GETINGE

GETINGE GROUP

GETINGE GEB SERIES
BIOSAFETY STERILIZERS
SAFE, RELIABLE DECONTAMINATION IN BIOCONTAINMENT FACILITIES

Always with you

LIGHTS ON FOR THE NEW GENERATION STERILIZERS

The new Getinge GEB series is one example of the new breed of state-of-the art sterilizers from the world's leading brand in infection control and contamination prevention. Sterilizers that further perfect the efficient performance and superior throughput you can always expect from Getinge. You recognize them by their clear, light and characteristic touch-screen panels, easily readable from a distance. As well as by their thought-through and user-friendly design, making them easier to operate than ever.

Ergonomic and user-friendly
The clear and intuitive interface of the new touch-screen panels is only one of many examples of how we ensure that Getinge sterilizers are easier to operate and more ergonomic. Read more about the new touch-screens on page 6.

Specially designed for the application
The Getinge GEB Series is a standardized range of dedicated autoclaves, specifically designed for use in BSL 3 and 4 facilities.


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A NEW SENSE OF REALITY

In light of the biohazards we live with today, and may be faced with in the future, the bio-containment community is responding with a new sense of urgency to prepare for these emerging threats.

Purpose Built Bio-Safety Laboratories:
New Challenges

Biocontainment laboratory facilities once considered state-of-the-art are being reconfigured and upgraded to reflect the new reality of bioterrorism. Until now, there has been an absence of accepted standards governing sterilizers used in a biocontainment environment, despite the need for them.

That's why Getinge is collaborating with laboratory designers, architects and bio-containment specialists to determine industry wide guidelines for sterilizer design and installation. Getinge is dedicated to providing bio-containment sterilizer systems that minimize risks associated with existing bio-safety facilities, while establishing a new benchmark of sterilization and containment for laboratories that have yet to be built.

Getinge GEB Steam Sterilizers offers:

- The independently validated Bioseal flange creates a hermetic seal between zones.
- Electrical signals to the hot zone pass through sealed conduits
- The doors of Getinge sterilizers are the cleanest, safest and simplest on the market.
- Top-quality piping and components are assembled to the highest standards.

A DEDICATED YET VERSATILE RANGE

Like all laboratories and research facilities, bio-containment suites need autoclaves for sterilization and decontamination. The pathogenic nature of the waste material from such facilities coupled with the use of the autoclave as a barrier between the facility and the outside world places special requirements on the autoclave design and processes used that standard autoclaves cannot fulfill.

The Getinge GEB Series is a standardized range of dedicated autoclaves, specifically designed for use in BSL 3 and 4 facilities.

A wide variety of chamber sizes are available, ranging from 0.3 to 17 m^3 and all models are available with one or two doors as appropriate for use in the facility.

The GEB range is available with a variety of flexible program combinations to suit the type of facility, for example:

- Microbiology laboratory (including Biosafety facilities)
  Glassware, culture media, hazardous waste
- Animal care facility / vivarium
  Cages, racks, bedding, pathogenic waste

Please refer to individual product specifications for additional details.

Unique features of the GEB range includes but is not limited to:

- Validated biological sealing system (bioseal). Creates a hermetic seal between hot and cold zones.
  Notified body certified design.
- Hermetically sealed conduits (condulets) through the bioseal for all electrical cabling into the hot zone.
- Membrane filtration on all pneumatic signal lines passing through the bioseal.
- Isolating valves and chemical decontaminant injection ports in the process system - for decontamination of piping system prior to maintenance activities.
- Getinge's unique effluent sterilization process. Safe and effective air removal for sterilization efficacy as well as condensate retention and sterilization.
- Optional interface for Class III Safety Cabinets (isolators)
- Uniquely designed and validated incinerator. Equipped as standard with an independent redundant controller ("Supervisor").

