

Sterilizers & Autoclaves



Sterilization Control





Sterilization

“is a validated process undertaken to render a product (medical device/instrument) free of living microorganisms including bacterial endospores.”

The process (sterilization cycle) is designed to assure that the probability of survival of microorganisms is no greater than one cell in one million units of the commodity (10^6 probability of non sterility). (See AS/NZS 4187:2003 for official definition)

Process Parameters of Sterilization

Process controls and validation procedures are the essence of “Good Manufacturing Practices” (GMP) to verify the efficacy of the sterilization process. GMP’s cover environmental monitoring, equipment qualification, cycle development and validation using biological indicators, packaging evaluations, and strict process control and documentation to ensure the reliability of sterilization.

Sterilization of reusable medical devices including surgical instruments is dependant on steam being able to gain access to all of the devices surfaces, sterility can only be at surfaces reached by the steam. A sterilization procedure is deemed adequate when proof of a reduction/kill in microbial count or SAL (sterility assurance level) $> 10^{-6}$ CFU/ml spores are furnished. The destruction of a microbial population follows a logarithmic scale and based on this fact the principle of the F_0 - value has been established for sterilization. **The F_0 value is the equivalent time in minutes to produce a given sterilization level at the lethality temperature of microorganisms.** F_0 is used in the sterilization process to ensure the required probability of sterilization without deterioration of products due to a prolonged sterilization cycle.

Steam Sterilizers

Steam Sterilizers

Mercer Medical manufacture a full range of sterilizers for CSSD and TSSU use. The multi-pulsing Hivac Sterilizer features a 316 stainless steel chamber with one or two doors and the choice of a controller to suit the application and demands for documentation.

- 316 Stainless Steel bead polished chamber
- Full stainless steel jacket for uniform heat transfer
- Manufactured and approved to international standards.
- Modular piping systems enabling easier disconnection and service.
- Advanced electronics, valves and material specifications making our machine very reliable.
- Fully lagged and clad to maximise efficiencies.
- Usual pressure rating 245 KPA (35PSI).
- Suitable for free standing or through wall mounting.
- Attractive unit with smooth clean lines.
- Available with a control system to suit your requirement.
- M3 Controller or Micro Control, both controllers conform to international sterilizer standards.
- Smooth flush easy clean control panel.
- The M3 controller offers the highest level of sterilization and quality assurance of any manufacturer.
- Menu driven with clear concise instructions given at all stages.
- Variable time,temperature characteristics.
- Flexible program selection, (fully programmable)
- Flexible cycle parameters.
- On board user diagnostics.
- Air leak automatic test cycle.
- Automatic air detector.
- Dynamic monitoring of all parameters to ensure correct cycle profile.
- All systems are battery backed.
- Fully automatic record keeping and documentation system (optional on Micro).
- Optional chamber capacities.
- Optional controller type.
- Optional door type.
- Biological sealing flange option.
- Optional data logger.
- Wander probe option available with either controller.
- Optional printer.



Control Systems

Control System

In consultation with various Sterile Service providers, Mercer Medical has developed an advanced and user friendly sterilizer controller. Utilizing reliable industrial computers and software with a Windows interface has resulted in major advantages for Infection Control practitioners.

Mercer Medical has four types and levels of control system with more under development. Each has varying degrees of connectivity built in and we are currently developing a system protocol to integrate all our controllers into customers existing LAN.

The Mercer Medical M3 controller is based on a touch screen Pentium Panel PC with built in 10/100 Base-T Ethernet port. This allows direct connection to a compatible LAN and the machine functions as a user with its own email address and internet access. The data storage of the M3 is contained within the local Paradox database and any authorised user can view historic data from the database folder. Additionally the machine concurrently updates a server database that is accessible from any workstation and enables real-time viewing of the machine cycle and progress, historic viewing and printing with full search capabilities, access to error logs and other engineering information for any machine connected to the LAN with an M3 controller.

