# Getinge 86-series
## Washer-disinfectors
## **Product Specification**

GETINGE
GETINGE GROUP


Backed by more than 100 years of experience, Getinge's global reach and extensive installed base, provides us with the knowledge to assist our customers in planning for optimal and efficient workflows. In this way we help you maximize throughput and provide solutions for efficient production. With our premium equipment, project management, logistics, signature service, and training, you can count on Getinge – right from the start. Getinge 86-series washer-disinfectors ensure reliable, effective cleaning and disinfection, and securing high throughput and efficiency.

Advanced automation capabilities provide a choice of automated loading and unloading to minimize the need for staff intervention and to increase productivity.

**Intended use**
The intended use of the 86-series washer-disinfector is to clean, thermally low or intermediate disinfect, and dry surgical instruments (solid and tubular), bowls, basins, glass ware, receivers, suctions bottles, baby bottles, anaesthesia equipment and surgical shoes. The goods can be made of stainless steel, aluminium, plastic, rubber, silicon and or glass.

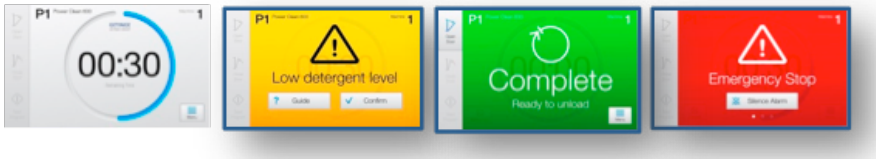
The 86-series washer-disinfector is used in facilities such as hospital wards, Central Sterile Supply Departments (CSSD), Operating Room Sterile Supply Unit, Hospital Laboratories and Biomedical Research Facilities.

Customer

Reference

## Key features

- Easy to Use Touchscreen Interface with Getinge Centric controls that allows operator to see machine status from a distance and provides easy to understand help in resolving problems. The 7” touchscreen display is delivered as standard on both clean and soiled side.




- Optional USB port for digital documentation of wash process.
- Process Report options with Network Storage generating reports in PDF format and Network Printing for printout of process reports.
- Low pressure, high volume flow wash designed to hydrate the load and effectively remove the soil without disturbing or damaging the instruments.
- Easy to clean rotary spray arms with removable tip on the top and bottom of the chamber as well as in between each level of the wash cart to allow water to reach all surfaces that need to be cleaned.
- Water fill level adjusted based on load to minimize water usage.
- Unique heat exchanger that pre-heats the drying air and also serves as a condenser for the outgoing air. This energy-saving process means shorter drying times and reduced energy consumption.
- Differential pressure monitoring and test port for HEPA 14 filter is standard.
- Integral process monitoring system that monitors key cycle parameters and integral machine functions alerting the operator to any deviations or issues with any of the parameters. Error code alert is accomplished with both a visual and volume controlled audible alarm.
- Wash carts with removable spray arms and shelves that can adapt to different load heights and incorporate accessories for cleaning lumen/cannulated/laparoscopic instruments.

## Online Services

Washers are equipped with ethernet connection standard to facilitate utilizing products available from Getinge IT Solutions.

The following IT Solution products are available via:

1. Getinge Online - provides real-time and historical information on machine performance and wash process.

   A one year license for Getinge Online is included with purchase of washer-disinfector.
2. T-DOC - Intrument Tracking, Asset Management and Traceability System

## Quality statement

Confidence in the Getinge group is the most important quality criteria. This is the hallmark of all our external and internal commitments, activities and products. Products and services supplied by Getinge conform to the agreed terms and expectations. The achievement of these quality goals is the basis for continued competitive and successful enterprise.