		GEB SERIES – TYPICAL MODELS*				
	Units	6610	6910	91422	102222	182222
Chamber volume	ft^3/m^3	16 / 0.45	29 / 8.83	154 / 2871	170 / 4.8	308 / 8.70
Chamber width	in/mm	26 / 672	26 / 672	35 / 900	39 / 1000	71 / 1800
Chamber height	in/mm	26 / 672	36 / 920	57 / 1450	86 / 2200	86 / 2200
Chamber depth	in/mm	39 / 1000	53 / 1350	86 / 2200	86 / 2200	86 / 2200

* Only a selection of our available standard models. Specific sizes can be made upon request.

1. **Small GEB Steam Sterilizers – 600 Series.**
   Fully automatic high-pressure steam sterilizers with a single vertical sliding door, or two vertical sliding doors for pass-through operation.

   Standard chamber volume:
   10 to 26 ft^3 (0.3 to 0.8 m^3)

2. **Medium-size GEB Steam Sterilizers – 900 Series**
   Fully automatic high-pressure steam sterilizers with a single vertical sliding door, or two vertical sliding doors for pass-through operation.

   Standard chamber volume:
   21 to 36 ft^3 (0.6 to 1.1 m^3)

3. **Large / Bulk GEB Steam Sterilizers – 1400 and 2200 Series**
   Sterilizers with automatic horizontal sliding door(s) for large-scale applications. They can be pit-mounted for convenient floor loading.

   Standard chamber volume:
   47 to 590 ft^3 (1.4 to 17 m^3)

FEATURES THAT SET THE INDUSTRY STANDARDS

The GEB Series Sterilizers set the industry standard for a new generation of autoclaves designed specifically in response to the need for new, modern biocontainment facilities; to define a new ‘state-of-the-art’.

Diaphragm isolated instrumentation
Pressure transducers and gauges are isolated from the chamber by sanitary diaphragms. This eliminates capillary piping which accumulates stagnant water in the process system (where microorganisms may multiply).

Door sealing mechanism
Choose from Getinge’s traditional active door gasket or the revolutionary ‘Slideloc’™ passive system. The active gasket is mechanically simple and inherently reliable while Getinge’s Slideloc System does not rely on utilities to maintain the seal between chamber and door.

Bioseal connections
Sealed conduits are provided through the bioseal for electrical connections (with 100% redundancy). All pneumatic lines are provided with membrane filters.

Biological sealing flange (bioseal)
Typically a double door GEB autoclave is a part of the barrier between the hot and cold zone. As such, it should be treated with the care, attention and respect as any other part of the barrier, such as doors and windows. It must be designed to be hermetically sealed, and be guaranteed to remain so for it’s design lifetime. The cross contamination seal of a standard double door autoclave cannot do this due to thermal stresses and sealing materials typically used.
Getinge’s Bioseal combines bolted stainless steel panels, a rubber gasket and a wall flange that is installed in the building fabric. The design is independently validated and certified (see more details on page 9 picture 2).

Specialized waste processing
Processes are intentionally designed for effective decontamination, including treatment of plastic waste material in disposal bags and part sealed containers.
This specialized process prevents fusion of the plastic materials and entrapment of air which would otherwise prevent steam penetration.

Isolating valves & injection ports
The process and drain piping system is provided with isolating valves and chemical (typically formaldehyde) injection ports to allow safe maintenance and filter changing.

Sterilization decontamination efficacy versus containment

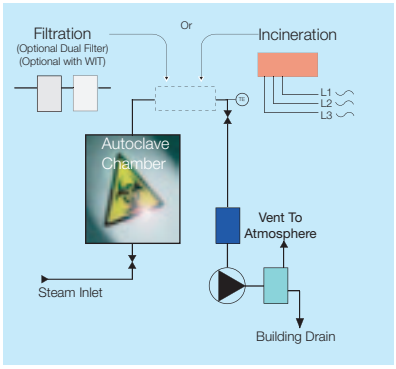
Containment presents several challenges to the sterilization system designer. An established principle of steam sterilization demands air removal prior to steam injection.

Challenge: air in contact with materials in the chamber is contaminated and cannot be removed without treatment.

