GW4290

GLASSWARE-WASHER – 90 CM
WITH HOT AIR DRYING SYSTEM

REVISION INDEX

REV.	DATE	REMARKS
01	08/08/2023	Aggiornata lista optional Precisati parametri elettrici – potenza delle resistenze Inserito parametro apertura automatica della porta a fine ciclo
02	28/08/2023	Updated the references to RS232 port

GENERAL CHARACTERISTICS

- Manufacturer: Smeg S.p.A.
- Market launch: 2023
- Intended use: the appliance is designed for washing and disinfection of laboratory glassware
- Main applications: food industry, pharmaceutical industry, general chemistry, organic chemistry and biochemistry, research laboratories, etc.
- Conformity: please refer to CE declaration of conformity

INTRODUCTION

The GW4290 series is the result of over thirty years' experience in the washing and disinfection sector, combines modern technology with the most reliable design solutions in full compliance with the most stringent industry regulations, developed and manufactured with the sole aim of ensuring the very best in terms of reliability, safety and performance.
The result is a system comprising the washing device and wash rack assembly making it possible to process the most diverse types of glassware, while optimising space and reducing costs for customers.
The front-loading machines with drop-down doors are made entirely of steel. More specifically, the washing chamber and door are manufactured using only **AISI 316L stainless steel**, and the outer panels are made of **AISI 304 stainless steel**.
A special configuration features a toughened glass door to allow viewing of the chamber.
The plastic materials are heat-resistant and able to resist corrosive substances and organic solvents.
Maintenance operations are facilitated by frontal access to the main machine parts.
The control system of the appliance is characterised by a sophisticated colour touch on glass display allowing the management of all operating parameters using animated icons and communication also of user-set parameters on three simultaneous levels.
This provides an instant overview of machine status without the need for manual intervention. The system saves each event and records the log of the programmes carried out in the memory.
The fully electronic control system makes it possible to choose from a vast range of programmes, save the cycles run to a dedicated buffer memory, set night-time cycles using the timer option, consult basic parameters on the display and, last but not least, run full appliance diagnostics.
The memory can be downloaded and the software updated simply by connecting a flash drive or external PC to the USB port conveniently located on the front of the machine.

All models of the series offer a net wash surface area of up to 1 m^2 depending on the washing rack used. The washing chamber is equipped with a rotating washing arm on the floor of the chamber and an optional one on the ceiling of the chamber. The racks used to hold the glassware to be washed can be fitted with either sprinklers or injectors, making it possible to obtain sprinkling, injection or mixed wash systems, to offer customers the solution that best meets their requirements.
The high precision in dosing of detergents and flow meter control on water intake minimize wastes as well as the environmental impact is remarkably reduced.
The electrical consumption has been widely reduced by combining the smart management of the electrical heating, a mindful design of washing cycles and an efficient hot air-drying system.
The drying system is made of an hot air generator (99.99% DOP HEPA filter) connected to the hydraulic circuit by means of a separation valve which works in conjunction with the steam condenser for achieving a guaranteed and efficient result.

The standard features of the machine include the communication management software. This exclusive software makes it possible, using the USB port, to: upload machine control software updates (firmware upload) without the authorised technicians having to dismantle and reassemble machine parts; monitor the current thermal disinfection cycle progress status and all relevant machine operation parameters remotely and in real-time; set and/or edit and subsequently save new wash cycles from a computer; download and save the thermal disinfection cycles carried out to a computer; and monitor the A0 value achieved in real time, by drawing a time/ temperature graph of any thermal disinfection cycle run.

A dedicated WD-LAN4290 optional is available for LAN network connection. The machine is set up for wireless data and/or printer connections.