The Mercer Medical Micro controller is the controller of choice for any smaller medical device Mercer Medical manufactures and is seen on sanitizers, anesthetics dryers, warming cabinets, flash sterilizers...

The unit comprises of a 2 line 20 character LCD display. The control card mounts behind the screen piggy back and the relay card mounts remotely via a ribbon cable. The control card has only 3 ICs and very few ancillary components and its simplicity equates to absolute reliability. Whilst somewhat limited in its program capacity in is powerful enough to control a double-ended power door sterilizer with eight individually configurable cycles including leak rate test, bowie dick cycle and multipulse / prevac with built-in real time clock and calander and serial printer logging the cycle parameters and the cycle in graphical format.



Models

Model MM500

- **Suitable for small size hospitals, medical clinics, hospital labs, industrial labs and university labs.**
- Stainless steel chamber and jacket
- M3 or microcontroller
- Manufactured and approved to relevant pressure vessel standards.
- Suitable for free standing or through wall mounting.
- Smooth flush easy clean control panel.
- Air leak automatic test cycle.
- Automatic air detector.



Chamber sizes			
Width (mm)	Height (mm)	Length (mm)	Door Type
508	508	1000	Power Vertical Sliding
508	508	1200	Power Vertical Sliding

Model MM600

- **Suitable for medium size hospitals, medical clinics, hospital labs, industrial labs and university labs.**
- Stainless steel chamber and jacket
- M3 or microcontroller
- Motorized loading trolley
- Manufactured and approved to relevant pressure vessel standards.
- Suitable for free standing or through wall mounting.
- Smooth flush easy clean control panel.
- Air leak automatic test cycle.
- Automatic air detector.



Chamber sizes			
Width (mm)	Height (mm)	Length (mm)	Door Type
660	660	1000	Power Vertical Sliding
660	660	1200	Power Vertical Sliding

Model MM690

- **Suitable for large size CSSD and TSSU departments in large size public and private hospitals, hospital labs, industrial labs, university labs and pharmaceutical industry.**
- Stainless steel chamber and jacket
- M3 or microcontroller
- Manufactured and approved to relevant pressure vessel standards.
- Suitable for free standing or through wall mounting.
- Smooth flush easy clean control panel.
- Air leak automatic test cycle.
- Automatic air detector.
- Biological sealing flange option.
- Suitable for free standing or through wall mounting.



Chamber sizes			
Width (mm)	Height (mm)	Length (mm)	Door Type
660	915	1200	Power Hinged & Automatic Horizontal Sliding
660	915	1500	Power Hinged & Automatic Horizontal Sliding
660	915	1800	Power Hinged & Automatic Horizontal Sliding
660	915	2000	Power Hinged & Automatic Horizontal Sliding

Future Technology for Sterilization

Module Upgrade System

Mercer Medical Module Upgrade System

The module system was a new idea in sterilizer system upgrade and future-proofing. All sterilizers old and new, can be upgraded to meet and exceed current international standards and requirements. Historically the pipe work and controls were fitted on and all over the sterilizer unit. Mercer Medical has fitted all components, pipe work and control system in a framed module that sits adjacent to the sterilizer. Connections to the sterilizer consist of 4 or 5 hoses.

The module will have all main sterilizer component laid in an easy and accessible way for service and maintenance. It offers the client the option of upgrading the module in the future without having to go through major shut down. It will be only the case of disconnecting the hoses, door switches and power, sliding the module out and pushing the new module in with new fittings and controller.

For a standard hospital steam sterilizer, the module will have the following components:

- 1 Sterilizer controller.
- 2 Steam valves.
- 3 Water valves.
- 4 Pressure regulating valve.
- 5 Steam traps.
- 6 Venturi jet valve.
- 7 Pressure transmitter.
- 8 Pressure gauges.
- 9 Electrical connections.
- 10 Door control box.
- 11 Cooling stack.
- 12 Strainers and non-return valves.
- 13 UPS.
- 14 Flexible stainless steel hoses.

