GW4060 - GW4060S
GW4060C - GW4060SC

GLASSWARE-WASHER - 60 CM

WITH AVAILABILITY OF LIQUID DETERGENT PUMP, HOT AIR DRYING, HEPA ABSOLUTE FILTER AND STEAM CONDENSER

GENERAL CHARACTERISTICS

- Manufacturer: Smeg S.p.A.
- Market launch: 2012
- 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: CE declaration of conformity as attachment

INTRODUCTION

The GW series is the result of more than 25 years of experience in washing and disinfection for laboratories. It combines the most advanced technologies and reliable solutions in full compliance with current directives and standards.
The professional Smeg glassware-washers are conceived and manufactured with the unique target of ensuring top results in terms of reliability, safety and performances.
Both the washing chamber and the inner door are made of **stainless steel AISI 316L,** acid-resistant and based on chromium-molybdenum alloy, while the external panels are made of **stainless steel AISI 304**.
The plastic materials used inside the washing chamber are all heat-resistant and they can get in touch with corrosive substances or organic solvent.
The machine is designed for an ergonomic use.
The maintenance operations are made easy by frontal accessing to the main machine components.
The glassware management is entrusted to 4 microcontrollers which allow to monitor and trace all of the machine operations.
The fully electronic control system provides a wide range of programs and stores in the internal memory up to 100 cycles performed. It is also possible check the machine parameters, schedule a delayed start just by setting the time on the internal clock-calendar or make a complete diagnostic of the appliance.
Smeg products, as by tradition, are characterized by top performances.
All the models with width both of 60 cm and 90 cm make available a usable washing area up to 1 m^2 depending on the rack (by using 4-level rack with sprayer for each shelf).
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 Smeg glassware-washers become even more unique with the TRACELOG software for remote controlling and tracing of cycle parameters.
The software allows to update the machine firmware with no hardware operations, to remotely show and trace all the machine parameters as well as the cycle progress, download the cycles archive for traceability or launch diagnostic functions just by remote control. The A0-value can be monitored in real-time mode by TRACELOG and the software allows to draw graphs for temperatures over the time.

The GW4060 series is available in the following versions:

VERSION	DETERGENT POWDER DISPENSER	NEUTRALIZER DOSING PUMP	DETERGENT DOSING PUMP	ADDITIVE DOSING PUMP	STEAM CONDENSER
GW4060	✓	✓	Not available	Optional	Not available
GW4060C	✓	✓	Not available	Optional	✓
GW4060S	Not available	✓	✓	Optional	Not available
GW4060SC	Not available	✓	✓	Optional	✓

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 GW4060 allow you to set all the washing parameters by means of the soft-touch keys or directly through the PC using the TRACELOG software.
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:	Electronic with micro-controller
Total programs:	15
Default programs:	9
Custom programs:	6
Display:	7-segments LED with control and alarm lights
Functions:	temperature, total and residual time, ongoing phase, selected program, clock and calendar, reporting of alarm code, maintenance
Custom phases:	10
Phase parameters:	water type (cold, demineralized), detergent dosing, target temperature, time extension in minutes, temperature and time for drying
Displayed temperature range for washing chamber:	from environmental temperature up to 95 °C
Accuracy:	0.1 °C
Temperature check for chamber:	n. 1 PT1000 probe – IEC 60751, B class

- **The machine is equipped with n. 9 default programs and n. 6 custom programs** (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), detergent type 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
  - The parameters modification is protected by password
- Dosing check by means of flow meters, level sensors and timer
- Display with LED segments for displaying all the main operating parameters as well as alarm and failure messages
- The intuitive soft-touch panel control makes simple and friendly the using of machine as well as immediate the controlling of disinfection parameters. In addition, the key combination allow to access the machine SET UP, adapting it to the installation needs.
- 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
- RS232 serial port for connecting the glassware to the PC or printer
- Electronic clock and calendar coupled with battery backup in case of power failure
- Checking of the ongoing cycle, with real-time displaying of the following information:
  - Ongoing program ID
  - Program progress, with remaining time
  - Ongoing sub-phase
  - Washing chamber temperature
  - A0-value achieved
- 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 GW4060C/SC) to ensure a low water consumption
- 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

SAFETY SYSTEMS AND ALARM INDICATIONS

- Electronic automatic door locking and unlocking command managed by micro-controller (manual door opening in case of power failure by means of screwdriver)
- Safety thermostats
- Alarm and warning messages: n. 41
- Trouble-shooting menu by PC connection
- Cycle stopped if door is open during washing phase with low temperatures
- Water levels check
- Over-heating check
- Alarm and warning messages on the machine display
- Pump malfunction check
- Checking by flow meters for a correct water intake
- Audible and visual alarm for detergent empty
- Water cooling down at the end of cycle
- AquaStop system for preventing damages due to water leakages - optional

WASHING SYSTEM

The Smeg glassware-washer GW4060 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. Whenever delicate washing is required there is the possibility to adjust the pressure in the top manifold branch (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:**
  - Coarse conical filter
  - Conical fine filter
  - External circular filter
  - Protection filter for draining circuit
- Micro-filter for cold water inlet tube
- Micro-filter for demineralized water inlet tube

DOSING SYSTEM

All the Smeg models have n. 2 dosing system for default respectively for dosing the alkaline detergent during cleansing phase and for dosing acidic neutralizer during neutralization phase. Each pump can be equipped with its own level sensor placed inside the canister of the used product.