The GW4290 model is available in the configurations shown in the following table:

VERSION	DETERGENT POWDER DISPENSER	NEUTRALIZER DOSING PUMP	DETERGENT DOSING PUMP	ADDITIVE DOSING PUMP	STEAM CONDENSER	GLASS DOOR
GW4290-00-000	●	●	-	○	-	-
GW4290-0C-000	●	●	-	○	●	-
GW4290-S0-000	-	●	●	○	-	-
GW4290-SC-000	-	●	●	○	●	-
GW4290-SC-00G	-	●	●	○	●	●

●	standard feature
○	optional features (some can **only be installed in the factory at the time of ordering**)
-	feature not provided and not installable

TECHNICAL FEATURES

The core of new glassware washer generation is the innovative electronic system with micro-controllers for controlling each single performed operation as well as for monitoring the overall data stream by means of redundant systems.

The Smeg glassware washer GW4290 allow you to set all the washing and disinfection parameters by means of the soft-touch keys or directly through the PC.
In this way it is possible to set all the washing parameters such as the execution times, the operating temperatures, the detergent amount, the phase number and much more.
The access to management operations is protected by a system of 4 password levels.

ELECTRONIC CONTROL SYSTEM

Control:	Touch on glass
Total programs:	40
Default programs:	20
Custom programs:	20
Display:	LCD, providing 3 simultaneous levels of information on machine programmes and parameters; provided with a set of icons - some of them animated - that provide information, also through a colour coding system, to accompany the current cycle; progress bar in the middle of the display
Display functions:	chamber temperature, target drying temperature, dose of chemical used, total and residual time, A0, current programme step, selected programme, ECO programme function, progress, clock and calendar, malfunction code, maintenance
Reprogrammable phases:	10
Phase parameters:	water type (cold, demineralized), detergent dosing, target temperature, time extension in minutes, temperature and time for drying
Display temperature range for washing chamber:	from environmental temperature up to 95°C
Accuracy:	0.1 °C
Temperature check in washing chamber:	n. 1 PT1000 probe – IEC 60751, B class (respectively for washing chamber and dryer)

- Graphic colour display for continuous real-time viewing of all the main operation parameters:
  - Ongoing program ID;
  - Program progress status, with progress bar, with indication of the expected residual time;
  - Ongoing sub-phase;
  - Washing chamber temperature;
  - A0-value achieved;
  - Alarm with maintenance messages;

- Touch on glass keyboard for programme selection - depending on the type of articles to be washed, level of soiling and A0 value - and for easy set-up operations;

- **There are 20 standard programmes and 20 further programmes that can be customised to suit customer requirements** (please refer to the programs table for further details);
- Each program **can be customized with up to n. 10 sub-phases for rinse/washing + n. 1 phase for drying.**
  - It is possible to configure and save for a single phase the following parameters: water intake type (cold water, demineralized water), degree of hardness of the water to be treated, detergent amount or chemical additive to use, spraying duration without heating, temperature and duration for hot phase, when adding the additives;
  - The drying phase can be customized by defining both duration and temperature;
  - Automatically set to the last cycle carried out;
  - Cycle repeat can also be set.
- **Detergent dosing check by means of flow meters, level sensors and timer**;
- Electronic check of the maximum allowed temperature;
- Audible and visual alarm for end of cycle;
- Immediate display of the detected error message;
- Automatic counter for cycles performed;
- USB port for connecting the glassware to the PC or printer);
- Optional serial interface for direct connection to an external printer or other optional modules;
- Optional LAN interface for network connection;
- Electronic clock and calendar coupled with battery backup in case of power failure;
- Checking of the correct washing pump functioning by means of high pressure switch;
- Soft-start for preventing thermal shock;
- Electronic control on the built-in ECO-SLIM steam condenser (only for GW4290-0C/-SC) to ensure the elimination of condensate;
- Temperature probes calibration through dedicated software;
- Range for water temperature set-point: from environmental temperature up to 95°C;
- Automatic storing of all data related to performed cycles on the internal archive;
- Possibility to download the cycles archive on PC;
- Possibility to install a printer for reporting the data cycle and validating in real-time the disinfection performed;
- Demineralised water can be deactivated for each program independently
- Possibility to select the automatic door opening parameter at the end of the cycle

