
 2. Remove the lid.
 3. Clean the deionised water tank.
 4. Clean the float switch and check that it moves smoothly.
 5. Replace the lid.
- The deionised water tank is now clean.

10 Errors, causes and remedy



DANGER!

Danger to life due to electric current!

Safety equipment must not be changed, dismantled or put out of service. In the case of unprotected parts of the device, there is an immediate danger to life due to electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the appropriate safety regulations when working under voltage for functional reasons.
- Comply with general, national, and operational safety regulations, such as wearing goggles and protective gloves.
- Only operate the device in perfect condition. Report any changes to the device immediately to the next person responsible.
- Clearly regulate and comply with responsibilities for operating, maintenance and repairs so that no unclear competences arise from the point of view of safety.
- Before working on electrical components, de-energize them.
- Observe safety instructions in the individual chapters of this manual and in the instructions of the suppliers.
- Work on electrical cables should only be carried out by qualified electricians or employees of ZIRBUS TECHNOLOGY GmbH.



DANGER!

Risk of burns due to hot surfaces or steam development!

If the appliance has not cooled down, there is a risk of burns on hot surfaces and hot pipes, especially in the chamber, on the heating rod and on the inside of the safety door. There is also a risk of burning hot sterile goods.

In the event of steam development, a hot cloud of steam can disappear when the safety door is opened.

- When handling the autoclave, use heat-resistant protective gloves and safety goggles.
- Allow autoclave to cool before opening.
- Before touching surfaces or pipes, check their temperature.
- Keep a sufficient safety distance when handling the autoclave.
- Strictly follow the instructions and the safety protocols set out therein.



DANGER!

Risk of injury due to live parts when the device is switched off!

The supply line to the on/off switch always carries voltage. Even when the device is switched off, individual components can carry voltage. Contact of live parts, e.g. with a tool, can lead to injuries caused by electricity.

- Always use appropriate tools and personal protective equipment (PPE) when working on electrical components.
- Ensure that the power supply is completely cut off before performing any maintenance or repair.
- Never use metal tools on live electrical parts.



WARNING!

Risk of injury due to insufficiently qualified personnel!

Special work may only be carried out by service personnel. This work is described in a separate service manual. If inadequately qualified personnel carry out work on the equipment or are in the danger zone of the equipment, serious injuries and considerable property damage can result.

- Observe the personnel qualifications defined below.
- Observe the interval for inspection by service personnel.
- If in doubt, contact ZIRBUS TECHNOLOGY GmbH.



WARNING!

Risk of injury due to improper fault rectification!

Improperly carried out work to rectify faults can lead to serious injuries and considerable property damage.

- Ensure sufficient assembly freedom before the start of the work.
- Pay attention to order and cleanliness at the assembly site! Loose components and tools lying on top of each other or lying around are sources of accidents.
- If components have been removed, ensure that they are installed correctly, reinstall all fasteners and maintain screw tightening torques.

Before recommissioning, observe the following:

- Ensure that all troubleshooting work has been carried out and completed in accordance with the information and instructions in this manual.
- Make sure that no people are in the danger area.
- Ensure that all covers and safety devices are installed and working properly.



WARNING!

Risk of scalding from hot wastewater!

In the event of an incident, the wastewater in the chamber can be up to 100 °C hot and under pressure.

- Only open the drain tap of the chamber when the chamber is depressurized.

Personal protective equipment

	Designation
	Heat-resistant protective gloves with arm protection
	Safety goggles

Personal qualification

Designation
Trained person

The following section describes possible causes of malfunctions and how to rectify them. For malfunctions that occur more than once, shorten the maintenance intervals in accordance with actual usage.

For malfunctions that cannot be rectified using the following instructions, contact the manufacturer; see contact details on page 7.

