

# Manual

## Laboratory autoclave

Autoclave using steam for the treatment of material and laboratory processes e.g. sterilization, as an aid in research and development

### CertoClav Essential (Controller)

### CertoClav Essential Alu (Autoclaving Chamber)

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## Introduction

Thank you for choosing CertoClav! Since 50 years we stand for quality made in Austria. Should the product not fulfil your expectations please contact your retailer or CertoClav directly under [support@certoclav.com](mailto:support@certoclav.com).

CertoClav Essential is the cost efficient solution for standard sterilisation at 121°C. The controller does a fractioned venting process, then holds 121°C for 15 minutes and then cools down to 80°C. Should you require a faster cool down please turn the red knob on the handle to release steam. Be careful not point the stream of hot steam towards a person or sensitive objects.

The controller has a printer interface for the CertoClav printer, via which protocols can printed.

In the following please find the usage instructions. Please mind the safety remarks.

Please register your unit via an email to [support@certoclav.com](mailto:support@certoclav.com) in order to receive software updates. Please send name, contacts and serial number of the unit.

Your

CertoClav Team

# **Declaration of conformity**

**PRODUCT: CERTOCLAV AUTOCLAV**

This is to certify, that the **CERTOCLAV** Product Range Connect, Essential, MultiControl and MultiControl 2 complies with the following regulations of the European Community:

## **2014/35/EU Low Voltage Directive**

Associated Standards:

EN 61010-2-040:2015 Safety requirements for electrical equipment for measurements, control and laboratory Part 2-040: Particular requirements for sterilizers and washer-disinfectors used to treat medical materials.

EN 61010-1:2010 Safety requirements for electrical equipment for measurements, control and laboratory use – Part 1: General requirements

The Certoclav pressure equipment is constructed according Low Voltage Directive.

## **2014/30/EU Electromagnetic compatibility**

Associated Standards:

EN 61326-1:2013 Electrical Equipment for measurements, control and laboratory use - EMC Requirements-

Part 1: General requirements (provided replacement: EDIN EN 61326-1:2018)

EN 61000-3-2:2014 Electromagnetic Compatibility (EMC) — Part 3- 2: Limits —

Limits for harmonic current emissions (equipment input current equal to or less than 16 A per phase)

EN 61000-3-3:2013 Electromagnetic compatibility — Part 3- 3: Limits — Limits for voltage fluctuation and flicker on the public low-voltage system (equipment having an input current equal to or less 16 A per phase) and not subject to conditional connection.

## **2011/65/EU Restriction of the use of certain hazardous substances (RoHS) Directive**

Associated Standards:

EN 50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Documentation technique pour l'évaluation des produits électriques et électroniques par rapport à la restriction des substances dangereuses

**Quality of Production:**

CertoClav produces according modern production methods and with high quality materials. Experience for many years and a competent team ensure high quality of products and professional service. All units are 100 % tested on function and quality. CertoClav manufactures in Austria only.

**Manufacturer:**

**CERTOCLAV** Sterilizer GmbH  
Georg Grinninger-Str. 37  
A-4050 Traun / Austria



Traun, 02.11.2018

Michael Dirix

CEO

## Controller - list of items

After opening the packaging, please inspect the product for eventual transport damage. In case of damaged items contact your dealer and do not operate the unit for safety reasons.

The following parts are delivered. Please check them carefully. Should one of these parts be missing, please contact your dealer or call us directly.

1. CertoClav Essential controller unit
2. Mains cable
3. Power connection cable from controller to autoclave
4. Manual

**Additional we offer the following accessories:**

- Art. no. 1300187 protocol printer with connection cable
- Art. no. 8500496 thermal paper for protocol printer
- Art. no. 8500210 PC Software professional version. For creating custom multi step programs



**Protocol printer Art. no. 1300187**

For further information concerning our product range visit: [www.certoclav.com/shop](http://www.certoclav.com/shop).

