WD2145	WD1160, WD4060	WD4190
		

INSTRUMENT WASHERS

USER MANUAL

Translation of the original instructions issued in Italian

CE
0051

READ THE USER MANUAL WITH CARE

This manual is an integral part of the appliance.
Take good care of it and keep it to hand throughout the appliance's life cycle.
This manual and all the information it contains must be read carefully before using the appliance.
Failure to read, misunderstanding or incorrect interpretation of the instructions provided in this manual may lead to misuse of the appliance, put the operator at risk and considerably reduce the appliance's performance.



Installation, maintenance and any repairs must be carried out by authorised technical staff.
Apart from leading to forfeiture of warranty cover, repairs performed by unauthorised staff may put the user's safety at risk.
Any components must always be replaced with genuine spare parts.

Use of the device in breach of the instructions provided by the manufacturer may jeopardise the specified protection level (safety of the appliance) and the warranty cover for it (see point 5.4.4 of IEC 61010-1:2001).

The manufacturer declines all liability for uses other than those described in this manual.



Consumables (detergents, air filters, thermal printer paper, etc.) are not covered by the warranty, except for any manufacturing defects.
The Warranty does not cover any parts found to be faulty due to negligent or careless use, improper use, failure to comply with the appliance's operating instructions, incorrect installation or maintenance, maintenance or repairs performed using by unauthorised staff or repairs made with non-genuine parts, damage during transport, or any circumstances in which the appliance's defects cannot be traced back to manufacturing faults. Any work relating to installation and connection to the intake and drain systems, and the maintenance work described in the operator's manuals, are also excluded from the Warranty.



Any accessories may not be installed on the appliance by the user; this must be done by authorised technical staff.

To request technical documentation relating to accessories: ***instruments@smeg.it*** *(ref. 5.4.4.c IEC61010-2-040:2005)*

The information in this manual is provided for guidance only. The contents and the equipment described may be subject to change without notice.

19 390 5339 08 - EN	05 / 12 / 2019	Specific models inserted with P4 presence in factory configuration.
Manual Rev.	**Date**	**Note**

INFORMATION AND AFTER-SALES SERVICE

Our Sales Department staff will be able to provide you with information about prices and special offers.

Our After-Sales Department will be able to provide you with guidance about keeping your appliance functioning correctly and put you in touch with your nearest authorised Service Centre.

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1 INTRODUCTION

WD2145, WD1160, WD4060, WD4190 - instrument washers for use in hospitals, class **IIb** medical devices (in accordance with the classification criteria established by Directive 93/42 and subsequent additions and amendments, extended and amended by EC Directive 2007/47).

The products comply with all the requirements of the relevant safety regulations and the standards in force for electrical equipment.



This manual describes four products:
- ***WD2145**: instrument washer 45 cm wide, without drying system*
- ***WD1160**: instrument washers, 60cm, without drying system.*
- ***WD4060**: instrument washers, 60cm, equipped with forced air drying system.*
- ***WD4190**: instrument washers, 90cm, equipped with forced air drying system and side cabinet to take detergent cans.*

The diagrams and images contained in this document refer to the model WD4060. For the WD2145, WD1160, WD4190 models the same considerations and procedures apply, unless otherwise specified.

The table below summarises the product's main characteristics. (For a full list of models and their configurations refer to the "

LIST OF MODELS
" point below).

	Basic **WD**
CONTROL	ELECTRONIC with MICROPROCESSOR (with Time and Date functions)
DOOR OPENING	Automatic
DETERGENT DISPENSING	Automatic, by means of Peristaltic pumps (**P1** and **P2)**
OPTIONAL DETERGENT DISPENSING	Optional peristaltic pump **P3**
CONTROL OF DETERGENT DISPENSING	Yes
DETERGENT JERRY CAN LEVEL CONTROL	Yes
TEMPERATURE CONTROL	Two probes, work and monitoring (**TL1** and **TCL)**
STEAM CONDENSER	Yes
DRYING SYSTEM	Yes, forced air (WD4060, WD4190 series Only)
ABSOLUTE DRYING FILTER	Yes (WD4060, WD4190 series Only)
WATER INTAKE CONNECTIONS	Mains and Demineralised
PRESET PROGRAMS	Specific HOSPITAL, TOTAL OF 16 PROGRAMS, 6 "CUSTOM" (customisable using TRACELOG software[1]. The software is not included in the product's basic outfit)
COMMUNICATION	RS-232 serial (For PC or Printer)

[1]The TRACELOG software enables the user to communicate with "WD" and "GW" instrument and glassware washers. Once the connection has been made, the user can:
- **Keep a record of the disinfection cycles performed.**
- Monitor the appliance's status.
- Download new versions of the appliance's software.
- Modify programs.
- Save the appliance parameter setup.

1.1 WD FAMILY - INTENDED USE

DESCRIPTION: Washer-disinfectors for washing and disinfecting reusable medical devices and other articles used in medical, dental, pharmaceutical and veterinary practice.

INTENDED USE: processing of instruments within hospitals and dental facilities, using thermal disinfection cycles to prevent the spread of infectious agents, which are a threat to both health-care staff and the final patient.

The appliance is built to provide the following function:

- **Washing with Thermal Disinfection**[2] of surgical or dental **instruments**;
- **The appliance cannot be used to sterilize instruments** or any other device.
- **The trolley and the washing baskets used are integral parts of the device** and determine the type of instruments that can be processed in a cycle.



Any use other than that described in this manual constitutes misuse.

The manufacturer declines all liability for uses other than those stated above.
The manufacturer declines all liability for any damage caused by the use of the appliance to wash glassware or instruments not approved by their manufacturers for automatic decontamination by means of thermal disinfection.

The appliance may only be used by specifically trained staff.
INTENDED USER PROFILE*, specifies the characteristics of the "TYPICAL USER":*
- staff specifically trained in the use of the device.
- staff trained in the thermal disinfection process and the medical device treatment cycle.
The staff concerned are employed in hospitals or dental facilities and are generally paramedics or nursing staff.

The installation engineer will train the staff assigned to use the appliance at the time of installation.
The manufacturer declines all liability in the event of malfunctions or accidents caused by use of the appliance by untrained staff.

The training of the staff responsible *includes specific information on the possible risks involved in the use of the appliance, and training in the safest possible way of carrying out the operating procedures.*
The installation engineer is also responsible for notifying the responsible authority of the USER and SUPERUSER passwords for access to the setup parameters. The responsible authority must keep these passwords in a safe place.

It is the duty of the appliance's ***RESPONSIBLE AUTHORITY*** *to ensure that those using the equipment have been suitably trained in its operation, its safe use and routine checks, and that this training is suitably maintained.*
Staff training should be checked regularly.

The installation engineer is responsible for ensuring that it operates correctly after commissioning.
Safety information supplied in compliance with 5.4.101.1 IEC61010-2-040:2005



Instrument manufacturers' instructions should always be followed when choosing the most appropriate disinfection treatment.
In particular, it is important to check the compatibility of the load for treatment with the specific washing cycle chosen, in terms of the maximum temperatures reached and the chemicals used. Information supplied in compliance with point 5.4.4.r IEC61010-2-040:2005.

[2] *Treatment in an Instrument Washer is no substitute for sterilisation.* Disinfection in an instrument washer is intended to reduce the risks for the staff who handle laboratory instruments to prepare them for subsequent use.

1.2 DEFINTITION: "RESPONSIBLE AUTHORITY" IN RELATION TO THE DEVICE

Responsible authority: *"Person or group responsible for the use and ordinary maintenance of the unit and for operator training."*
Definition taken from point 3.5 of the IEC61010-1 standard.

The responsible authority should be clearly identified within the facility where the appliance is used, (for example by recording the relative names and responsibilities on corporate forms).

1.3 STANDARD 15883

The reference standard for the operating performance of a thermal disinfector is **EN ISO 15883.**

As well as compliance of the device as supplied, point 6 of 15883-1 requires to undertake further checks relating to the device as installed, in a sequence of processes known as validation. The validation process is in charge of the Responsible authority for the device.

VALIDATION

The validation process for a thermal disinfection device under EN ISO 15883-1 involves 3 different phases.

1. **Installation Qualification - IQ**
2. **Operational Qualification - OQ**
3. **Performance Qualification - PQ**

installation qualification - IQ
process of obtaining and documenting evidence that equipment has been provided and installed in accordance with its specification

operational qualification - OQ
process of obtaining and documenting evidence that installed equipment operates within predetermined limits when used in accordance with its operational procedures

performance qualification - PQ
process of obtaining and documenting evidence that the equipment, as installed and operated in accordance with operational procedures, consistently performs in accordance with predetermined criteria and thereby yields product meeting its specification

Note on performance qualification
Performance qualification must be carried out after completion of installation and operational qualification.
Performance qualification must be carried out whenever new or modified objects are placed in the appliance for washing and disinfection, or new load systems are used, unless proof is provided that they are equivalent to an approved reference load or an object or load system already approved in the past.
Performance qualification must be carried out when new process parameters (including process chemicals) are adopted.

Operational qualification should be repeated at set intervals to provide regular verification of the appliance's operation.
Repetition of performance qualification for each appliance every year is suggested.

WARNING - USE OF PROBES FOR VALIDATION

The basic appliance does not feature a physical port as envisaged by the 15883 standard for the insertion of probes with cable: the use of wireless probes (dataloggers or similar) is recommended.

2 LIST OF MODELS

Model configuration chart; abbreviations used:

SYMBOL	MEANING
●	**feature present**
○	**optional accessory**, installable on the model in question
-	**feature not present and not installable** on the model in question.
- / ●	**Refers to the specific characteristics of the relevant variant** (some variants have the feature as standard while for others it is not available - e.g. runners in chamber for upper trolley on WD1160).

	***Notes on variants - Power supply:*** *Unless otherwise specified, the device is set for a power supply of three-phase plus neutral with 400V between phases (400V 3N~) – this can be changed to 230V single-phase on the user's premises by authorised technical staff. This configuration is also referred to as "standard".* *If a specific power supply is indicated (e.g. "230V three phase without neutral", or "230V single-phase"), this means that the variant is preset for a specific type of power supply, which cannot be modified on the user's premises.*

2.1 WD2145 MODELS

WD2145: instrument washer 45 cm wide, without drying system, single-phase connection.
Product configuration and active variants (identified by the 6-figure code).

Features - Model standard characteristics	
DD - Powder detergent dispenser in inner door	-
P1 - Peristaltic detergent pump	●
P2 - Neutralising agent peristaltic pump	●
P3 - Optional peristaltic pump	-
Drying system	-
HEPA H13 absolute filter	-
Steam condenser	●
P1 detergent dispensing monitoring	●
P2 acid neutralising agent dispensing monitoring	○
P3 pump dispensing monitoring	-
SL1 - P1 jerry can level monitoring	●
SL2 - P2 jerry can level monitoring	●
SL3 - P3 jerry can level monitoring	-
Aquastop	-
Runners in chamber for upper trolley	●
Trolleys supplied	○
Side cabinet to accommodate 3 detergent cans	-
Electrical main switch	-

Model variants and specific characteristics

6-figure identification code	**Model name**	**Specific characteristics**
860453	WD2145	50Hz, 230V single-phase
860575	WD2145-6	60Hz, 220V single-phase
860455	WD2145D	50Hz, 230V single-phase, Std trolleys provided
860476	WD2145DGB	50Hz, 230V single-phase, Std trolleys provided, UK plug
860574	WD2145D6	60Hz, 220V single-phase, Std trolleys provided

2.2 WD1160 MODELS

WD1160: instrument washers, 60cm, without drying system

Characteristics	WD1160
DD - Powder detergent dispenser in inner door	-
P1 - Peristaltic detergent pump	●
P2 - Neutralising agent peristaltic pump	●
P3/P4 - Optional peristaltic pump [The device can manage up to a maximum of 3 dosing pumps. The pump conventionally identified as "P4" if used for dosing lubricant or drying additives]	○
Drying system	-
HEPA H13 absolute filter	-
Steam condenser	●
P1 detergent dispensing monitoring	●
P2 acid neutralising agent dispensing monitoring	○
P3 pump dispensing monitoring (Control not available in combination with P4 for lubricant / drying aids).	○
SL1 - P1 jerry can level monitoring	●
SL2 - P2 jerry can level monitoring	●
SL3/SL4 - P3/P4 jerry can level monitoring	○
Aquastop	○
Runners in chamber for upper trolley	- / ●
Trolleys supplied	○
Side cabinet to accommodate 3 detergent cans	-
Electrical main switch	-

Models - specific characteristics

6-figure identification code	Model name	Specific characteristics
860346	WD1160	50 Hz
860345	WD1160D	50 Hz, with runners in chamber for upper trolley, std trolleys provided.
860344	WD1160R	50 Hz, with runners in chamber for upper trolley
860377	WD1160-3	50Hz, Three-phase 230V, without neutral.
860440	WD1160R3	50Hz, Three-phase 230V, without neutral, with runners in chamber for upper trolley.
860356	WD1160-1	50Hz, 230V single-phase.
860355	WD1160D1	50 Hz, 230V single-phase, with runners in chamber for upper trolley, std trolleys provided.
860378	WD1160R1	50 Hz, 230V single-phase, with runners in chamber for upper trolley.
860533	WD1160-16	60Hz, 230V single-phase.
860534	WD1160R16	60Hz, 230V single-phase, with runners in chamber for upper trolley.
860553	WD1160-36	60Hz, Three-phase 230V, without neutral.
860648	WD1160R36	60Hz, Three-phase 230V, without neutral, with runners in chamber for upper trolley.
860662	WD1160BD1	50Hz, 230V single phase “Full Power” (7.0kW), rails in the chamber for the upper trolley, Standard dental trolleys included.
860727	WD1160-6	60Hz
860684	WD1160P4	50Hz standard, equipped with lubricant dosing pump P4 and jerry can level monitoring.

2.3 WD4060 MODELS

WD4060: instrument washers, 60cm, equipped with forced air drying system.

Features	WD4060
DD - Powder detergent dispenser in inner door	-
P1 - Peristaltic detergent pump	●
P2 - Neutralising agent peristaltic pump	●
P3/P4 - Optional peristaltic pump [The device can manage up to a maximum of 3 dosing pumps. The pump conventionally identified as "P4" if used for dosing lubricant or drying additives]	○
Drying system	●
HEPA H13 absolute filter	●
Steam condenser	●
P1 detergent dispensing monitoring	●
P2 acid neutralising agent dispensing monitoring	○
P3 pump dispensing monitoring (Control not available in combination with P4 for lubricant / drying aids).	○
SL1 - P1 jerry can level monitoring	●
SL2 - P2 jerry can level monitoring	●
SL3/SL4 - P3/P4 jerry can level monitoring	○
Aquastop	○
Runners in chamber for upper trolley	- / ●
Trolleys supplied	○
Side cabinet to accommodate 3 detergent cans	-
Electrical main switch	-

Model variants and specific characteristics

6-figure identification code	Model name	Specific characteristics
860306	WD4060	50 Hz
860308	WD4060D	50 Hz, with runners in chamber for upper trolley, std trolleys provided.
860305	WD4060R	50 Hz, with runners in chamber for upper trolley.
860447	WD4060-3	50Hz, Three-phase 230V, without neutral.
860309	WD4060-1	50Hz, 230V single-phase
860307	WD4060D1	50 Hz, 230V single-phase, with runners in chamber for upper trolley, std trolleys provided.
860583	WD4060B1	50Hz, 230V single-phase “Maximum power” ("full power") (7.0 kW).
860587	WD4060BD1	50 Hz, 230V single-phase “Maximum power” "full power" (7.0 kW), with runners in chamber for upper trolley, std trolleys provided.
860348	WD4060-6	60Hz
860383	WD4060R6	60Hz, with runners in chamber for upper trolley.
860448	WD4060-36	60Hz, Three-phase 230V, without neutral.
860728	WD4060D6	60Hz, with runners in chamber for upper trolley, std trolleys provided.
860762	WD4060R3	50Hz, Three-phase 230V, without neutral, with runners in chamber for upper trolley.
860685	WD4060P4	50Hz, equipped with lubricant dosing pump P4 and jerry can level monitoring.

2.4 WD4190 MODELS

WD4190: instrument washers, 90cm, equipped with forced air drying system and side cabinet to take detergent cans.

Features	WD4190
DD - Powder detergent dispenser in inner door	-
P1 - Peristaltic detergent pump	●
P2 - Neutralising agent peristaltic pump	●
P3/P4 - Optional peristaltic pump [The device can manage up to a maximum of 3 dosing pumps. The pump conventionally identified as "P4" if used for dosing lubricant or drying additives]	○
Drying system	●
HEPA H13 absolute filter	●
Steam condenser	●
P1 detergent dispensing monitoring	●
P2 acid neutralising agent dispensing monitoring	○
P3 pump dispensing monitoring (Control not available in combination with P4 for lubricant / drying aids).	○
SL1 - P1 jerry can level monitoring	●
SL2 - P2 jerry can level monitoring	●
SL3/SL4 - P3/P4 jerry can level monitoring	○
Aquastop	○
Runners in chamber for upper trolley	- / ●
Trolleys supplied	○
Side cabinet to accommodate 3 detergent cans	●
Electrical main switch	●

Model variants and specific characteristics

6-figure identification code	Model name	Specific characteristics
860364	WD4190	50 Hz
860515	WD4190R	50 Hz, with runners in chamber for upper trolley.
860527	WD4190-1	50Hz, 230V single-phase.
860526	WD4190R1	50 Hz, 230V single-phase, with runners in chamber for upper trolley.
860471	WD4190-6	60Hz
860530	WD4190-36	60Hz, Three-phase 230V, without neutral.
860686	WD4190P4	50Hz, equipped with lubricant dosing pump P4 and jerry can level monitoring.