10.1 Error messages

error-no.	Message text	Cause	Correction
1	Temperature sensor product (1) regulation shows a incorrect value	Product temperature sensor TCIR 1 is defective	Product temperature sensor exchange
		Analog input is defective	Replace Analog Card
021.1	Temperature sensor chamber bottom (1) regulation shows a incorrect value	Product temperature sensor TCIR 1.1 is defective	Replacing the product temperature probe
		Analog input is defective	Replace Analog Card
022	Temperature sensor chamber top regulation shows a incorrect value	Product temperature sensor TC11.2 is defective	Product temperature sensor exchange
		Analog input is defective	Replace Analog Card
23.1	Temperature sensor filter exhaust (1) regulation shows a incorrect value	Product temperature sensor TC16.1 is defective	Product temperature sensor exchange
		Analog input is defective	Replace Analog Card
061	Pressure sensor chamber regulation shows a incorrect value	Pressure probe PCI1 is defect	Replacing the pressure probe
		Analog input is defective	Replace Analog Card
091.1	Motor protection switch vacuum pump (1) has triggered	Current consumption drive motor vacuum pump M1 too high	Check current consumption
		Three-phase phase is missing	Power supply examine
		Power contactor Q4 defect	XXX
		Vacuum pump M1 sits firm	M1 vacuum pump If necessary, exchange
		Engine defective	Check protection, replace if necessary
		Fan wheel fallen off	Attach the fan wheel
121	Overheating protection steamgenerator has triggered	Lack of water in the steam producer	Overheating protection TA5 reset after the steam generator has cooled down
		Heating contactor defective	Water level in the steamer Check Witness
		Pressure switch PC5 defective or incorrectly set	LC5 level sensor and Test LA5 for function
		Conductivity of DI water too high	Check the heating contactor Check the PC5 pressure switch Check water quality
125	DI-water level too low	VE water supply interrupted on site	VE water supply examine

error-no.	Message text	Cause	Correction
		Float Switch LC4 defect	Float Switch LC4 Check for function, replace if necessary
		Wasserventil Y20 ver-dirty or defective	Sieve insert in water Clean the Y20 valve, check the voltage supply on the valve, replace the valve if necessary
127	Filling steam generator too long	VE water supply to low, see Alarm 125	DI water supply as described in Alarm 125
		Air in the filling pump	Bleeding the filling pump, To do this, loosen the connection between the filling pump and valve Y21 and start the pump
		Filling pump M5 defective	Check the pump function
		Solenoid valve Y21 defective	Solenoid valve function Check Y21
		Check valve RV5 leaking or defective	Check the RV5 function
		Relay is defective	Checking the function of the relay Fen
143	Control voltage 24VDC not ok	24 VDC control fuse has tripped	Replace the fuse, analyze a short circuit if necessary
		Network transformer overloaded or defect	Check the mains transformer
146	Vacuum setpoint not reached	Door seal leaking	Door seal optically opened Check damage
		Chamber screen or exhaust air Filter clogged	Chamber sieve FI1 and Check exhaust air filter
		Vacuum valve Y3 defective or clogged	Check the Y3 vacuum valve
		Water supply Vacuum pump insufficient or too warm	Test vacuum pump according to manufacturer specifications, control water supply
		Pipe and valve system leaky	Pipe and valve system Check for leaks
171.1	Door motor (1) drives too long	Defective door drive	Checking the door drive
		Mechanics not in order. Adaptation	Mechanics of the locking mechanism Control
172	Door switch (door 1) not ok	Door limit switch B2 is defect	Door limit switch on radio Check the
		Door limit switch B2 is incorrectly adjusted	Adjustment of the door end Check the

error-no.	Message text	Cause	Correction
		Electrical connection interrupted to the PLC	Check wiring
191	Sterilization temperature too low	Luftentleerungssystem does not work properly	Valve Y6 or in the case of appliances Check with Y8 exhaust filter
		Door seal leaking	Door seal optically opened Check damage
		Product temperature sensor TCI1 misplaced	Position of the product test the TCI 1 temperature sensor, which must not be isolated
		Program incorrectly configured Rated	Check program parameters Adjust if necessary
		Wrong program started	
		Steam supply too small	Check the steam supply
		Product temperature sensor TCI1.1, TC1 or TCI6 defective or displays incorrect reading	Test product temperature sensor TCI1.1, TC1 or TCI6
192	Sterilization temperature longer than 5 min too low	See Alert 191	See Alert 191
290	Sterilization not successful!	Discontinued sterilization Time not elapsed	Program parameters Trolling
			More Error Messages heed
291	Manual step was operated	Manual cycle was leads	–
		Program moves to the next program step	–
292	STOP is activated	Manual termination of the Program	–
294	Power failure	interruption of the span Pension	Voltage control supply
299	Communication with PLC interrupted	Connection between Control and display not in order	Connection between Check the control and display, replace the connection cable if necessary
317	Cabinet temperature too high!	No function of the fans, Fan filter dirty	Check the fan, ventilate Cleaning the filter

11 Dismantling and disposal



DANGER!

Lebensgefahr durch elektrischen Strom!

Safety equipment must not be changed, dismantled or put out of service. In the case of unprotected parts of the device, there is an immediate danger to life due to electric shock. Damaged insulation on individual components can be life-threatening.