SAFETY SYSTEMS AND ALARM INDICATIONS

- Electrical door block with automatic closure safety lock and microprocessor-controlled active release;
- Mechanical emergency door release in the event of machine failure;
- Mechanical emergency door release in the event of a power failure;
- Overheating safety system via safety thermostats;
- Error/alert messages shown on the display:
  - n.° 14 warning messages;
  - n.° 42 alarm indications;
  - Visual and acoustic alerts when a detergent top-up is required;
  - Visual alerts when a softener salt top-up is required;
  - Visual alerts when drying filter replacement is required (where present);
  - Visual alerts when routine maintenance is required;
- Checking by flow meters for a correct water intake;
- Water levels check;
- Pump malfunction check;
- Chamber over-heating control by means of a PT1000 probe;
- Operator safety system with chamber temperature reduction at the end of the cycle;
- Water Stop system for preventing damages due to water leakages - optional.
- Trouble-shooting menu by PC connection;
- Wash stop when the door is opened.

WASHING SYSTEM

The Smeg glassware-washer GW4290 is based on a closed loop washing system with water intake completely renewed in each phase.
The mixing of additives with water occurs by means of peristaltic pumps inside the washing chamber and in a specific phase of the program. The additives concentration can be set for each program.
During the working phase the washing pump makes the water and additives flow into the sprayer systems, with the possibility of adjusting the washing pressure of the upper sprinkler, for delicate washes. (see the pressure regulator picture).
The high rate flow/pressure, in conjunction with temperature and time, allow the removal and dilution of contaminants in the water.
The electrical heating system rapidly increases the temperature of water filled in the washing chamber without stopping the circulation and washing processes)
In order to ensure a constant pressure on sprayers and consequently a good quality for cleansing, the machine steadily monitors if the washing pump works in the best way.

The steam condenser, if present, works whenever the water heating generates vapour avoiding leak into the environment. All that means a better glassware drying. Furthermore, the steam condenser avoids the connection to an external air vent.

- Washing pump flow: more than 400 L/min
- Drain pump flow: 18 L/min

FILTERS

- **4-stage filter inside the washing chamber:**
  - Well macrofilter made of micro-perforated steel mesh
  - Well microfilter made of steel mesh
  - Immediately visible coarse filter in the chamber
  - Midline microfilter made of steel mesh
- Microfilter for cold water inlet tube
- Microfilter for demineralized water inlet tube

DOSING SYSTEM

All Smeg models are equipped with a standard issue automatic chemical dosing system consisting of:

- **Depending on the configuration -** 1 powder detergent dispenser **or** 1 peristaltic pump with a flow rate of 46 mL/min (P1) for dosing liquid alkaline detergent, activated in the cleaning step
- 1 peristaltic pump (P2) for dosing the acid pH neutraliser during the neutralisation step

For the dosing of any other liquid chemicals, the device can be fitted with:

- 1 peristaltic pump (P3) for dosing liquid alkaline detergent (optional)

Option of:

- 1 peristaltic pump (P4) for dosing additive

All peristaltic pumps can be provided with a level sensor to be inserted directly in the cans of the products used, in order to show when the product is missing on the display (optional).
In addition, pumps P1, P2 and P3 can be connected to a dose control sensor - flow switch (optional).

Please refer to the programs table for further details on chemicals consumption.

STEAM CONDENSER

The steam condenser is a system for reducing the saturated vapour, normally produced as a result of the high temperatures involved for increasing the water temperature, especially in the thermal disinfection process.
This system avoids the formation of condensate in proximity of the machine and humidity emissions into the environment. Limiting the heat dispersion emitted by the glassware-washer in air-conditioned rooms, the workload of conditioning system is slightly reduced as well as the electrical consumption and unwanted thermal shocks.