# Controller Essential

## Safety remarks




- ⚠ Use only in accordance with this manual. Store the manual in a space accessible to all users.
- ⚠ Must not be installed in a space that is subject to the danger of explosions.
- ⚠ Use only with rated voltage.
- ⚠ Only for use in laboratories. Operate only by trained personnel. Do not use in domestic settings.
- ⚠ This autoclave must only be maintained by CertoClav or authorized retailers. Always use original spare parts.
- ⚠ Do not open the case, before disconnecting the main plug.
- ⚠ Do not install the controller close to high power electronics.
- ⚠ Install the controller only in a full regulating circle where the heat probe PT100 can gauge the activity of the heater attached.
- ⚠ Do not install closer than 30cm to a CertoClav autoclave in order to protect the controller from heat.
- ⚠ Use only appropriate material for wall mounting

## Controller - technical data

### Overview

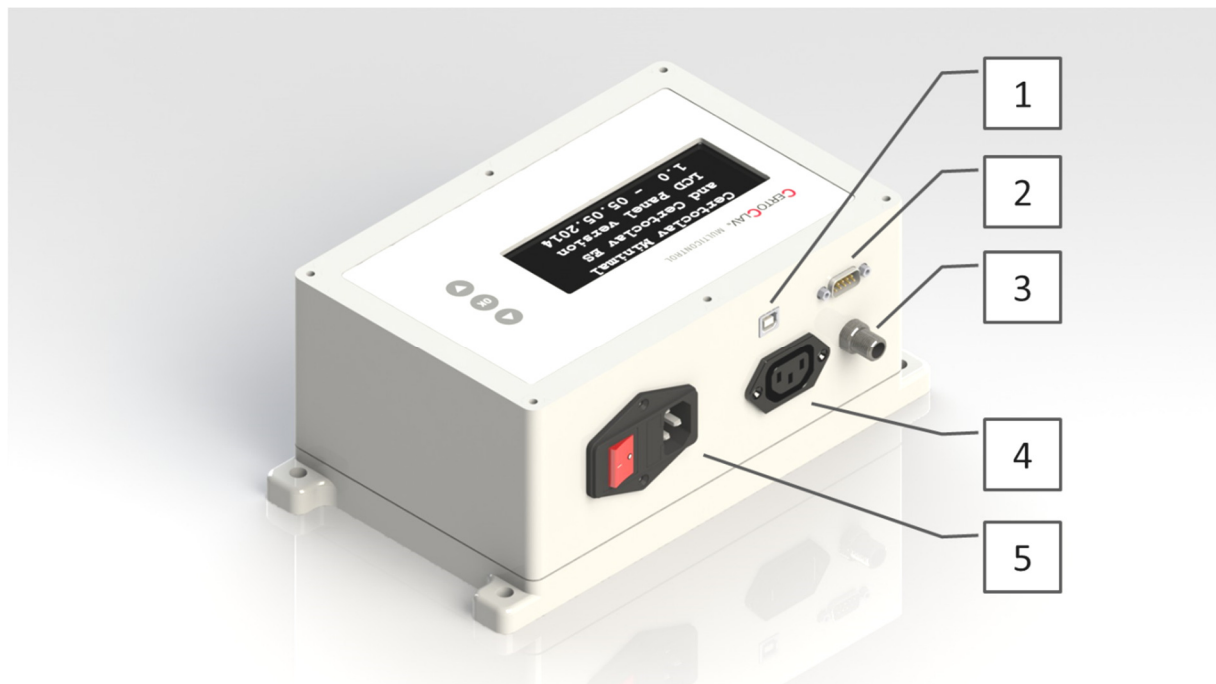
Protection	IP 20
Enclosure material	ABS
Power connection	230V 50/60Hz
Heater connection	230V 50/60Hz
Maximum output	2000W
Control algorithm	PID
Temperature sensor interface	PT100, class A

### Stickers

	<p>Directive 2012/19/EU (WEEE): The supplier will take the supplied commodity back on the expense of customer after use completion and ensure best available treatment, recovery and recycling according to the laws duly</p>
	<p>ATTENTION: Consult manual before use</p>
	<p>CE marked according to directives NSR 2014/35/EC, EMC 2014/30EC and EN 61010-1:2010.</p>



