WD6010 – WD6010M

HIGH CAPACITY WASHER-DISINFECTOR UP TO 12 DIN
DOUBLE-DOOR OR SINGLE-DOOR (M)

GENERAL CHARACTERISTICS

- Manufacturer: Smeg S.p.A.

- Market launch: 2015

- Available versions: pass-through double-door (WD6010) / single-door (WD6010M)

- Intended use: the appliance is designed for washing and thermal or chemical disinfection of surgical various instruments, anaesthesia sets, rigid endoscopes, microsurgery instruments, ophthalmology sets, OR clogs, baby bottles, container, laboratory glassware, crockery e accessories used in communities

- Main applications: general surgery, gynaecology, otolaryngology, urology, orthopaedics, ophthalmology, etc.

- Conformity: please refer to CE declaration of conformity

INTRODUCTION

The WD6010 series is the result of more than 30 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 (EN15883).

The professional Smeg washer-disinfectors are conceived and manufactured with the unique target of ensuring top results in terms of reliability, safety and performances.

The innovative system constituted by washer-disinfector, racks and flexible accessories allow the re-processing of a wide range of instruments as well as optimizing spaces and decreasing the end users' costs.

The washing chamber is equipped with the innovative fast coupling system for racks and n. 2 sprayers respectively placed on the ceiling of the chamber and its bottom.

The hydraulic system is made of stainless steel AISI 304 with automatic drain at the end of cycle to remove completely all the residuals.

The loading is frontal through the drop-down door made of double tempered glass with a vision surface of 82% internal chamber volume. It is also possible to install the optional LED lighting system (optional) into the chamber for optimal visibility.

The loading capacity has been increased up to 12 DIN keeping compact dimensions (only 65 cm width) and ensuring a usable washing area up to 1,8 m^2 depending on the rack.

The washing chamber is made of stainless steel AISI 316L, an acid resistant chromium-molybdenum alloy, with rounded edges and sloping surfaces to avoid water stagnation, self-cleaning to remove any risk of bacterial proliferation.

The maintenance is easy and safe by accessing to the main components directly from the unclean side of the machine.

The washer-disinfector control is entrusted to electronic boards communicating each other (network) to control, display, and monitor all the performed operations in real-time mode by the TFT – 4.3 inches touch-screen with capacitive sensing (on both unclean and clean sides for double-door models).

The electronic control system traces each events also in case of power failure.

The electronic control system provides a wide range of programs and stores 40 programs in the internal memory, 20 standards and 20 custom.

Furthermore, it is possible to schedule night-time cycles, display all the main parameters in real-time mode such as the achieved A0-value. It is also possible to perform a get a complete diagnostic of the machine.

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 a hot air generator (99.99% DOP HEPA filter) which works in conjunction with the steam condenser for achieving a guaranteed and efficient result.

The Smeg washer-disinfectors become even more unique with the WD-CONNECT software for remote controlling and tracing of cycle parameters.

The software allows the updating of 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 WD-CONNECT and the software allows the tracing of temperature graphs over the time.

TECHNICAL FEATURES

The core of new washer-disinfector 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 washer-disinfector WD6010 allows to set all the cycle parameters through the multi-language and coloured touch screen display (TFT – 4.3 inches with capacitive sensing) on unclean side and clean side (only for double-door models.

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 – Network type
Total programs:	40
Default programs:	20
Custom programs:	20
Display:	multi-language and coloured touch screen display (TFT – 4.3 inches with capacitive sensing) on unclean side and clean side (only for double-door models)
Functions:	temperature, total and residual time, A0-value, ongoing phase, selected program, clock and calendar, reporting of alarm code, maintenance
Custom phases:	10
Phase parameters:	water type (cold, hot, demineralized)), detergent amounts, n.2 target temperatures for phase, phase duration, drying time, drying duration
Displayed temperature range for washing chamber:	From 5 °C up to 95 °C
Accuracy:	0.1 °C
Temperature check in washing chamber:	n. 2 PT1000 probe – IEC 60751, B class

- **The machine is equipped with n. 20 default programs and n. 20 custom programs** (please refer to the programs table for further details):