## Standards and codes

The Getinge 86-series washer disinfector complies with the following requirements and standards:

- MDD 93/42/EEC (Medical Device Directive) Certificate 41314824 issued by Intertek Semko AB, Code 0413
- ETL/INTERTEK Standard: IEC/EN/UL 61010-1, CAN/CSA C22.2#61010-1, IEC/EN 61010-2-040, CAN/CSA C22.2#61010-2-040:07
- EMC (Electromagnetic Compatibility) EN IEC 61326-1
- EN1717: Protection against pollution of potable water installations and general requirements of devices to prevent pollution by backflow
- EN ISO 15883 1-5
- ANSI/AAMI ST15883-1 and ANSI/AAMI ST15883-2
- ASME A112.1.2-2012
- DVGW (Deutscher Verein des Gas- und Wasserfaches EV.)
  Standard: Arbeitsblatt W 507

## Documentation

The following documentation will be sent out together with the product:

- User manual in local EU language or requested language (paper)
- Installation manual in English, German, French or Swedish (paper)
- Declaration of Conformity (paper)
- Quick start guide (laminated paper)
- CD containing all approved languages for the user manual and installation manual, program sheets and circuit diagrams.
- The following documentation can be provided by the sales company to the end costumer upon request:
    - Technical manual
    - Parts list

## Design features

**VIP glass doors** (View-in-Process) – Glass doors provide a full-size view inside the chamber. The doors consist of two layers of safety tempered glass, which provides excellent sound and heat abatement, as well as an extra measure of operator safety.

**Low pressure wash** – Rotary spray arms mounted in the top and bottom of the chamber as well as in between each level of the wash cart are used to evenly distribute high volumes of water at low pressure and drying air over all surfaces of the load from both above and below. Wash carts automatically connect to water and drying air circulation system upon loading into the chamber.

**Drain pump** – Wash and rinse solutions are pumped to the building waste system from the sump via the water trap.

**Process piping** – External heat exchanger, steam coils, manifold tubes, sump base, removable filter screens and chamber are made of AISI 316 stainless steel. AISI 316L stainless steel sanitary tri-clamp fittings are used for easy removal of key process components. Gaskets and hoses are EPDM, PTFE or Silicone.

**Brushless fan motor** – Fresh air is pulled into the dryer unit by two powerful fans. Unique brushless motor produces no carbon dust that can contaminate air filters and heating elements, resulting in longer fan life and lower maintenance costs.

**Drying heater and HEPA Filter** – The fans forces air through the electric heating elements at high velocity. Drying air is quickly heated and filtered in a H14 HEPA filter before entering the chamber through the circulation system which will utilize the rotary spray arms to distribute the hot air rapidly over the load.

**Drying heat exchanger** – Hot air leaving the chamber passes through the heat exchanger in vanes touching the incoming fresh air. Heat energy is transferred to the colder, incoming air, increasing its temperature before it reaches the heating element. Warmed fresh air reduces the energy required to achieve maximum temperature. Meanwhile, the cool fresh air creates condensation in the moist hot air leaving the heat exchanger. The condensation droplets are piped to the water trap and then to drain.

## Cycle description

The washer is pre-loaded with wash cycles from the factory designed to provide effective cleaning for different load types. Below is a list of typical phases found in wash programs. The inclusion and repetition of phases is specific to each of the various programs.

**Prerinse** – The chamber is filled with cold water via direct connection to house water supply. The circulating pump is started and water is circulated through the spray system under full pump pressure.

**Wash** – The chamber is filled with cold and/or hot water via direct connection to house water supply. While the water is circulated it starts heating and a peristaltic dosing pump automatically adds a programmed amount of chemical cleaning agent. Once set point temperature has been achieved, the controller will time the wash and then terminate the wash phase.

**Rinse** – Fresh hot water fills the chamber via direct connection to house water supply. Water is forced into the spray manifold nozzles and onto the load.

**Final rinse / disinfection** – Fresh water from the optional final rinse booster tank or via direct connection to house water supply then fills the chamber. While the water is circulated it starts heating and if a lubricant or rinse aid is selected, a programmed amount of liquid is automatically added. Once set point temperature has been achieved, the controller will time the thermal rinse.