## Controller - connections

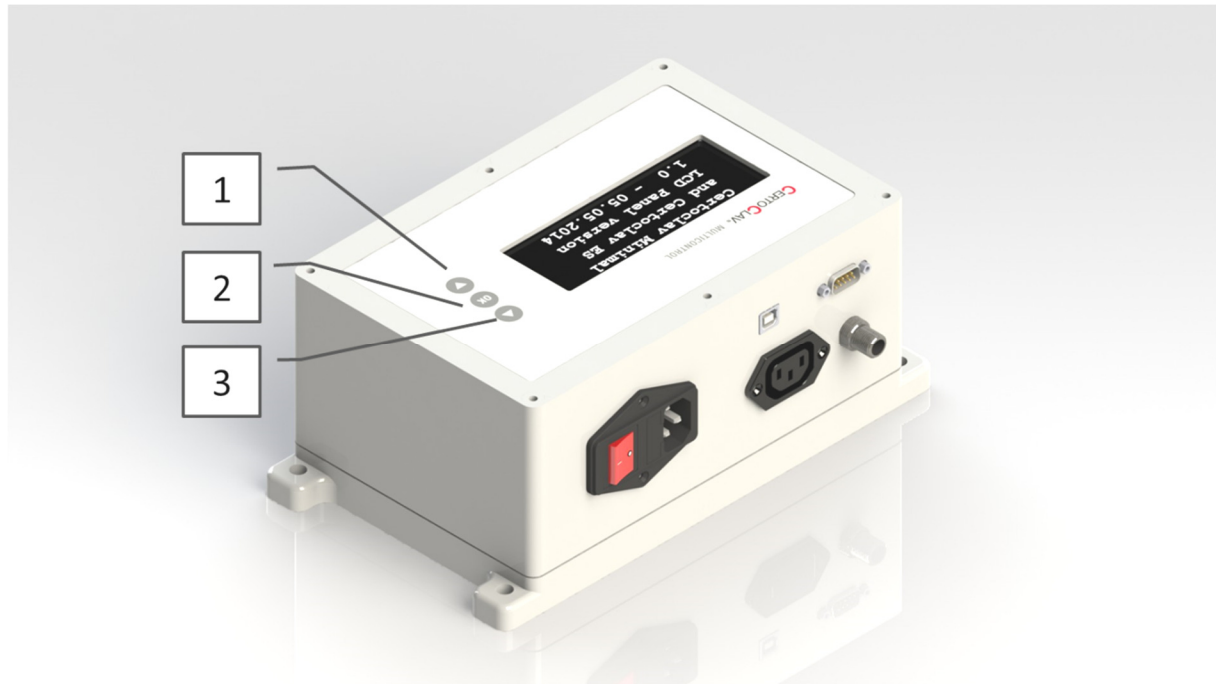


1. USB port for PC
2. Connection for CertoClav protocol printer
3. Port for a 4-wire PT100 temperature sensor
4. Port for connection to a heater or autoclave (220V, 10A max)
5. Mains connection (mains cable) with switch and fuse holder

## Controller - installation

1. Connect the controller (port 5) with mains cable to a power socket.
2. Connect the controller (port 4) with a heater/autoclave using connection cable.
3. Screw in the cable of the PT100 probe (port 3).
4. Optionally connect a printer (Port 2)
5. Optionally connect a Windows PC (port 1).
6. The controller can be mounted on the wall using the holes on the side of the enclosure.

## Controller - user interface



1. Down / minus button
2. OK / Enter button
3. Up / plus button

## Controller - operation

- Use the up/down buttons (1, 3) to select a point in the menu or to increase/decrease a value.
- Use the ok button (2) to enter a menu point or to confirm an edited value.