2.5 WASHING TROLLEYS

	The device is unable to operate without its washing trolley, *which is necessary to support the instruments for processing. The trolley is an integral part of the device.* *The device may be equipped with various washing trolleys, which must be chosen according to requirements.* *Consult your authorised dealer for information and explanations.*
	Installation*, maintenance and any repairs of* ***accessories*** *must be carried out by technical staff authorised by the manufacturer.* ***Any components must always be replaced with genuine spare parts***

2.6 OPTIONALS

2.6.1 WD-PRINTE" printer - W1245, WD1160, WD4060

The appliance's RS-232 port can be used to connect the external WD-PRINTE printer, supplied with its own power transformer.

This accessory should be used **only with thermal paper**, **57.5mm** ± 1mm, recommended weight 55 g/m^2.
To operate this accessory, simply connect the transformer to the power socket and connect the RS-232 port to the RS-232 socket on the rear of the glassware washer. Refer to the accessory's manual for detailed instructions.

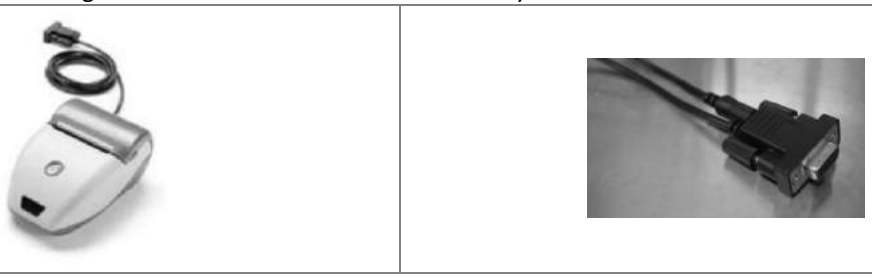


fig. 1 – Optional desktop printer and detail of RS-232 connection port

2.6.2 "WD-PRINT9" Printer – WD4190

The "WD-PRINT9" is a panel printer that can be installed inside the side cabinet on WD4190 devices.



fig. 2 – WD-PRINT9 accessory.

2.6.3 Peristaltic pump P3 (cannot be installed on WD2145)

Peristaltic pump P3 is always optional: contact your local dealer for advice about the model best suited to your needs (e. g. “P34060H”, “P34190H”).

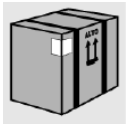
Note: the third pump is conventionally identified as "**P4**" if used for dosing of lubricant or additives assisting drying (eg on "WD4060P4").



*Note for **WD4190**: the device’s cabinet is designed to take two 5 litre cans of Smeg detergent. To take a third detergent can, the cabinet must be fitted with the “**TANKBSK**” (Tank Basket) accessory.*

3 KEY TO THE SYMBOLS USED IN THE MANUAL AND ON THE APPLIANCE

The following is the key to the symbols used on the appliance and in this manual, as required by point 5.4.4.e of IEC61010-2-040:2005.

	***Read with particular attention.*** *(Symbol which appears beside particularly important instructions or warnings).*
	ON" Power *(Symbol 5007 IEC 60417-1)**. Only for WD4190: on the main switch, to indicate **connection to the mains**.*
	***"OFF" Power*** *(Symbol 5008 IEC 60417-1). Only for WD4190: on the main switch, to indicate **disconnection from the mains**.*
	***Warning, danger: refer to the manual.*** *(The symbol appears on the appliance's technical dataplate to emphasise that staff must read the manual before using the device.* *The symbol appears in the manual next to safety instructions)*
	***Warning, hot surface.*** *(the symbol is affixed to the appliance close to parts which may heat to high temperatures and constitute a burn hazard - do not touch parts near this symbol. The symbol appears in the manual to emphasise safety instructions relating to the burn hazard).*
	***Warning, electric shock hazard.*** *(The symbol is affixed close to live parts - the device's power supply must be disconnected before doing any work on these parts. Never touch live parts unless the electricity supply is disconnected).*
	*Transport, storage and unpacking precautions.*
	*Biohazard.*
	*Flammability hazard.*
	*At the end of its working life, the product must be consigned to a disposal plant for recovery and recycling in accordance with the relevant legislation in the country of installation. Contact the specialist disposal consortia.* ***At the end of its lifetime the appliance may be contaminated,*** *especially the chamber and water circuit (e.g. if the appliance has ended its working life due to a fault that has caused the failure of the last thermal disinfection cycle): take appropriate care when decommissioning. THIS APPLIANCE IS MARKED ACCORDING TO THE EUROPEAN DIRECTIVE ON WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE). BY ENSURING THIS PRODUCT IS DISPOSED OF CORRECTLY, YOU WILL HELP PREVENT POTENTIAL NEGATIVE CONSEQUENCES FOR THE ENVIRONMENT AND HUMAN HEALTH, WHICH COULD OTHERWISE BE CAUSED BY INAPPROPRIATE WASTE HANDLING OF THIS PRODUCT.*
	***CE marking, notified body IMQ (CE0051*** *only on "WD" models, medical devices).* *This symbol appears on the appliance's technical data label and in this manual, indicating that it is a medical device which holds EC CERTIFICATION issued by IMQ ("0015" is the code number of the notified body IMQ).*

4 GENERAL WARNINGS



***Leaning or sitting on the open door of the device might cause it to tip over**, putting people in danger. The door is not designed primarily to support loads.*
The maximum weight which can be loaded on the door, including the weight of the instrument trolley, must never exceed
WD1160, WD4060, WD4190: 37kg
WD2145: 18kg
- if the weight of the instrument trolley and baskets is excluded, the maximum load must never exceed:
WD1160, WD4060, WD4190: 23kg.
WD2145: 15Kg

Only WD4060, WD4190: For optimal DRYING, the load for processing must never exceed 15 kg.

With use of the glassware washer, localised or general discolouring of the heating element may occur. This is normal since it is due to the operating mode and does not reduce the appliance's effectiveness.

In the event of malfunction, disconnect the appliance from the electricity supply and turn off the water tap. Then contact your nearest authorised Service Centre.

Open the door carefully, first waiting for the wash cycle to end.

The appliance has an automatic door opening system; do not force the door open while a program is in progress.

The appliance must only be used by staff suitably trained in its operation.

The chamber of the appliance is not designed for users to climb into it. The user must never climb into the chamber; this might put his safety at risk (ref. 7.102 IEC61010-2-040).

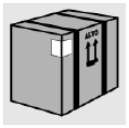


DEMI WATER ABSENCE
If demineralised water is not available, the user is responsible for ensuring that the quality of the water supplied to the medical device does not cause mineral salts or other substances to be deposited on the treated instruments, rendering their subsequent use unsafe.



Do not place flammable substances inside the device. Do not use flammable detergents.

Never place alcohol or solvents such as turpentine, which might cause an explosion, inside the appliance. Do not place materials dirty with ash, wax or paint inside the appliance.



When moving the appliance around, a forklift truck or pallet truck must be used.
Before leaving the factory, the base of the appliance is secured to a pallet, which is used for lifting and transporting it.

Do not use appliances which have been damaged in transit!

If in doubt, contact your dealer.

STORAGE: The device should be stored in a closed place, under conditions of temperature, humidity similar to those described for its operation, see section "INSTALLATION".



Once decommissioned, the appliance must be rendered unusable. Cut the power supply cable after removing the plug / disconnecting the cable from the power socket.

4.1 ACCESSING AND REUSING THE DEVICE AFTER AN INCOMPLETE CYCLE

The instructions relating to the device's safety in the event of an incomplete operating cycle are provided in compliance with points 5.4.4.g and 13.1.102 of IEC61010-2-040.



WARNING
Warning applicable if the appliance is used for processing biologically contaminated material*.*
If a disinfection cycle is interrupted (by the user or due to an alarm generated by the appliance itself): take care when handling the instructions and the load in general in the washing chamber. The load and the internal parts of the appliance might be biologically contaminated/infected.
The load and the internal parts of the appliance might be biologically contaminated/infected.

Before handling tools or performing any maintenance: *Perform a complete disinfection cycle or, if you cannot perform a complete Thermo-disinfection cycle, handle tools with caution (using protection devices required for the handling of infected instruments, eg. gloves, lab coat).*



DANGER, HOT SURFACES
The appliance performs a thermal disinfection cycle using water at high temperatures (up to 93°C) and detergents. If, in the event of a failure, there is water in the chamber when the door is open: avoid contact with the skin, burning hazard and risk of irritation due to the toxicity of the chemicals used.
Never touch the heating elements inside the chamber*.*
Contact authorised technical staff in the event of a failure.

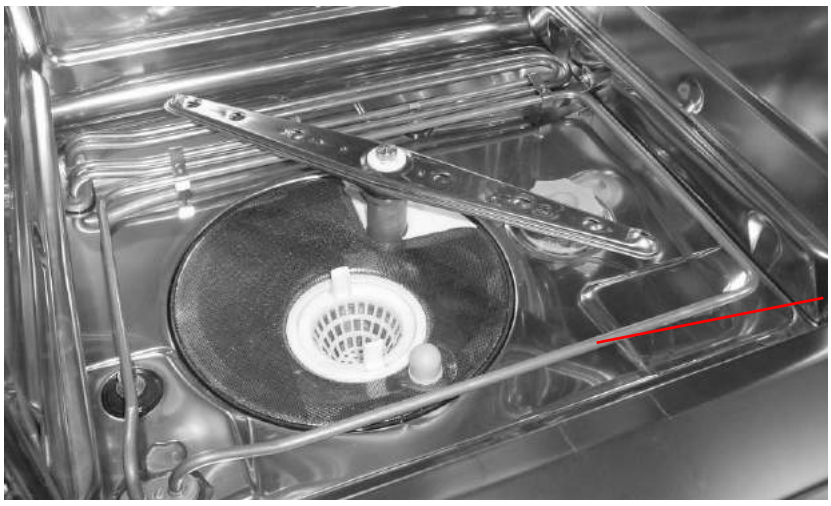


fig. 3 – Guideline view of inside of tank, detail of heating elements.

4.2 DOOR OPENING

The following is a brief preview of the procedure for opening the door of the device for easier access to the chamber. The points which follow provide a complete description of all the controls.

The appliance is equipped with an **automatic door locking system**.

Do not force it open; proceed as follows:

- Connect the appliance to the electricity supply.
- For WD4190 only: open the hatch of the side cabinet and turn the main switch on.
- Hold down the button with the **On/Off** symbol for 2 seconds to switch the appliance on.
- Press the **Door opening** button: the appliance gives a ***beep*** when it receives the signal. Release the button and the door will open automatically after a few moments.

BUTTONS TO BE PRESSED TO OPEN THE DOOR			
	**On/Off**		**Door opening**

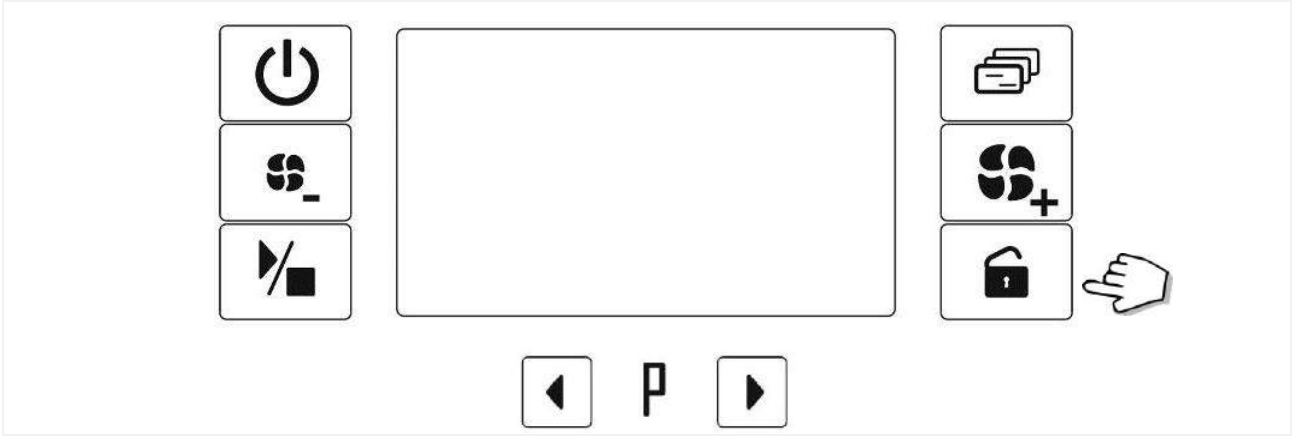


fig. *4* – Selecting automatic door opening

To open the door without connecting the appliance to the electricity supply (useful for emergencies or in case of power blackouts), the manual release system has to be used (see next point).

4.3 MANUAL DOOR RELEASE PROCEDURE

If necessary, due to a malfunction or power blackout, the appliance can be opened manually by releasing the lock using a screwdriver with stem Ø4mm; be gentle, taking care not to damage the device.

1. This procedure is only possible with the appliance in standby status, with no cycle running.
2. Warning: before opening the appliance manually, **disconnect it from the electricity supply.**
3. Insert a screwdriver or a **rod 4 mm in diameter into the hole in the bottom of the centre of the front panel.**
4. **Push the pin upward until the lock is released**.

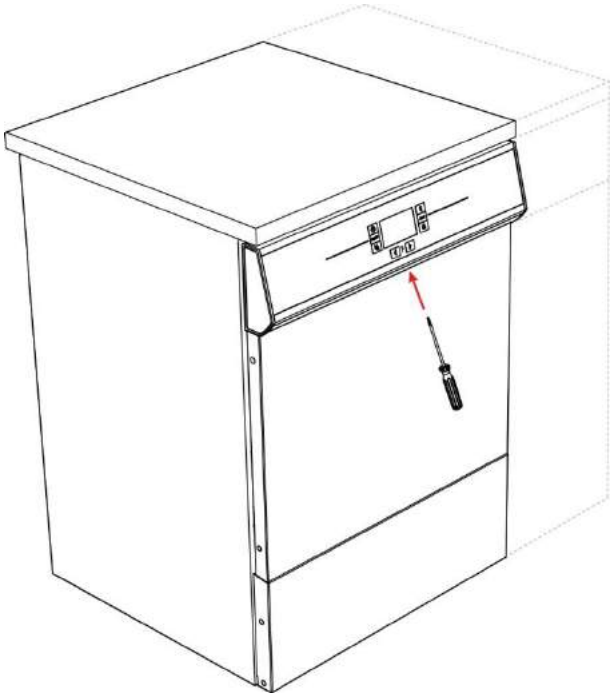


fig. 5 – Diagram showing how to release the lock by hand in any emergency.

4.4 OPENING THE DOOR OF THE SIDE CABINET - WD4190 ONLY

WD4190 models have a side cabinet with a hatch which opens like a drawer. Once the hatch is open, users have full access to the components inside:

- **Main switch** (circuit-breaker),
- **Panel printer** (if installed),
- **Detergent cans.**

To open the cabinet hatch, simply pull it towards you using the stainless steel handle provided.
The following are located above the panel that carries the master switch and printer:

- **RS232 port**: for data transmission – connection by means of TRACELOG software.
- **"Data output" switch**: used to activate the panel printer or data transmission on the RS-232 port. These two devices can never operate simultaneously. The data output switch activates the RS-232 port when turned to "I" or the printer when turned to "II".