**Drying** - Fresh air is pulled from the clean side of the department through a heat exchanger by brushless fan motors, forced through a HEPA filter and across the PTC electric heaters.

## Standard safety features

**Illuminated chamber** – Wash chamber is equipped with one halogen lamp mounted through the ceiling to illuminate the chamber for safe operations.

**Door obstruction closing** – If the moving door contacts an obstruction while the washer is closing the door, the door will reverse and go back to open position. The door can be closed again when the obstruction is removed.

**Door obstruction opening** – If the moving door contacts an obstruction while the washer is opening the door, the door will stop. The door can be opened again when the obstruction is removed.

**Door interlock switches** – The control system will permit only one door to be unsealed and open at any given time during normal operations. Alternating door operation helps maintain integrity of the barrier wall.

**Low chemical warning** – Low level sensor will automatically send a low chemical warning to the message screen to alert operators when the chemical reaches the a low level in the container. Controller allows the new cycle to be started, but requires the detergent to be replaced or refilled before another cycle can be run.

**Low chemical start prohibit** – Once the low chemical warning is initiated and one cycle has been run, the controller prevents subsequent cycles from being run without replacing or refilling the chemical container.

## Disclaimer

Do not use this product specification for installation of equipment.

Subject to change without notice.

# Getinge 86-series
## Washer-disinfectors
## Ordering Information

**Mark your selections:**
☐ = Selected option

### Documentation

To ensure the correct sets of manuals to be included for Getinge 86-series to match each market;

Please state your country:

_____

### Models

☐ S-8666 ☐ S-8668

### Panels

The 86-series comes as standard with a 7” touchscreen display (P20) with Getinge Blue Circle on both soiled side and clean side.

### Program selection

When choosing a country with pre-configured program, a suitable amount of dosing pumps will always be chosen automatically

- ☐ Hospital, 1 min A0600 (90 °C/60 s), general
- ☐ Hospital, 5 min A03000 (90 °C/300 s), general
- ☐ UK, adapted for the UK market
- ☐ USA/Canada, adapted for the US/Canadian market
- ☐ China, adapted for the Chinese market
- ☐ Germany, adapted for the German market
- ☐ Glassware

### Door selection

On double door machines the door interlocks assure integrity of barrier wall by allowing only one door to be open at any given time

- ☐ (E) single door, automatic
- ☐ (D) double door, automatic

### Framework

Getinge 86-series has a framework in painted steel as standard.

- ☐ AISI 304 steel

Customer _____ Reference _____

## Heating

The water in the sump is as standard electrically heated. Dryer is always electrical heated. The heating of the sump has the following options:

- ☐ Steam heating
- ☐ Combined electrical and steam heating

## Voltage supply

**50 Hertz, 3 phase**

- ☐ 415 V, 3N+PE
- ☐ 400 V, 3N+PE
- ☐ 380 V, 3N+PE
- ☐ 230 V, 3+PE
- ☐ 200 V, 3+PE

**60 Hertz, 3 phase**

- ☐ 400V, 3N+PE
- ☐ 380 V, 3N+PE
- ☐ 240 V, 3+PE
- ☐ 208 V, 3+PE
- ☐ 200 V 3+PE
- ☐ 220 V, 3+PE

## Booster tank

As standard the final rinse is heated in the sump. For process time reduction a booster tank for preheating of final rinse water can be chosen.

The booster is always heated up the same way as the machine. When the machine has a combined heating system the booster is electrical heated. Hot water will be used if purified water is not selected.

- ☐ Booster tank

## Media connections

Getinge 86-series has top connection for hot and cold water and where appropriate, steam as standard

- ☐ Cold + hot water, bottom connection
- ☐ Cold + hot water and steam, bottom connection

## Purified water valve

If the incoming water has a hardness of more than 5° dH (5 grains hardness of water), then it is important to use purified water during final rinse for a good cleaning result.
If the purified water has a pressure <100 kPa (14.5 psi), a separate pump is required.

The connection point will be the same as connection for cold and hot water.