DRYING SYSTEM

The drying system with forced hot air is a very fast and highly efficient drying system.
This system consists of a hot air generator and a powerful fan to make the air flow. It is managed directly by the micro-controller which allow to set both the duration and the target temperature of the drying phase.
The drying target temperature can be set in the range [40 ÷ 115] °C.
The smart management entrusted by the micro-controller automatically set the fan speed in relation to the target measured inside the washing chamber.
More specifically, the gradual start of the initial activation steps reduces the escape of steam.

Air intake is by double filtration:

- Stage 1: pre-filter C class with 98% retention;
- Stage 2: HEPA H14 absolute filter with 99.995% efficiency (optional)

The machine display will show a warning for the filter substitution whenever it is no more efficient so that it is possible to ensure always the optimal level for air purification and that no bacterial contamination occurs inside the glassware.
The drying system is equipped with fan speed control and hot airflow control at the entrance of the washing chamber.

- Electrical resistance consumption: 0.8 kW

POWER SUPPLY

All Smeg models are manufactured with an electrical power supply (with both 50 Hz and 60 Hz frequencies) that can be configured on-site by authorised technicians.

Default electrical connection:

- three-phase 400V with neutral: 3/N/PE 400 V – 7 kW
- Power of the heating elements 6,4 kW

Can be configured using ad hoc optional kits to obtain:

- Single-phase version: 1/N/PE 230 V – 2.8 kW
- Power of the heating element 2,2 kW

- Three-phase version without neutral: 230V 3~ / PE / 7.0 kW
- Power of the heating elements 6,4 kW

Series GW4290 models are provided with a main switch on the machine.

WATER CONNECTIONS
(PRESSURE 1-6 bar - 3/4“ DN20 connection – REQUIRED FLOW RATE 4-12 L/min)

- **Cold water connection:**
  - Temperature 8-35 °C;
  - Fe2+/Fe3+ content <0.5ppm;
  - pH 7-8;
  - Minimum microbiological quality required “Drinking water type” (see Directive 98/83/EC - Italian Legislative Decree 31/2001)
- **Hot water connection (optional):**
  - Temperature 8-50 °C;
  - Fe2+/Fe3+ content <0.5ppm;
  - pH 7-8;
- **Demineralised water supply:**
  - Temperature 8-50 °C;
  - max. hardness 0.5 °f – 0 ppm CaCo3
  - Conductivity <30 µS/cm
  - pH 5-8
  - TDS max 40 mg/L
- All water supply hoses are fitted with a water stop device
- Booster pump for non-pressure demineralized water - optional
- Built-in softener based on automatic volumetric regeneration with salt
- Water hardness from 33 dH (60 °f) to lower than 4 dH (7 °f)
- Water consumption: 9-10 L for each single phase in relation to the selected program
- Checking by flow meters for the correct water intake

DRAINAGE CONNECTION

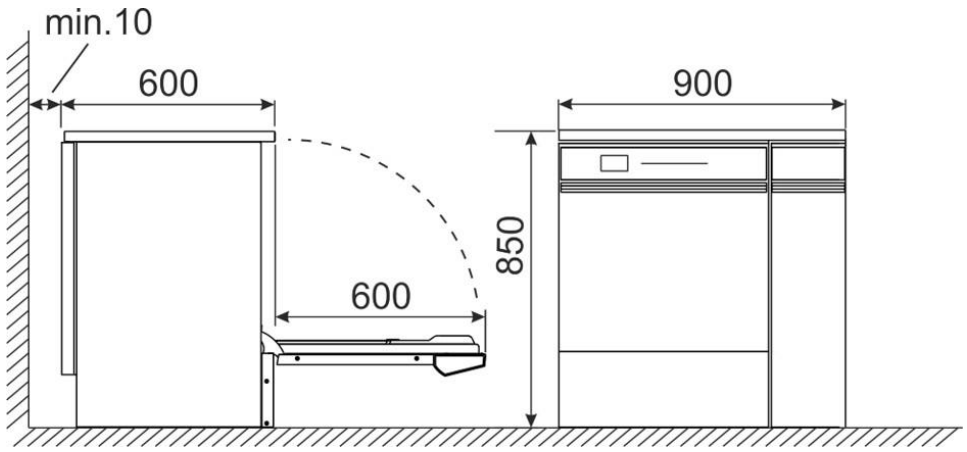
- Drainage pipe connection with Ø 21 mm (1/2”) rubber end piece
- Maximum flow rate 25 L/min.
- Max. outlet water temperature 95 °C, can be adjusted to a minimum of 65 °C using the drain cooling function
- Max. heigh of drain from the floor 800 mm
- In the machine configurations with a condenser, the two drainage pipes from the chamber and condenser lead into a single final drainage pipe fitted with a siphon and vent valve.