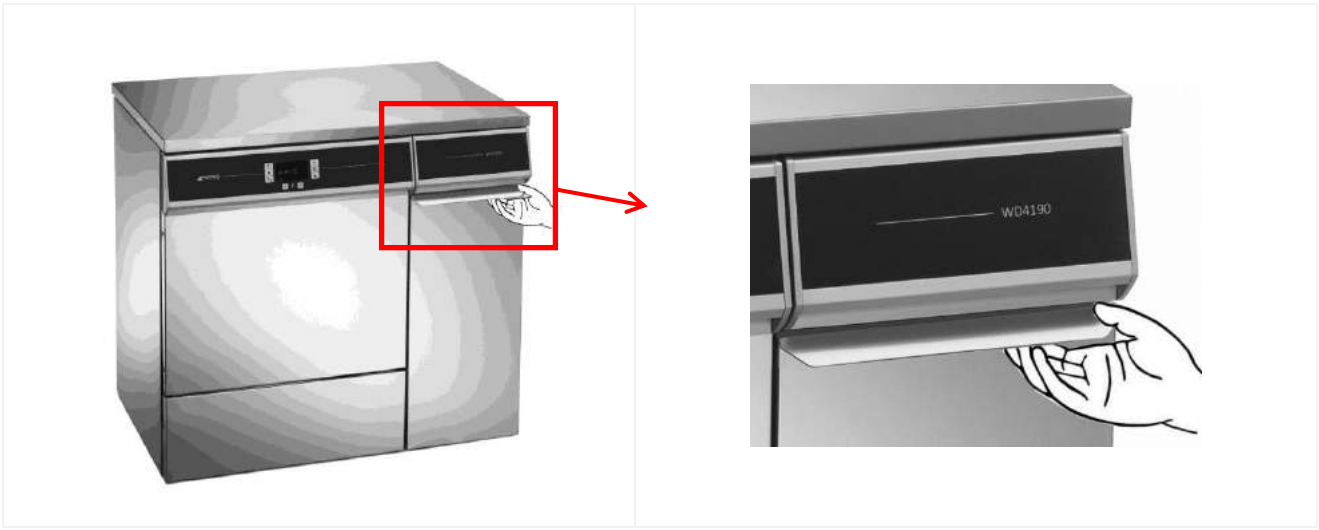


fig. 6 – *Opening the side cabinet hatch WD4190.*



fig. 7 – *Once the side cabinet hatch is open, the user has access to the device's master switch (and the printer, if installed).*

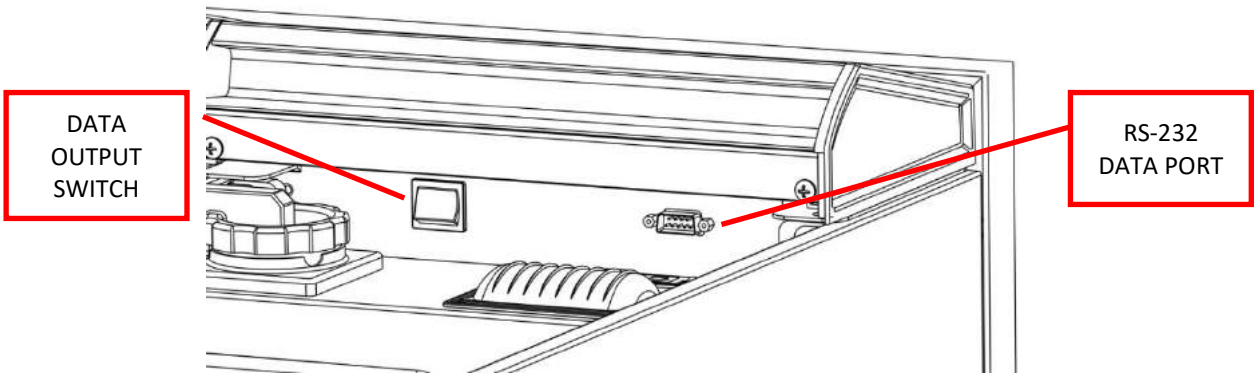


fig. *8 – The RS-232 data port and the data output switch (which directs data either to the transmission port or to the printer) are located above the master switch panel.*

5 DESCRIPTION OF CONTROLS AND PROGRAMS

5.1 CONTROLS

All the device's control and monitoring devices are placed together on the front panel.

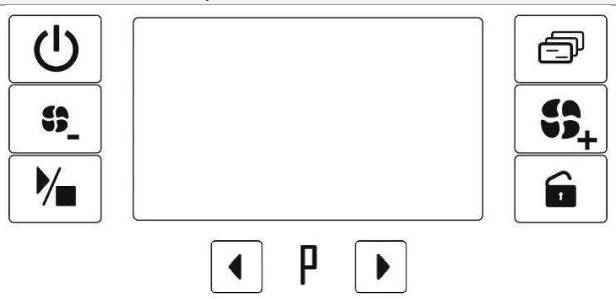
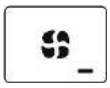
WD4060, WD4190 CONTROL PANEL	WD2145, WD1160 CONTROL PANEL
	

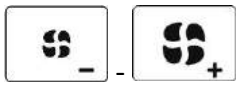
fig. 9 – Control panel. The display and indicator LEDs are in the middle and the control buttons at the sides and bottom.

CONTROL PANEL SYMBOLS			
SYMBOL	**MEANING**	**SYMBOL**	**MEANING**
	**On/Off**		**Functions**
	**Drying Decrease** (only on WD4060, WD4190)		**Drying Increase** (only on WD4060, WD4190)
	**Start / Stop**		**Door opening**
	**Selection**		**Selection**



The diagrams below only us the layout relating to WD4060 models. The same remarks and procedures also apply for models WD2145, WD1160 and WD4190, unless otherwise specified.

5.2 CONTROLS - DETAILED DESCRIPTION

<table>
<tr><th>BUTTONS</th><th colspan="3">DESCRIPTION</th></tr>
<tr><td></td><td colspan="3">On/Off
The button is operational with the door opened or closed.
The button turns the device’s interface on and off, allowing its use. Hold it down for 2 seconds for both switch-on and switch-off.
Once the appliance has been switched on, the code of the selected program appears on the display (e.g. “Pr 03”).
When the interface is switched off, the display shows a flashing “OFF” message.
When the door is open, the display shows 4 horizontal dashes and none of the other interface buttons are active. The device is still powered up even when the interface is off.</td></tr>
<tr><td></td><td colspan="3">Drying +/- (only on WD4060, WD4190)
The buttons increase/decrease the intensity (and duration) of the drying phase.
Holding down the “Drying–” button selects a separate drying program; the display shows the message “Pdry”.
If the cycle set has a drying phase, these buttons are enabled and the drying LED illuminates.
If the cycle set does not include a drying phase, the buttons are not enabled and the drying LED remains off.
These are “first touch” buttons; there is no need to hold them down.
The drying duration set is displayed as follows:
- 3 horizontal bars on the display; maximum time setting, default time
- 2 horizontal bars, medium duration
- 1 horizontal bar, short duration</td></tr>
<tr><td></td><td colspan="3">Start/Stop
This button starts the selected cycle or interrupts a cycle in progress. It must be held down for 2 seconds. Two beeps sound when a cycle is started or stopped.
The button is also used (again holding it down) to confirm the value of an appliance parameter during modification.</td></tr>
<tr><td></td><td colspan="3">Functions
Hold down: access to the appliance setup parameters, password required. Refer to the SETUP MODE - “FUNCTIONS” section for a detailed explanation.
Short press: whenever the Functions button is pressed,
the display screen changes; the various screens show the parameters of the cycle selected in combination with the LED which explains their meaning.
For a full understanding of the values shown on the display, note that they depend on the appliance’s status:
1. Appliance in standby
2. Washing cycle running</td></tr>
<tr><td></td><td>LED</td><td>ON DISPLAY</td><td>Meaning of LED on</td></tr>
<tr><td rowspan="2"></td><td></td><td>1 : 16</td><td>With appliance in standby
The value is the nominal duration of the cycle. The time LED also illuminates. The duration is guideline; it applies in test conditions and with correct electrical connection.
With cycle running
Time left to end of current cycle</td></tr>
<tr><td></td><td>-- : 90</td><td>With appliance in standby
Maximum temperature reached in the cycle set
With cycle running
During washing: Tank temperature
During drying: inlet air temperature. (function introduced from firmware version 4.6.xx.yy).</td></tr>
</table>

BUTTONS	DESCRIPTION		
	A_0	600	**With appliance in standby** A0 value associated to the selected cycle, if the cycle includes a thermal disinfection phase. **With cycle running** Display function which starts from the thermal disinfection phase: displays the A0 value reached. The value reached during the thermal disinfection phase is displayed during the phases which follow. [The parameter is displayed on two consecutive display screens from firmware version 1.11.0.32. The value in thousands is indicated by the suffix "t", in units with the suffix "u"]
	-	F5	**With appliance in standby** Number of phases in the program **With cycle running** Current phase N.B.: Washing cycles always start with a short draining phase to bring the device to the standard starting condition: this phase is called “phase 0”.
	-	PR 03	If the user does not give any commands for 5 seconds, the display shows the program selected.
	**Door opening** The door is opened automatically by means of an electric lock; opening is only permitted in conditions of safety for the user. The user simply presses the button; there is no need to hold it down. The button also provides an “**Escape”** function; it is pressed to quit the procedure for displaying or modifying an appliance parameter. In this case, it has to be held down (2 seconds).		
	**Selection** Program selection buttons. The letter “P” and the name of the selected program appear on the display. These buttons can be used to **increase or decrease** the current value during **modification of an appliance parameter.**		

5.2.1 A0 PARAMETER DISPLAY

The parameter is displayed on two consecutive display screens from firmware version 1.11.0.33.
The A0 parameter can reach high values (eg typical A0 = 12000) and will appear on two consecutive screens; thousands display screen (t-Thousands) and units screen (u-units), the value in thousands is indicated by the suffix "t" units with the suffix" u ". The transition from one screen to the next occurs automatically after 3 seconds or by short press of the "**Functions**" key.

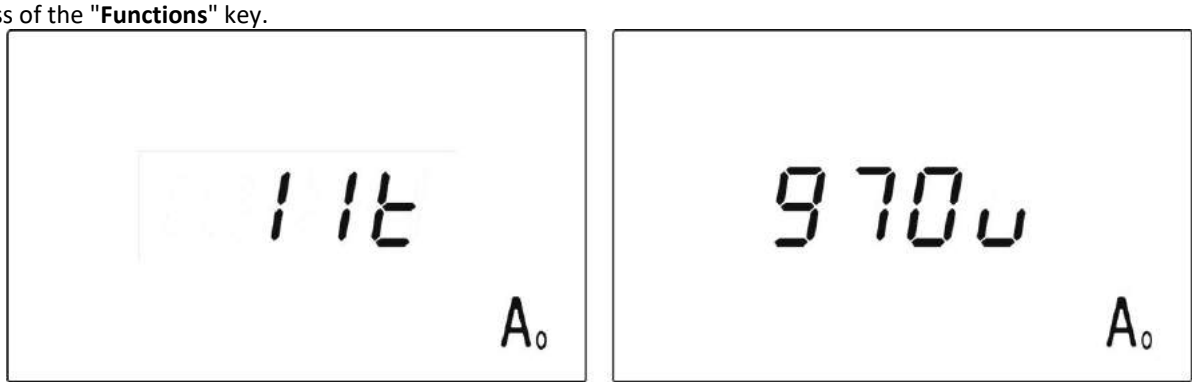


fig. 10 – *The A0 value is displayed split into thousands (t) and units (u)*

5.3 INDICATOR LEDS - INTRODUCTION

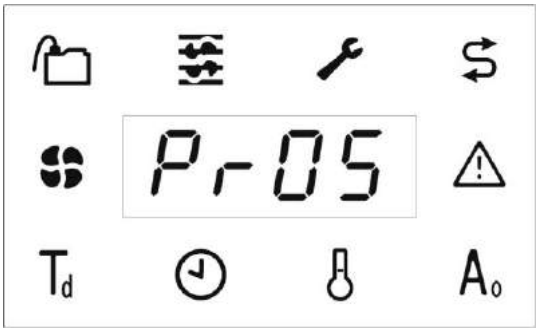


fig. 11 – – In the front panel display area: digit area in the centre with indicator LEDs around the perimeter

LED SYMBOLS			
SYMBOL	**MEANING**	**SYMBOL**	**MEANING**
	No detergent		**A0, thermal disinfection**
	Maintenance: filter replacement (Only for WD4060, WD4190)		**Temperature**
	Appliance maintenance		**Time: time left on display**
	Lack of salt		**Thermal disinfection, identifies cycles with thermal disinfection**
	Alarm		**Drying** (Only for WD4060, WD4190)

5.4 INDICATOR LEDS - DETAILED EXPLANATION

1 - Symbols associated to a warning	
SYMBOL	**MEANING**
	**No detergent** Lights up if the detergent level sensors are installed and one of them is at "minimum" level. The warning is displayed at the end of the cycle and, in combination with the LED, the segment display shows the code of the detergent to which the warning refers: P1: code “A-:68” P2: code “A-:69” P3: code “A-:70” P4: code “A-:71” Activated at the end of the cycle and when the user attempts to start a new program. The washing cycle can be started with this light on by pressing the **Start/Stop** button again. If both alarms are present (cans P1 and P2 both empty), the **Start/Stop** button has to be pressed twice to start the cycle. (The device’s internal memory records the event). **Replace the can of detergent which is running out with a new can as soon as possible.**
	**Maintenance: filter replacement** Only for WD4060, WD4190. Active if the dryer is present and the absolute filter is installed. (The absolute filter is optional on the GW series). The LED indicates that the absolute filter needs to be replaced. Operation of the light is triggered by the number of drying operating hours, set at 500h when the filter is new. The filter must be replaced by authorised staff.
	**Appliance maintenance** The appliance counts the number of cycles performed and the LED comes on to alert the user that maintenance is required. These are inspection and maintenance operations, scheduled every 1000 cycles, which must be performed by authorised staff to keep the appliance safe and in good working order.
	**Lack of Salt** Salt must be added to the water softener reservoir in the chamber. Salt is necessary to enable the softener to reduce the hardness of the intake water.
	**Alarm** The machine displays an anomaly, which can be generated by a fault or by the detection of abnormal conditions. **A numerical code on the segment display indicates the alarm which has been triggered.** The alarms table in this manual details the components which may have caused the event for each alarm code, to simplify diagnostics and troubleshooting. A record should be kept of any alarms to allow the After-Sales Service to be provided with a detailed description of the malfunction.

2 - Symbols associated to a washing cycle parameter	
When the LEDs listed below light up, the value shown on the display is a parameter of the washing cycle in progress or being selected. When the cycle has not yet started: pressing the **functions** button displays the cycle parameters. When the operating cycle is in progress: pressing the **functions** button displays the value reached by the parameter associated to the LED.	
SYMBOL	**MEANING**
A_0	**A0, thermal disinfection** **With cycle running**: The LED is on when the digits in the middle of the screen show the A0 value reached. **With appliance in standby**: when the LED is on the digits in the middle of the screen show the A0 value associated to the cycle being selected. Parameter calculation and display are only enabled if the cycle has a thermal disinfection phase with temperature of at least 80°C.
	Temperature **With cycle running**: The LED lights up when the display shows the temperature in the chamber. **With drying in progress:** The LED lights up when the display shows the temperature in the dryer pipe (function introduced from firmware version 4.6.xx.yy). **With appliance in standby:** the value on the display shows the max. temperature associated to the cycle being selected.
T_d	**Thermal disinfection** Identifies a cycle with thermal disinfection; the LED flashes when a thermal disinfection phase is in progress.
	Drying Only for WD4060, WD4190. The LED comes on to identify a cycle with drying phase, even during selection. The LED flashes when the drying phase is in progress.
	Remaining time **With cycle running**: The LED lights up when the display shows the time remaining. **With appliance in standby:** the value on the display shows the estimated time for performance of the program.

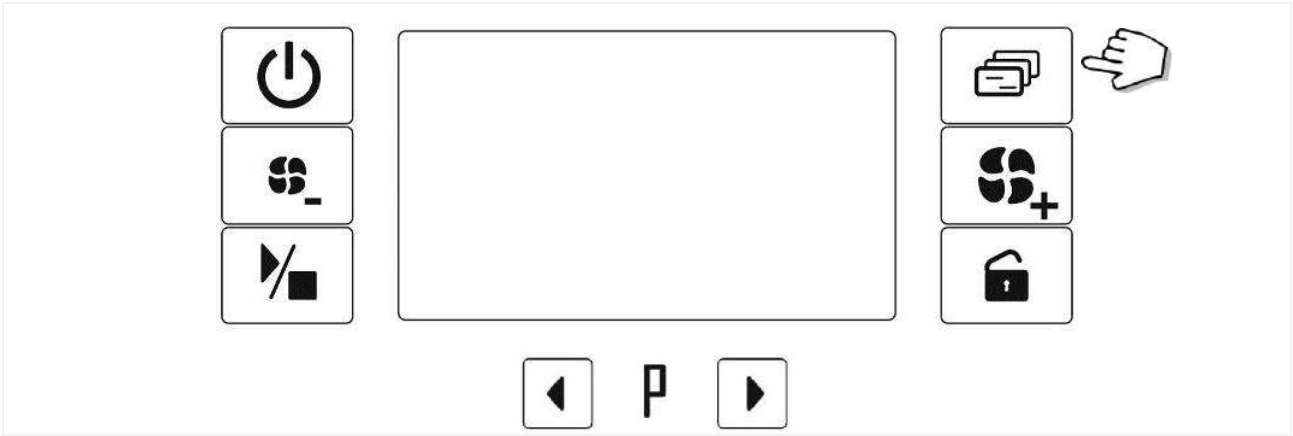


fig. 12 – Functions button With the cycle in progress or being selected, pressing the Functions button displays the parameters of the wash cycle: A0 value, Temperature and Time Remaining.