- Observe the appropriate safety regulations when working under voltage for functional reasons.
- Comply with general, national, and operational safety regulations, such as wearing goggles and protective gloves.
- Only operate the device in perfect condition. Report any changes to the device immediately to the next person responsible.
- Clearly regulate and comply with responsibilities for operating, maintenance and repairs so that no unclear competences arise from the point of view of safety.
- Before working on electrical components, de-energize them.
- Observe safety instructions in the individual chapters of this manual and in the instructions of the suppliers.
- Work on electrical cables should only be carried out by qualified electricians or employees of ZIRBUS TECHNOLOGY GmbH.



DANGER!

Risk of burns due to hot surfaces or steam development!

If the appliance has not cooled down, there is a risk of burns on hot surfaces and hot pipes, especially in the chamber, on the heating rod and on the inside of the safety door. There is also a risk of burning hot sterile goods.

In the event of steam development, a hot cloud of steam can disappear when the safety door is opened.

- When handling the autoclave, use heat-resistant protective gloves and safety goggles.
- Allow autoclave to cool before opening.
- Before touching surfaces or pipes, check their temperature.
- Keep a sufficient safety distance when handling the autoclave.
- Strictly follow the instructions and the safety protocols set out therein.



WARNING!

Risk of injury in case of incorrect disassembly!

Errors during disassembly can lead to injuries or cause considerable property damage.

- Have the dismantling carried out exclusively by employees of ZIRBUS TECHNOLOGY GmbH.
- ZIRBUS TECHNOLOGY GmbH can also be consulted in the event of subsequent changes of location.
- Refrain from unauthorized dismantling and changes of location.



WARNING!

Risk of scalding from hot wastewater!

Das Abwasser in der Kammer kann im Störfall bis zu 100 °C heiß sein und unter Druck stehen.

- Ablaufhahn der Kammer nur öffnen, wenn die Kammer drucklos ist.



NOTE!

Danger to the environment due to incorrect disposal!

Incorrect disposal can pose a risk to the environment.

- Have electrical components, lubricants and other auxiliary materials disposed of by approved specialist companies.
- If in doubt, obtain information on environmentally friendly disposal from the local municipal authority or special waste management companies.



NOTE!

Dismantling is carried out exclusively by employees of ZIRBUS TECHNOLOGY GmbH.

Personal protective equipment

	Designation
	Heat-resistant protective gloves with arm protection
	Safety goggles
	Safety footwear

Personal qualification

Designation
Trained person

Disposal

The appliance must be disposed of in accordance with the applicable disposal guidelines. After careful cleaning by the customer, the device will be dismantled, removed and disposed of properly by ZIRBUS technicians at the customer's expense.

- If the device or parts of it are contaminated (irreparably contaminated), disposal will not be carried out by ZIRBUS technicians. In this case, the operator of the device is responsible for disposing of it.

12 Technical data



NOTE!

Anschlüsse können abhängig von der Ausstattung des Geräts variieren.

12.1.1 Dimensions and weights

LabStar	40	70
Overall dimensions (B × H × T) [mm]	548 × 660 × 866	548 × 660 × 866
Chamber volume [Liter]	47	65
Free usable space (B × H × T) [mm]	310 × 280 × 465	310 × 280 × 689
Weight [kg]	172	187

12.2 Loading capacities

The left-hand value indicates the number of Schott bottles, while the right-hand value indicates the number of Erlenmeyer flasks.

	250 ml	500 ml	1000 ml	2000 ml
LabStar 40	50 / 30	15 / 11	12 / 6	5 / 3
LabStar 70	72 / 46	23 / 18	18 / 10	9 / 8

12.2.1 Connection data

Medium	Description
Drain tap chamber	3/8" - Auslegeleistung: 4,2 m³/h
Compressed air	- Pressure: 3,0 – 7,0 bar - Class 4 ISO 08573-1:2010 - max. Volume flow: 4,2 m³/h
Fully desalinated water	- DI-Wasser, pressure 0,5 – 2,5 bar - Conductivity: 0,5 µS/cm – 5µS/cm - Layout performance: 1 m³/h
Cold water	2,5 – 5,0bar, max 8 °dH / 1,42 mmol/L - max. volume flow: 1 m³/h - Layout performance: 0,08 m³/h
Electrical connection	- LabStar 40: 400 VAC, 50 Hz, 16 A optional 230 VAC, 60 Hz, 20 A 5,5 kW - LabStar 70: 400 VAC, 50 Hz, 16 A optional: 230 VAC, 60Hz, 25 A 7,5 kW