    A0 VALUE
    The A0 value is referenced by the standard EN ISO 15883-1 as a numerical value related to the thermal disinfection performed.
    It is described by the following formula:

    $$A_0 = \sum 10^{[(T-80)/z]} \times \Delta t \setminus$$

    Z = 10 °C; t = seconds for the considered interval time; T = temperature (°C) achieved by the loaded equipment

- Each program can be **customized with up to n. 10 sub-phases for rinse/washing + n. 1 phase for drying**:

    - RINSE OR WASHING
        - n. 2 x Target temperature (up to 95 °C)
        - Phase duration
        - Additive type
        - Additive amount
        - Chamber temperature for chemical mixing
        - Water intake type (cold, hot, demineralized)
        - Water intake amount

    - DRYING PHASE
        - Phase duration
        - Air temperature within the range [50 ÷ 110] °C

- Access to parameters setting is protected by a system of 4 password levels
- Possibility to set password for each single user
- Dosing check by means of volumetric flow meters
- Additive depletion check by float level sensor (display warning when canister is empty)
- The heating of water is made with electrical resistances (or steam optional)
- n.2 multi-language and coloured touch screen display (TFT – 4.3 inches with capacitive sensing) on unclean side and clean side (only for double-door models) to display all the operating parameters and alarms/warning messages (n.1 display on unclean side for single-door models)
- **A0-value showed on display in real-time mode**
- Program selection in regards to the A0-value required by the instruments type
- Electronic check of the maximum allowed temperature
- "EASY VIEW" cycle progress display
- Audible and visual alarm for end of cycle
- Immediate display of the detected error message
- Automatic counter for cycles performed
- USB serial port for connecting the washer disinfector to the PC
- Archive downloading by means of USB pen drive or LAN connection
- 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
- Electronic control on the built-in ECO-SLIM steam condenser (optional) to ensure a low water consumption
- Temperature probes calibration through dedicated software
- Range for water temperature set-point: from 5°C up to 95°C
- Water cooling down at the end of cycle
- Possibility to install a printer on unclean or clean side for reporting the data cycle and validating in real-time the disinfection performed
- Demineralised water can be deactivated for each program independently
- PRC Conductivity sensor (optional)
- Rack recognition system for automatic selecting the optimal washing program (optional)

SAFETY SYSTEMS AND ALARM INDICATIONS

- Door interlock during the cycle
- Mutually exclusive door opening for double door models to avoid cross-contamination between clean and unclean sides
- Manual opening of door in case of power failure
- Emergency outlet for preventing overflow in the washing chamber

- Over-heating check by means of thermostats
- General safety switch
- Immediate display of the detected alarm/warning messages
- Checking of the correct washing pump functioning
- Washing pump is completely self-drained of residual water
- Over-heating check for washing chamber temperature by means of PT1000 probe
- Over-temperature check for drying system by means of PT1000 probe
- Redundant check for dosing system by means of flow meters
- FDS system – Foam detection system;
- PRC system – Rinse quality detection system (if installed)
- Water cooling down at the end of cycle
- Warning for HEPA filter substitution

WASHING SYSTEM

The Smeg washer-disinfector WD6010 is based on a closed loop washing system with water intake completely renewed in each phase.

The hydraulic system loads 20 L of pre-filtered water, which is drained before the next phase by floor drain (or optional drain pump).

The particular shape of washing chamber minimizes the water consumption and ensures the constant pressure in washing circuit.

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 (mixing temperature and detergent dosing can be set for each program).

During the working phase, the washing pump makes the water and additives flow into the sprayer systems. 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 or the optional steam heating system rapidly increases the temperature of water filled in the washing chamber without stopping the circulation and washing processes.

The smart management allows loading the water intake in relation to the rack to be used so that the water consumption and waste can be minimized.

The water flows into the sprayers placed on the ceiling and at the bottom of the washing chamber as well as into the manifold branches for rack injection or alternatively into the injection systems in relation to the glassware to be processed.

During the heating, the water keeps to flow into the sprayers and the washing process is not stopped.

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: 600 L/min
- Washing pump electrical consumption: 1.0 kW

FILTERS

Specifically designed for high retention of particles and easy to access for maintenance.

