GE 6913 AR-2
ANIMAL SCIENCE GROUP

5102112-010-01

Reporting an accident or incident

Use this information when reporting incidents and accidents involving the unit.

If an accident or an incident associated with the occurs, this must be reported immediately in writing to the address below. The report must be used to identify the cause of the accident or incident and to what extent the occurrence was due to the unit

The unit is a product in the Getinge range.

The unit may also be a sterilizer that is a medical engineering product and which conforms to the EU medical devices directive, or which is constructed in a similar way to a medical device. Under the medical devices directive, the manufacturer must investigate the cause of accidents/incidents that occur and report them to the authorities concerned.

The investigation may lead to changes in new or already delivered devices or in instructions and guidance.

The following circumstances must be reported:

1. circumstances that caused the death of a patient, user or someone else, or that caused serious deterioration in the health of a patient, user or someone else.
2. circumstances that might have caused, the death of a patient, user or someone else, or that might have caused serious deterioration in the health of a patient, user or someone else.

The following information is required:

The manufacturing number of the unit (on a label in the electrical cabinet), Date/time of event, Description of event, Consequences of event.
Contact: Name, Phone number, Address:, E-mail:
The information must be sent by letter or fax to:

GETINGE STERILIZATION AB
For the attention of: Quality Manager
Box 69
31044 GETINGE
Sweden
Fax: +46 (0)35 549 52

Attention symbols

Some of the warnings, instructions and advice in this manual are so important that we used the following special symbols to draw attention to them. The symbols used are as follows:

Warnings

This symbol indicates a warning in the text of the manual. The nature of what the warning relates to is such that it may result in more or less severe injury and in certain cases mortal danger.
The symbol is also used to highlight safety components, etc. See "Safety devices - an overview" under "Introduction" in the DESCRIPTION OF OPERATION or under "Maintenance" in the SERVICE MANUAL.

Instructions

This symbol highlights instructions that are important for avoiding damage to the unit and/or load, among other things.

Advice

This symbol indicates important advice and hints that make it easier to work with the unit.

Symbols on the unit

Hot surface

This symbol gives warning of a hot surface.

GETINGE

USER MANUAL
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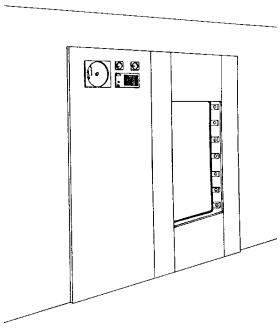
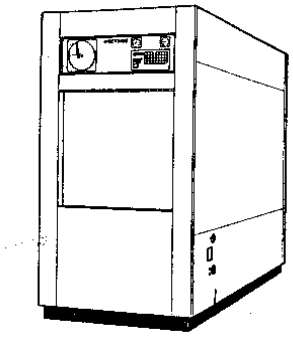
INTRODUCTION

Introduction GE

Sterilizer type GE is the collective designation of a range of GETINGE overpressure sterilizers using steam and vacuum in the process for sterilization. GE-sterilizers are available with vertically or horizontally sliding doors. Both single and double ended types exist.





The GE-sterilizers are intended for sterilization of materials in the health service as well as in the pharmaceutical industry. The type of materials include: instruments, utensils, glass, plastic, leather and textiles. Some sterilizers have special programs for sterilization of hot and cold liquids. The all dominating sterilizing agent is steam with a temperature of 120-135 °C.

Adaptation to respectively task is made mainly by selecting type of software for the control unit. The sterilizer control unit is computerized and provides possibilities for a large number of processes, all characterized by a very good accuracy in controlling the process parameters. Both instantaneous and set values for a proceeding process may be displayed on request.

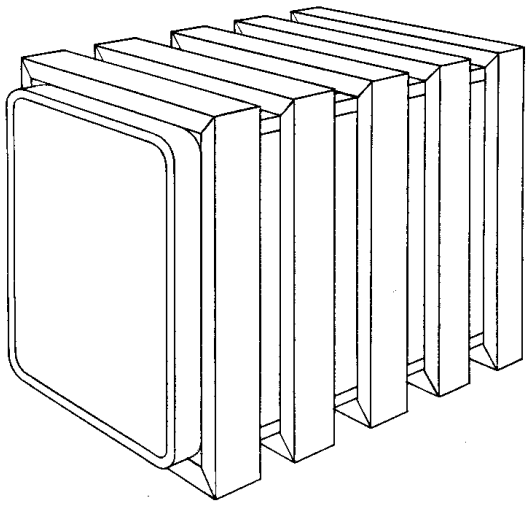
The software which controls the processes can be fixed programmed in the control unit to combine quickness with safety in the production lines. When it comes to odd type of works, most process parameters can be set from time to time by the operator.

Reprogramming of the control unit can be made at site.

The automatic doors are provided with safety devices to protect the operator.

The sterilizer chamber, made of acid proof stainless steel is covered externally to about half its area by seal-welded u-profiles which serve

both as stiffening bars for the pressure vessel and as a steam jacket containing temperature controlled steam heating for the chamber walls.



The GE-type sterilizers should be supplied with electricity, cold water, compressed air and steam. If central steam is not available or there are reasons not to use it, GE-units can be equipped with an electric steam generator.

Overview of safety devices

Cladding and front panels must prevent access to the parts of the installation that are normally accessible only to trained personnel.

General access to an installation supplied without cladding, which should normally only be maintained by trained personnel must be prevented. A convenient way of preventing access is to install the equipment in a lockable area.

Additional information about the above safety components are given in the Safety checks, Technical data and Periodic maintenance sections of the Service Manual.

Safety components

Every unit is equipped with a number of components with the specific purpose of ensuring the safety of personnel. These items are marked with a warning triangle below in the following documents:

- **electrical diagrams**
- **pipework diagrams**

- **spare parts lists**

These components have undergone special tests before being accepted as safety components. For this reason, they must not be replaced with components of any make or design that has not been approved by GETINGE.

It is of the highest importance that the operational reliability of these components is continuously upheld during their entire service life.

The signs are used not only to indicate important components, but also to draw attention to other safety factors that call for special attention, such as dimensions, tolerances, materials, etc.

Doors

The doors are closed and locked while the process is running and remain locked in the event of media loss. The doors cannot be opened until the pressure in the chamber has been equalized with the ambient pressure, not even if fault management gives an opening command. The horizontal sliding doors are actuated by a pneumatic motor. To prevent crush injuries, the power of the pneumatic motor is limited. As an extra safety measure there is a load sensor on the pneumatic motor, to detect obstruction of the door motion by large objects. The load sensor stops the door before the object is crushed, preventing injury and damage.

Emergency stop

In the front panel, at the side of the door, there is a pushbutton with these functions:

A **On door operation.**
to stop the door motion immediately during door operation. Pressing the button triggers an alarm. This alarm stops the door immediately:

B **When the door is closed**
The current process is aborted and all valves for media to the chamber are closed. This also triggers an alarm.

Key for authorized user / stepping key

The installation has a key on the electrical cabinet which allows stepping and holding of program phases during the process or after an alarm situation. During critical parts of the process, stepping is prevented by the program. The key is also used in certain cases to prevent unauthorized use of functions and test programs that require specialized knowledge.

Door blocking key

There is a keyswitch on the front panel beside the door. Anyone person entering the sterilizer chamber should always take the key with them. When the key is not in the keyswitch, the door cannot be closed. See also under "Cleaning the chamber" in the OPERATION chapter.

Cladding plates

Front panels and cladding plates must not be opened by operators, only by specially-trained technicians. Sheet metal surfaces that the operator may come into contact with are insulated and cooled to a temperature that is safe to touch.

Valves

Electrically- and pneumatically-controlled valves are closed by spring force. This means that unwanted steam and water flow is prevented if the control medium fails. The principle is that the valves should go to a safe position if the control medium fails.

Pressure vessels

The sterilizer chamber and jacket are pressure vessels, designed and built in accordance with standards laid down by official bodies charged with monitoring this area of safety.

The connected supply lines from external steam, water or compressed air networks must be protected against excessive pressure by safety valves. The sterilizer supplier is not responsible for these valves. Permitted supply media pressures are stated in technical data.

Safety valves

Safety valves limit the system pressure, providing the last line of protection to prevent the design pressure of the vessel from being exceeded. Safety valves are required to be inspected at prescribed intervals.

Where the permitted supply pressure of the chamber may exceed the design pressure and/or where the pressure vessel standard specifies it, the sterilizer is fitted with a safety valve (or valves) and/or bursting disks. The internal supply lines to the sterilizer chamber are fitted with fixed reducers suitable for the safety valve(s) and/or bursting disks.