- ☐ Purified water valve

## Dosing pumps

As standard two dosing pumps for process chemicals are supplied. As an option a 3rd and 4th pump can be chosen. When dosing pump 3 or 4 is chosen the process chemical should be indicated below in order to get the adequate machine program. If no chemical is chosen, program for two dosing pumps will be loaded in to the machine.

All dosing pumps can be equipped with flow dosing control.

When choosing a country with pre-configured program a suitable amount of dosing pumps will always be chosen automatically. For details see table under Additional comments, page 10.

- ☐ Dosing pump 1: Cleaning detergent
  Dosing pump 2: Rinse Aid
- ☐ Dosing pump 1: Cleaning detergent
  Dosing pump 2: Instrument Lubricant
- ☐ Dosing pump 3: No choice of detergent
- ☐ Dosing pump 3: Neutralizing
- ☐ Dosing pump 4: Cleaning detergent
- ☐ Dosing pump 4: Chemical disinfectant
- ☐ Dosing pump 4: No choice of detergent

## Supervisor

Supervisor is an independent monitoring of pump pressure, detergent, flow, final rinse, conductivity and temperature.

- ☐ Supervisor

## Flow control

Flow control of detergent is offered as an option to ensure accurate chemical dosing in each cycle, which is a pulse base control unit of dosing. Liquids with a higher viscosity than 10 cST can cause a clog of the flow monitoring function.

- ☐ Flow control. (Flow control is required to comply with EN ISO 15883)

## Drain cooling

As hot solutions from the drain enter the water trap, cold water is automatically injected to reduce the temperature to 60 °C (140 °F) or less before the discharge enters the building waste system

- ☐ Drain cooling

## Conductivity control

Conductivity control of final rinse water with repeated rinse function. After three repeats the control system will send an alarm if the conductivity is too high.

- ☐ Conductivity control of final rinse

## Drying sensor

Automatic drying sensor measures the humidity of the drying air and adjusts the drying time accordingly. The result is a reduced cycle time and energy consumption when not using full loading capacity.

- ☐ Drying sensor

## HMI

- ☐ Multi language – Enabling optional language for Process reports. Ensure that Load release can be made using a Process report provided in the native language of the personnel. Choice of language must be set at installation.

## Automatic Cycle Selection

A bar code scanner automatically selects the right program for each wash cart. Automatic program selection via scanner can be chosen for loading manually or for machines connected to AGS or automatic loaders and unloaders.

☐ Stationary bar code scanner built into the washer-disinfector

## Process report

Process performance data can be printed out or stored on a USB. The information includes start date and time, phase description, disinfection time, amount of detergent if flow is used and temperature and any alarms occurred during the process.

☐ Built-in printer, soiled side, not in combination with AGS

☐ Built-in printer, clean side, not in combination with AGS

☐ USB storage, soiled side, not in combination with printer

Documentation of process is required to comply with EN ISO 15883

☐ Enabling network printing. For printout of process report including process chart. For network printing, Lexmark printers are recommended.

☐ Enabling network storage. Generating a process report in PDF format.

## Preparation for automatic loading equipment

Getinge washer disinfector 86-series is designed for manual or automatic loading. When using automatic loading, 86-series needs to be prepared with interfaces to loading/unloading systems.

Prepared for AGS always include operator panel on both sides, USB on loading side and scanner. No possibility to add printer.

☐ Loading conveyor only*

☐ Unloading conveyor only*

☐ Loading & unloading conveyor*

☐ AGS 2.0 (only available for S-8668)*

☐ AGS old version

For add-on machine completing existing AGS installation please state position number counting from loading conveyer .....

* Automation kit 2.0, Article No 6001483301. Order separately.

To be assembled on wash carts intended for the new automatic loading system.