- **3-stage filter inside the washing chamber:**
  - Main filter
  - Micro-filter
  - Protection filter for washing circuit
- Micro-filter for cold water inlet tube
- Micro-filter for hot water inlet tube
- Micro-filter for demineralized water inlet tube

DOSING SYSTEM

The Smeg washer-disinfector WD6010(M) has n. 2 peristaltic pumps for default respectively for dosing the alkaline detergent during cleansing phase and for dosing acidic neutralizer during neutralization phase. Each pump is equipped with its own level sensor placed inside the canister of the used product, with warning on display for empty canister. The dosing precision is ensured by volumetric flowmeters.

- n. 1 peristaltic pump for dosing liquid alkaline detergent
- n. 1 peristaltic pump for dosing liquid acidic neutralizer
- n. 2 peristaltic pump for dosing additive (optional)

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

The detergent compartment is an integral part of the machine on the unclean side; its design is suitable for storing up to 3 x 5 litres and 1 x 1 litre cans. It is equipped with a removable tray for easy cleaning in case of detergent leakages.

STEAM CONDENSER

The steam condenser (optional) is a system for reducing the saturated vapour, normally produced because 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 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 "INTELLIGENT DRY" 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 most efficient drying temperature is automatically set by the control system for each of the program.

The hot airflow spreads evenly in the overall volume chamber and throughout the instrument hollows by virtue of the particular design made for sprayers and nozzles.

The drying target temperature can be set in the range [50 ÷ 110] °C.

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

Whenever the filter is no more efficient, the machine will show on display a warning for its substitution to ensure that the air purification is always kept at optimal level and no contamination occurs for instruments.

The drying system is equipped with fan speed control and hot airflow control at the entrance of the washing chamber.

- Airflow rate: 220 m3/h

POWER SUPPLY

- Three-phase 3/N/PE 400 V - 50 Hz - 13 kW max
- General safety switch on machine
- Smart electrical consumption management with maximum absorption peak of 13 kW

WATER CONNECTIONS
(connection 3/4" male – DN20)