### Screens

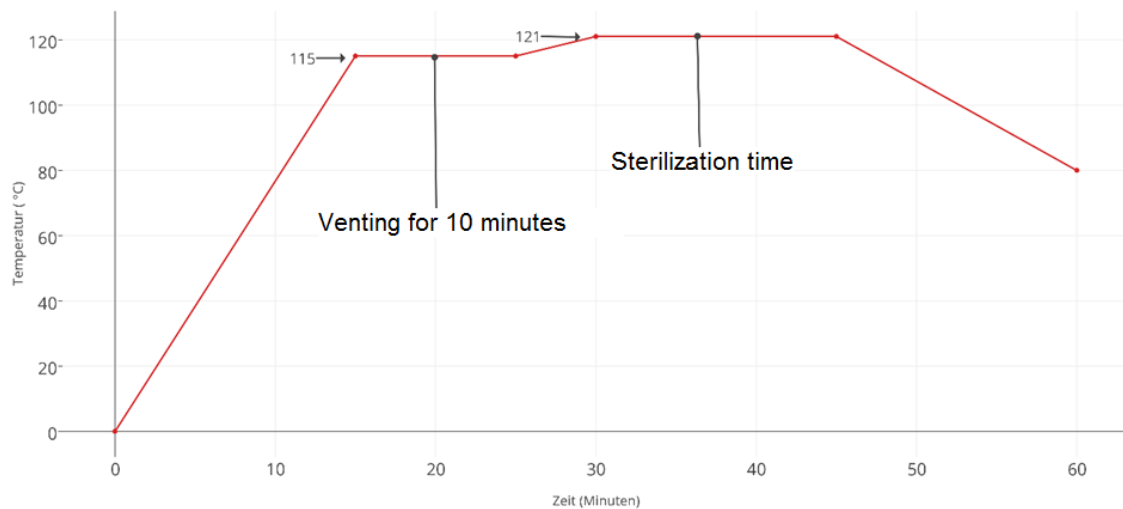
#### Main menu

Programs: Access to programs  
Settings Access to settings

#### Programs

Shows all available programs

Standard 121°C / 15 min. with 10 min venting (115°C), cooling down to 90°C



Process example. Temperature curve of the standard program

#### Program – recurring menu points in program menu:

- |               |   |
|---------------|---|
| • Start       | Starts the selected program                   |
| • Info        | Displays program steps                        |
| • New program | Allows creation of a new, single step program |
| • Back        | Back to Programs Menu                         |

#### Settings

- |                 |  |
|-----------------|--|
| • Vers          | Version of firmware                                      |
| • Serial        | Serial no.   |
| • Contrast      | Display contrast. Selectable from 0-5                    |
| • Factory reset | Resets controller to factory setting, including programs |
| • Language      | Language selector: German / English                      |
| • Back          | Back to Main Menu  |

#### Status display while in operation:

- |                       |  |
|-----------------------|--|
| • 1 Achieve xxx.x deg | Number and description of current step         |
| • Time                | Time elapsed since start (hh:mm:ss) or (dd:hh) |
| • Temperature         | Current temperature                            |
| • Stop                | Option to manually stop the running program    |

## Troubleshooting

Message	Explanation and troubleshooting
Display shows "Program stopped"	The program has been stopped manually by user.
Display shows: "power loss"	Program has been stopped because of power loss. Ensure that the fuse holder has been assembled tightly and that the power cable is mounted correctly.
Display shows: "delta-T error"	The allowed temperature range of T-1/+2°C has been exceeded during holding time. Check if the temperature cable has been plugged and screwed correctly into the controller. Check if the autoclave chamber is not out of water.
Display shows: "sensor error"	Error in temperature sensor. Most often this means the sensor is not plugged in into controller. Other possible reason: cable break.
Display shows: "heater error"	Maximum allowed temperature exceeded (143°C) OR target temperature not be reached. Please check if temperature sensor is working properly or autoclave chamber is not out of water.
Display shows: "profiler error"	Please navigate to Settings -> Factory reset and press the OK button. This is necessary to solve software issues.
Display background light is turned off permanently	Please check if the power switch is turned on. Please replace both 5mm 10A slow acting fuses placed at the shelf of the black power connector.
Display contrast is bad	Navigate to Settings -> Contrast and press the OK button until the contrast is well.
Other errors	Navigate to Settings -> Factory reset and press the OK button. This is necessary to solve software issues.
Autoclave runs out of water during sterilization	Check if the gasket has been placed correctly into the lid. The text "Place This Side Facing Down" on the gasket must be readable for the user. Check if the red knob on the handle is in locking position during sterilization. For cycles with sterilization time longer than 60 minutes, close the steam release cock.
Water is dropping out of the gasket of the lid	On heat-up, the gasket of the lid will be compressed. If the gasket is wet also, this can cause a few drops coming out of the gasket during heat-up. If the dropping doesn't stop after heat-up, please remove the gasket and clean it with distilled water. If the problem is not resolved, contact CertoSupport to order a new gasket.