5.5 SELECTING THE WASHING PROGRAMME

The device has an interface, with segment display and 10 LED-lit symbols, for user-device communications.
To run a program:

1. Close the door by shutting it against the appliance until the lock clicks shut. **The buttons are only enabled with the door closed.**
2. If the appliance is off, switch it on by pressing the **On/Off** key (hold down for 2 seconds)
3. Use the **Selection** buttons to select the program.
4. Once the selection has been made, the **Functions** button can be used to scroll through the program parameters.
5. Only for WD4060, WD4190: If the program includes a drying phase, its duration can be adjusted using the **Drying Decrease** and **Drying Increase** buttons.
6. Press the **Start/Stop** button to start the cycle (hold it down for 2 seconds).
7. Two beeps sound to indicate the start of the cycle.
8. Once the selected program has been successfully completed, the display shows **End**".
9. **Interrupting the cycle:** A cycle in progress can be interrupted by pressing the **Start/Stop** button. **WD:** If the program is stopped, it is no longer possible to restart the current cycle. After the interruption a reset cycle is performed automatically to return the machine to the standby condition.
10. Starting the **RESET cycle**: hold the **Functions** and **Start/Stop** buttons down for about 2 seconds, until two beeps are heard. The display shows "***P-***".

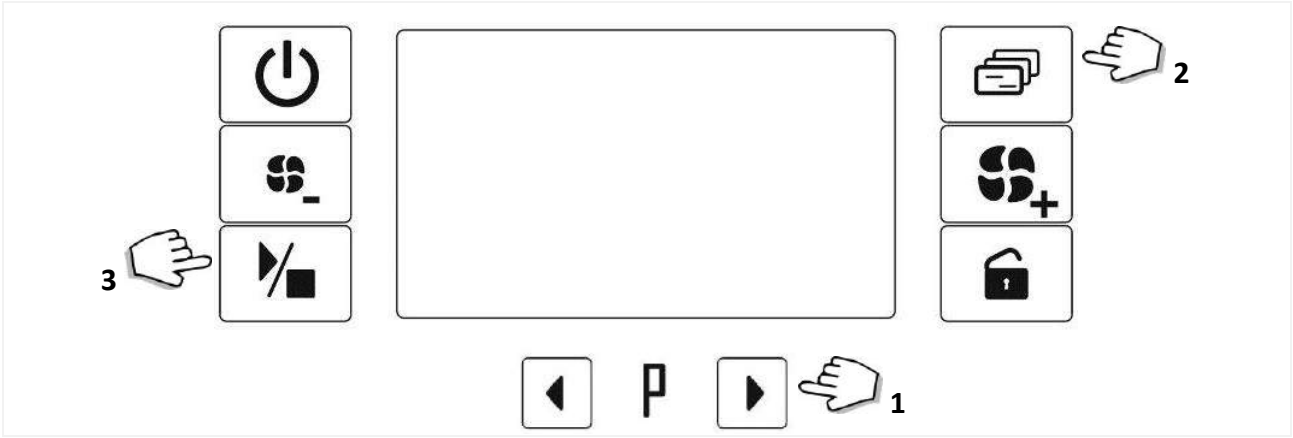


fig. *13* – Standard procedure for **starting a cycle**. 1 Select the program using the **Selection buttons**. 2 **Check the program** parameters: **Functions button**. 3 **Start the program**: hold down **the Start/Stop button**.

CONTROL PANEL SYMBOLS			
SYMBOL	**MEANING**	**SYMBOL**	**MEANING**
	On/Off		**Functions**
	Drying Decrease (only for WD4060, WD4190)		**Drying Increase** (only for WD4060, WD4190)
	Start / Stop		**Door opening**
	Selection		**Selection**

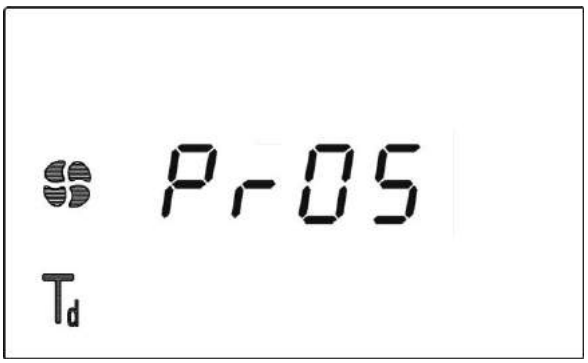


*fig. 14 – Example of a **Display screen**. Program 5 selected*
*The program includes a **drying phase – Drying LED on**.*
*The program includes a **thermal disinfection phase**– "Td" LED on.*

NOTE - CYCLE COMPLETION TIMES

***The completion times shown on the display are guideline**: they may vary due to factors such as the intake water temperature and pressure.*

*At the end of each program, a **resin regeneration** phase may be automatically tripped, followed by **resin washing**, to ensure **that the integral softener operates correctly**. These procedures do not take place at every cycle but are triggered as needed, depending on the intake water hardness and the amount of water used.*

The procedures are not included in the theoretical cycle time shown initially on the display.

In order for the real times to be close to the theoretical stated times, the appliance parameters must be set appropriately, so that the time passed is calculated on the basis of the electrical connection as made.

5.6 PROGRAMS INSTALLED

Please refer to the documents supplied with the device:
“WD2145 program table” and “**WD1160-WD4060-WD4190 Program Table”**.

N.B: The drying phase is only present in the WD4060, WD4190.



CUSTOM PROGRAMS
In addition to the Standard Original programs, which cannot be modified by the user, modifiable programs are also available.
*The **Custom programs** are programs which can be modified to meet specific requirements.*
Programs can only be modified using the TRACELOG software; contact your local dealer for information concerning the use and installation of the program.



MAINS WATER - DEMINERALISED WATER in PROGRAMS
The enclosed table indicates when a specific phase takes in cold water and when demineralised water.
If demineralised water is deselected by means of the appliance setup parameters, the appliance will always take in cold water.
Whenever possible, connection to demineralised water is recommended, for better final rinsing results and to avoid the formation of limescale.

5.6.1 RESINS - SOFTENER, REGENERATION AND WASHING PHASE

The softener incorporated in the device removes calcium compounds from the intake water to reduce its hardness.
The softener comprises a container of ion exchanger resins, which must be regenerated regularly.
The appliance decides when a resin regeneration and washing cycle is needed depending on the hardness set and the quantity of water treated.
Resins washing cycles are performed at the start of a washing cycle, to avoid the risk that standing brine (salt and water) might cause corrosion.

5.6.2 DRYING PHASE – Only for WD4060, WD4190

The **drying** phase is included in the washing and thermal disinfection cycle, except in programs "Prewash", "Auto-Disinfection" and "Service".
When a program which includes the drying phase is selected, the LED of the function illuminates.

ADJUSTING THE DRYING SETTINGS

The specific buttons for this function allow the effectiveness of the drying process **to be regulated** by increasing or decreasing the total time of this phase. **3 dashes** light up on the display if the default drying settings are active, while 2 dashes or 1 dash indicate gradually shorter times.

STANDARD STRUCTURE OF THE DRYING PHASE, 3 STEPS

Drying total time: *t_d = t_1 + t_2 + t_3*	**Step 1** *[t_1]*	**Step 2** *[t_2]*	**Step 3** *[t_3]*
Characteristics:	The fan speed is reduced (1/4 - 1/2 of full speed) to aid the controlled venting of steam from the well.	Time and temperature equal to target values set by the program. Fan at full speed.	Cooling phase for load and heating elements.
Duration, with 3 dashes	*t_1 = 10 minutes*	*t_2 = target_time*	*t_3 = 4 minutes*
Duration, with 2 dashes	*t_1 = 10 minutes*	*t_2 = 0.5 x target_time*	*t_3 = 4 minutes*
Duration, with 1 dash	*t_1 = 10 minutes*	*t_2 = 0*	*t_3 = 4 minutes*
Duration, with 0 dashes	*t_1 = 4 minutes*	*t_2 = 0*	*t_3 = 4 minutes*

NOTES
The "**target time**" stated in the table refers to the time specified in the annexed "PROGRAM TABLE" document.
In a standard program, e.g. with drying having t_target=25min, the total time of the phase is calculated as follows:
t_d = t_1 + t_2 + t_3 = 10 + 25 + 4 = 39minutes.
If the final temperature is below 40°C during the last phase of the washing cycle, step 1 is completely omitted, since there is no need to expel steam: t_1=0.

Target temperature: the temperature value in the program table, which refers to the temperature reached by the monitoring probe TA in the drying duct. The temperature in the well during drying is about 30°C below the target value. For example, for a drying program with T_target=110°C,

T_well ≈ T_target - 30°C = 110°C – 30°C = 80°C.

SEPARATE DRYING PHASE

Users can also select a **SEPARATE DRYING CYCLE** by pressing the "**Drying Decrease**" button for 2 seconds: the message "**PdrY**" appears on the display.
The drying time can still be adjusted as described above.

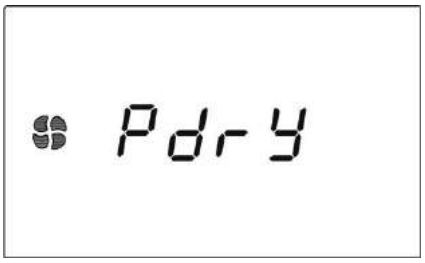


fig. *15* – Display screen**: separate drying** program.

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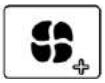
	**Drying Decrease**		**Drying Increase**

fig. 16 – Buttons used to **Decrease** and **Increase** the Drying Time**.**

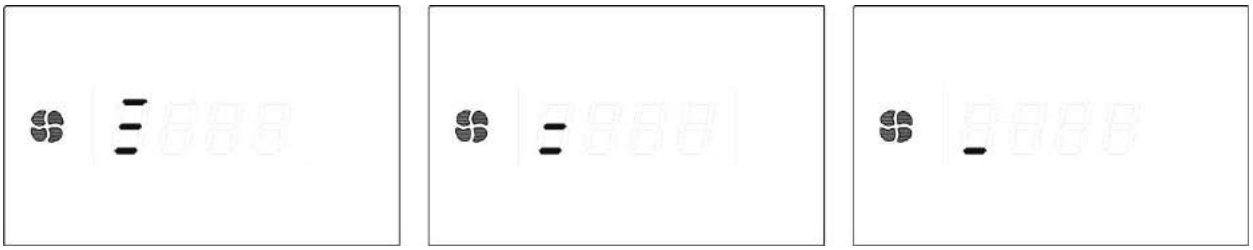


fig. 17 – Display during Drying setting adjustment.



N.B. - important for selecting the cycle and max. cycle temperature
The drying temperature stated in the programs table (e.g. 110°C) refers to the value measured at a specific point of the Dryer duct and does not correspond to the temperature reached by the load.
Temperatures in the chamber during drying never exceed 90°C.

5.6.3 CUSTOM PROGRAMS

Programs (eg 10, 11, 12, 13, 14 and 15) that can be modified to meet specific washing requirements.
Modifications can be made using the TRACELOG software (not part of the standard package) or **by authorised engineers on request**.
For details of how to purchase the software and minimum installation requirements, contact your local dealer or mail the manufacturer directly at instruments@smeg.it .
If parameters are modified from the default settings, a record should be kept of the various phases and the new program settings.



***Warning**: when creating a custom program, do not include more than two thermal disinfection phases at 93°C for 10min.*

CUSTOM PROGRAM RECORD TEMPLATE

Program		1. Prewash / Wash (cold)			2. Wash / Enzymatic Wash			3. Chemical Disinfection			4. Neutralisation			5. Mains Water Rinse			6. Demi Rinse			7. Hot Demi Rinse			8. Thermal Disinfection / Td + lubrication			9. Drying		A0	Cycle time (except drying)
ID.	Name	H2O Intake	Temp. [°C]	duration [min]	H2O Intake	Temp. [°C]	duration [min]	H2O Intake	Temp. [°C]	duration [min]	H2O Intake	Temp. [°C]	duration [min]	H2O Intake	Temp. [°C]	duration [min]	H2O Intake	Temp. [°C]	duration [min]	H2O Intake	Temp. [°C]	duration [min]	H2O Intake	Temp. [°C]	duration [min]	Temp. [°C]	duration [min]		

5.7 A_0 THERMAL DISINFECTION PARAMETER

The **A_0** parameter (introduced by the EN 15883 standard[3]) allows a numerical value to be assigned to the thermal disinfection carried out - shown by **Td** in the interface LEDs.

When calculating the parameter, only the time intervals during which the temperature is above 65°C are considered. For thermal disinfection programs, the calculation is simplified by only including the "extension" phase, when the temperature is kept constant at close to the target value set.

Programs that include thermal disinfection have therefore been designed to offer the following **A_0** values:

Temperature [°C] and time [min]	A_0
90°C - 1'	600
90°C - 5'	3000
93°C - 5'	6000
93°C - 10'	12000

The formula for calculating **A_0** is given below.

$$A_0 = \tau \bullet 10^{\left(\frac{T-80}{10}\right)}$$

τ = Time in seconds for which the disinfection temperature must be maintained.

T = Disinfection temperature in °C.

If the temperature is 80°C, A_0 is equal to the temperature maintenance time.

[3]EUROPEAN STANDARD EN 15883 "Washer-Disinfectors" , with particular reference to section 3 *Terms and Definitions* and annex B, *A_0 concept*. of part 1 of the standard, 15883-1.

5.8 PREPARING THE LOAD FOR WASHING AND DISINFECTION

Loading instructions are provided in compliance with 5.4.4-k of IEC61010-2-040:2005.

Effective washing starts with preparation of the load for processing.
To allow effective cleaning and prevent damage, **the load for processing must be arranged appropriately on the most suitable supports.**



Before placing the instruments and the other items of the load in the specific baskets, it is necessary to remove any large residues deriving from previous use, by soaking, treatment or rinsing.

Stainless steel items cannot be immersed in physiological solutions of sodium chloride, as prolonged contact causes corrosion and damage to the surface due to stress corrosion cracking.

Do not overload the washing baskets to ensure effective mechanical action of the water across the entire surface of the elements to be processed.
Instruments which can be dismantled must be prepared and stowed as instructed by the manufacturer.
Overlapping must always be avoided.

For effective cleaning, items with hinged joints must be opened to minimise the overlapped surfaces. The instrument holder devices used and the fixing devices must be designed so that no shadow zones are created during subsequent cleaning and disinfection.



WASHING SUPPORTS - TROLLEYS
The appliance comes without washing trolleys.
Refer to the washing trolley manuals for guidance on their correct use.
Contact your local dealer for advice about the washing trolleys best suited to your needs
instruments@smeg.it



Avoid direct, repeated contact with dirty material.

Always take the greatest care and use suitable personal protection equipment, both before and after treatment.

Before processing instruments or any other object, check on the manufacturer's instructions that the items are approved for automatic treatment in Instruments Washer and also the recommended maximum washing temperature.

5.9 END OF CYCLE

Once the selected program has been successfully completed, the display shows "***End***".
"**End**" only appears if the washing phases have been performed and been **completed correctly**; it does not appear if the program has been interrupted or if an error which may affect the cycles' effectiveness has occurred.
A beep sounds to indicate the end of the cycle.

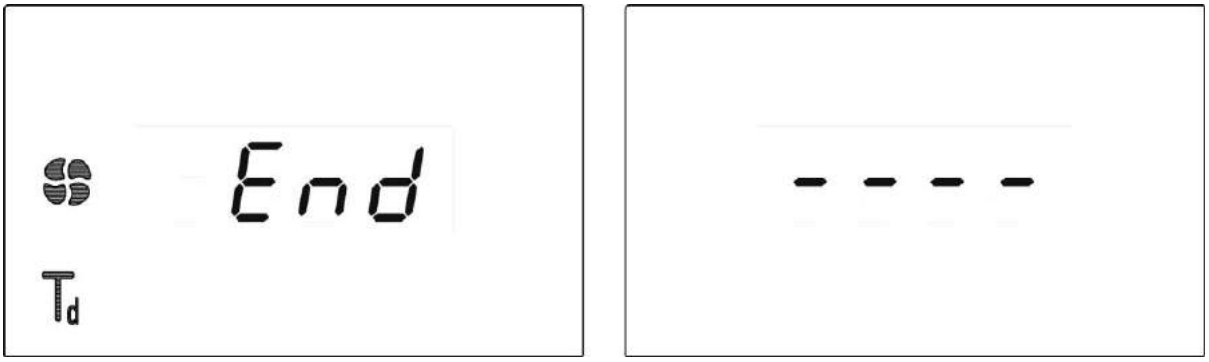


fig. 18 – End of cycle, display screen. The word End indicates that the washing process has been completed correctly. If automatic opening is enabled: the door is released automatically and the 4 dashes appear on the display.

WD
Automatic door opening at the end of the cycle cannot be set; an operative must be present.
Wait about 10 minutes with the door open before removing the processed load, to allow the material in the washing chamber to cool, and if necessary to dry.

5.10 INTERRUPTING A PROGRAM IN EXECUTION

INTERRUPTIONG A PROGRAM

*A cycle in progress can be interrupted by pressing the **Start/Stop** button.*
*During the "**Suspension**" of the program, the letter "**S"** appears on the display, followed by the code of the current program.*

WD - Hospital Instrument Washer

If the program is stopped, it is no longer possible to restart the current cycle. After the interruption a reset cycle is performed automatically to return the machine to the standby condition.