- Cold water (CW) - pressure [1.0 ÷ 6.0] bar – max hardness 10 °f –   temperature [8 ÷ 35] °C
- Hot water (HW) - pressure [1.0 ÷ 6.0] bar – max hardness 10 °f – max temperature 60 °C
- Demineralized water (DW) – pressure [1.0 ÷ 6.0] bar, conductivity < 30 µS/cm – max temp. 60 °C
- Floor drain - DN40
- Possibility to wall drain by using dedicated pump (optional)
- Drain water cooling down to preserve pipelines
- Water consumption: 18-23 L for each single phase in relation to the selected program
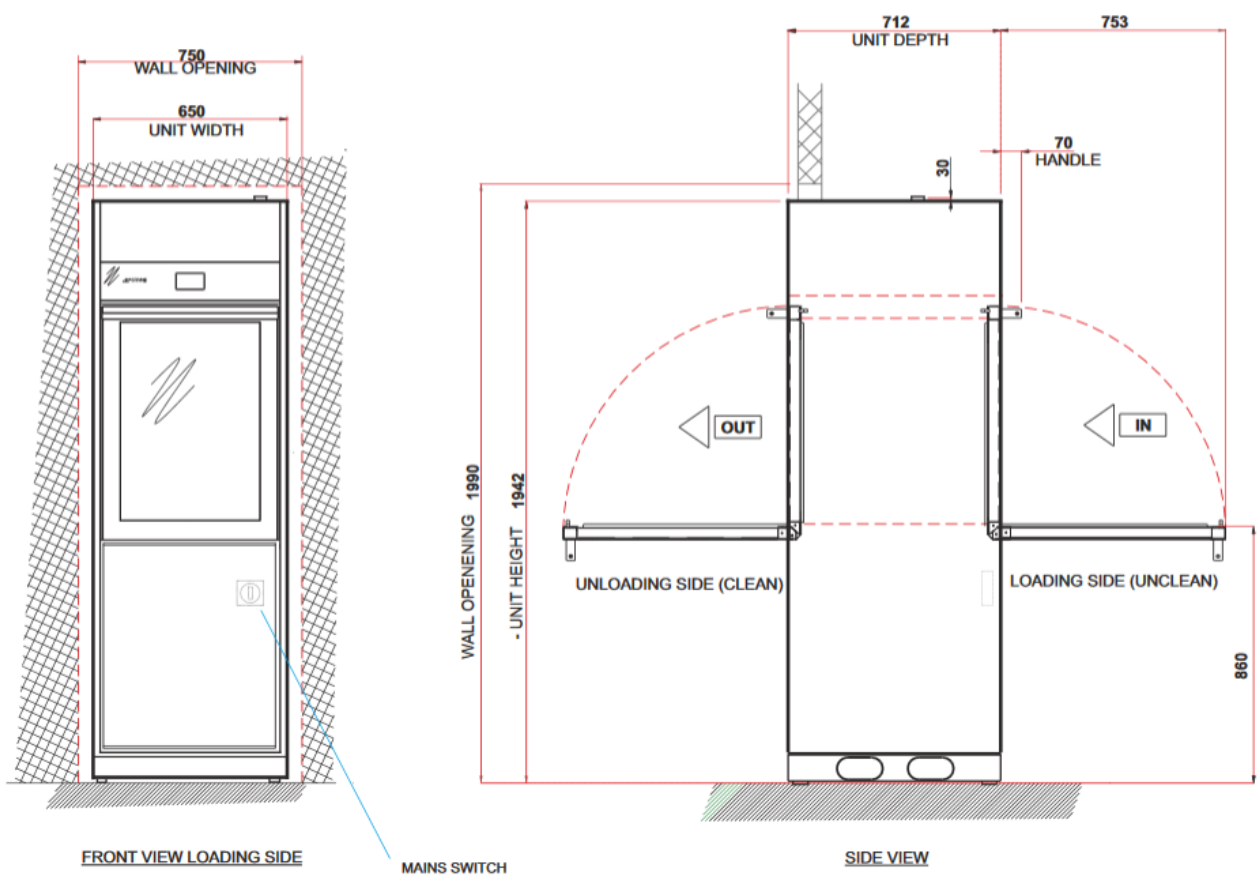- Checking with flow meters for a correct water intake
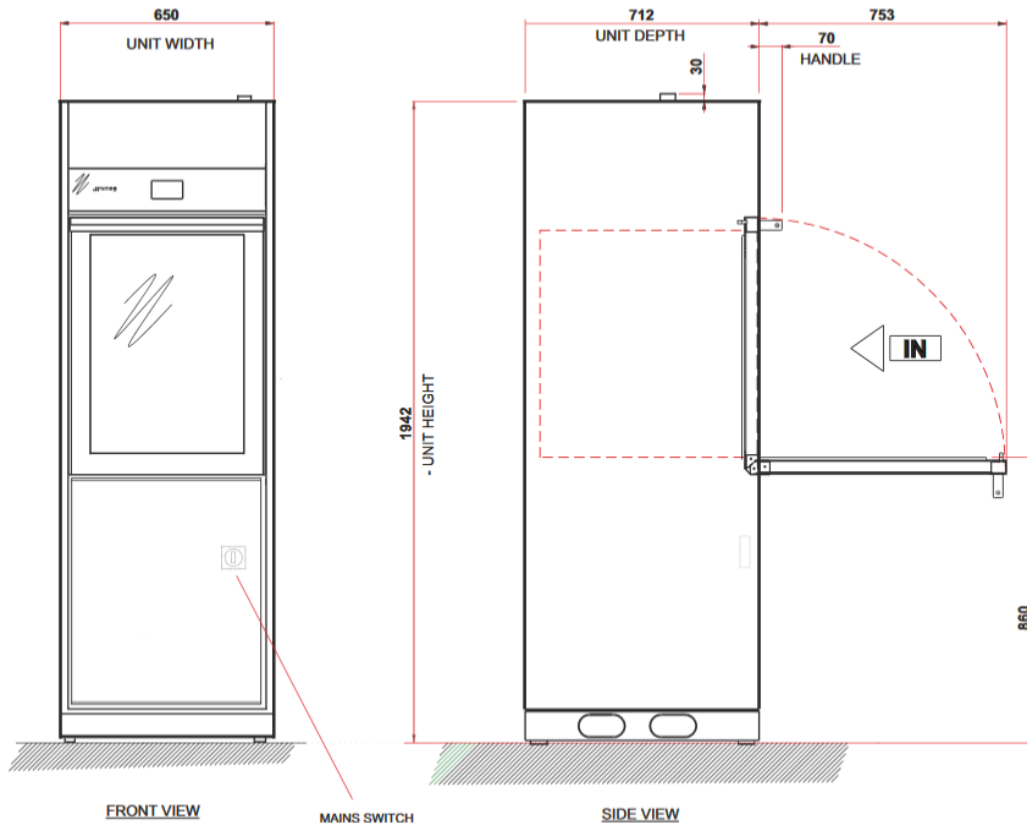
NOISE LEVEL