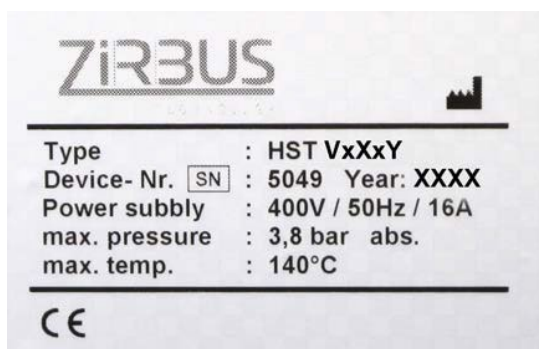
12.3 Emissions

Medium	Description
Sound power	< 68 dB(A)

12.4 Type plates

The device's type plate is on the cladding plate on the rear of the device.

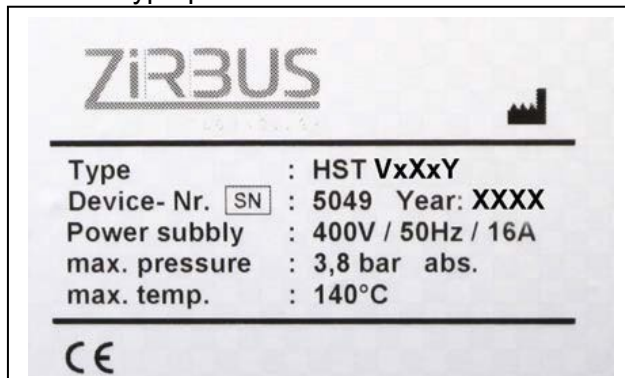
The type plates for the electrical cabinet and pressure vessel can be found in the locations shown on the following page



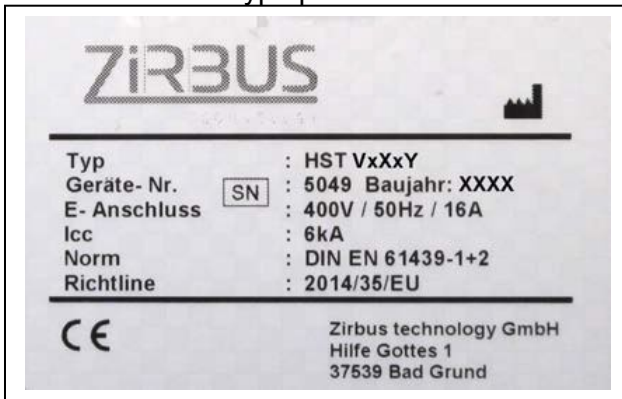
(Example type plate of the unit)

The type plates for the electrical cabinet and pressure vessel are attached in the locations shown, on the right-hand side of the chamber – behind the cladding plate.

Machine type plate



Electrical cabinet type plate



Pressure vessel type plate



13 Service

13.1 Contact

Zirbus service can be contacted at:

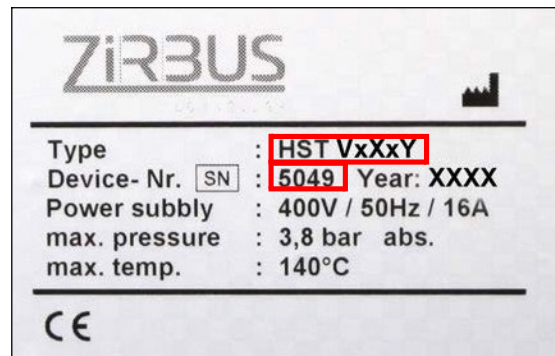
E-mail: service@zirbus.de

or

Tel.: +49 5327 83 80-0

For service queries, please always provide the device type and serial number.

You can find the information on your device's type plate, see chapter 2.