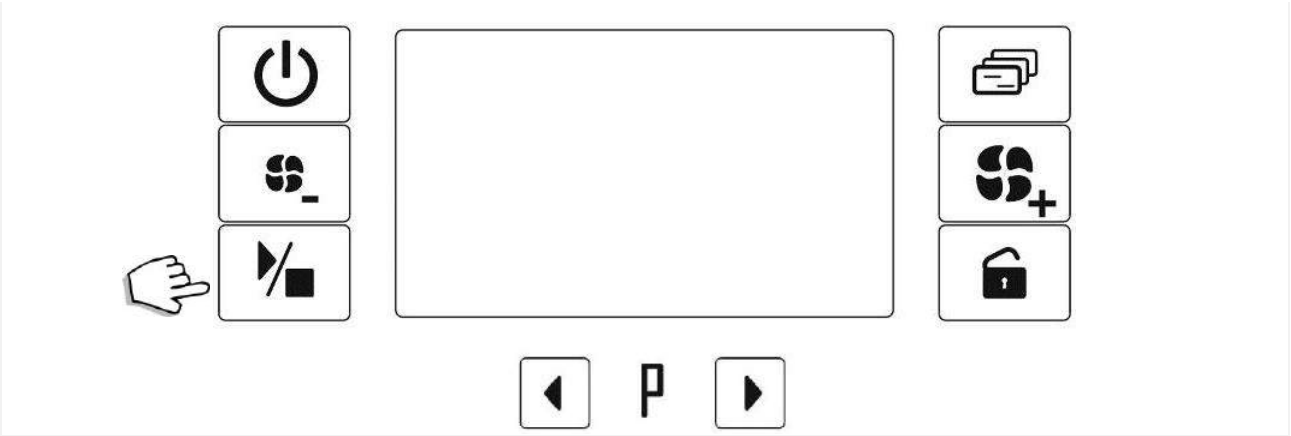


fig. *19* – Interrupting a Program: hold down the **Start/Stop** button

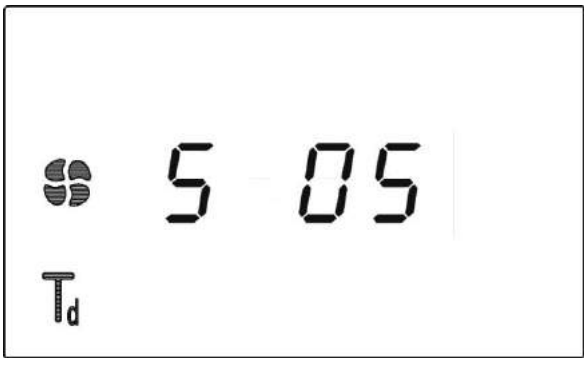


fig. *20* – Display screen, Suspension of program 5: **S 05** ".

".

5.11 PROGRAM SPECIAL OPTIONS

The following functions are defined as “Special Options”:
1. Temporary disabling of demi water
2. Delayed start (function introduced from firmware version 4.6.xx.yy).

The “Special Options” menu is accessed by pressing the “Start/Stop” and “Door Opening” buttons simultaneously.
To scroll through the special functions: press the “Functions” button and release at once.
The special options only apply for 1 single cycle, executed after selection of the option. After execution of the cycle, the default values are restored.

Special options must be confirmed by pressing the “Start/Stop” button; after confirmation, the program display returns to the screen.

If the option is not confirmed, after 10 seconds without any action the system quits the option and the last parameter set is maintained.

N.B.: the current date and time must be set to allow the “delayed start” setting to function correctly.

5.11.1 DELAYED START - Setting the hours

Delayed start: initially, the display shows “dh:00”.
The selection keys can be pressed to set up to a max of 12 hours (“dh:12”).
The “clock” LED remains on while the selection is made and the value set flashes until confirmed.

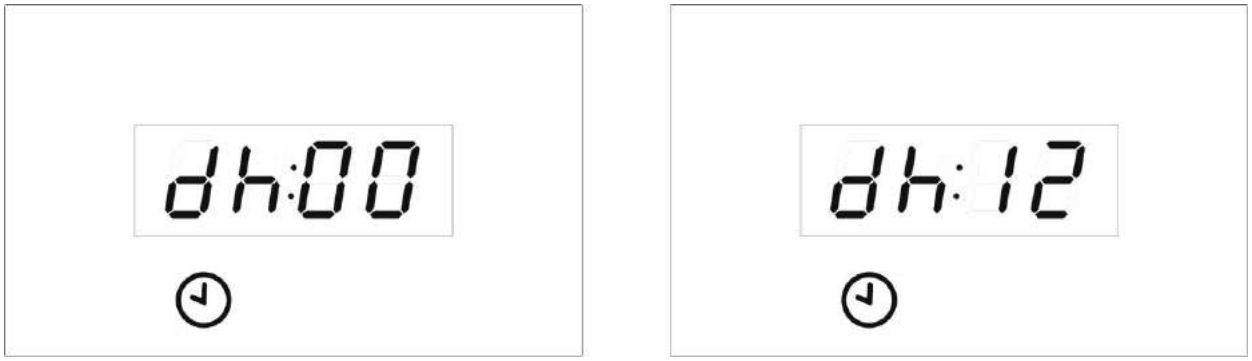


fig. 21- Delayed start setting screen

5.11.2 DELAYED START - Starting the program and display

To start a program with delayed start set: Hold down the “Start/Stop” (as when starting the cycle normally).
The display shows, in alternation (switching every 2 seconds):
the time remaining before the start of the program (format “hh:mm”) / the **program selected** (“Pr:XX”).
The “clock” LED remains steady when the time remaining is displayed.
At the end of the delay time: the program starts and from this point onward the contents of the display are the same as for a normal cycle.

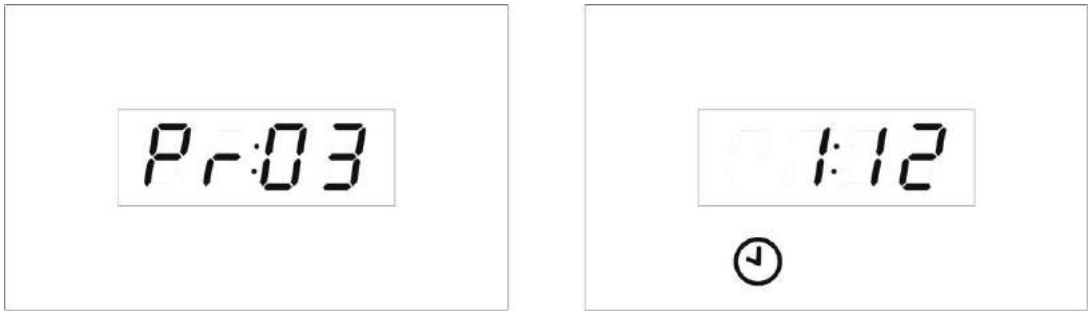


fig. 22 – Once the cycle start command is given, the display alternates the program selected with the time remaining before it actually starts.

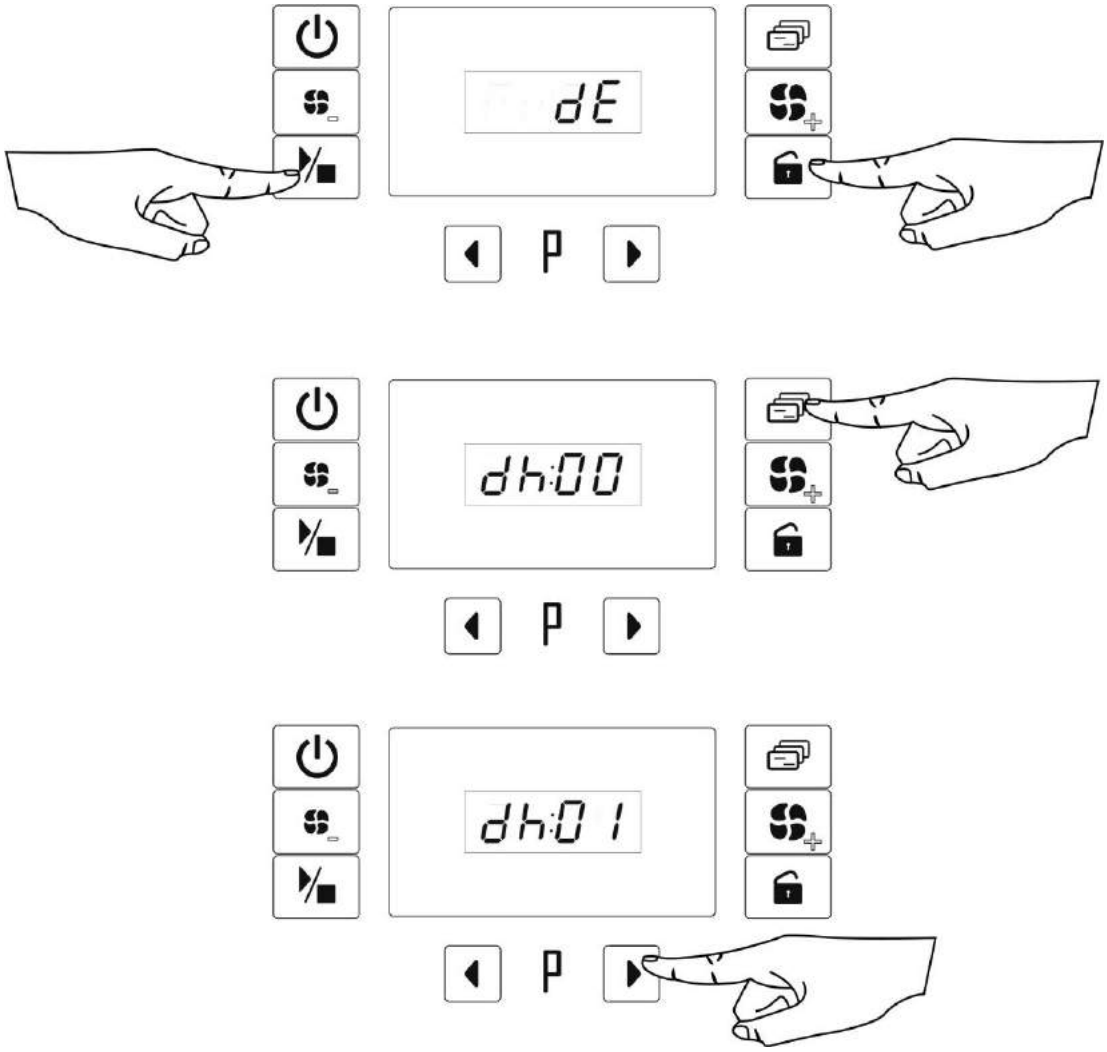


fig. 23 – Example of use of the delayed start to set a delay of 1 h

5.11.3 TEMPORARY DISABLING OF DEMI WATER

(Funzionalità presente a partire dalla versione firmware main 1.8.0.32 Aprile 2013).

*Press the "**Start/Stop**" and "**Door opening**" buttons simultaneously for a moment to display the status of the "demineralised water disabling" option.*
*The **Selection** buttons can be used to deselect the use of demineralised water.*

Modifications to the parameter must be confirmed using the "Start/Stop" button.

If the option is active, the message "*no dE* ", meaning "No demi", temporary disabling of demineralised water, appears on the screen.

If the option is disabled by pressing the two keys mentioned above, the message "*dE*" is shown on the screen.

This option can only be used if the use of demineralised water has been activated.
(See parameter "7-Demineralised water" below in the setup parameters section, in the: SETUP MODE - "FUNCTIONS")

*The **disabling option** can be activated before starting the selected program, and remains **active for only one cycle,** at the end of which it is deactivated automatically.*

When the disabling option is active, demi water is replaced with cold water in all the phases where it would normally be used.

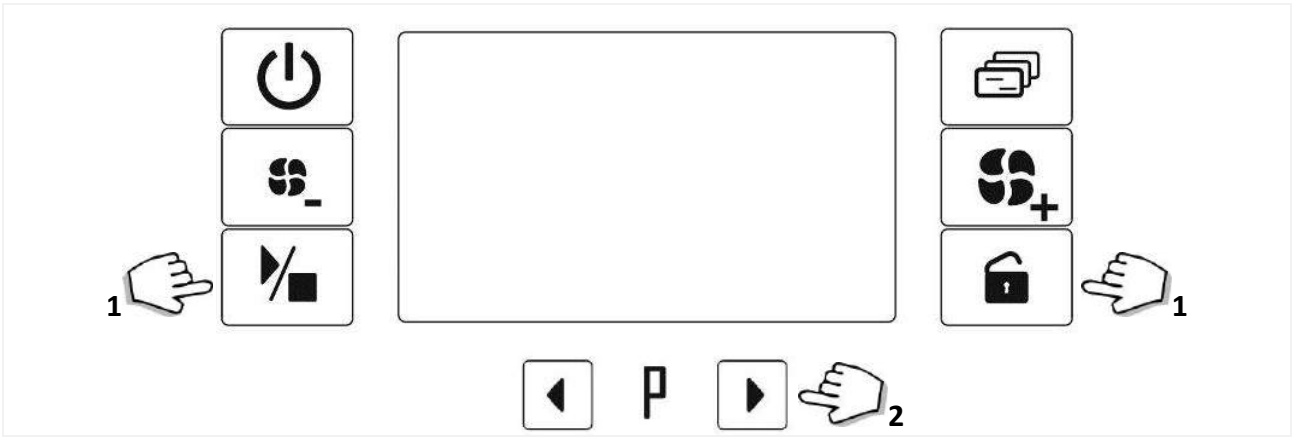


*fig. 24 – Demi water disabling buttons. To access the function: hold down the **Functions + Door opening** buttons together. To select demi water disabling: **Selection** buttons*

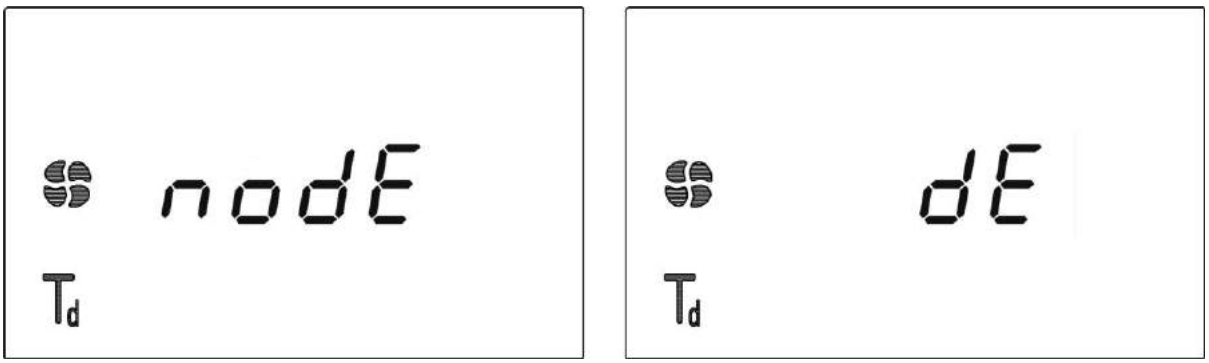


*fig. 25 – Display screen: **TEMPORARY disabling of demi water**; the option can be enabled and disabled using the selection buttons*

5.11.4 Deleting "Delayed start" - "No Demi" settings

To delete a setting:
1. return the parameter to zero (e.g. "dh:00" for delayed start, " dE" for demi water).
2. switch the device off and back on (the default value is restored: e.g. "dh:00").
3. open the door of the device (for "delayed start" only) once the cycle start command has been given.

5.12 RESET PROCEDURE

*The **RESET** procedure performs water pump-out and intake cycles to return the device to conditions of safety in the event of a malfunction.*
A RESET cycle can and should be started if an alarm occurs.
The Reset cycle can also be started independently, regardless of whether or not an alarm is present.

N.B.**: the **RESET** procedure can only be started with the door **CLOSED.
*When an error occurs, generally the device manages the anomaly itself: in this case **the alarm code flashes on the display** until the problem has been dealt with: **no reset commands are accepted during this time.***
*Any RESET forced by the user will not be accepted until the problem has been dealt with and the alarm code on the display is "steady". Eg: If alarm "**AF:84**" (overheating during drying) occurs, the device manages its status independently and does not allow a RESET to be performed until the automatic process for dealing with the alarm has been completed.*

STARTING A RESET
After an alarm or with the appliance at a standstill, press the **Functions** and **Start/Stop** buttons and hold them down for about 2 seconds, until a **beep** is heard.
"**P-**" appears on the display and the RESET procedure starts.
At the end of the procedure, "**E-**" flashes on the display, alternating with the program which was running and has been interrupted, if any.
Depending on the appliance's status, the RESET command may not be accepted: in this case, open and close the door and then repeat the procedure.

ATTENTION
If it is not possible to perform the RESET cycle, before calling the After-Sales Service switch the appliance off and back on and then try again.