## Thermal disinfection type

☐ Disinfection phase time and temperature controlled

☐ Disinfection phase time and temperature controlled, additional A0 value calculated and printed

☐ Disinfection phase A0 value controlled

## Spray arm monitoring system

The spray arm supervision system monitors the rotation speed of the spray arm and sends an alarm if the rotation deviates from the set limits. This helps ensure effective cleaning by alerting the operator to loading errors in which instruments obstruct spray arm rotation, clogged spray arms, chemical foaming in the chamber or broken spray arm bearings. A cart indication tag, mounted on each wash cart, tells the system how many spray arms to monitor. For ordering of wash carts suitable for monitoring system see the new Loading Equipment brochure.

☐ Spray arm monitoring system

## UK kit

☐ UK kit with UK power socket soiled side and machine stops soiled side and clean side

## Test port for water analysis

Test port allow to take water samples during the process.

☐ Test port for water analysis

## Pressure monitoring

Circulating water pressure monitoring to ensure that the machine is not running a process with a pressure that is too low or too high

☐ Water pressure monitoring

## Audible alarm

For more safety and effective handling the 86-series can be equipped with an adjustable audible alarm up to 85 dB

☐ Adjustable audible alarm

## Language

Machine displays are available in a selection of languages. User manuals are available for all EU languages. Other languages on special request.

Other technical documentation is available in English, French, German and Swedish.

Please state display language choice below:

Please state user manual language choice below:

## Container

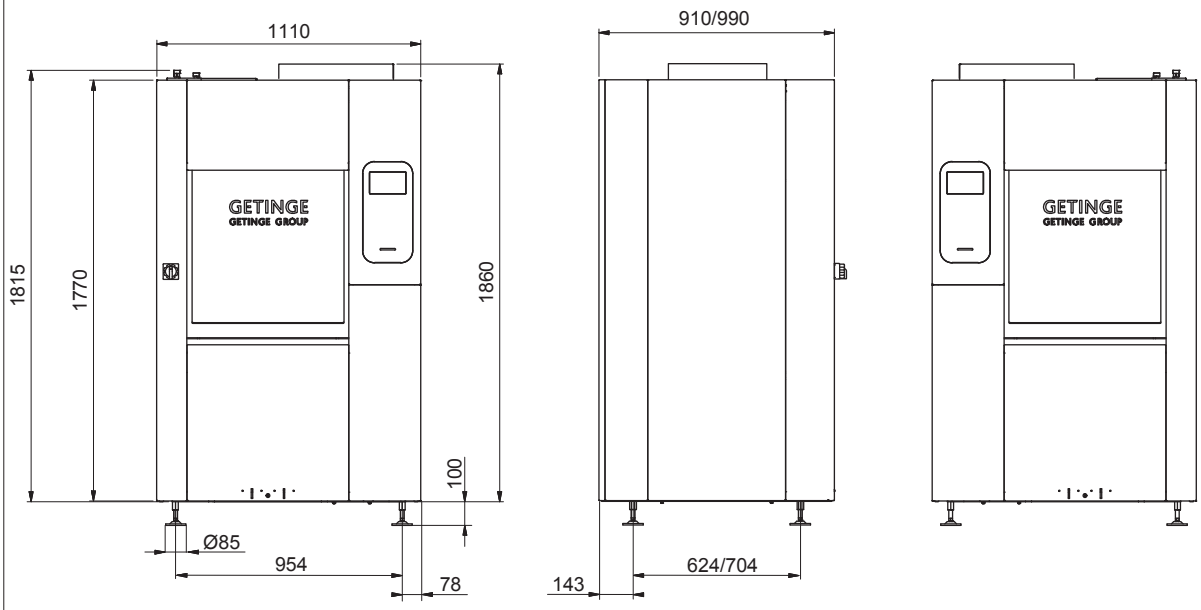
☐ Detergent container set, including three empty 5 Liter containers