The module upgrade systems lends itself ideally to be retrofitted on old sterilizers with outdated controllers and pipework which are unmaintainable. The pipework, electrical connections and old controller shall be removed from the sterilizer. The module can then be slid into the side of the machine. The hoses will be connected to the appropriate ports. Electrical connections to be terminated as per designed. Services will be connected to the module and the machine will be ready to function. Site preparation is critical to make sure that the upgrade job will go ahead without delays. Space should be available to accommodate the module.



Water Saver

Mercer Medical

High Vacuum Sterilizer Water Saver Module

Medical can now offer a quantum leap forward in water saving technology! The Medical Water Saver Module is an environment friendly solution to high water usage associated with high vacuum sterilizers. Mercer Medical can now install a water saving unit to your existing sterilizer.

Main Features

Reduced Water Usage = Reduced Running Costs

Tests have shown that water usage is cut by more than 95% on a standard venturi system and up to 75% on a vacuum pump based system. This means that a multipulse sterilizer fitted with a vacuum venturi system would in the past have used up to 1780 litres per cycle, but with a Water Saver Module, use approximately only 90 litres!

Environment Friendly

These machines dramatically reduce the strain on water supply, energy reserves and wastewater treatment plants. No more water shortage problems. Even in emergency situations sterilizers can still be used, as the water usage is very small.

Easy to Install

No more planning or investing in large water supplies to sterilizers. A standard 20mm line at above 25 PSI is recommended. There is also a cost saving here at the installation phase of the project. Both water supply and drain can be smaller.

Other Features

- Increased reliability
- Decreased maintenance costs
- Quieter than a vacuum pump
- Payback period of only 4 months

Mercer Medical Motorised Trolley

The Motorised Trolley provides a safe and effortless way of transferring loaded carriages in and out of a Mercer Medical sterilizer. The operator "docks" the trolley with the sterilizer using a locking lever and operates a switch on the motorised trolley control panel to automatically transfer the loaded carriage into the sterilizer. Once the loaded carriage has successfully been transferred into the sterilizer chamber the operator can undock the trolley. On completion of the sterilization cycle, the sterilizer door is opened and the operator docks the trolley with the hot carriage containing the sterilized load in the chamber. The operator simply presses the switch on the motorised trolley control panel and the carriage is pulled onto the trolley. The operator no longer has to reach into the hot, steaming sterilizer to retrieve the carriage.

The motorised trolley is driven by a 12 volt motor which is powered by a rechargeable 12 volt 17Ah battery. Safety switches ensure that the motorised trolley can only operate while docked.



Service Specifications



SUPPLY REQUIREMENTS:

WATER

WATER-WITH WATER SAVING OPTION FITTED

- 3/4" BSP SUPPLY LINE FITTED WITH BALL VALVE ISOLATOR
- 250kPa(G) DYNAMIC MINIMUM
- 30L/MINUTE

STEAM

- 1" BSP SUPPLY LINE FITTED WITH BALL VALVE ISOLATOR
- 350-500kPa(G) DYNAMIC
- 75Kg/HOUR AVERAGE, 100Kg/HOUR MAXIMUM

COMPRESSED AIR

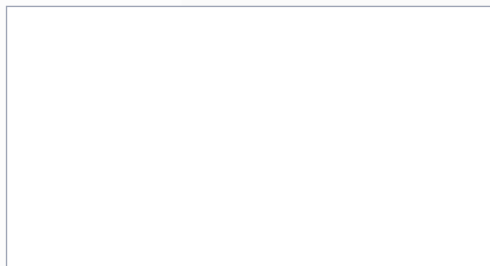
- 1/4" BSP SUPPLY LINE FITTED WITH BALL VALVE ISOLATOR
- 400-800kPa(G)
- LESS THAN 1CFM

ELECTRICAL

- SUPPLY: 3 PHASE, N+E.
- VOLTAGE: 415 V AC @ 50Hz
- RATING: 10 AMPS PER PHASE

DRAIN

- 2" COPPER PIPE X 250mm HIGH
- WITH A 2" VENT TO ATMOSPHERE



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