- Max 66 dBA

DIMENSIONS LxPxH

- External dimensions: 650 x 720 x 1950 mm
- More machines can be installed side by side without the need for technical spaces
- Internal working dimensions: 550 x 620 x 685 mm
- Internal working volume: 234 L
- Net weight: 280 Kg

WD6010 – DOUBLE-DOOR MODEL

WD6010M – SINGLE-DOOR MODEL

FRONT VIEW   MAINS SWITCH   SIDE VIEW

STAINLESS STEEL

- Washing chamber AISI 316L 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.
- External panels are mechanically coupled with fast connectors for optimizing the maintenance operations.
- The washer-disinfector design ensures the best thermal and acoustic insulation.

DETERGENT COMPARTMENT

Ergonomics, reduced footprint and easy to use.

The detergent compartment is an integral part of the machine; its design is suitable for storing up to 4 x 5 litres + 1 x 1 litre.

It is also equipped with a removable tray for easy cleaning.

There is no need of detergent tubing outside the machine footprint.

AUXILIARY FUNCTIONS

- USB port fort downloading the performed cycles
- Ethernet port for LAN connection (optional)

The total verification of the thermal disinfection process is one of the most important aspects as explicitly required by the regulations. Therefore, it is essential that the washer-disinfectors are equipped with the necessary device for communicating data of the performed process. The Smeg washer-disinfector WD7010 has an USB serial port for default in order to download all the data related to washing and disinfection programs.

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.

Alternatively, the machine can be connected to an archiving software by using the LAN port (optional).

The Smeg models are compatible to the most common traceability software on the market.

EN15883 COMPLIANCE

The standard EN15883 specifies general performance requirements for washer-disinfectors related to quality assurance and process. The washer-disinfector WD6010 complies with the standard to ensure that washing cycles are controllable, verifiable and repeatable.

All the Smeg washer disinfectors are full in compliance with the standard and each technical solution implemented fulfil the requirements contained therein.

Among the various novelties introduced by EN15883 the most important is the A0-value concept. The EN15883 standard defines the A0-value, an important numerical value that puts in relation the two fundamental parameters of disinfection: temperature and time.

Basically the A0-value means how large is the lethality of the disinfection process for instrumentation.

The washer-disinfector provides a wide range of programs with different A0-values for every need but it is also able to calculate and show the current value on the display and make a printout at the end of the cycle if the optional printer is installed.

LAN CONNECTION

The new generation of Smeg glassware can be equipped with the WD-LAN60, an optional electronic board to connect the glassware to the available data LAN.

The LAN connection and the dedicated WD-CONNECT software make the new WD6010 series even more unique: it is possible to update the machine firmware with no hardware operations by a LAN connection or to download the cycles archive for traceability.

AVAILABLE OPTIONS

- Booster pump for non-pressure demineralized water
- Additional peristaltic pumps (2)
- Panel 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.)
- Drain pump for wall drain connection
- Conductivity sensor for checking the drain water
- LED lighting for washing chamber
- Rack recognition system for automatic selecting the optimal washing program
- ECOSLIM Steam condenser
- LAN connection for downloading the traceability of the performed cycles
- Dual drain valve to separate and channel the polluted drain water of the first washing phases from the final one
- Sampling tap faucet for validation

ACCESSORIES RANGE – VERSATILITY AND FLEXIBILITY

In CSSD and sub-CSSD, the washing and disinfection with the combined action of time and temperature are considered a necessary step to get top results for medical devices and instrumentation cleaning.

The use washer disinfector is fundamental also for processing hollow instruments, anaesthesia sets, containers, OR clogs, baby bottles and teats.

The Smeg washer-disinfector WD6010 is designed to work with the flexible racks, which are configurable to re-process different items, optimizing spaces and saving money.

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 instrumentation 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 re-processing of thermo-sensitive instruments and anaesthesia sets as well as special lubricants and additives which are able to prolong the medical devices lifetime.