A physical principle is that steam condenses when it comes in contact with cooler surfaces.

Challenge: the condensate produced as steam heats the contaminated materials, prior to achieving sterilization decontamination conditions, is itself contaminated. It requires treatment prior to release to the building drain.

Several options are available to treat the removed air and condensate, and should be applied based on a risk assessment of the facility design.

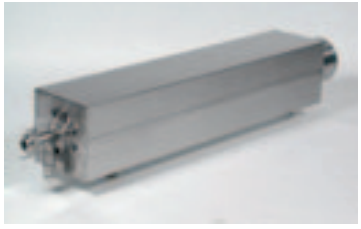


OPTION 1

Filter the air evacuated from the chamber through a 0.22µm sterile membrane filter. This renders the air sterile and the filter is steam sterilized during the subsequent process. For added security, a second filter may be installed in the series.

Additionally, an automatic in-place Water Intrusion Testing (WIT) integrity test may be performed on the filtration system.

Condensate produced is collected in the chamber base and is heated by incoming steam and by the steam heated external jacket. Sterilization decontamination of the condensate is confirmed by temperature sensors.



OPTION 2

Pass the air through the unique Getinge incineration system. This validated ultra high temperature device provides a torturous pathway for the evacuated air. This destroys all viable organisms, rendering the exhaust air sterile and safe to discharge.

Condensate is treated as described for Option 1.

SAFEGUARDING YOUR INVESTMENT. CORE FEATURES OF THE GEB SERIES

1. The unique sectional jacket adds strength and rigidity to the chamber, and robotic welding eliminates defects. The resulting construction ensures a long product lifecycle to safeguard your facility and investment.

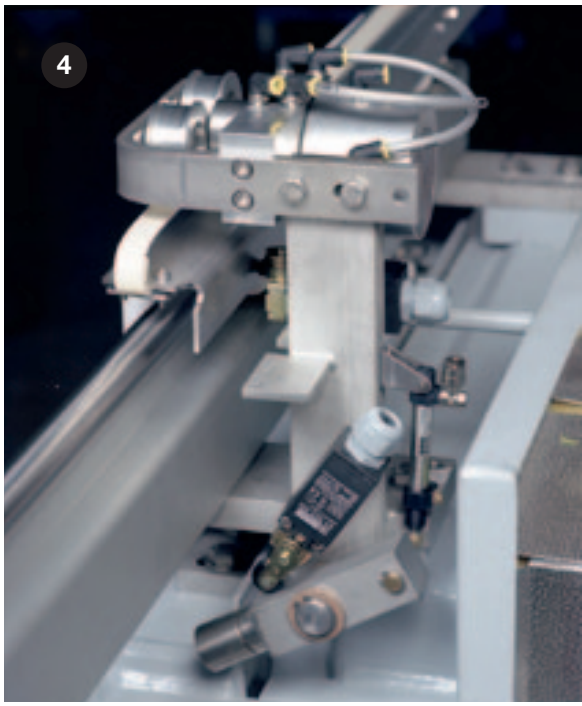
2. The independently validated bioseal flange creates a hermetic seal between zones. Fabricated from a combination of bolted steel panels and a rubber gasket. The mating wall flange is provided during construction for installation in the building fabric.

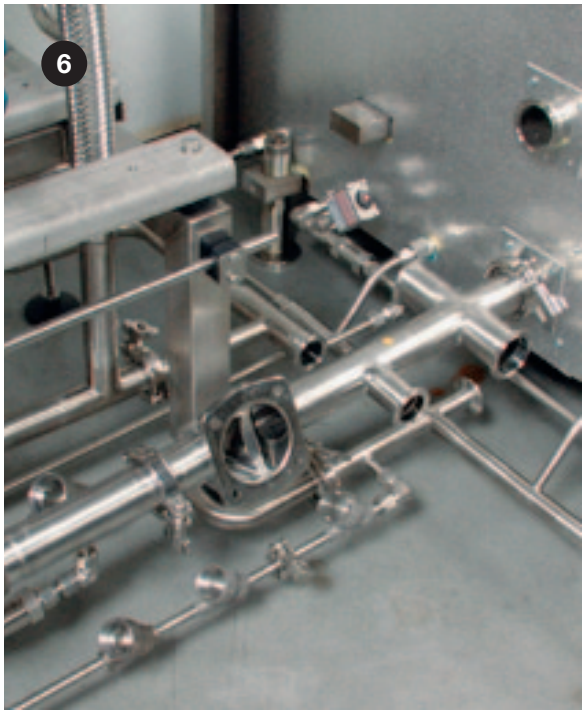
3. Electrical signals to the hot zone pass through sealed conduits (condulets). Similarly pneumatic signals pass through membrane filters.