Monitoring the door seal pressure

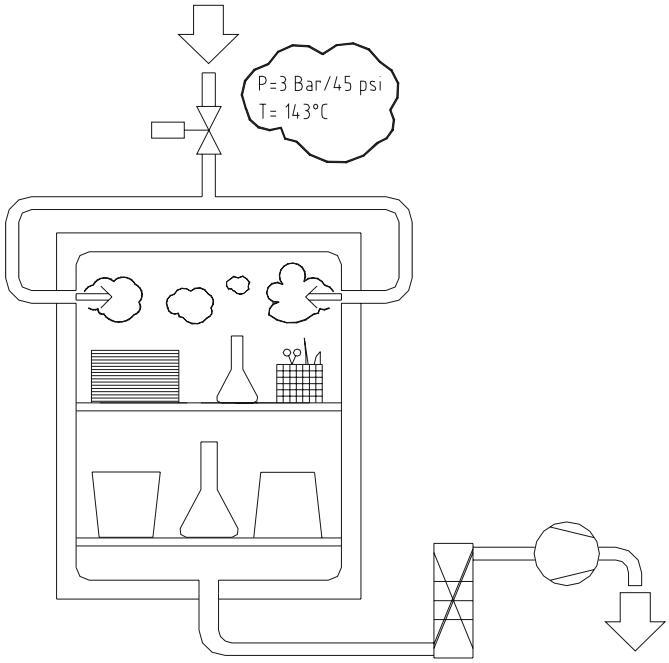
Valves that admit any medium to the chamber are kept closed until the pressure behind the door seal is high enough to guarantee the tightness of the chamber.

The pressure in the seal groove is controlled to a range below the supply pressure. The lower seal pressure extends the life of the seal.

THE PROCESS

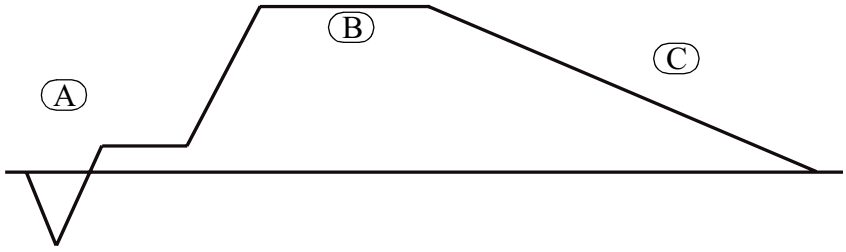
The GE process

The process starts with the door seal being pressed towards the door by means of compressed air or steam.



Sterilization with steam and vacuum

Steam and vacuum are used in the sterilization of many materials, such as utensils, empty containers, plastics, rubber, textiles, liquids, etc.
A universal steam process has three main phases: Pre-treatment (A), sterilization (B) och post-treatment (C).



Pre-treatment
It has been found that the presence of moisture is one of the most important conditions when killing micro-organisms with heat. The steam must therefore be brought into very close contact with the micro-

organisms, and since air is an obstacle, it must be almost totally eliminated. Any air present reduces the temperature of the steam.

The pre-treatment phase, with its repeated evacuations alternating over a short time with the admission of steam, has been designed to gradually dilute the air in the items and the chamber until its influence is no longer significant.

When sterilizing liquids in open containers, air elimination is done by single vacuum or by passing steam through, so the pressure reductions associated with a pulsating pre-vacuum do not cause the liquid to boil.

Sterilizing
The sterilizing time for sterilizers fitted with the computerized control equipment is counted from the instant in the build-up phase of the process when the vessel temperature sensor signals an actual value which is equal to or higher than the nominal sterilizing temperature specified for the relevant program. Countdown of the sterilizing time stops during the process if the temperature falls below the programmed sterilizing temperature.

Load temperature sensors are used when sterilizing items, primarily liquids, where the sterilizing temperature is measured in the load. The condition for counting down of the sterilizing time is that all temperature sensors, the chamber temperature and the load temperature, report a sterilizing temperature in accordance with the program.

Post-treatment
The post-treatment is intended to normalize the temperature and moisture content of the goods. For this purpose, all types of goods except liquids are therefore exposed to a deep vacuum for a certain period of time.

The post-treatment of liquids that have been sterilized in open or semi-closed containers takes the form of a self-cooling period. During this period, the pressure and temperature are reduced extremely slowly until the temperature is well below the boiling point of the liquid. The process is speeded up by slightly evacuating the chamber when its pressure gets close to that of the surrounding atmosphere.

The sterilizer door will remain sealed by its gasket until the chamber reaches at atmospheric pressure.

Maintenance program

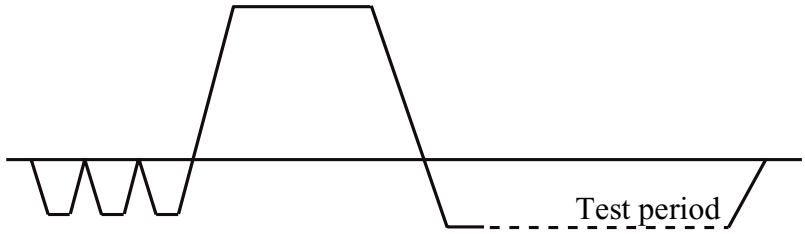
Chamber leak test

The autoclave is equipped with a program for automatic leak test of the autoclave chamber. A leak test shall be performed with a preheated sterilizer and with empty chamber. The leak test process has its own program number (See list of programs).

The vacuum pump starts and evacuates the air from the chamber. This is done in three evacuations and entering steam between each evacuation. After the last of the three evacuations the chamber is heated to working temperature and kept at this temperature for stabilization. Then the vacuum pump is started once more. The pump stops when a deep vacuum is reached in the chamber.

For a short period of time after this evacuation a slight rise of the chamber pressure takes place which is not due to leakage but results from evaporation of condensate and temperature - pressure changes of the recently rarefied residual steam.

A chamber pressure rise caused by air leakage can not be detected until the conditions in the chamber are stable. Not earlier than 5 minutes after the vacuum pump has stopped should the pressure and time be measured. A satisfactory leak test allows for a maximum permissible pressure raise of 13 mbar / 10 minutes. A failed leak test will result in an alarm.



PGMP006.EPS

Sterilization and testing of the air filter

The unit has a program for sterilizing and testing air filters.

NOTE: For a safe test, the temperature in the service room and of the water used should be between 20 °C and 30 °C.

The filter sterilization and test has its own program numbers (see PROGRAM COMBINATION).

The programs (which are sometimes combined into one program) have the following steps:

Sterilization

1. Sterilization: The filter is sterilized by steam flowing through the filter and the filter housing. The temperature is controlled by a temperature sensor in the outlet.
2. Cooling: The filter is cooled with compressed air which is blown through
   the filter cartridge.

Testing

The following applies to filter systems that have a container for test water:

The container must be filled with water before the program is started!

1. The filter housing is filled with water: The space in the filter housing upstream of the filter cartridge is filled with water and the enclosed air is pressurised. This pressure is held for a stabilizing period.
2. Test: After filling with water, the filter can be pressure-tested because the compressed air affects the pressure on the water on the upstream side of the filter. By measuring the pressure drop and therefore the water flow through the filter cartridge, it is possible to determine whether or not the filter is serviceable. If the test is negative, an alarm is given.
3. After an alarm (if any) has been acknowledged, the operator can choose to continue the process or repeat the test:

   Pressing  / **[START]** moves the process on to draining/ drying.

   Pressing **P1 / [TEST]** instead performs the test by making the program jump back to the water filling stabilization period and starting the process from that point.
4. Draining and drying: The filter housing is dried and drained by blowing compressed air through the filter cartridge.

Documentation of the process

PACS SUPERVISOR is an independent measuring system that records the sterilizer's process data. If the Supervisor is connected to a printer directly on the unit or via a standalone PC with GETINGE's OPC or OPH program, a complete printout of recorded data can be obtained.

Printout is possible in four modes. The mode shown below is preset before delivery and is recommended by Getinge.

The supervisor stores the last process so that an “emergency printout” can be produced afterwards if there is problem with transmission of the printout or with the printer itself.

For further information, see the section on the supervisor in the SERVICE MANUAL section on CONTROL UNIT .

The illustration below is schematic and must not be used as a template for evaluating individual process results.