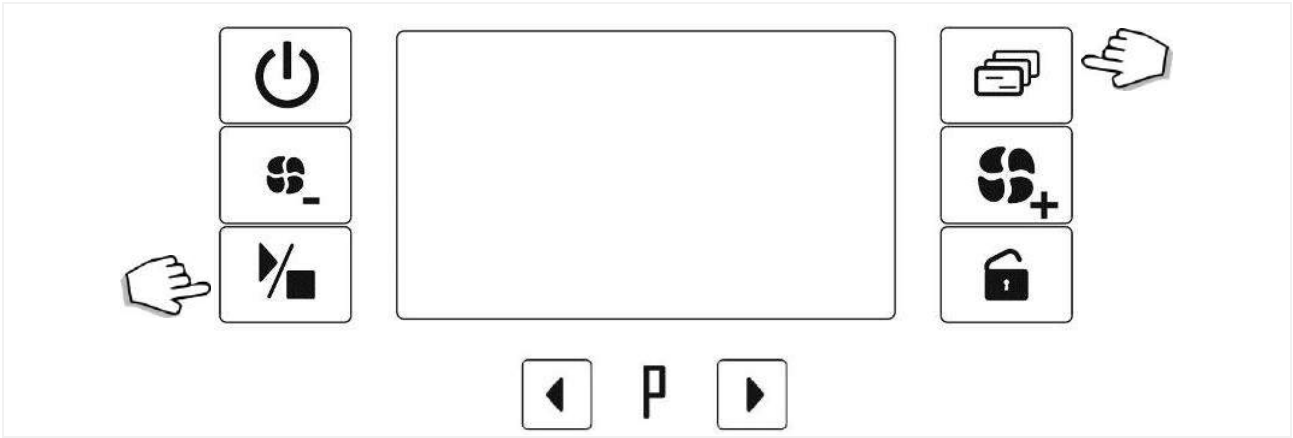


*fig. 26 – RESET cycle selection buttons: hold down the **Start/Stop + Functions** buttons together*

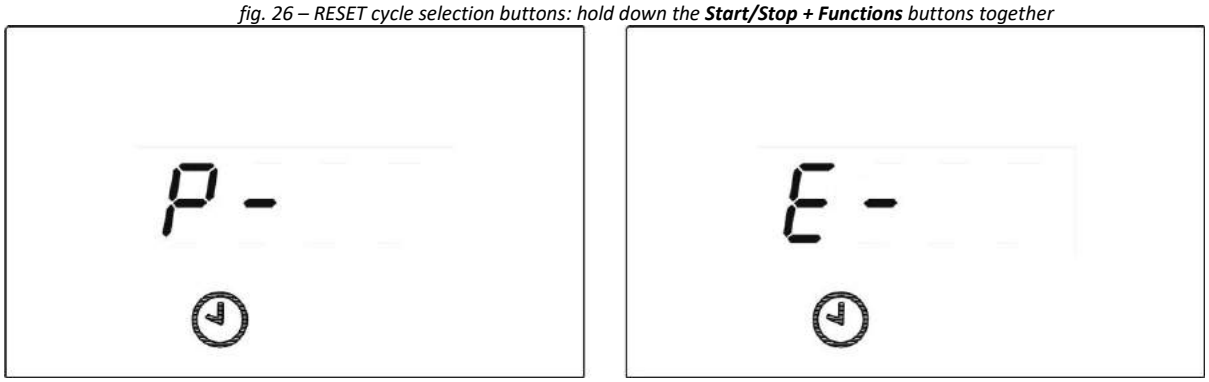


fig. 27 – RESET: during the RESET the display shows " P- ". At the end of the RESET cycle, " E- " appears on the display.

5.12.1 PRINTING THE CYCLE AND APPLIANCE PARAMETERS

If the printer accessory has been installed, it is possible to force printing of the data relating:

1. To the last cycle performed: by pressing the **1 On/Off** and **2 Functions** keys simultaneously.
2. To the setup parameters, by pressing the **3 Functions** and **4 LH Selection** keys simultaneously.

Print last cycle	+
Print parameters	+

Commands are only accepted if the door of the device is closed.

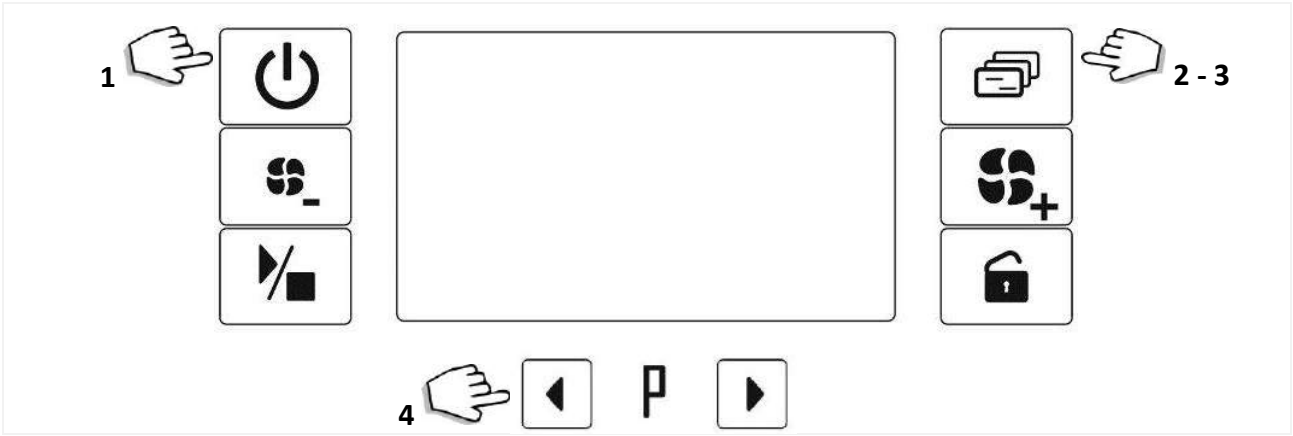


fig. 28 – Standard procedure for forcing printing.
Last cycle data: use "On/Off"+"Functions" keys; Parameters: use "Functions"+"LH Selection" keys.".

6 SETUP MODE - "FUNCTIONS"

The appliance has setup procedures for modifying its operating parameters.
The setup mode is accessed by pressing the "Functions" button and requires a password.

For reasons of security and responsibility, 4 levels of password are available for access to more and more complex functions:

1. USER Level (1111)
2. SUPERUSER Level (provided by the installation engineer)
3. ENGINEER Level
4. FACTORY Level

6.1 ACCESSING THE SETUP MODE / ENTERING THE PASSWORD



a. Hold the **Functions** button (5) down for 5 seconds. 4 dashes appear on the display.
b. Use the **Selection** buttons (4-8) to modify the individual characters of the password.
c. Short press the **Functions** button (5) to move on to the next character
d. Once the 4 characters of the password have been entered, confirm by holding down the **Start/Stop** button (3).

I. If the password entered is correct, the system accesses the first menu item
II. If the password is not correct, two **beeps** signal the error.
III. 5 seconds after the last button is pressed, the system automatically quits the Setup menu.

e. Once the Setup mode has been accessed, the various **items** available can be scrolled using the **Functions** button (5).
f. Note on WD4060, WD4190: a short press on the button **Drying +** (6) has the same meaning of the short press on button **Functions** (5) in the following cases:
I. When entering password, to switch from one character to the next.
II. Going into the setup mode, to scroll through the various items available.



*fig. 29 – **Functions** button: hold down to access the Setup mode.*

Le **voci** accessibili dal menù di **SETUP** sono riportate nella tabella seguente. Per passare da una **voce** alla successiva: pressione breve del tasto ***5 - Funzioni***.

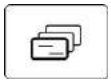
Setup Item	Description
Set	Appliance parameter setup - detailed explanation provided below in “Set” Parameters
Cloc	Date and time - detailed explanation provided below in “Cloc” Parameters
Filt	**Drying filter counter.** Press the **Start/Stop** button to display the **number of absolute filter hours left before the maintenance message appears.** The initial default setting is 500. The value is in units. (Display only parameter, cannot be modified).
Tec	Appliance operating hour counter for maintenance. Press the **Start/Stop** button to display the **number of cycles left before the maintenance message appears.** The initial default setting is 900. The value is in units. (Display only parameter, cannot be modified).
Coun	Appliance total operation counter (display only parameter, cannot be modified) [The parameter is displayed on two consecutive display screens from firmware version 1.11.0.32. The value in thousands is indicated by the suffix "t", in units with the suffix "u"]
PrEn	Setting which allows display and selection only of the washing programs actually of interest.

6.2 ACCESS AND PARAMETER MODIFICATION

The three **options** referred to above - **Set, Cloc and PrEn** – are used for accessing and modifying:

1. Appliance parameters, **Set.**
2. Date and Time parameters, **Cloc.**
3. Setting to allow display and use of a subset of programs only, **PrEn** (PrEn: “Program Enable”).

The following basic procedure applies to every item.

Step	Button	Action
1		**Start/Stop** – hold down to **access the option required**. To access the **Set** parameters, hold down until the “**Set**” option appears on the display. To access the **Cloc** (date and time setting) parameters, hold down until the **“Cloc”** option appears on the display. Similarly, for the “PrEn” option
2		**Functions -** Selection of the parameter required (see detail of the parameters in the points which follow). Note on WD4060, WD4190: a short press on the button **Drying +** has the same meaning of the short press on button **Functions**.
3		**Selection** buttons - Modification of the selected parameter During modification, the parameter concerned flashes on the display.
4		**Start/Stop** – hold down to confirm the modification. Once the modification has been confirmed the parameter stops flashing and appears on the display with steady light.
5		**Door opening** – hold down to quit the screen for display/modification of the current parameter.

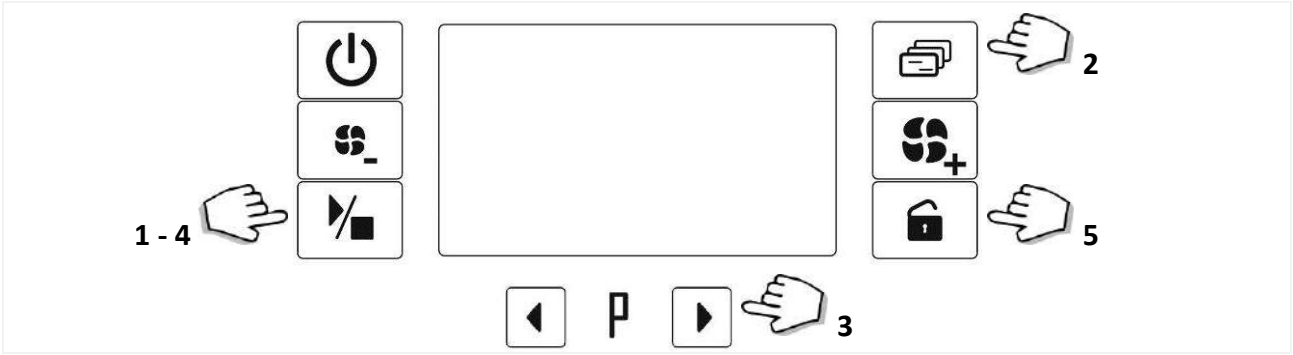


*fig. 30 – Steps for display and modification of the **Set** and **Cloc** parameters:*
***Access the parameter**: by pressing the **Start/Stop** button*
***Quit the parameter**: by pressing the **Door opening** button.*

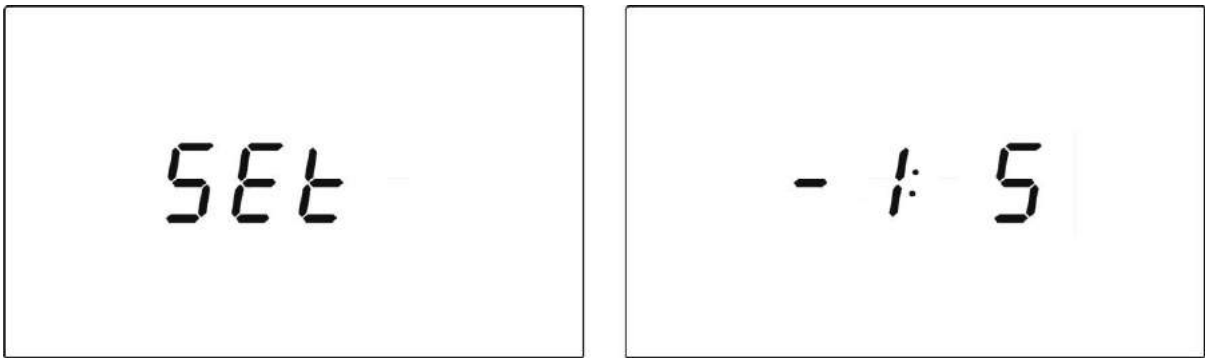


*fig. 31 – **Set** parameters. Hold down the **Start/Stop** button to access the parameters. Parameter **-1** sets to the dose dispensed by peristaltic pump **P1**. Use the **Selection** buttons to modify the parameter. Use the **Functions** button to move to another parameter. Confirm changes using the **Start/Stop** button.*

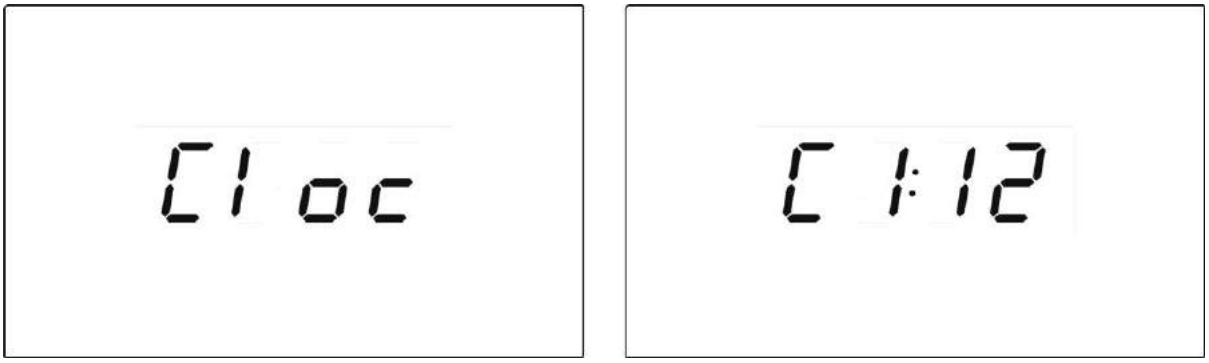


*fig. 32 – **Cloc** parameters. Hold down the **Start/Stop** button to access the parameters, in this case identified as **C1, C2, etc.** Parameter **C1** sets the current year. Use the **Selection** buttons to modify the parameter. Use the **Functions** buttons to move to another parameter. Confirm changes using the **Start/Stop** button.*

6.3 SET“ PARAMETERS

Set on the display.
To access this item press the **Start/Stop** button.
The **Set** item contains a number of setting parameters.
User level operators can only display the parameters and cannot modify any “Set” parameters.

Set PARAMETER	DESCRIPTION	POSSIBLE SUPERUSER ACTION	
		With set parameter “-d=0”	With set parameter “-d=1”
-1	**Detergent pump P1 dispensing rate.** Setting in ml/litre, with maximum threshold of 20 ml/litre. The default value of this parameter is **4ml/litre**. **Maximum recommended quantity: 10ml/litre.** Increase and decrease with the **Selection** buttons**.**	Display and Modification	Display
-2	**Detergent pump P2 dispensing rate.** Setting in ml/litre, with maximum threshold of 20 ml/litre. The default value of this parameter is **2ml/litre.** **Maximum recommended quantity: 10ml/litre.** Increase and decrease with the **Selection** buttons**.**	Display and Modification	Display
-3	**Detergent pump P3 dispensing rate.** (Option not available on WD2145) Setting in ml/litre, with maximum threshold of 20 ml/litre. The default value of this parameter is **10ml/litre.** **Maximum recommended quantity: 15ml/litre.** Increase and decrease with the **Selection** buttons**.**	Display and Modification	Display
-3	**P4 detergent pump dosage** **(only for models WD1160P4, WD4060P4, WD4190P4)** If the third pump is dedicated to the dosage of lubricant or drying agents, it conventionally takes the name of "P4". In this case the pump is dedicated and refers to specific models (eg WD1160P4, WD4060P4, WD4190P4). Note: For the most recent software versions (7.9 or later, 2020), each unit shown on the display corresponds to a dosage in tenths of a ml. Ex. Parameter -3: 03 means that the dosage set is equal to 0.3 ml / liter. For previous versions of the software (7.8 or earlier), P4: a unit corresponds to a dosage of 0.143 ml / liter: 1 = 0.143ml / liter 2 = 0.286 ml / liter (value of default). ... 10 = 14.3 ml / liter	Display and Modification	Display
-4	**Water hardness setting** Set the hardness in °f, in steps of 5. Range: 5-60°f. The default setting is 40°f. Warning: Make sure that the value is actually the same as the hardness of the water used.	Display and Modification	Display and Modification
-6	**Printer language** English by default, the language can be chosen from the various options available	Display and Modification	Display and Modification