## Additional comments:

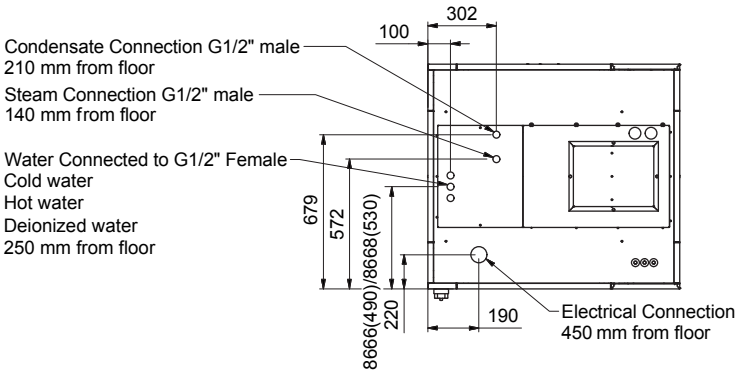
| **Pump no** | **Pre-configured programs** | | | | |
|---|---|---|---|---|---|
| | UK | USA/Canada | China | Germany | Glassware |
| 1. Alkaline | X | | X | X | X |
| 1. Enzymatic detergent | | X | | | |
| 2. Alkaline | | X | | | |
| 2. Rinse Aid | | | | X | |
| 2. Enzymatic detergent | X | | | | |
| 2. Instrument lubricant | | | X | | |
| 2. Neutralizing | | | | | X |
| 3. Instrument lubricant | | X | | | |
| 4. Enzymatic detergent | | | X | | |

## 8666/8668 OUTER DIMENSIONS

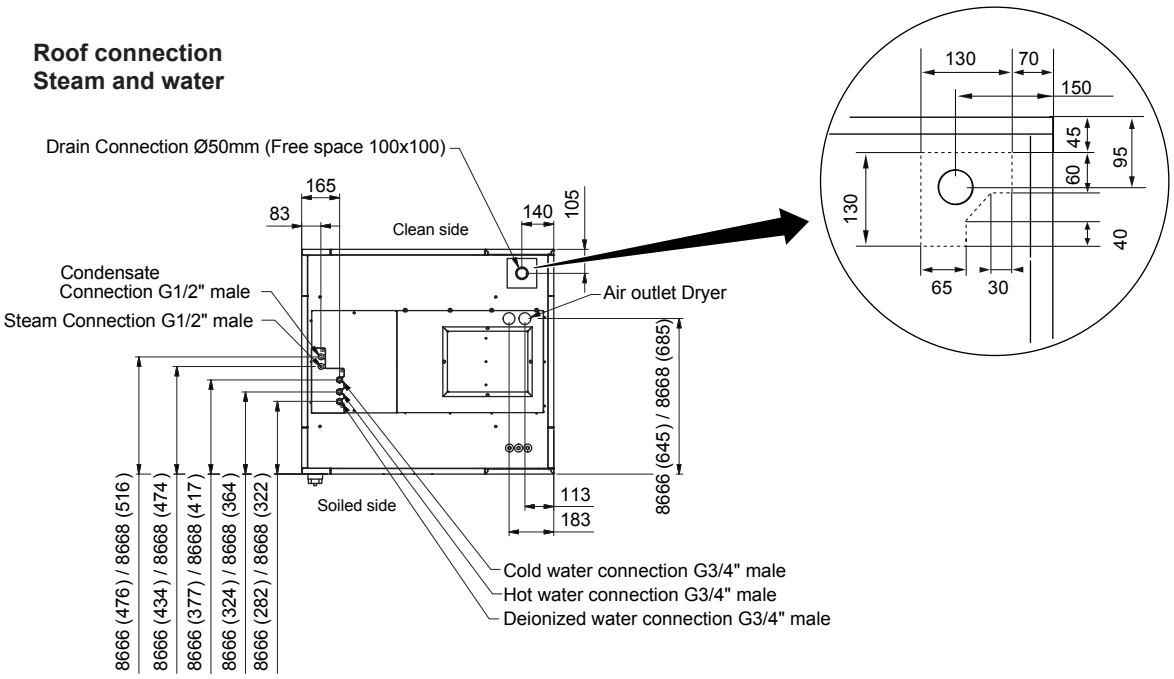
**For additional details, please refer to Installation manual.**