DATE	16/05/2001
PROCESS START	08:01:36
AUTOCLAVE NAME	HS6613-2
AUTOCLAVE NUMBER	1
CYCLE COUNTER	5

1

SIGNALS	
AI00	DRAIN TEMP
AI24	S DRAIN TEMP
AI03	CHAMBER PRESS.
AI27	S CHAMBER PRESS.
AI04	T1
AI05	TI2

3

Page: 1

PARAMETERS	
NEG. PULSE	3
POS. PULSE	5
STERILIZING TEMP	134.0 C
STERILIZING TIME	00:07:00
DRYING TIME	00:05:00
DRYING STEAM PULSE	00:00:00
DRYING AIR PULSE	00:00:00

2

PROGRAM: P1 POROUS LOAD 134

PROGTIME	AI00	AI24	AI03	AI27	AI04	AI05
START						
00:00:01	83,1	82,7	1.000	1.021	89.2	89.1
NEG PULSING						
00:00:23	82.3	82.3	0.955	0.960	101.4	101.0
00:02:53	67.4	67.4	0.100	0.097	105.6	104.1
POS PULSING						
00:00:03	93.4	93.3	0.822	0.822	120.6	120.8
00:00:58	117.5	117.5	1.865	1.865	129.9	129.9
HEAT UP						
00:00:49	104.5	104.5	1.245	1.251	113.5	113.7
STERILIZING						
00:01:14	134.4	134.3	3.052	3.065	134.1	133.9
00:03:14	135.0	135.0	3.116	3.120	135.3	135.4

4

IDENTIFICATION: HS6613-2 1 CYCLE COUNTER: 5

Page: 2

PROGTIME	AI00	AI24	AI03	AI27	AI04	AI05
00:00:14	135.0	135.0	3.116	3.116	135.2	135.3
LOWEST TEMP		134.9				
DRYING						
00:00:18	135.0	135.0	3.110	3.113	135.2	135.3
HIGHEST TEMP		135.2				
00:02:12	60.1	59.9	0.130	0.124	105.2	105.4
EQUALIZATION						
00:03:16	89.9	89.8	0.055	0.052	119.6	119.2
PROCESS COMPLETE						
00:33:27	93.7	93.6	0.987	0.987	130.3	130.1

4

PROCESS FAILURE

5

SIGNATURE:_____

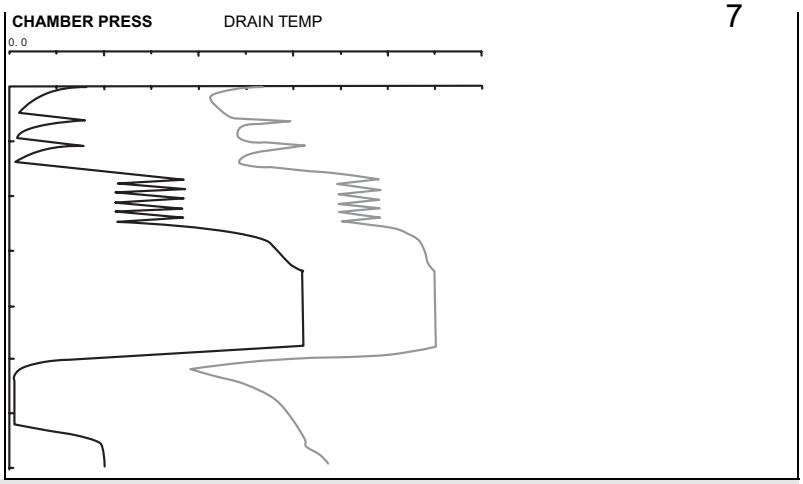
6

Page: 3

DATE	: 16/05/2001
PROCESS START	: 08:01:36
AUTOCLAVE NAME	: HS6613-2
AUTOCLAVE NUMBER	: 1
CYCLE COUNTER	: 5

PARAMETERS	
NEG. PULSE	3
POS. PULSE	5
STERILIZING TEMP	134.0 C
STERLIZING TIME	00:07:00
DRYING TIME	00:05:00
DRYING STEAM PULSE	00:00:00
DRYING AIR PULSE	00:00:00

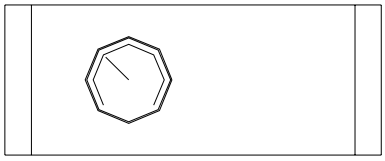
PROGRAM: P1 POROUS LOAD 134



1	In the top part, the date and time when the process was started and the type designation, number and cycle counter of the sterilizer are shown.
2	Parameters of the current program that can be changed with a parameter code are listed under the PARAMETERS. In this example, sterilizing temperature in °C and times for various sub-processes in hours, minutes and seconds.
3	The parameters chosen for printing are listed under the heading SIGNALS.
4	Information on which program has been started and then process log.
5	Printed out if an error occurs during the process.
6	These lines are printed out after a faulty process. Code identification of the person who entered the password, and one line for initialling.
7	Graphic representation of the process

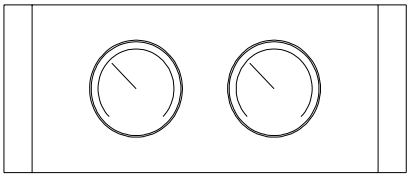
INSTRUMENTS

Unit side 1



Jacket pressure gauge

The gauge shows the actual positive pressure in the jacket.

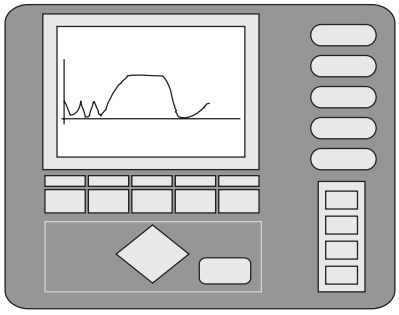


Chamber pressure gauge (to the right)

The gauge shows the actual positive pressure in the chamber.

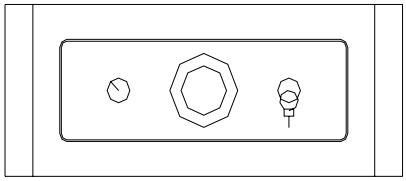
Steam pressure gauge (to the left)

The gauge shows the actual positive pressure in the process steam.



Operator panel OP30

Get acquainted with the function of the operator panel by studying the chapter *CONTROL UNIT PACS 3000*.



Controls left to right:

Control switch

Cuts off the electric power to the control system of the unit.

Emergency stop

Stops the process.

Door blocking key

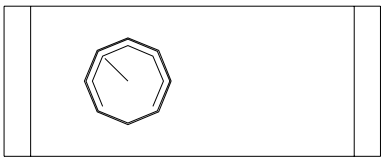
In the locked position, the key prevents closing of the door. The key must be taken out when it is locked and must be carried when cleaning or entering the chamber.

Door closing is prevented in the position to the left, indicated by the symbol 

The door is not blocked in the position to the right. 

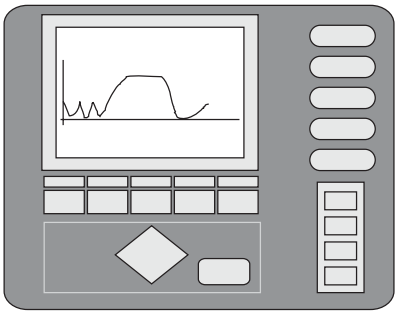
Read the chapter *INTRODUCTION - safety devices, an overview*, in the OPERATOR MANUAL, for a detailed description.

Unit side 2



Chamber pressure gauge

The gauge shows the actual positive pressure in the chamber.



Operator panel OP30

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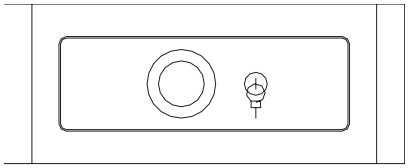


Emergency stop (to the left)

Stops the process.

Door blocking key (to the right)

In the locked position, the key prevents closing of the door. The key must be taken out when it is locked and can be used, for example, when cleaning or entering the chamber.

Door closing is prevented in the position to the left, indicated by the symbol 

The door is not blocked in the position to the right. 

Read the chapter *INTRODUCTION - safety devices, an overview*, in the OPERATOR MANUAL, for a detailed description.

Program start

Where applicable, the operator must state process parameters and other information requested by the control system. On equipment where an authorisation code for programs not intended for routine sterilization is activated, the operator must also enter an authorisation code immediately after startup.

Via operator panel OP30
The operator must choose a program on the operator panel by calling up a list from the main menu via the "CHOOSE PROGRAM" button. Use the arrow keys to scroll in the list. Press Enter to choose the selected program from the list. See also PACS 3000 CONTROL UNIT.

- When the start button is lit, the process is ready to start.
- Check that the correct program number is displayed on the operator panel.
- Then start the process by pressing the start button.

Process startup is prevented if:

- there is an unacknowledged alarm
- the door is not closed and interlocked in accordance with the conditions
- the control system has detected an interlocking error (affects door safety)
- the keyswitch for manual stepping is activated
- the keyswitch for door blocking has been activated (only if there is a keyswitch)
- media supply, eg steam or cooling water, is not available (only if the sterilizer is equipped with sensors for this).
- the jacket temperature has not been reached or is too high (only if the process includes jacket heating)

Password-protected programs only: after "START" has been pressed, the operator is prompted to enter the password.

Message

If the operator chooses to attempt to start the sterilizer, even though starting is blocked, the operator panel display shows a message referring to an essential condition that is not met.