German	French	Spanish	Italian	English
dE	Fr	ES	It	En

Set PARAMETER	DESCRIPTION	POSSIBLE SUPERUSER ACTION	
		With set parameter "-d=0"	With set parameter "-d=1"
-7	**Demineralised water** The use of demineralised water can be activated or deactivated depending on whether or not the relative connection has been made (Activated: **dn**, Deactivated: --)	Display and Modification	Display and Modification
-8	**Fan hours** The parameter indicates, to the nearest ten, the **number of absolute filter hours left before the maintenance message appears.** The initial default setting is 500. (e.g. the display shows "-8:50"). The value can be reset by an authorised engineer.	Display Only	Display Only
-9	**Number of cycles** Indicates, to the nearest ten, the **number of cycles left before the maintenance message appears.** The initial default setting is 900 (e.g. "-9:90"). The value can be reset by an authorised engineer.	Display Only	Display Only
-A	**Power Supply** The parameter indicates whether the connection is: - single-phase: parameter setting "1" - three-phase and single phase "full power": parameter setting "3" **N.B.**: the value "3" refers to both 400V 3N~ / 50 Hz and 230V 3~ / 50Hz connections. **Warning**: this parameter is only used for the correct setting of times remaining.	Display Only	Display Only
-b	**Memory Data Overwriting** - Overwriting enabled: parameter setting "1" - Overwriting disabled: parameter setting "0" The parameter refers to whether or not the device's internal memory, which keeps a record of all the cycles performed and the alarms which have occurred, can be overwritten. **WARNING** If overwriting is disabled, alarm AF:91 is triggered once the memory is full. In this case the appliance will not perform any more cycles until the data from the memory are downloaded; this can only be done using the TRACELOG software.	Display and Modification	Display and Modification
-d	**Superuser dosage setting disabling parameter.** (Parameter introduced from Main Firmware version 4.6.xx.yy). If "-d: 0" the superuser is able to modify the dosages If "-d: 1" the superuser is not able to modify the dosages but can display them. Default value: "-d: 0". This Parameter can only be modified by the authorised engineer.	Display Only	Display Only
-E	**Parameter for setting presence or absence of the WD-LANE accessory.** (Parameter introduced from Main Firmware version 4.6.xx.yy). Sets the serial port communication speed "-E: Pr" = 9600 bps (for Printer connection) "-E: Ln" = 11500 bps (for connection to WD-LANE - LAN accessory).	Display and Modification	Display and Modification

Set PARAMETER	DESCRIPTION	POSSIBLE SUPERUSER ACTION	
		With set parameter "-d=0"	With set parameter "-d=1"
-t	**Test cycle** (Parameter Introduced from the Main Firmware version 1.11.0.33) The parameter can be used by authorized technicians only; it allows the display and the start of a Test program, on the display "***Pr t***". This test program performs a short washing cycle and activates all the loads of the device. The cycle is defined to be used for machine verification after components replacement. - Parameter value "--", you do not have access to the cycle "***Pr t***" - Parameter Value "on", the technician gets access to the Test Program "Pr t". In order not to run the Test cycle "***Pr t***": switch Off the device to reset its condition..	Display Only	Display Only

In the following pictures some examples of "***Set***" parameters are featured

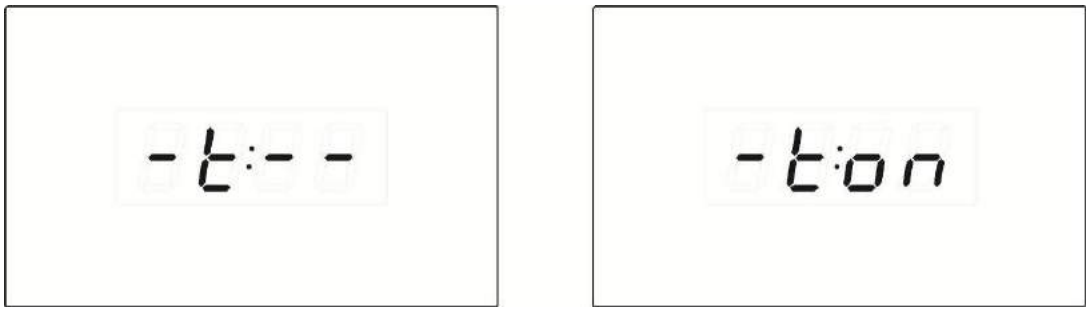


*fig. 33 – **Set "- t"** value can be "--" or "**on**". In this latter case a test cycle will be activated.*

6.4 APPLIANCE DATA STORAGE, OVERWRITING

The appliance stores the data relating to the **cycles performed** and all the **alarms which have occurred** in its own **internal memory**, on a PCB.
The data in the appliance's memory can be read using the **TRACELOG** software.

Overwriting of the data in the appliance's memory can be enabled or disabled using a setup parameter, **Set**: **-b** – ; for details, refer to the **SETUP MODE** - **"FUNCTIONS"** section.

Parameter **Set -b** has two possible values:
- "**0**" meaning "**overwriting disabled**"
- "**1**" meaning "**overwriting enabled**" – **1** is the **default value** for the parameter; overwriting is permitted and no alarm is triggered when the appliance's memory is full.

WARNING
*If overwriting is disabled, **parameter "-b=0"**, alarm **AF:91** is triggered once the memory is full.*
***In this case the appliance is cut out and will not perform any more cycles** until the data from the memory are downloaded to free spaces; this can only be done using the TRACELOG software.*

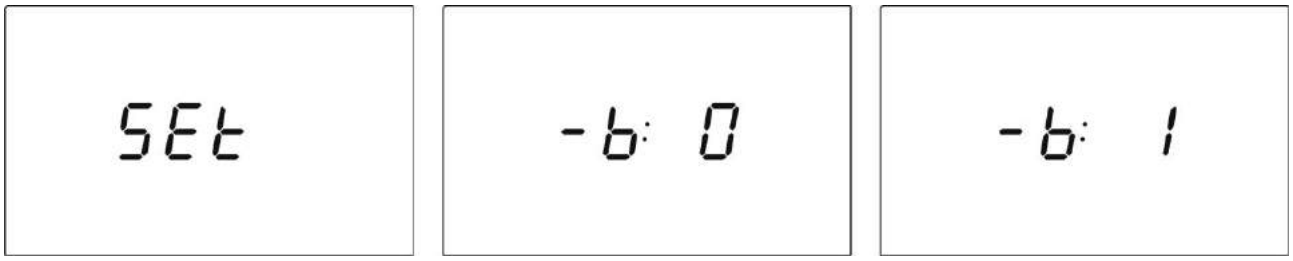


*fig. 34 – **SET** appliance parameters; parameter –**b** is used to enable and disable overwriting of the internal data memory..*

The following is an example of data stored in the internal memory, with a key to their interpretation.
The data can be accessed using the TRACELOG software.

```
================================================================================
2012/10/17 10:39:46   START PROGRAM: 7      Oper: 255
        Cycle N.: 288
2012/10/17 10:40:17   START PHASE N.: 1
2012/10/17 10:41:12   Inflow Detergents        P1:0.40%
2012/10/17 10:42:26           TL1: 22.7       TCL: 22.5
2012/10/17 10:42:26   Start heating           Target temp. 93
2012/10/17 10:56:12           TL1: 94.1       TCL: 93.6
2012/10/17 10:57:36           TL1: 93.9       TCL: 93.4
2012/10/17 10:57:52           TL1: 94.1       TCL: 93.6
2012/10/17 10:59:43           TL1: 93.9       TCL: 93.4
2012/10/17 10:59:58           TL1: 94.1       TCL: 93.6
2012/10/17 11:01:53           TL1: 93.9       TCL: 93.4
2012/10/17 11:02:08           TL1: 94.1       TCL: 93.6
2012/10/17 11:04:12           TL1: 93.9       TCL: 93.4
2012/10/17 11:04:26           TL1: 94.1       TCL: 93.5
2012/10/17 11:05:53   Ao>=15983
2012/10/17 11:05:53   Start heating           Target temp. 0
2012/10/17 11:05:53           TL1: 94.1       TCL: 93.6
2012/10/17 11:07:49   START PHASE N.: 2
2012/10/17 11:08:41   Inflow Detergents        P2:0.20%
2012/10/17 11:09:34           TL1: 43.3       TCL: 42.3
2012/10/17 11:09:34   Start heating           Target temp. 0
2012/10/17 11:11:34           TL1: 59.7       TCL: 59.2
2012/10/17 11:11:34   Start heating           Target temp. 0
2012/10/17 11:11:34           TL1: 59.7       TCL: 59.2
2012/10/17 11:12:33   START PHASE N.: 3
2012/10/17 11:13:19   Inflow Detergents
2012/10/17 11:13:41           TL1: 36.9       TCL: 36.5
2012/10/17 11:13:41   Start heating           Target temp. 0
2012/10/17 11:15:41           TL1: 49.9       TCL: 49.5
2012/10/17 11:15:41   Start heating           Target temp. 0
2012/10/17 11:15:41           TL1: 49.9       TCL: 49.5
2012/10/17 11:16:41   START PHASE N.: 4
2012/10/17 11:17:26   Inflow Detergents
2012/10/17 11:17:49           TL1: 33.3       TCL: 32.9
2012/10/17 11:17:49   Start heating           Target temp. 75
2012/10/17 11:25:47           TL1: 76.2       TCL: 75.7
2012/10/17 11:26:30   Start heating           Target temp. 0
2012/10/17 11:26:30           TL1: 76.9       TCL: 76.5
2012/10/17 11:27:29           Start drying: TA_TARGET: 120   TA1: 73
2012/10/17 12:04:47           End drying: TA1: 89
2012/10/17 12:09:07   END PROGRAM: 7
================================================================================
```

The double line marks the start and end of a program

Consecutive number of cycle

First phase, called “1”

P1 detergent dispensing

Phase Target temperature

A0 value reached

Second phase, called “2”

The two tank temperature probes are called:
TL1 – working probe
TCL – control probe

Drying phase, with Target temperature in Dryer duct

*fig. 35 – Example of **cycle data** stored in the **appliance’s memory**.*

***(The first phase is referred to as “PHASE N.1”** with effect from main firmware version 2.0.0 of 23/09/2013, it was formerly referred to as “PHASE N.0”)*

6.5 "CLOC" – DATE AND TIME PARAMETERS

The **Cloc** parameter (an abbreviation of "**CLOCK"**), is used to **modify the current date and time**.
For instructions for accessing the "Cloc" parameter, refer to the previous point, *"ACCESSING THE SETUP MODE "*.
This parameter can be modified with just the user password.



The modification procedure is:

a) To select the **Cloc** parameter, hold pressed the **Start/Stop** button (3) when the indication **"Cloc" is** on the display (ref. also to the par . "**ACCESSING THE SETUP MODE"**).
b) **Selection** buttons (4-8): for modifying the value of the parameter.
c) **Functions** button (5) – quick press**:** to move from one parameter to the next. (on WD4060, WD4190 the operator can also use the "**Drying +"** key (6) with the same function).
d) **Start/Stop** button (3): hold pressed to confirm the modification
e) **Door opening** button (7): hold pressed to quit the parameter being modified and the Cloc function.

During modification, the parameter concerned flashes.

CLOC PARAMETER	DESCRIPTION
C1	Year, last two figures only (00-99), e.g.: for "2012" enter "12"
C2	Month (1-12)
C3	Day (1-31)
C4	Hour (1-24)
C5	Minutes (0-59)
C6	Seconds (0-59)



*fig. 36 – **Cloc** parameters. Hold down the **Start/Stop** button to access the parameters, in this case identified as **C1, C2, etc.** Parameter **C1** sets the current year, **C2** the month, etc. Use the **Selection** buttons to modify the parameter. Use the "**Functions"** button to move to another parameter. Confirm changes using the **Start/Stop** button.*

6.6 SETTING THE “PrEn” “PROGRAM ENABLING” FUNCTION

By means of the appropriate settings, the “**PrEn**” parameter allows the user to only display and start the programs actually of interest. This setting can be made from “superuser” level upward. (Function introduced from Main Firmware version 4.6.xx.yy).

Once the menu has been selected, the operator can scroll through the user programs (P01-P15). The first 2 digits of the display show the program number and the second 2 the “on” or “oF” value (e.g. “06:on”) depending on whether or not the program currently selected is enabled.
By default: all programs are enabled, “on”. To disable a program, set “of” next to its number (e.g. “06:oF”) using the **Modify** buttons.
At least 1 program is always enabled; the superuser can disable up to 15 of the 16 programs available.

The procedure is similar to that in use for the setup parameters.

Step	Button	Action
1		**Start / stop** – hold down to **access the option**. To access the **PrEn** parameters, hold down until the “**PrEn**” setup option appears on the display.
2		**Functions** – quick press - Selects the programs to be enabled/disabled**.**
3		Buttons for **Selection - Modification** of the selected parameter (switch from “on” to “oF” to disable display of the program on the screen).
4		**Start / Stop** – hold down to **confirm the modification**.
5		**Door opening** – hold down to **quit the screen** for display/modification.

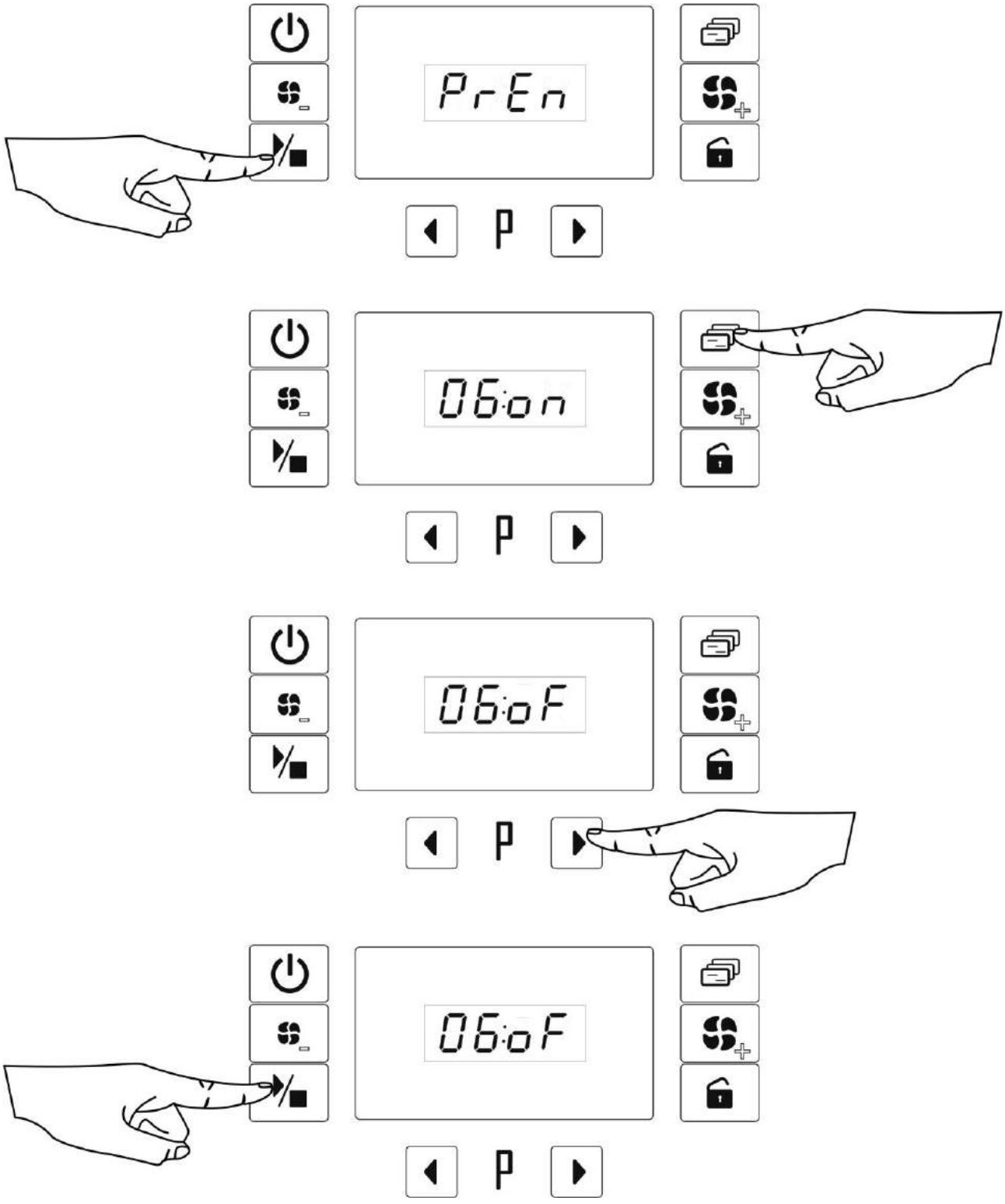


fig. 37 - Example of use of the "PrEn" function to disable display of program "06" on the screen.

7 INSTALLATION INSTRUCTIONS

Once the appliance has been installed correctly, it must be prepared for use as follows.
The authorised engineer commissions the device in accordance with the set procedures and records its serial number.

The basic operations are as follows:

- Set the current date and time.
- Fill up with regenerating salt.
- Add detergent and neutralising agent and any other chemicals used.
- At first installation, program "**16 Service**" must be run, preferably twice in succession, to operate the peristaltic pumps and prime the detergent inlet lines correctly.
- Run a complete program including a thermal disinfection phase with no load for processing in the tank.

The device is now ready for use.

7.1 USE OF THE WATER SOFTENER

The quantity of lime in the water (which depends on its hardness) may cause whitish marks on the objects processed, which may tend to become dull over time. The appliance is equipped with an automatic water softener which removes the substances that cause hardness from the water with the aid of regenerating salt.