### Floor connection
### Steam and water




### Roof connection
### Steam and water



**UTILITY REQUIREMENTS**

| Utility | Unit connections | Supply pressure requirements | Flow requirement | Temperature |
|---|---|---|---|---|
| Cold water (CW) (Drain cooling) | **Top connect.** ISO G-3/4", male<br>**Bottom connect.** ISO G-1/2", female | 200-600 kPa | Min 30 l/min | Max 20 °C (68°F) |
| Hot water (HW) | **Top connect.** ISO G-3/4", male<br>**Bottom connect.** ISO G-1/2", female | 200-600 kPa | Min 30 l/min | 45-60 °C (113-140 °F) |
| Purified Water (DIW) | **Top connect.** ISO G-3/4", male<br>**Bottom connect.** ISO G-1/2", female | 200-600 kPa | Min 30 l/min | |
| Drain | ø50 (2") mm | 40l/min<br>With cooling 70l/min | | Max 90 °C (194 °F)<br>Max 60 °C (140 °F) |
| Steam | ISO G-1/2, male | 300-500 kPa | 0,9-1,0 kg/min (300 kPa) | Max 160 °C (320 °F) |
| Condensate | ISO G-1/2, male | 30 kPa maximum back pressure | | |
| Machine Exhaust | | | 250 $m^3/h$ (147 CFM) | 90 °C (194 °F) |
| Building Exhaust | | | 510 $m^3/h$ (300 CFM) With Damper | |

| Electrical with or without booster | Connection/ Frequency Hz | Max operating current (A) | Max service disconnect |
|---|---|---|---|
| 415V | 3N+PE 50 | 32.5 | C40 |
| 400V | 3N+PE 50 | 32.2 | C40 |
| 380V | 3N+PE 50/60 | 30.6 | C40 |
| 240V | 3+PE 60 | 56.3 | C60 |
| 230V | 3+PE 50 | 54.3 | C63 |
| 220V | 3+PE 60 | 52.3 | C60 |
| 208V | 3+PE 60 | 53.0 | C60 |
| 200V | 3+PE 50/60 | 51.5 | C60 |

Technical data section continues on next page.

# Technical data (continued)

| Combined steam and electrical with booster | Connection/ Frequency Hz | Max operating current (A) | Max service disconnect |
|---|---|---|---|
| 415V | 3N+PE 50 | 32.5 | C40 |
| 400V | 3N+PE 50 | 32.2 | C40 |
| 380V | 3N+PE 50/60 | 30.6 | C40 |
| 240V | 3+PE 60 | 56.3 | C60 |
| 230V | 3+PE 50 | 54.3 | C63 |
| 220V | 3+PE 60 | 52.3 | C60 |
| 208V | 3+PE 60 | 53.0 | C60 |
| 200V | 3+PE 50/60 | 51.5 | C60 |

| Steam with or without booster | Connection/ Frequency Hz | Max operating current (A) | Max service disconnect |
|---|---|---|---|
| 415V | 3N+PE 50 | 14 | C20 |
| 400V | 3N+PE 50 | 14 | C20 |
| 380V | 3N+PE 50/60 | 13.8 | C20 |
| 240V | 3+PE 60 | 23 | C30 |
| 230V | 3+PE 50 | 23.5 | C25 |
| 220V | 3+PE 60 | 25.0 | C30 |
| 208V | 3+PE 60 | 24.8 | C30 |
| 200V | 3+PE 50/60 | 26 | C32 |

| Combined Steam and electrical with-out booster | Connection/ Frequency Hz | Max operating current (A) | Max service disconnect |
|---|---|---|---|
| 415V | 3N+PE 50 | 14.5 | C20 |
| 400V | 3N+PE 50 | 15.5 | C20 |
| 380V | 3N+PE 50/60 | 16.5 | C20 |
| 240V | 3+PE 60 | 33.5 | C40 |
| 230V | 3+PE 50 | 31.5 | C40 |
| 220V | 3+PE 60 | 30.5 | C40 |
| 208V | 3+PE 60 | 29.5 | C40 |
| 200V | 3+PE 50/60 | 28.5 | C32 |

Technical data section continues on next page.