- STEPPING KEY ON - Indicates that key switch for stepping is on.
- PRINTING ACTIVE - Indicates that printing from the printer is blocking the start of a new program.
- UNACKNOWLEDGED ALARM – Indicates that a previous alarm has not been acknowledged and blocks the start of a new program.
- SEAL PRESSURE– Indicates that the door seal pressure is not as expected.
- DOOR KEYSWITCH - Indicates that the keyswitch for cleaning is on.
- DOOR NOT CLOSED - Indicates that a sterilizer door is not properly closed.
- LOW WATER LEVEL – Indicates that the water level in the tank is low.
- COMPRESSED AIR – Indicates that the pressure of the air supply is low.
- COMPRESSED AIR – Indicates that the pressure of the air supply is low.
- OTHER START CONDITION - Indicates that a starting condition specific to the type of unit or accessory is not met.
- JACKET HEATING - Displayed immediately after starting, while the jacket heats up. This message disappears as the process continues.

Alarms

If a fault occurs, in standby or during a process, the system goes to an alarm phase. This is an exceptional situation, but it is normally not dangerous. The current process is stopped and output signals from the control system go to settings that maintain the safety of personnel, the unit and the load.

The events below take place when the unit goes into an alarm phase.

- An audible signal sounds
- The ***Process fault***  /  alarm indicator flashes.
- The type of fault appears on the unit display in plain text.
- If the unit has a printer, the alarm text is printed out as part of the process log.

The alarm is registered automatically in the control system fault log-. The fault log- contains information about the last 20 alarms.

If an alarm occurs:
Read the message.
Press the "ALARM OK" button or  for acknowledge the alarm. The audible signal stops and the alarm changes from flashing to a steady light.

The fault codes are explained later in this chapter.

In case of an error concerning a temperature sensor, a pressure transducer or the Back-up battery a service technician is to be called for.

Blowing safety valve

If a safety valve blows off:

- Press the EMERGENCY STOP button.
- If this has no effect, cut off the electric power supply with the control switch on the front of the unit.
- In an emergency, the power supply can be cut off with the working switch.

Send for a service technician without delay.

On power failure or if the control switch or working switch of the sterilizer had to be turned off during a process, there is a risk of leakage at the door. Safety measure when there is positive pressure in the chamber:

KEEP WELL AWAY FROM THE DOOR AND CALL A TECHNICIAN!

Correcting faults

Faults that require intervention in the installation must be put right by an authorised technician.

Alarms in standby mode

An alarm from an idle sterilizer prevents it being started.

- Call a technician.

If the load contains liquids, choosing the wrong program may endanger personnel and equipment.

Alarms during a process

A fault that occurs while a program is running stops the process and sets all valves to a safe position . Any pumps and motors stop.

The ***Process complete*** ↻ indicator lights up red on completion.

There are three options:

1. The program stops the process until you press the ◇ / **[START]** button. The process is then completed automatically.
2. Call a technician. After activating the keyswitch for authorised user / stepping the technician can restart the process where it stopped.
3. With the key activated, step the process to another phase with the ⏭ / **[STEP]** button and start from there, or step to the end. The process advances one step every time the button is pressed. The alarm message remains on the display until you start.

For safety reasons, it is not possible to step past a pressure equalisation phase or a cooling phase.

Repeated alarms

If the process repeatedly hangs at the same alarm point, call a technician to step the process to the end. If several faults occur, only the last one is displayed.

In certain phases, sensor faults prevent stepping of the program.
Stepping may only be done by trained personnel.

Alarm printout in process documentation

Where a main fault causes one or more secondary faults, the operator panel shows on the most recent fault. If the unit has a printer or similar, all faults are printed out, together with the time when they occurred.

Error codes

The error messages listed below are defined in the control system. If more than one error occurs consecutively, only the error code for the last error is displayed.

If the sterilizer is equipped with a printer, the error message is printed out. For secondary errors, all error messages are printed out.

Information about the last twenty faults is saved in the control system and is accessible in the service menu. If the sterilizer has a printer, this information can be printed out.

Service codes

When the word SERVICE appears on the display, service is required and must be carried out by a service technician. See below for explanations of the codes.

NOTE:
No error has occurred.
The sterilizer can still be used.

Fault code/ Message	Explanation and cause
Battery fault (Message)	The system backup battery is flat. Programs and stored parameters may have been lost.
Chamber temp. sensor fault	The chamber temperature sensor is outside the temperature range (-5/+150 °C) eg because it is faulty or not properly connected. The alarm can be activated everywhere and is triggered without delay. A faulty temperature sensor alarm is triggered only once during a process; see also ADVICE AND INSTRUCTIONS. If the fault occurs during a process, an alarm message is printed out on the log.

Fault code/ Message	Explanation and cause
Jacket temp. sensor fault	The jacket temperature sensor is outside the temperature range (-5/+150 °C) eg because it is faulty or not properly connected. The alarm can be activated everywhere and is triggered without delay. A faulty temperature sensor alarm is triggered only once during a process; see also ADVICE AND INSTRUCTIONS. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
Jacket drain temp. sensor fault	The jacket temperature drain sensor is outside the temperature range (-5/+150 °C) eg because it is faulty or not properly connected. The alarm can be activated everywhere and is triggered without delay. A faulty temperature sensor alarm is triggered only once during a process; see also ADVICE AND INSTRUCTIONS. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
Waste temp. sensor fault	The temperature sensor in the drain is outside the temperature range (-5/+150 °C) eg because it is faulty or not properly connected. The alarm can be activated everywhere and is triggered without delay. A faulty temperature sensor alarm is triggered only once during a process; see also ADVICE AND INSTRUCTIONS. If the fault occurs during a process, an alarm message is printed out on the log.
Load temp. sensor fault	One of the load temperature sensors is outside the temperature range (-5/+150 °C) eg because it is faulty or not properly connected. The alarm can be activated everywhere and is triggered without delay. A faulty temperature sensor alarm is triggered only once during a process; see also ADVICE AND INSTRUCTIONS. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.

Fault code/ Message	Explanation and cause
Temp. sensor fault, condenser	The condenser temperature sensor is outside the temperature range (-5/+150 °C) eg because it is faulty or not properly connected. The alarm can be activated everywhere and is triggered without delay. A faulty temperature sensor alarm is triggered only once during a process; see also ADVICE AND INSTRUCTIONS. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
Pressure sensor fault	The pressure transmitter is outside the pressure range, eg because it is faulty or not properly connected. The alarm can be activated everywhere and is triggered without delay. A faulty pressure sensor alarm is triggered only once during a process; see also ADVICE AND INSTRUCTIONS. If the fault occurs during a process, an alarm message is printed out on the log.

Mistakes when correcting the above types of fault may lead to situations where people may be in danger. Always call a trained service technician.

Fault code	Explanation
High jacket temp.	The jacket temperature has been too high for part of the process. A message is printed on the log when the fault occurs. NOTE: Not on all sterilizers.
Gasket failure	The door seal pressure is too low, eg because there is not enough media pressure, the seal is damaged or valves or pipe systems are leaking. The alarm can only be activated during a process and is triggered 15 seconds after the fault occurs. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.

Fault code	Explanation
Door fault	A door or doors is/are not closed and interlocked, eg because of a faulty door switch or damaged connections. The alarm can only be activated during a process and is triggered 15 seconds after the fault occurs. If the fault occurs during a process, an alarm message is printed out on the log.
Motor fault	A motor has stopped. The control system senses that the return signal from the motor control unit is absent, eg because the overcurrent protection has tripped. The alarm can only be activated during a process and when the motor must be activated. The alarm is triggered 15 seconds after the fault occurs. A message is printed on the log when the fault occurs. NOTE: Not on all sterilizers.
High temperature	The chamber temperature at the process-controlling sensor has been above the permitted limit during the sterilization phase. The alarm cannot be activated until after 15 seconds initial stabilization in the sterilization phase and is then triggered without a delay. A message is printed on the log when the fault occurs.
Low temperature	The chamber temperature at the process-controlling sensor has been below the permitted limit during the sterilization phase. The alarm cannot be activated until after 15 seconds initial stabilization in the sterilization phase and is then triggered without a delay. A message is printed on the log when the fault occurs.
Time fault: sterilization	The chamber and/or load temperature at a process-controlling sensor has been below the permitted limit for more than five minutes during the sterilization phase. A message is printed on the log when the fault occurs.
Time fault: heating	The phase named on the display exceeded the time frames within which heating should have been completed. Check whether the cause is a component fault or media fault. A message is printed on the log when the fault occurs.