If the errors cannot be resolved contact CertoSupport

Email: [support@certoclav.com](mailto:support@certoclav.com)

Phone: +43 (0) 7229 689

## Controller - usage of protocol printer

After connecting a CertoClav protocol printer (Art. No. 1300187) the following protocol is printed:

### Header

10 Type of autoclave  
15 Program name  
30 Cycle number

### Program steps

SxxA Heat up  
SxxH Hold  
SxxC Drying  
SxxE End

### Footer

40 Control message. Sterilization successful?



## Controller – cleaning and maintenance

### Cleaning

If necessary, the controller can be wiped with a moist, not wet, cloth.

### Maintenance:

Maintenance must only be done by the manufacturer or an authorized body. No regular maintenance necessary.

## LIST OF ITEMS

The following parts are delivered with the autoclave, please check:

- Autoclave Chamber (Aluminium) with lid
- Instrument tray
- Manometer with gasket and nut, steam release valve with gasket
- Connection cable to Controller Essential
- Main cable Controller Essential





Should one of these parts be missing, please contact your dealer or call us directly.

**Additionally, we recommend the following accessories:**

- Wire basket diam. 23, stainless steel. Art. No. 8583010

For further information about our product range please visit: [www.certoclav.com/shop](http://www.certoclav.com/shop)

## Stickers

	<p>Directive 2012/19/EU (WEEE): The supplier will take the supplied commodity back on the expense of customer after use completion and ensure best available treatment, recovery and recycling according to the laws duly.</p>
	<p>ATTENTION: Consult manual before use</p>
	<p>ATTENTION: Hot surface</p>
	<p>CE marked according to directives NSR 2014/35/EU + EMC 2014/30/EU.</p>

# CertoClav Essential Alu (Autoclaving chamber)

## Safety remarks

- ⚠ Use the autoclave chamber only with the Essential Controller. Do not plug in directly to a power supply. The chamber will heat in an uncontrolled way.
- ⚠ Never manipulate the safety devices. Only use autoclaves and controllers of the type. Never use lid and chamber of different types together.
- ⚠ Surfaces are hot while in operation (metal and plastic parts). During operation touch only the dials for time and temperature on the base of the units. Wear protective gloves if touching anything else.
- ⚠ Use only in accordance with this manual. Store the manual in a space accessible to all users.
- ⚠ Must not be installed in a space that is subject to the danger of explosions.
- ⚠ Use only with rated voltage
- ⚠ Only for use in laboratories. Operate only by trained personnel. Do not use in domestic settings.
- ⚠ Never operate without water. Target water amount: 1 litre (min. 0,7, max 2,5)
- ⚠ Do not autoclave tightly sealed containers (especially glass bottles) since there is no pressure compensation.
- ⚠ Do not autoclave corrosive solutions or salty solutions!
- ⚠ Do not release steam in the direction of a person – danger of burning. Connect a hose (inner diameter 10mm) to release hot steam into a suitable container or sink.
- ⚠ When loading contains glass containers let the unit cool down to 80°C before opening, with liquids the temperature should be at least 70°C, danger of boiling over of fluid or explosions of glass bottles.
- ⚠ Do not transport when filled. Do not open with force.
- ⚠ The heating sensor must be fixed safety and the bottom of the chamber. Look for a good heat conduction between temperature sensor and bottom of chamber. The sensor also must be fixed safety at maximal heat.
- ⚠ This autoclave must only be maintained by CertoClav or authorised retailers. Always use original spare parts.

## Autoclave - Technical data

Authorised ambient temperature:	-10°...+40°C
Capacity of appliance chamber:	12 L or 18 L
Maximum load:	9 kg with max. 3 L water of it
Sterilisation cycle	121°C with venting for 255 Minutes. Then cool down to 80°C.
Air evacuation	Stream venting
Maximum operating pressure:	2,7 bar
Tested at pressure of:	4,1 bar
Chamber constructed acc.:	Low-voltage-directive 2014/35/EU
Nominal voltage:	230V ~10% 50 Hz
Power input:	Control box: 5,5 W, Heating: 1900 W
Rate of interference suppression:	N

### STANDARDS:

#### Low-voltage-directive 2014/35/EU

CertoClav pressure equipment is constructed according **Low-Voltage-Directive 2014/35/EU**.

#### Electromagnetic Compatibility Directive

Directive 2014/30/EU of the European Parliament and of the Council of 15 December 2014 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC.