NOISE LEVEL

- Max 60 dB(A)

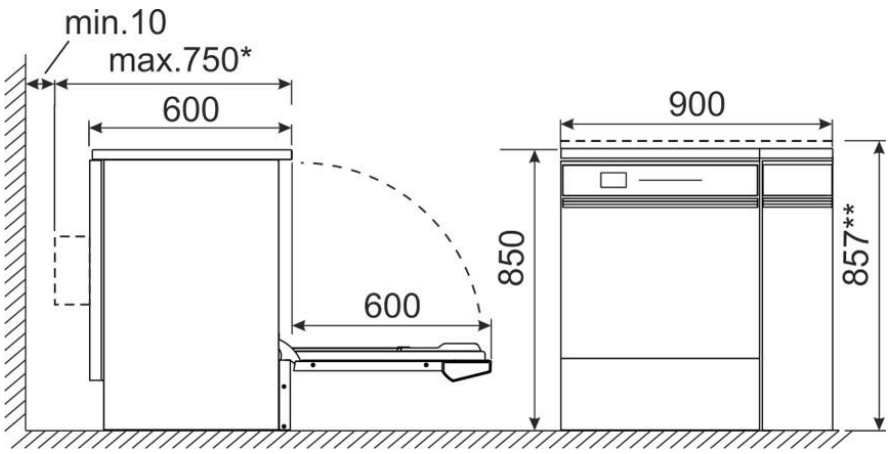
DIMENSIONS LxPxH AND WEIGHTS

- External dimensions (with top for built-in applications - optional): 900 x 600 x 850 mm (H=820 mm)
- Net internal chamber dimensions: 525 x 490 x 570 mm
- Net internal chamber volume: 147 litres
- Net weight: 100 Kg
- Packed weight : 116 kg
- Maximum in-operation weight: 167 kg



- H=820 mm for the built-in version and H=1250 mm in the version with base/raised frame

If the optional PAD1 part is installed, the dimensions to be considered are 900 x 750* x 850 mm.
Any optional peristaltic pumps are housed inside the cabinet.
If the optional AS4190 water stop device is installed, the height increases to 857 mm**



STAINLESS STEEL

- Washing chamber and inner door AISI 316L – thickness 6/10 – 8/10 mm – with rounded edges and sloping surfaces to avoid water stagnation, self-cleaning to remove any risk of bacterial proliferation.
- External panels AISI 304 – perfectly smooth “Scotch-brite” finish to prevent dust and/or dirt accumulation, made with quick-coupling panels for easy maintenance and cleaning;
- Removable front panels to facilitate access to the parts inside the machine and allow considerable maintenance time-saving;
- The product is manufactured to ensure absolute thermal and acoustic insulation.

DETERGENT COMPARTMENT

Ergonomics, reduced footprint and easy to use.
The detergent compartment inside the compact design of the glassware washer can hold up to two 5-litre cans. Storage capacity can be increased to four 5-litre cans by installing the TANKSBK optional. There is no need for external cabinets or product suction pipes outside of the glassware washer, which has two practical pull-out can racks for easy cleaning.