Fault code	Explanation
Time fault: pressure	The phase named on the display exceeded the time frames within which a pressure increase should have been completed. Check whether the cause is a component fault or media fault. A message is printed on the log when the fault occurs.
Time fault: cooling	The phase named on the display exceeded the time frames within which cooling should have been completed. Check whether the cause is a component fault or media fault. A message is printed on the log when the fault occurs. NOTE: Not on all sterilizers.
Maintenance (Message)	The message is displayed when the programmed service interval has elapsed and the current process has ended. The text continues to be displayed until it is de-activated by the service technician. The unit can still be used Call a service technician immediately.
Major leak	A major leak has been detected during the stabilization part of an automatic leakage test. A message is printed on the log when the fault occurs. NOTE: Not on all sterilizers.
Leak test failure	An automatic leak test failed. The process log shows that the automatic leak test failed. NOTE: Not on all sterilizers.
Filter fault	An automatic integrity test of the sterile filter failed. The process log shows that the automatic integrity test failed. NOTE: Not on all sterilizers.
Power failure	There has been a power failure longer than 10 seconds. This alarm can only be activated during a process. If the fault occurs during a process, an alarm message is printed out on the log.

Fault code	Explanation
Emergency stop	The program has been stopped with the emergency stop button. Emergency stop can be activated everywhere and the alarm is triggered without a delay. If the emergency stop is used during a process, an alarm message is printed out on the log.
Door interlocking	The independent safety interlocking via the door switch of media admissions to the chamber is faulty. For further information see ADVICE AND INSTRUCTIONS.
Seal interlocking	The independent safety interlocking via the seal pressure switch of media admissions to the chamber is faulty. For further information see ADVICE AND INSTRUCTIONS. NOTE: Not on all sterilizers.
Pressure interlocking	The independent safety interlocking, via the chamber pressure switch or supervisor, of media admissions to the chamber is faulty. For further information see ADVICE AND INSTRUCTIONS.
Temp. interlocking	The independent safety interlocking, via the load temperature sensors or thermostatic relay or supervisor, of media admissions to the chamber is faulty. For further information see ADVICE AND INSTRUCTIONS. NOTE: Only on sterilizers with liquid load.
IO fault	The control system has lost communication with at least one of the input or output cards. Call a service technician immediately.
Low water pressure	The pressure of the water supply is low. The alarm can only be activated during a process and is triggered 15 seconds after the fault occurs. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
Low steam pressure	The pressure of the steam supply is low. The alarm can only be activated during a process and is triggered 15 seconds after the fault occurs. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.

Fault code	Explanation
Low air pressure	The pressure of the air supply is low. The alarm can only be activated during a process and is triggered 15 seconds after the fault occurs. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
Steam generator fault	Low water level in steam generator. The alarm can be activated everywhere and is triggered with a delay of 50 seconds. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
High cond. level	The level sensor detects high liquid level in the drain. The alarm can be activated during the sterilization phase at points where water is not expected and is triggered after ten seconds continuous indication. An alarm message is printed on the log. NOTE: Not on all sterilizers.
Bursting disk	The bursting disk monitoring device indicates a burst bursting disk. The alarm can be activated everywhere and is triggered without delay. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
Valve fault	The position monitoring of a valve does not correspond to the expected status. The alarm can only be activated during a process and is triggered after a 15-second delay. If the fault occurs during a process, an alarm message is printed out on the log. NOTE: Not on all sterilizers.
UPS active	The control system is currently running off the uninterruptible power supply system. When there is now power to the pumps and anticlockwise, the process is stopped and an alarm is triggered. NOTE: Not on all sterilizers.

Fault code	Explanation
Keep sequence (Message)	The process is held in its current program phase. This happens when the key for authorized user / stepping is activated. An information message is printed on the log.
Step (text on printout only)	The program has been stepped past a Boolean condition in the process by pressing a button when the key for authorized user / stepping is activated. An information message is printed on the log.
Manual output. (Message)	In standby mode, this indicates that digital or analog outputs have been activated. Call a service technician immediately.
Pr. eq. manual (Message)	After post-treatment, this indicates that manual pressure equalization is required. The message only appears when the process has been restarted with a faulty pressure sensor. For further information see ADVICE AND INSTRUCTIONS. Call a service technician immediately.
Step manually (Message)	After post-treatment, indicates that manual stepping is required in order to continue. The message only appears when the process has been restarted with a faulty pressure or temperature sensor. For further information see ADVICE AND INSTRUCTIONS. Call a service technician immediately.
Man. support pressure (Message)	After post-treatment, this indicates that the support pressure must be maintained manually to protect the load. The message only appears when the process has been restarted with a faulty pressure sensor. For further information see ADVICE AND INSTRUCTIONS. Call a service technician immediately. NOTE: Not on all sterilizers.

Fault code	Explanation
Empty jacket (Message)	After post-treatment, indicates that manual emptying of the jacket is required in order to continue the process. The message only appears when the program has been restarted with a faulty pressure sensor. For further information see ADVICE AND INSTRUCTIONS. Call a service technician immediately. NOTE: Not on all sterilizers.

Fault code	Explanation
High pressure	The chamber pressure has been too high during the sterile phase. This may indicate the presence of air or non-condensable gases. The actual pressure in the chamber is compared with a theoretical saturation pressure calculated from sterile temperature +3°C. This check applies only to steam-only programs. A message is printed on the log when the fault occurs. NOTE: Only on sterilizers with steam programs.
Vacuum pump fault	Vacuum pump stopped. The control system senses that the return signal from the motor control unit is absent, eg because the overcurrent protection has tripped. The alarm can only be activated during a process and when the motor must be activated. The alarm is triggered 15 seconds after the fault occurs. A message is printed on the log when the fault occurs.
Time fault: vacuum	The phase named on the display exceeded the time frames within which evacuation should have been completed. Check whether the cause is a component fault or media fault. A message is printed on the log when the fault occurs.

General advice when using the sterilizer

- Keep the sterilizer door closed when not sterilizing.
- Be observant about anything that dose not appear normal, such as leakage, humming solenoid valves, seizing mechanical parts, etc. Remedy the situation before it becomes a malfunction.

Fire hazard

There have been reports of textile loads catching fire in the sterilizer chamber. In all cases this has been due to the load becoming excessively dry and hot. This can happen in two ways:

- The load has been placed in a heated chamber and left for a long time without the process being started. Ignition is believed to take place when the load is moistened again on the admission of steam to the chamber.
- The load is left in the chamber for a long time without the process being completed. This probably happens when the process has been interrupted because of a fault and the load has not been taken out of the chamber.
  Ignition takes place when the process is completed and the load is exposed to air.

Users should be aware of the risks and establish procedures to ensure that loads are not left in a heated chamber for longer than necessary.

Weekly cleaning

External cleaning

Clean stainless steel surfaces on the outside of the sterilizer with a standard domestic cleaner that does not contain abrasives. Take care when cleaning painted surfaces, texts and plastic parts.

Cleaning the chamber

When cleaning inside the chamber, a keyswitch on the front can be used to block the door open, and the chamber preheating is shut off at the same time.
On double-ended sterilizers, the keyswitch can also be used to open and block the unloading door for better access; see step 6 below.

1. Turn the keyswitch to the locked position 

   when the sterilizer is in standby mode and take out the key. The

message ***Door keyswitch*** appears on the operator panel display.

2. Open the door by pressing “Open door”. Let the sterilizer cool down before starting work.

The sterilizer should have cooled down before cleaning. When the keyswitch cannot be constantly observed, the person doing the cleaning must always take the key with them. This is to ensure that no-one mistakenly resets the keyswitch.

3. Clean the strainer in the chamber floor drain.
4. Remove any shelves, guides and bottom plates and clean the inside of the sterilizer chamber.
   Use a general-purpose chlorine-free cleaner. Scouring powder may be used occasionally on stubborn stains. ***Never use steel wool***. Sterilizers that are often used to sterilize products containing salt require especially thorough cleaning, since residual deposits may even attack stainless steel. An acidic cleaning agent followed by careful rinsing is most suitable for the purpose.
5. After cleaning, insert the key in the keyswitch and restore

   the initial status.. 

   Close the door with the door pushbutton.
6. On double-ended sterilizers, the unloading door can be opened for cleaning by repeating steps 1 - 5. Note that there may be restrictions on door opening on SPF sterilizers and sterilizers with controlled work flow.
7. When cleaning is complete, both doors must be closed and the key must be left in the keyswitch.

OPERATING INSTRUCTION

This operating instruction is intended for the daily use of the sterilizer.

One copy, together with one copy of the program combination, is at delivery to be found inside the sterilizer chamber.
These two documents are to be available for the operator when working at the control panel.

OPERATION INSTRUCTIONS

Use

This sterilizer must not be used for processing other material than stated in the program combination list.

Pathogenic material must not be sterilized in this sterilizer.

Warning! Fire hazard!
Do not leave goods in a heated chamber. See Chapter OPERATION.

Beware of hot surfaces inside the sterilizer chamber when the door is open!

Keep the sterilizer doors closed as much as possible to reduce energy loss and minimise temperature rise in the room.

Daily preparations

- Learn the functions of the control buttons and signal lamps by studying the INSTRUMENTATION and CONTROL UNIT chapters. Find out how the user-programmable parameters are set on this unit.
- Open valves for water, air and, where applicable, steam.
- Switch on the mains switch of the unit.