#### Tested in accordance with:

EN61010-1:2001 (IEC 1010-1:2001) Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements

EN61010-2-040:2005 (IEC 1010-2-040:2005) Particular requirements for sterilizers and washer-disinfectors used to treat medical materials

**CERTOCLAV** Essential is not suitable for sterilization of tight sealed bottles and loads with aggressive media. For porous loads the **CERTOCLAV** Essential can't be recommended.

Smaller amounts of textiles with low density can be sterilized. Liquide can only sterilized in small amounts. Large amounts will not reach the required temperature. Please contact CertoClav for special firmware versions if you want to sterilize liquids.

The usage of sterilization indicators is recommended.



## Setup

- Set up is easy. Either put the autoclave on a table or the floor, so that you get a convenient work height.
- Unpack the manometer. Mount it according to the instructions packed with the items. This appliance has been packed separately to avoid damage in transportation.
- Mount a tube/hose on the steam release cock, inner diameter 10 mm.
- Plug in the connection cable to the socket on the back side. Connect the other end to the Essential controller.
- Connect the heat probe cable to the Essential Controller. The heat probe cable is fixed the chamber and cannot be removed.
- The unit is switched on via the Essential controller. Plug in Main cable.


## Operation

 READ INSTRUCTIONS BEFORE FIRST USE!

 The first run should be without load; only with water.

## Loading the autoclave

- Fill in 1.0 – 1.5 litres of distilled water.
- ATTENTION: Do not use demineralized water from an ion-exchanger – it causes corrosion! If there is no other water available add approx.. 1/3 tap water.
- Put in instrument tray and basket and place loading. It is important that steam can circulate freely.

 Do not autoclave tightly sealed containers (especially glass bottles) since there is no pressure compensation.

## Close and Locking

- Take the lid and make sure that the red knob is turned to open.
- Open the steam release cock (turn black knob anticlockwise).
- Connect tube to avoid burning from hot steam.
- Lid is put on 30° turned counter clockwise. Then turn the lid clockwise until the handles are in line with each other.
- Turn the red knob to closed = locked.
- Do NOT open the small screw on the regulating valve.

## Autoclaving (incl. venting)

Autoclaving is done by following the instructions for the controller (see page 9).  
The cable of the temperature sensor is connected with the controller. Turn on via controller.


## End of cycle – cooling down (see page 10)

If loading contains glass bottles wait until chamber temperature is below 80°C, for liquids wait until temperature has reached 70°C = approx. 40 min.

## Opening

Open the steam release cock (turn anticlockwise). Turn red knob to open = unlock. Steam release valve will be opened. Steam escapes. Turn lid anticlockwise and remove.

To get better drying of the loading remove the basket from the chamber and let it cool down to room temperature before taking goods out.

 **ATTENTION: UNCOMPLETE CYCLE:** Should the cycle interrupted caused by switch off or electrical failure or other reason – the sterilization is not completed correct and has to be repeated. For opening please follow the safety hint for cooling down.

## Cleaning and maintenance

For **CLEANING** the appliance wipe inside and outside with a damp cloth. Never immerse the lid and chamber of the unit in water. Before start of cleaning or disinfection plug off mains cable and make sure that appliance has cooled down.

Discolouration and stains occur when not using distilled water. To remove discolouration, add some citric acid to the aqua dest. and boil for about 10 minutes, do not close the CertoClav. Empty the chamber immediately.

The steam release cock should be cleaned regularly with a needle from inside of lid to remove stains from venting nozzle.

For **DISINFECTION** of metal surface disinfection liquids with following substances are suitable: Ethanol, Propyl alcohol, Isopropyl alcohol, Glutaraldehyde, quaternary ammonium compounds. Please follow the application notes of the manufacturer for the cleaning and disinfection detergents.

Never manipulate on safety devices. Operate only lid and chamber of the same series (Essential). Do not mix lids of different types of autoclaves.


Repairs on valves, safety features and electric must only be carried out by an appointed CertoClav partner or by the manufacturer. Use original CertoClav spare parts only.

Every two years the unit should be checked by an appointed retailer or CertoClav.

## Autoklav – Safety devices

### Locking mechanism and steam release valve

Against opening when autoclave is under pressure and prevented pressurizing at incorrect locking.

With turning the orange knob to  the steam release valve gets opened automatically and the steam escapes. As long as the autoclave isn't locked correctly, the steam release valve doesn't close and prevented pressurizing.