4. The doors of Getinge sterilizers are the cleanest, safest and simplest on the market.

5. Getinge's unique "Slideloc" passive door locking system, provides a compression seal of the door gasket when the door is in the closed position. Does not rely on utilities to maintain the seal.

6. Top-quality piping and components are assembled to the highest standards.





DESIGNED WITH ENVIRONMENTAL ASPECTS IN MIND

At Getinge, we are committed to contribute to a sustainable society. We work purposefully to optimize our use of energy and natural resources, minimize our emissions to air and reduce the environmental impact of our waste management.

The environmental engagement of Getinge does not cease with product delivery but include the complete product life cycle. To gain maximum eco-effectiveness, we consider the environmental aspects of the entire life cycle including stages as product development, operational factory administration, production processes, distribution, intended use of the product and, finally, scrapping of the product.

Main focus: energy efficiency
Our overriding environmental objective is optimizing energy consumption and thus reducing the impact on the climate.

Thanks to Getinge's concept, the process times are among the shortest on the market. This means that sterilization of the goods will require less energy consumption.

A Loading System For Every Need
A new sterilizer represents a large capital investment. Therefore Getinge ensures that our sterilizers provide true value with regard to design, performance and life cycle economy. This includes the loading system and accessories which are an integral part of the complete system, and the part that the operator comes into contact mostly during the routine operation of the equipment.

For each application, Getinge offers a variety of loading alternatives, from simple sliding shelves to completely automated systems.

The Getinge SMART loading and distribution system has been designed with two things in mind: Movement and People - It's about ergonomics, about letting people work in harmony with the objects they use. It's about moving heavy loads easily and avoiding strenuous positions. It's about being flexible and understanding that people differ in height, strength and that tasks vary.

CONTROL SYSTEMS

Reliability of decontamination process control is crucial in life science applications, particularly when treating toxic and pathogenic waste material.

Alternate Local HMI Panel

To achieve this and minimize human error, Getinge supplies PLC based automation systems designed for the challenging environments typically found in Life Science applications, and programmed using a wealth of experience gained since Getinge introduced the first PACS computer controlled sterilizers in the mid 1980's.

Getinge offers a choice of hardware platforms, each with the same fundamental equipment functionality and programming methodology.

- Rockwell – Allen Bradley (Logix Platform)
- Siemens – Simatic (S7 Based platform)
- Getinge – PACS 3500

All systems accurately handle tasks such as parameter setting, recipe handling, sequence control, and data processing, presentation and storage.