Running a process

- Select the desired program. The selected program is indicated on the control panel.

Parameter password

- Before a selectable parameter can be changed, a parameter password must be entered, after which all parameters (see Program combination) can be changed.

Password-protected programs

- Programs that are not intended to be used routinely are protected with a password. Some degree of consideration is called for before a password-protected programs is chosen. Examples include test programs, programs for emergency situations, programs with selectable parameters or programs using some sterilization medium other than steam.
- Turn and remove the door blocking key and load the sterilizer.
- Load the sterilizer.
- Restore and turn the door blocking key.

Starting via operator panel OP30

- Make sure that process media are available.
- Close the door by pressing the ***Close door***  button.

Process adaptation must be done before "Start"  **is pressed. If the lamp does not light up, starting is being prevented by a condition; see also the OPERATION and CONTROL SYSTEM chapters.**

When the lamp is lit, press the ***Start***  button.

With a normal program
the process starts.

With a password-protected program
this happens instead:

- The display shows the menu for entering the password.
- Enter the password and press ***Enter***  .

The process starts.

After completion of the process

Beware of hot surfaces inside the sterilizer chamber when door is open!

The control panel displays progress of the process.

- A password may be needed to open the door on the unloading side. **Note:** This function only operates if it has been activated with a DIP switch.

Procedure from operator panel

- The green ***Process complete*** lamp lights on completion of a fault-free process. If the door on the discharge side does not open automatically, press the **[**OPEN] / pushbutton.
- Select a new program immediately unless the same program is to be used for the next sterilization.

Goods handling

Remember that the goods may contain a considerable amount of heat when unloaded. Position them with regard to a good working environment.

Note that the goods may be very hot immediately after unloading.

Let the goods cool down or wear safety gloves to handle them.

Things to do when the work is finished

Unless otherwise prescribed by local rules:

- Turn off the control power supply by the switch on the front.
- Inspect the strainer in the bottom of the chamber and clean it if necessary.
- Close valves for air, water and, if used, steam and gas.

If necessary:

- Shut down the sterilizer for long enough to let it cool down, eg overnight.

- Clean the inside of the chamber. Use a chlorine-free cleaner if necessary.

The sterilizer must always be cold when cleaned. To prevent injury, switch off the power to the control system.

The cleaning instruction is given in the section *General advice on using the sterilizer* in the OPERATION chapter.

How to interpret the "Process complete" indicator 

Normal routine program
After completion of fault-free normal routine process, the indicator shows a steady green light.

Maintenance programs
After a completed, fault-free automatic leakage test or filter sterilization, for example, the indicator shows a flashing green light.

Normal routine program with fault
After completion of stepped or alarmed normal routine process, the indicator shows a steady red light.

Maintenance programs with fault
After completion of a stepped or alarmed maintenance program the indicator shows a flashing red light.

Stopping the program or a blowing safety valve

In an emergency, the program can be stopped or a safety valve that is blowing off can be made to close, by means of the EMERGENCY STOP button on the front panel, without disabling the safety systems of the unit. An alarm is triggered when the program is stopped.

- Press the EMERGENCY STOP button.
- Follow the instructions under "What to do if there is an alarm" below.

Only switch off the control unit power switch as a last resort, since this affects the safety systems of the installation.

The main power supply switch or disconnector to the sterilizer may be turned off only in an emergency.

On power failure or if the control switch or working switch of the sterilizer had to be turned off during a process, there is a risk of leakage at the door. Safety measure when there is positive pressure in the chamber:

KEEP WELL AWAY FROM THE DOOR AND CALL A TECHNICIAN!

ALWAYS LEAVE THE PREMISES and call a technician if the chamber pressure is in the RED area of the pressure gauge.

What to do if there is an alarm

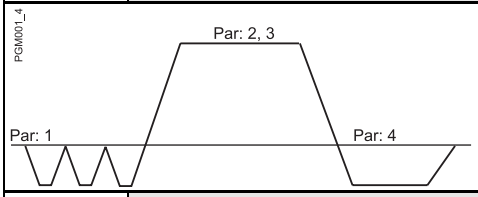
- Note the phase of the process where the fault occurred.
- Silence the audible signal by pressing  or **[ALARM OK]**.

Options for action are described under *Alarms* in the OPERATION chapter.

Program combination 1/2 P 31282

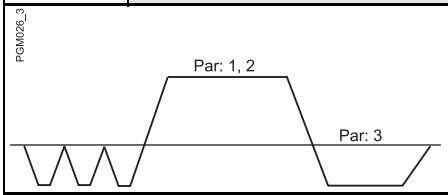
GETINGE

P1 Utensils, glassware, textiles, plastic and rubber products



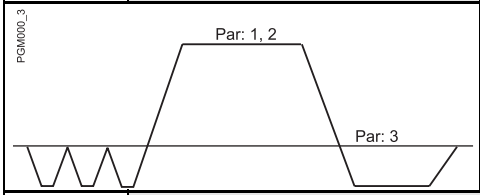
Parameter		Range	Delivered	Actual
1. Pre Puls Vacuum	- - -	1 - 99	3	_ _ _ _ _ _
2. Sterilizing temperatur	°C	105 - 135	134	_ _ _ _ _ _
3. Sterilizing time	min	3 - (99 h)	7	_ _ _ _ _ _
4. Drying vacuum time	min	0 - (99 h)	5	_ _ _ _ _ _

P2 Textiles, plastic and rubber products



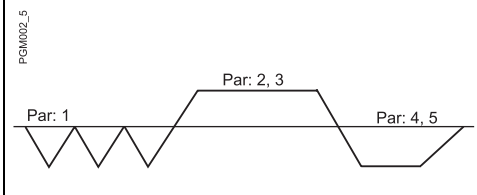
Parameter		Range	Delivered	Actual
1. Sterilizing temperatur	°C	121	121	_ _ _ _ _ _
2. Sterilizing time	min	16	16	_ _ _ _ _ _
3. Drying vacuum time	min	5	5	_ _ _ _ _ _

P3 Utensils, glassware, textiles



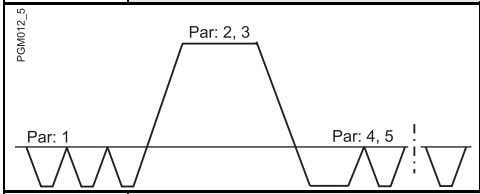
Parameter		Range	Delivered	Actual
1. Sterilizing temperatur	°C	134	134	_ _ _ _ _ _
2. Sterilizing time	min	7	7	_ _ _ _ _ _
3. Drying vacuum time	min	5	5	_ _ _ _ _ _

P4 Filter



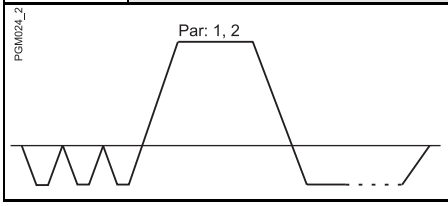
Parameter		Range	Delivered	Actual
1. Pre pulse vacuum	- - -	1 - 99	3	_ _ _ _ _ _
2. Sterilizing temperatur	°C	105 - 135	121	_ _ _ _ _ _
3. Sterilizing time	min	3 - (99 h)	16	_ _ _ _ _ _
4. Drying vacuum time	min	0 - (99 h)	5	_ _ _ _ _ _
5. Ramps	bar / min	0.1 - 1.0	0.2	_ _ _ _ _ _
Ramps	psi / min	1.45 - 14.5	2.90	_ _ _ _ _ _
Ramps	kPa / min	10 - 100	20	_ _ _ _ _ _

P5 Rubber stoppers, ampoules



Parameter		Range	Delivered	Actual
1. Pre pulse vacuum	- - -	1 - 99	3	_ _ _ _ _ _
2. Sterilizing temperature	°C	105 - 135	121	_ _ _ _ _ _
3. Sterilizing time	min	3 - (99 h)	16	_ _ _ _ _ _
4. Drying vacuum time	min	0 - (99 h)	5	_ _ _ _ _ _
5. Drying pulses	- - -	0 - 10	2	

P6 Automatic leak rate test



Parameter		Range	Delivered	Actual
1. Temperature	°C	134	134	_ _ _ _ _ _
2. Time	min	7	7	_ _ _ _ _ _

Max accepted leak rate 0.013 bar / 10 min
Max accepted leak rate 0.19 psi / 10 min
Max accepted leak rate 1.3 kPa/ 10 min

This machine is not intended for use with liquid loads.
Hazardous waste and explosive material must not be processed in this sterilizer.
Products that can emit toxic substances on autoclaving must not be processed in this sterilizer.