# Technical data (continued)

| OPERATING CONDITIONS | | |
|---|---|---|
| Room temperature | 5-40 ºC (41-104 ºF) | |
| Air humidity | Max 80 % vid 30 ºC (87 ºF) | |
| Max surface temperature | 50 °C (123 °F) | |
| Water consumption | 8666: 32l/phase<br>8668: 37l/phase | Varies with the load |
| Heat dissipation | Max 1500W | |

| **Noise level** | 58 dB |
|---|---|

According to Machinery Directive 2006/42/EC, on 1m distance, 1.6 m above the floor, combined propagation in free fields on hard surface.

| TECHNICAL DATA COMPONENTS | |
|---|---|
| **Water circulation system** | |
| Design pressure | 200 KPa |
| Operating pressure | Max 130 kPa |
| Design temperature | 100 °C (212 °F) |
| Operating temperature | 93 °C (199 °F) |

| **Circulation pump** | |
|---|---|
| Max flow | 750l/min |
| Motor | 2 kW |
| Material construction | EN 1.4404, PP/Glass fibre |

| **Drain pump** | |
|---|---|
| Max flow | 55l/min |
| Motor | 170 W |
| Material of construction | EN 1.4404, PP |

| **Dosage pump** | |
|---|---|
| Max flow | 100ml/min |

| **Heater steam** | |
|---|---|
| Heating velocity | 9-11 °C/min (depends on steam pressure) |

Technical data section continues on next page.

# Technical data (continued)

| **Heater electrical** | |
|---|---|
| Heating velocity | 4,5-5 °C/min (depends on voltage) |
| Installed power | 400V : 2x9kW, 230V : 2x9kw |

| **Heater combined** | |
|---|---|
| Heating velocity | 6-7 °C/min (depends on steam pressure and voltage) |
| Installed power with booster | 400 V : 2x9 kW, 230 V : 2x9 kW |
| Heating velocity Booster electrical | 4 °C/min (depends on voltage) |

| **Booster heater, steam** | |
|---|---|
| Heating velocity | 5-6 °C/min (depends on steam pressure) |

| **Booster heater, electrical** | |
|---|---|
| Heating velocity | 4 °C/min (depends on voltage) |
| Installed power | 400 V : 1x9 kW, 230 V : 1x9 kW |

| **Dryer** | |
|---|---|
| Installed power, heaters | 4x1500 W |
| Installed motors | 2x1100 W |

**OPERATING CONDITIONS**

| **Outer dimensions** | |
|---|---|
| Width | 1110 mm |
| Depth | 8666: 910 mm 8668: 990 mm |
| Height | 1870 mm |

Technical data section continues on next page.

## Technical data (continued)

| OPERATING CONDITIONS (continued) | |
|---|---|
| **Effective and gross chamber dimensions** | |
| Width | 665 mm |
| Depth | 8666: 720 mm  8668: 810 mm |
| Height | 667 mm |
| Effective chamber volume | 8666: 312 l.  8668: 351 l. |
| Gross chamber volume | 8666: 430 l.  8668: 480 l. |

| **Weight and floor loading** | |
|---|---|
| Total | 400 kg |
| Load per machine foot | 0,85-0,98 kN |
| Specific surface loading | 3,4-3,9 kN/m2 |
| Floor load machine foot | 347 kN/m2 |

*When installing 86-series at high altitudes, such as >500 meters above sea level, modifications must be done. If it is not done, problems with deformed glass windows, due to low air pressure, might occur. Instructions how to make the modification is made can be provided by Getinge service providers.*

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## GETINGE GROUP

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.