- Peristaltic pump flow: 55 mL/min
- n. 1 powder dispenser for detergent (GW4060, GW4060C)
- n. 1 peristaltic pump for dosing liquid acidic neutralizer (GW4060, GW4060S, GW4060C, GW4060SC)
- n. 1 peristaltic pump for dosing liquid alkaline detergent (optional)
- n. 1 peristaltic pump for dosing additive (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 very fast and highly efficient.
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.
The air extraction system is combined with a double stage HEPA filter designed to target most of the smallest pollutants and particles:

- Stage 1: pre-filter C class with 98% retention
- Stage 2: HEPA filter S class with 99.99% retention (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

- Single-phase 1/N/PE 230 V - 50 Hz – 2.8 kW max
- Three-phase with neutral line 3/N/PE 400 V - 50 Hz - 7 kW max

WATER CONNECTIONS (PRESSURE 2-5 bar - connection 3/4“ gas)

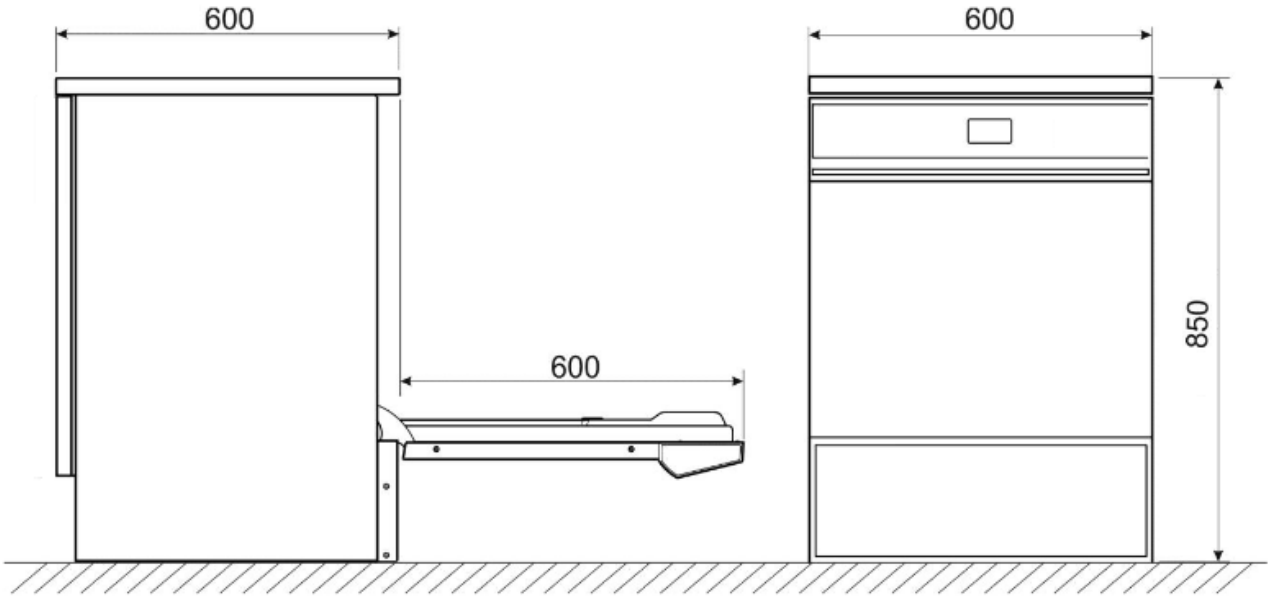
- Water connection for cold water is independent
- Demineralized water, conductivity < 30 µS/cm
- Booster pump for non-pressure demineralized water - optional
- Built-in softener based on automatic volumetric regeneration with salt: water hardness from 33 dH (60 °f) to lower than 4 dH (7 °f)
- Water consumption: 9-10 L for each single phase in relation to the selected program
- Checking by flow meters for the correct water intake

NOISE LEVEL

- Max 50 dB

DIMENSIONS LxDxH

- External dimensions with top: 600 x 600 x 850 mm (H=830 mm without top)
- Internal working dimensions: 525 x 490 x 570 mm
- Internal working volume: 147 L
- Net weight: 72 Kg



- H=830 mm for built-in mounting solution by removing top and H=1250 mm by installing a frame or a plinth

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 – “Scotch-brite” finish perfectly smooth to avoid dirt and/or dust accumulation.

AUXILIARY FUNCTIONS

Storing up to 100 performed cycles.
Serial port RS232 for connecting to PC or the external printer.
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 glassware-washer GW4060 has an RS232 serial port for default in order to download all the data related to washing and disinfection programs.

Cycle archive: TRACELOG / TXT format
Download cycle archive: TRACELOG / TXT format

TRACEABILITY

Tracing the washing and disinfection cycles is very important because it is a fundamental premise for the outcome verification of the overall process.
The printer is an optional useful to report all the data related to the cycles performed by hard-copy. The Smeg models are compatible to the most common traceability software on the market.

LAN CONNECTION

The new generation of Smeg glassware can be equipped with the WD-LANE, an optional electronic board to connect the glassware to the available data LAN.
The LAN connection and the TRACELOG software allow to display all the machine parameters directly on your PC. The data communication is bidirectional and therefore it is possible to communicate 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
- Level sensor for detergents canisters
- Booster pump for non-pressure demineralized water
- Additional peristaltic pumps
- AquaStop
- Plinth with detergent cabinet or a frame for increasing of working level
- Software for remote control and process traceability
- LAN connection
- External printer, 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
- Top for reducing the machine height
- HEPA absolute filter

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 thorough washing and effective glassware disinfection require the using of specific detergents. 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.