Program combination 2/2 P 31282

GETINGE

P7 WIT

Parameter		Range	Delivered	Actual
1. Test time	min	10	10	_ _ _ _ _ _
2. Drying vacuum time	min	3 - (99 h)	15	_ _ _ _ _ _

P8 SIP

Parameter		Range	Delivered	Actual
1. Sterilizing temperatur	°C	105 - 135	121	_ _ _ _ _ _
2. Sterilizing time	min	3 - (99 h)	30	_ _ _ _ _ _
3. Test time	min	10	10	_ _ _ _ _ _
4. Drying vacuum time	min	3 - (99 h)	15	_ _ _ _ _ _

This machine is not intended for use with liquid loads.
Hazardous waste and explosive material must not be processed in this sterilizer.
Products that can emit toxic substances on autoclaving must not be processed in this sterilizer.

CONTROL UNIT PACS 3000

The letters **PACS** stand for **P**rogrammable **A**utoclave **C**ontrol **S**ystem.

The purpose of the control system is to issue orders and send them to the executive components of the unit so that a number of process steps are performed in accordance with a predetermined template. The order signals are worked out by the computer program of the control unit in conjunction with measurements of actual parameter values for the current program. These are usually times, temperatures and pressures.

Several different pieces of equipment can be connected to the control unit for programming, monitoring and documenting the processes.

The operator communicates with the control unit via a control panel or an ordinary PC. There are several versions of the operator-machine interface, from the simplest, which consists of two pushbuttons and eight LEDs to shows that certain statuses have been reached, to the most advanced, which allow complete programming of the control system, among other things.

All operator panels can be used to monitor the processes, since they display all the set parameter values as well as actual values on request. All relevant data associated with a given process, such as batch number, operator number, date, etc., can be entered by the operator.

Programs, system definitions and process data can be documented by connecting a printer to the unit. A host computer can also be connected directly to the CPU of the control system.

If necessary, a measurement and monitoring system which is completely independent of the control system, can be set up by providing the equipment with a PACS SUPERVISOR. This contains a separate CPU and its own measurement and control cards. The SUPERVISOR performs its measurements by means of separate temperature and pressure sensors alongside those of the control unit. The system has links to the control unit CPU and can therefore use the shared operator panel, as well as adding the control unit readings to the process documentation. The SUPERVISOR can also be involved in independent interlocking of door opening, for example.

The computer contains programs for automatic calibration of the temperature and pressure sensors. Where alternative correction constants are known, they can be entered manually. The testing functions include means of activating analog and digital outputs and for monitoring analog and digital inputs.

The control unit hardware is divided, so that the operator panels can form small separate units that are easy to position at the most suitable location. CPU, measurement and control boards and the power supply are installed in separate electrical enclosures which are connected to the operator panels by shielded cables.

A number of special terms

STERILIZATION refers to the entire series of treatments that make up a process aimed at achieving the total killing of all living organisms. This applies to sterilizers and usually includes air removal, heat treatment and a drying phase.

STERILIZING refers to the actual killing part of the process, the heat treatment.

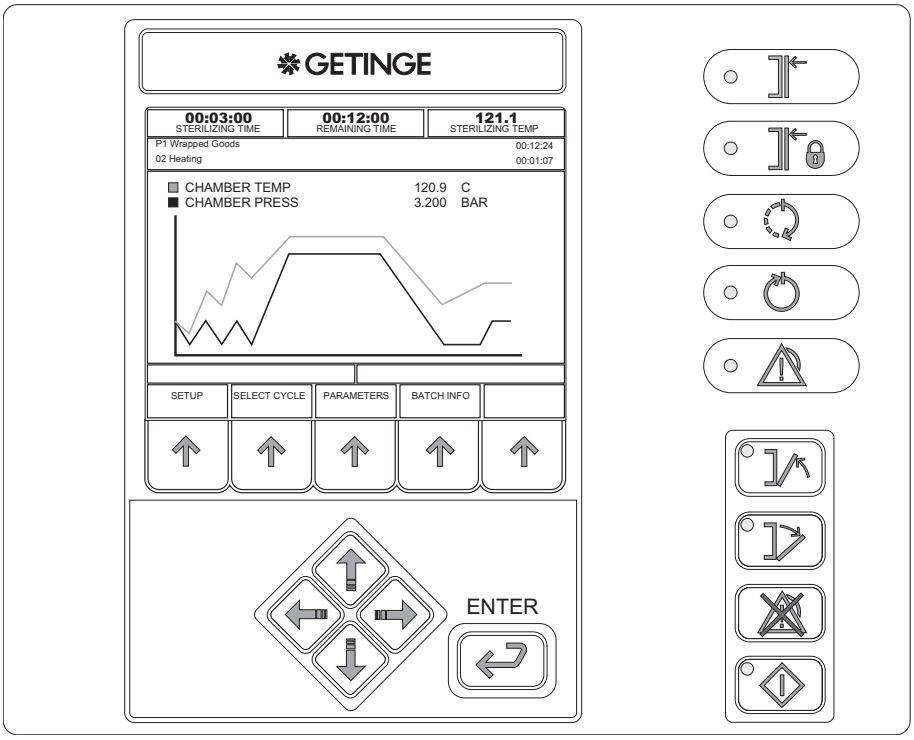
On the same basis as the two terms above, STERILIZATION TIME refers to the duration of the entire process from the start until the objects can be taken out of the sterilizer. The PROCESS TIME is the same as the sterilization time.

The STERILIZING TIME is only that part of the process for which the programmed STERILIZING TEMPERATURE exists in the chamber.

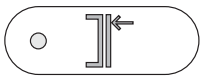
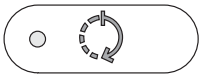
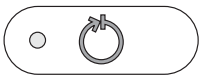
In this context, PARAMETERS means FACTORS THAT INFLUENCE THE sterilization process. Examples of parameters in the sterilization process are temperature, pressure, time, humidity, gas concentration, etc.

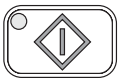
PARAMETER VALUES may be permanently set in the program, be adjusted by the operator, be included in selectable recipes or downloaded from a higher-level system.

Operating panel type OP 30



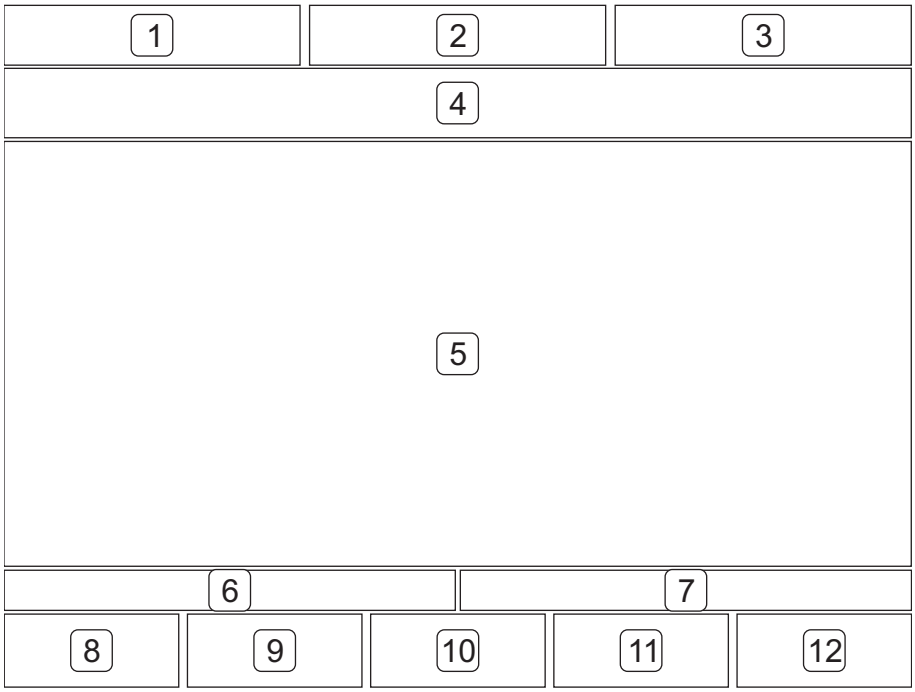
Indicators and controls

	The door(s) is/are closed.
	The door(s) is/are closed and locked.
	Process running
	Process completed without errors
	Defective process
	Close door
	Open door

	Reset the alarm.
	Startup

Display

The display is divided into a number of windows in which information about the process appears as described below.

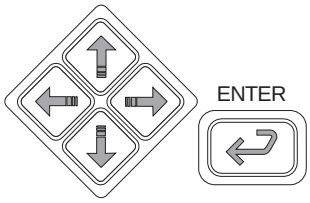


Fields 1 - 3	Process parameters
Field 4	Program number, program name and process time Phase number, phase name and phase time
Field 5	Process window
Field 6	Alarm text (white on a red background)
Field 7	Information text (white on a blue background)
Fields 8 - 12	Key texts adapted to each menu

Function keys

1. Five labels for the function keys appear at the bottom of the character window. The texts (max two lines of seven characters) are centred in a window.
2. The key texts always appear in the same place. Example: if the HOME function is active on any of the display, it always appears in key position two.