AUXILIARY FUNCTIONS

- USB port for wash cycle log downloads
- LAN port for network connection (optional)

The total verification of the thermal disinfection process is one of the most important aspects as explicitly required by the regulations. So it is essential that the glassware are equipped with the necessary device for communicating data of the performed process.
The Smeg GW4290 glassware washer includes a standard issue USB port to allow connection to a computer or flash drive and for downloading all the information on the washing and thermal disinfection cycles carried out.
The electric card makes it possible to save the data of the most recent programmes run; the number of programmes that can be saved depends on their complexity but is never less than 100.

PROCESS TRACEABILITY

The traceability of the washing and thermal disinfection cycles carried out using professional glassware washers is the indispensable condition for verifying the effective success of the operations.
The printer is a fundamental accessory that provides a detailed report containing all the information relating to the cycles carried out.
Alternatively, the machine can be connected to an electronic data storage system via the LAN port (optional).

LAN CONNECTION

The new generation of Smeg glassware can be equipped with the optional “WD-LAN4290”, data communication card that is able to connect the glassware washer directly to any data network available.
The LAN connection and dedicated Smeg WD-CONNECT software make it possible to view each appliance as though it were a terminal by making all the machine data available directly on the computer.
The data communication is bidirectional and therefore it is possible to communicate directly with the micro-controllers to set the cycle parameters or plot the chamber temperatures on an Excel graph.

AVAILABLE OPTIONS

- Dosing control kit with flow meters (FLUX4060);
- Level sensors for detergent canisters (WD-LS4190);
- Validation temperature probe inlet device (KITSOND);
- Booster pump for boosting the demineralised water pressure (PAD1, PAD2+PAD2R, PAD2X+PAD2R – to be chosen according to the characteristics of the circuit available);
- Additional peristaltic pumps (P14190, P34290, P44290 depending on the type of chemical to be dosed);
- Possibility of Petrol configuration (P3 and P4 pumps included and dedicated seals)
- Additional can racks (TANKSBK)
- Hot water supply hose with water stop device (T4260AC);
- Water stop with basin on the floor of the chamber (AS4190);
- Steel base with detergent compartment and lock (B9040L);
- Raised frame (T9040);
- Data communication card for LAN connection (WD- LAN4290);
- Wi-Fi connection-ready;
- Panel printer (WD-PRINT4290) for tracing the cycle parameters and real-time validation of the cycle performed. The following data are traced for each process: date and time for each event, washing parameters (time, temperatures, detergent dosing, etc.);
- Additional sprayer to be placed on the ceiling of the washing chamber, made of stainless steel AISI 304, for increasing washing performances on tools with complex shape (IRCP);
- Steel closure top for built-in applications (TOP90IB);
- Electrical connection conversion kit (WD-EC4290-1, WD-EC4290-3);
- HEPA absolute filter (AF4060).

ACCESSORIES RANGE – VERSATILITY AND FLEXIBILITY

In laboratories, the washing and disinfection with the combined action of time and temperature are considered a necessary step to get top results for glassware cleaning.
Thanks to the high number of specifically designed accessories, Smeg offers a wide range of solutions to fulfil each single need.
It is also possible to work out on custom requirements for achieving tailored solutions.

DETERGENTS AND ADDITIVES

The use of specific detergents is essential for obtaining thorough washing and even more effective disinfection of the glassware. Smeg can provide you a wide range of alkaline detergents (for washing phase) and acidic neutralizers (for neutralization phase) which have been designed specifically to ensure an efficient cleansing so that the disinfection process can be optimal.
Furthermore, Smeg offer various detergents for processing of laboratory glassware and tools which are able to prolong their lifetime ensuring certain e repeatable results.

TECHNICAL ASSISTANCE SERVICE

Smeg takes care of its customers throughout the product's lifecycle, by making available highly-specialised technical service centres throughout Italy and worldwide, that take care of installation, testing and personnel training.
In addition, a single national helpdesk provides qualified assistance to meet all requirements.
Choosing Smeg means finding an after-sales service with a 5,000 m2 warehouse able to ensure next-day delivery of spare parts, thanks to a comprehensive web-based management system (SmegTech).

WARRANTY

24 months by the local Smeg service centre.