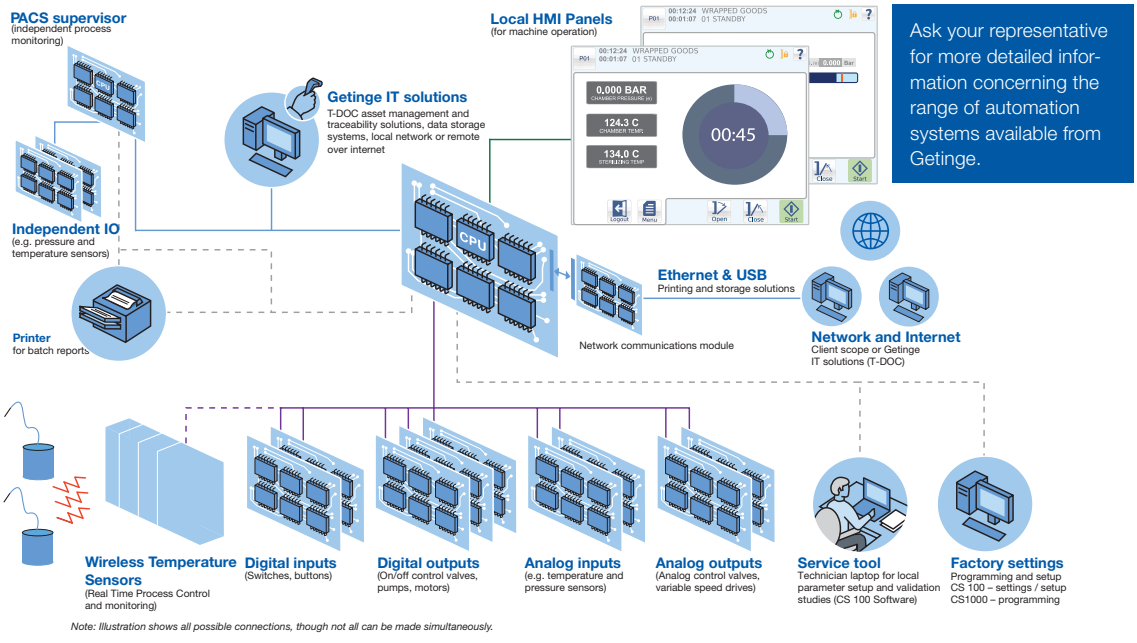
Versatile features
The features included in our automation systems are:

- Extensive documentation
- Automatic sensor calibration
- Comprehensive alarms/alerts
- Process and alarm logging
- Multilevel password protection

Touch Screen User Interface

Autoclaves are controlled via an easy to use touch-screen panel where the operator may select the appropriate process and adjust some parameters (Supervisor restricted).

During the process, the operator receives clear feedback of process status, alarms and process time remaining - all clearly visible at a distance.



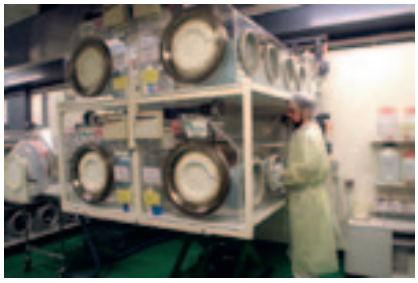
Ask your representative for more detailed information concerning the range of automation systems available from Getinge.

OTHER EQUIPMENT AND SERVICES FROM GETINGE

Getinge GEW Series Cage and Rack washer

In addition to the GEB Series, Getinge supplies a wide range of other equipment for applications in Research and Microbiology laboratories.

Whatever the Life Science application, Getinge has the solution for all your Contamination Prevention. Consult Getinge for further information.
www.getinge.com / info@getinge.com



Getinge La Calhène Isolation Technology

Getinge 3200LS Tunnel washer

COMPLETE SOLUTIONS FOR CONTAMINATION PREVENTION

Getinge is the world's leading provider of solutions for effective cleaning, disinfection and sterilization in the healthcare and life science sectors. We are dedicated to helping our customers provide maximum productivity in the most cost-efficient way. We do this by offering well thought through and customized solutions. This means that we are with our customers all the way from architectural planning and education to traceability and support – with complete solutions, long-term commitment and global presence. Getinge – Always with you.

2300 ENG 2011.12 · Göteborgstryckeriet · We reserve the right to make technical and construction changes.

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GETINGE GROUP is a leading global provider of products and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. We operate under the three brands of ArjoHuntleigh, GETINGE and MAQUET. **ArjoHuntleigh** focuses on patient mobility and wound management solutions. **GETINGE** provides solutions for infection control within healthcare and contamination prevention within life sciences. **MAQUET** specializes in solutions, therapies and products for surgical interventions, interventional cardiology and intensive care.