Cursor keys



There are five keys for navigation on the panel. These keys (which always have the same functions) are four arrow keys (up, down, left and right) to control the cursor and an ENTER key.

On the main process display the program keys are used to move around in the on-screen menu to choose a function.

Using the operator panel

General

1. The image is normally made up of different displays with different extra function choices, displays where data appears or displays with editable fields where data can be entered or changed.
2. The cursor keys are used to scroll through all the selectable fields on the current display. When you select a field, it is displayed reversed.
3. If there are more rows (list entries) than will fit into a single window (about ten) only the first ten are displayed, and a scrollbar appears on the right of the display.
4. You can scroll through the entire list with the aid of the arrow keys. When the cursor reaches the last displayed field of the list and there

are more fields below it, pressing the down key causes the list to scroll up one row at a time. The same applied when scrolling in the opposite direction.

5. All selectable list boxes and choices operate as rotating lists. This means that, if you press the down key when the last choice is selected (highlighted), the first choice in the list is selected. The rotating choice list operates regardless of the number of choices available.
6. The HOME key always uses key position 2 and returns you to the main menu and logs off the current user.
7. System messages on the panel, such as “System busy” etc appear as popup menus.

Screen display modes
A display can have up to three modes:

A READ MODE – you can scroll between values

B EDIT MODE – values can be changed

C SAVE MODE – to save edited values

Editing fields

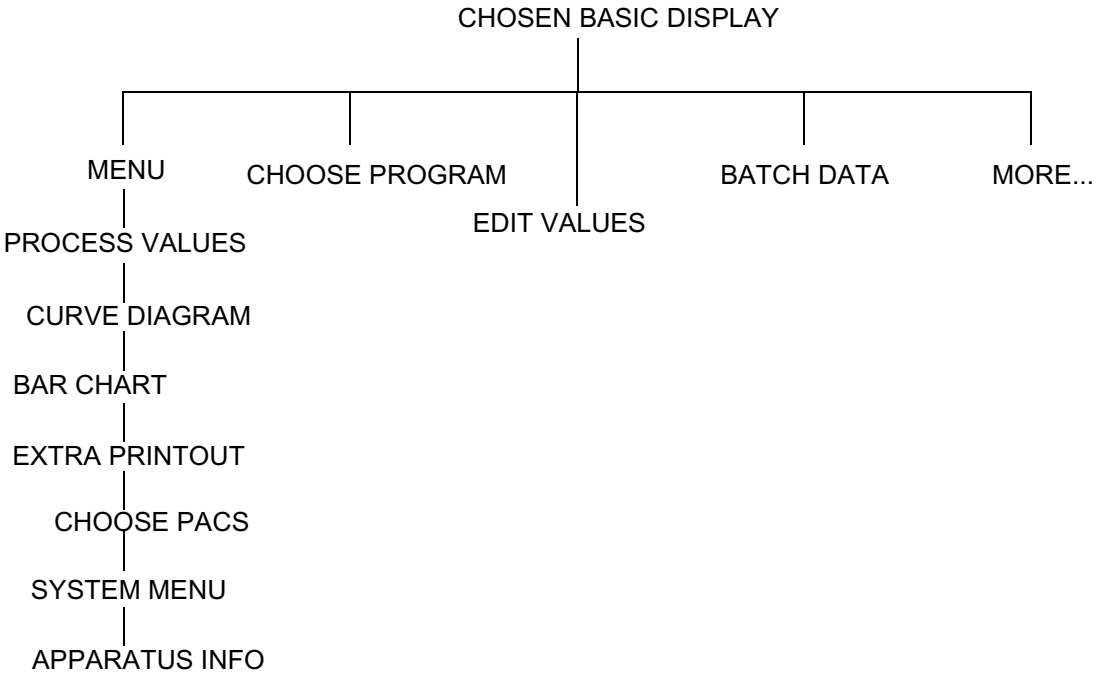
- When the display is in read mode, pressing ENTER causes the display to switch to edit mode and lets you edit the chosen field.
- Arrow keys are used to modify fields.
- When the screen display is in edit mode, pressing ENTER makes the display change to save mode.
- Arrow keys are used to choose another field.
- When the display is in save mode, pressing ENTER causes the display to switch to edit mode and lets you edit the chosen field.
- The SAVE key saves value in PACS and puts the display in read mode.
- **Editing numeric fields** – The first numeral flashes and the others are displayed in reverse. The flashing numeral can be increased/ decreased with the up/down arrow keys. Pressing the left/right arrow keys choose the next numeral to the left/right, and makes it editable at the same time. If you press right-arrow key at the far right numeral, the cursor does not move to another numeral. The same applies to the far left numeral.
  When you press ENTER after editing a numeric field, the system checks automatically that the new value is within the permitted range.
- **Editing option fields** – All numerals in the field flash. Pressing the up/down arrow keys changes the value of the field to the previous/ next value in the list. If the field has the last value in the list, pressing the down key displays the first value. Likewise for the first value in the list when the up key is pressed.

- **Editing alphanumeric fields** – A keyboard is displayed above the current screen display. The keyboard is not transparent. A cursor appears where the field value is located. The field value is empty. The first key on the keyboard is selected. The arrow keys are used to access a character. Pressing ENTER places the chosen character in the field. The arrow keys and the ENTER key are used repeatedly to place characters in the field. The keyboard supports both upper and lower case (small and capital) letters. A program key labelled "SHIFT LOCK" toggles the display of characters on the keyboard between upper and lower case. Pressing the OK program key closes the popup menu and returns you to the previous display. Characters are entered into the chosen field.

The OK and CANCEL keys

- In READ MODE, the OK key returns you to the previous display
- The CANCEL function always uses key position 1 and is defined as follows:
  - In READ MODE
    – return to previous display. No confirmation is needed.
  - EDIT MODE, without popup
    – returns the original value of the field and changes the display to SAVE MODE.
    EDIT MODE, with popup
    – returns the original value of the field, returns the previous display and changes it to SAVE MODE.
  - SAVE MODE
    – prompts for "Confirm cancel" (of this function has been chosen), returns all fields on the display to their original values and returns the previous display.
- If the option in the panel setting menu for confirmation of save and cancel is set to Yes, the prompt "CONFIRM SAVE?" appears when you press SAVE, letting you choose Yes or No. Yes saves the values on the display and lets you continue. No returns you to the display. This setting is made in the system menu and is described in the service manual.
- If the option in the panel setting menu for confirmation of save and cancel is set to Yes, the prompt "CONFIRM CANCEL?" appears when you press CANCEL, letting you choose Yes or No. Yes restores previous values and lets you continue. No returns you to the display. This setting is made in the system menu and is described in the service manual.

Operator menu tree



Description of operator menu tree

Chosen basic display

The control system has three ways of reporting on the process. The basic setting is defined in the system menu and is described in the service manual. These three possibilities are described under Settings, where the display mode can also be temporarily changed.

Menu

Process values
Shows a scrollable list containing the displayable parameters.

Curve diagram
Shows two predefined parameters as growing curves.

Bar chart
Shows two predefined parameters as vertical bars.

Extra printout
This option is only available when the control system is in the standby phase.

When the function has been chosen, a new display with the following options appears:

1. CANCEL – return to previous menu display
2. HOME – return to basic display
3. NO – return to previous menu display
4. YES – print out the latest process and return to the previous menu display

Choose PACS
This option only appears if the panel is connected to more than one PACS or if the sterilizer has a SUPERVISOR.

System menu
Described in the service manual. A password is required for access to this menu.

Apparatus info
Displays (among other things) the control system in the form of version information for the panel and the control system.

The brightness of the display can be increased or reduced with the number 2 function key (LESS BRIGHT) and the number 3 function key (BRIGHTER).

Choose a process

Displays a list of available processes. If there are more processes than will fit in a menu display, they are displayed in a scrollable list.

Parameters

Displays a list of parameters. An “A” before the parameter name means that the parameter can be adjusted (Adjustable).
Press EDIT to adjust a parameter. An alphanumeric keyboard now appears, with a prompt to enter a password. If you enter the wrong password, “WRONG CODE” appears. After a second or two, the password entry display re-appears.

When the correct password has been entered, a list of options appears. If the list is too long to fit into a display, it is scrollable.
Choose the selected parameter by pressing ENTER. An entry screen for the chosen parameter appears.

Edit the value and press ENTER. Provided that the chosen value is within the approved range, it will be transferred to the previous display. Press SAVE to save the value or CANCEL to restore previous values.

Batch

This option is only available if the function has been defined. A PC is required to define this function.

Entry of batch data
Defined values are entered with an alphanumeric keyboard.
Press SAVE to save entered data.

Menu

This function is only displayed in situations where one of the pre-programmed functions is active.