### Pressure control valve:

If pressure gets over maximally 10 % of the maximum work pressure of 2,7 bar the pressure control valve opens!

### Safety valve

If the pressure control valve doesn't work, the safety valve gets opened at a pressure of 3,6 – 4 bar and closes when the work pressure is reached again.

*In this case you have to change the pressure control valve because it could be broken.*

### Safety recess at chamber-edge

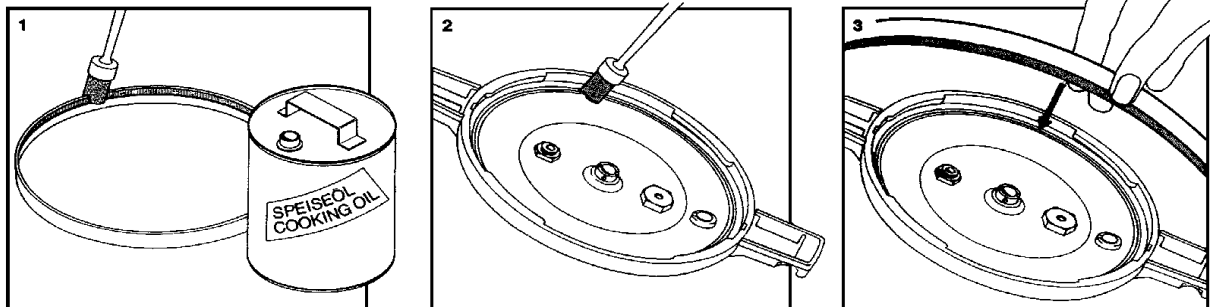
At the edge of the chamber, on the left side of the handle of the chamber, there is a recess. When the pressure gets over 4,7 bar, the lid gasket gets pressed out of this recess and get crashed.

**ATTENTION: In this case you have to send the autoclave to CertoClav for repair!**

Note: If there escapes steam at the side of the gasket at normally working: Either the gasket replaced wrong or the gasket is wearied out and has to be changed. (see replacement of the gasket)

## REPLACEMENT OF THE GASKET

Please see drawing below:



- 1 Apply cooking oil to the new gasket
- 2 Clean and oil groove
- 3 Press gasket into groove ribbed side pointing downward (letters show to the middle of the lid)

WE RECOMMEND THE CERTOCLAV SERVICE SET ART. No.: 1250499. It contains all spares which are under wear and tear and have to be replaced.

## Spare Parts

1	1250334	Manometer mit Schleppezeiger, komplett	Manometer with maximum indicator
2	1250320	Druckbegrenzungsventil	Pressure control valve
3	1250433	Ventildichtung	Gasket for valve
4	1250208	Abdampfhahn komplett mit Entlüftungsdüse neu	Steam release cock complete with venting nozzle new
6	1250235	Deckelgriff mit Verriegelung, Schraube und Mutter	Lid handle with lock, screw and nut
7	1250242	Abdampfventil	Steam release valve
8	1250237	Griff mit Schraube für Gerätekammer	Handle with screw for chamber
9	1251324	Sockel mit Steckdose	Base with socket
10	1250408	Dichtung für Sockel	Gasket for base
12	1260404	Deckeldichtung Silikon 24 cm	Lid gasket Silicon 24 cm
13	1250194	Mutter für Manometer	Nut for manometer
14	1250236	Deckelgriff mit Schraube und Mutter	Lid handle with screw + nut
15	1250451	Dichtung für Manometer	Gasket for manometer
16	1250310	Sicherheitsventil mit O-Ring	Safety valve with O-ring
17	1300188A	Sensorkabel mit Einschraubfühler PT100	Heat probe cable with PT100
18	1250335	Bimetall-Sicherung	Bimetal fuse
19	1250356	Kabelsatz für Essential/MC	Cable set for Essential/MultiControl
	1300198	Geräteverbindungskabel zu Steuerung ES	Connection cable to controller ES
	1300197	Netzkabel Steuerung ES	Main cable controller ES
	1250380	Reinigungsnadel für Düse	Needle for cleaning venting nozzle

## Warranty

The unit has been checked from our quality control by 100 %. We give guarantee for 2 years on all parts, which are not consumables from the date of purchase.

An extension of the warranty period to 5 years is available for purchase.

No warranty will be given in case of inappropriate use e.g. corrosive loads.