14 Technical appendix

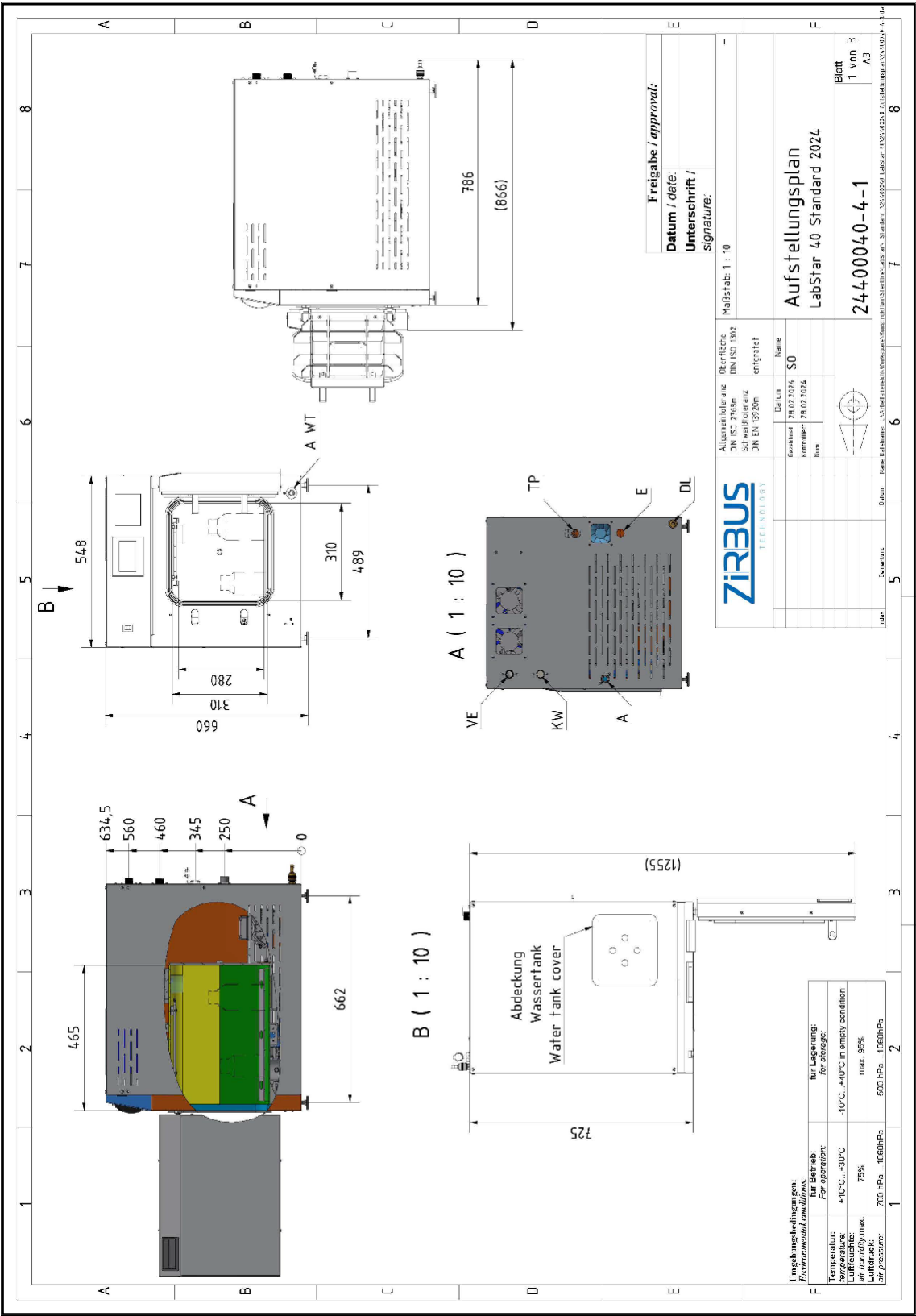
14.1 List of abbreviations

The table lists and explains abbreviations used in the visualisation and in this document.

Abbreviation	Meaning
DLGV	Steam-air mixture method Heating of the chamber under increased pressure.
FRVV	Fractionated vacuum Draw air from the chamber using a vacuum more than once and then by vapour feed.
GRAV	Gravitation Draw air from the chamber without a vacuum, only by vapour feed.
IPC	Industry PC A computer intended for use in industrial environments.
OVT	Overtemperature
VOVV	Pre-vacuum Draw air from the chamber using a vacuum once and then by vapour feed.
SPEA	Steam pulse evacuation of air (Steam pulse evacuation of air)
PLC	Programmable logic control
STT	Sterilisation temperature Temperature at which sterilisation is performed.
STt	Sterilisation time Time for which sterilisation is performed.
TP	Touch panel
OVT	Overtemperature To safely reach the sterilisation start temperature, the overtemperature 134 +1° can be entered to prevent the error message "STT not reached".
VE	Fully desalinated Fully desalinated water used for the steam generator.
VMT	Vacuum drying (VDT) Drying with vacuum after the sterilisation process is completed.

14.2 Set-up plan

14.2.1 LabStar 40



14.2.2 LabStar 70