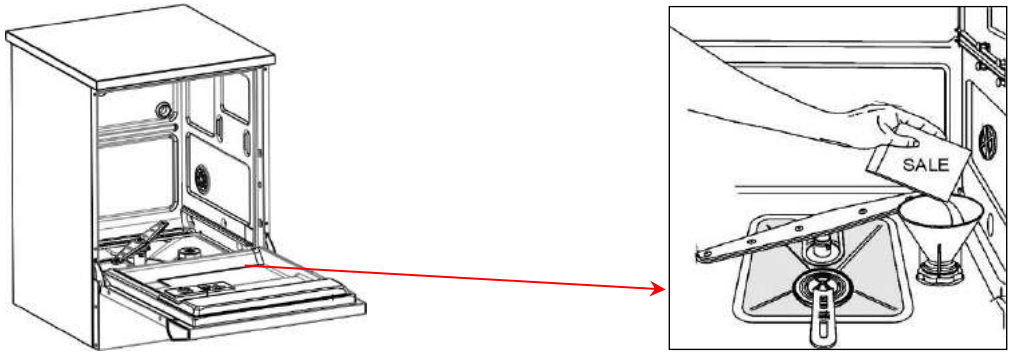


fig. 38 – The salt tank is accessible with the door open; filling the softener tank with regenerating salt.

If water of average hardness is used, fresh salt will have to be added about every 20 washes. The softener tank contains **about 1 kg of coarse salt.**
The salt tank is in the bottom of the glassware washer's chamber.
Remove the bottom basket, unscrew the cap of the tank by turning it anticlockwise and **pour in the salt** using the funnel supplied with the glassware washer; take care not to spill salt in the chamber. Remove any residual of salt around the hole and in the tank before screwing the lid back on.



ATTENTION

- ***The first time the glassware washer is used, a litre of water must be poured into the tank with the salt.*** *Whenever the tank is filled, always take care to ensure that the cap is firmly closed. The mixture of water and detergent must not get into the salt tank, as this would impair operation of the regeneration system. In this case the warranty cover will cease.*
- ***Only use coarse salt for domestic dishwashers.***
- ***Do not use edible salt,*** *since it contains insoluble substances which might damage the water softening system over time.*
- ***Fill up with salt when necessary before starting a washing program****, so that any excess salt solution will immediately be removed by the water; if salty water is left inside the chamber, it may cause corrosion. Carry out a prewash to prevent this if necessary.*

7.2 HOW TO REGULATE THE WASHING PRESSURE IN THE SPRAYING ARMS – 1160, 4060, 4190

The pressure of the washing water in the top and bottom spraying arms can be regulated by means of the adjuster under the spraying arm itself.

- Position 1: Maximum flow at top level.
- Position 2: Balanced flow.
  Position 3: Maximum flow from bottom arm.

Pressure regulator: in combination with standard trolleys, maintain Position 1.

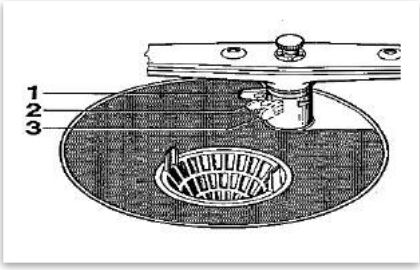


fig. 39 - Pressure regulator.

7.3 USING DETERGENT AND NEUTRALISING AGENT

The appliance is equipped with detergent dispensing devices.

1. **Pump P1,** dispensing of neutral or weak alkaline liquid detergent.
2. **Pump P2**: dispensing of acid neutralising agent.
3. **Pump P3/P4**: optional, never installed by default. Auxiliary detergent/lubricant pump.

SYMBOL	MEANING
●	feature present
○	optional accessory, installable on the model in question.
-	feature not present and not installable on the model in question.

Dispensing pumps fitted on the various models (OPT = optional accessory); P1 and P2 are installed on all the models in the range.

WD	WD2145	WD1160 WD4060 WD4190
P1 Peristaltic detergent pump	●	●
P2 Neutralising agent peristaltic pump	●	●
P3/P4 optional peristaltic pump	-	○

Except for “PREWASH” programs only, the pump **P1** is activated automatically during washing.
The neutralising agent for rinsing is automatically dispensed by pump **P2** during the phase after washing.

It is important to use good quality detergents to obtain good results. Keep detergent bottles closed in a dry place to prevent the formation of lumps which might lead to poorer washing results.
Once bottles have been opened they must not be kept for too long, since the detergents tend to lose their efficacy.



ATTENTION
If the jerry can level sensors are not fitted: check the levels of product in the cans / bottles to ensure that programs are not performed without detergent or neutralising agent.



During installation, ***or when a completely empty jerry can of product is replaced,*** *run program no. 16* ***SERVICE*** *to charge the system with liquid. The pipeline from the jerry can to the pump must be filled to ensure that the product is dispensed properly during subsequent washing cycles.*

7.3.1 LIQUID DETERGENT INTAKE SYSTEM

Each peristaltic pump is complete with a detergent intake system.
Configuration with LEVEL SENSOR - STANDARD (Installed by default on P1 and P2 on the **WD** range):
Suction nozzle with integral level sensor and tapered rubber support for fitting onto the can.

1. Silicone hose for connection between intake pipe and peristaltic pump.
2. Detergent intake filter, fitted directly on the suction nozzle pipe

WARNING
It is essential that the label on the intake pipe corresponds to the type of detergent being used.
Refer to the following colour code:
1. White/clear: P1, alkaline detergent
2. Red: P2 acid neutralising agent
3. Blue: P3, additive
4. Green: P4, lubricant or rinsing agent.

Incorrect connections (e.g. if detergents P1 and P2 are exchanged) will reduce effectiveness of the process.

Connection errors leading to the mixing of different chemicals in the intake systems may cause irreparable damage to parts of the circuit.
Detergent intake system connection errors lead to the loss of Warranty cover for the parts concerned (peristaltic pumps, detergent suction and intake circuit, and level and flow sensors if installed).

The intake pipe is supplied complete with intake filter. The filter pushes into place on the pipe. Make sure that the filter is always fitted and correctly positioned to keep the detergent dispensing system in good working order.

Check regularly that the silicone hose is properly fixed to the stainless steel intake pipe and that there are no leaks

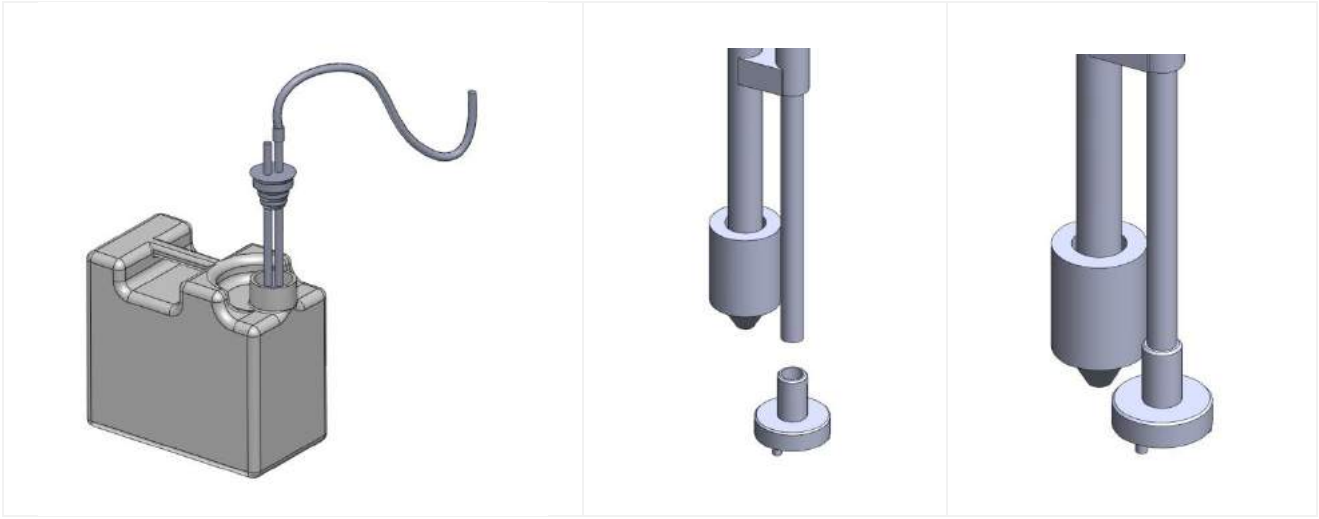


*fig. 40 – **Configuration with LEVEL SENSOR**: Detergent suction nozzle with integral level sensor. The suction nozzle is complete with filter: make sure that the filter is always correctly positioned to ensure no lumps are drawn in.*

7.3.2 DETERGENT JERRY CAN LEVEL SENSORS - OPTIONAL SL3 for P3

The appliance can be fitted with level sensor “SL3” integral in the detergent intake pipe for the P3 optional pump, product "**WD-LS** xxx" (***L**evel **S**ensor;* the value of xxx may vary depending on the suction nozzle configuration required – for WD1160, WD4060: WD-LS3060.)

Contact your local dealer for advice about the accessory best suited to your needs and your device.

WARNING

The electrical connection to level sensors must be made using the terminal board provided inside the rear crosspiece (each peristaltic pump has a terminal for connection of the relative level sensor).

This procedure must be carried out by authorised technical staff.

7.4 RECOMMENDED DETERGENTS

One of the fundamental factors in achieving a good washing process is the type of detergents used.
The manufacturer guarantees excellent washing results with the use of the products recommended.
Contact your local dealer for advice about the types of detergents suitable for your application, and their modes of use.



ATTENTION
Always comply with the INSTRUCTIONS provided by detergent PRODUCERS, especially with regard to the RECOMMENDED DOSES and the correct TEMPERATURES for their use.
Safety information about doses supplied in compliance with 5.4.4.s of IEC61010-2-040.
Refer to the product instructions and technical safety data sheets.
Technical data sheets are available on request.

WD
The effectiveness of the washing action and consequent thermal disinfection provided by this appliance has been tested in compliance with EN 15883-1 and 15883-2 using the cleaning agents listed in this manual.
The parameters of the various phases of the programmed washing cycles (duration, temperature, extension and doses) have been calculated on the basis of the use of these agents.
The appliance's effectiveness and correct operation cannot be guaranteed in the event of use of cleaning agents other than those recommended here.

N.B.: the THIRD pump, P3, is an optional accessory.

Recommended detergents for WD

Alkaline detergents (pump P1
DETERLIQUID C2

Acid neutralising agents (pump P2)
ACIDGLASS C2

Disinfectant (pump P3)
Contact authorised technical staff

Lubricant / drying additive
Contact the manufacturer (possible use of the product only on customized programs and with specific options / models).

Weakly alkaline enzymatic detergents (detergent that can be used in combination with the P1 pump, based on process requirements)
Contact the manufacturer



WARNING
WD: *Do not use powder detergents: this may damage instruments' internal mechanisms and corrode titanium surfaces.*
Do not add detergent to the acid neutralising agent jerry can: this will reduce the effectiveness of the wash.
Use products recommendend by the manufacturer

GENERAL PRECAUTIONS FOR DETERGENTS



HANDLE DETERGENT CANS WITH CARE

Warning: detergents may be TOXIC.
Refer to the product safety data sheets.
Once a product has run out, replace the empty jerry can with a full one of the same product.
If the product left in the old jerry can is poured into the new one, take care not to overfill the new cans to ensure that they will not overflow when the suction nozzles are inserted.
Gloves must be worn during transfer of detergents, during fill-ups and during insertion of the suction nozzles.
Information supplied in compliance with 5.4.3.m, 5.4.4.n and 5.4.4.q IEC61010-2-040



FIRST AID MEASURES IN CASE OF CONTACT WITH DETERGENTS

Instructions provided in compliance with point 5.4.4.p IEC61010-2-040.
Remove contaminated clothing and put it in a safe place.
Contact with the skin or eyes: wash immediately and thoroughly with water. If possible, apply a sterile gauze dressing. Seek medical advice.
Swallowing: rinse out the mouth with plenty of water. Seek for medical advice immediately.



DETERGENT SAFETY DATA SHEETS.
Detergent SAFETY DATA SHEETS must be kept:

1. ***close to the place where detergents are stored;***
2. ***close to the appliance.***

In easily accessible positions.
The latest versions of the safety data sheets should be requested regularly (e.g. once a year).
Safety data sheets will be supplied on request.



DISPOSAL
Information supplied in compliance with point 5.4.4.L of IEC61010-2-040.
DISPOSAL of any product residues and containers (cans and bottles): refer to the "DISPOSAL ADVICE" section of product safety data sheets.
The appliance's responsible authority must dispose of detergent residues and containers in accordance with the relevant national or local legislation..



FLAMMABILITY
Always refer to detergent technical data sheets to assess the products' flammability.
Do not use flammable products in the appliance.

8 ALARMS and WARNING MESSAGES

This section provides instructions for interpreting alarm messages and taking any appropriate measures. Information supplied in compliance with point 5.4.4.j of IEC61010-2-040:2005.

The appliance's display has backlit LED symbols.
See also the explanations provided in the INDICATOR LEDS - DETAILED EXPLANATIOn section.
The symbols in the top of the display contain **WARNINGS** which the appliance provides to its users, as detailed below (For full information, also see the "DESCRIPTION OF CONTROLS AND PROGRAMS" section).

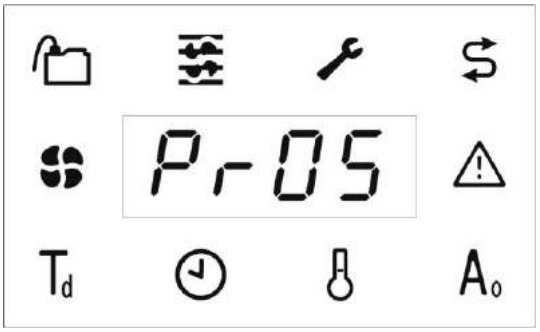


fig. 41 – Central display, detail of backlit symbols.

SYMBOL	MEANING
	**No detergent** Lights up if the detergent level sensors are installed and one of them is at "minimum" level. The error is displayed at the end of the cycle and in combination with the LED the segment display shows the code of the detergent to which the warning refers: P1: code on display "A-:68" P2: code "A-:69" P3: code "A-:70" Activated at the end of the cycle and when the user attempts to start a new program. The washing cycle can be started with this message present (i.e. overriding the warning) by pressing the **Start/Stop** button again. If two or more similar alarms (e.g. cans P1 and P2 empty), the **Start/Stop** button will have to be pressed twice or more before the cycle can be started. (The device's internal memory records the event but allows execution of the cycle).
	**Maintenance: filter replacement** (only for WD4060, WD4190) Active if the dryer is present and the absolute filter is installed. (The absolute filter is optional on the "GW" series). The LED indicates that the absolute filter needs to be replaced. Illumination of the symbol is triggered by the number of drying system operating hours, set at 500h when the filter is new. The filter must be replaced by authorised staff. Keeping the filter in operation after the end of its useful life will lead to poor drying results. If the filter is fulled, the drying air flow rate is reduced. The filter's useful life may be less than the 500 h set, depending on the amount of dirt in the environment. If drying performance deteriorates, users should have the filter changed earlier. The appliance does not signal this type of wear, but only wear arising from the hours actually worked.

SYMBOL	MEANING
	**Appliance maintenance** The appliance counts the number of cycles performed and the LED comes on to alert the user that maintenance is required. These are inspection and maintenance operations, scheduled every 1000 cycles, which must be performed by authorised staff to keep the appliance safe and in good working order. These maintenance operations are not covered by the product Warranty, which does not include the replacement of components which deteriorate due to normal wear and tear.
	**No Salt** Salt must be added to the water softener reservoir in the chamber. Salt is necessary to enable the softener to reduce the hardness of the intake water. The intake water hardness is set on the appliance parameters on the basis of the information provided by the user. Regular checks (every 6 months/year) to ensure that the initial characteristics are retained are recommended. If the characteristics change, contact the authorized engineer for modification of the parameters accordingly.
	**Alarm** The machine displays an anomaly, which can be generated by a fault or by the detection of abnormal conditions. **The segment display shows “AF” plus a code number identifying the alarm triggered.** The alarms table below details the components which may have caused the event for each alarm code, to simplify diagnostics and troubleshooting.



The following is a list of the alarms which may occur on the device, they are of two types: "FATAL" and "NON FATAL".
*- In the first case, “**FATAL ALARMS”**, the message which appears is "**AF**" followed by the alarm number.*
*- The second category, **“NON FATAL ALARMS”**, are warning messages and not malfunctions; the display shows "**A-**" followed by the alarm number. **Press the “Start/Stop” button to continue using the device..***

HOW TO DEAL WITH ALARMS - READ CAREFULLY

When an alarm occurs, the device will automatically attempt to set in conditions of safety.
When an alarm message is noticed: Refer to the table below to find out what the code means and the relevant countermeasures. Apply the countermeasures recommended for the specific circumstances.

When an error occurs, generally the device manages the anomaly itself: in this case ***the alarm code flashes on the display*** *until the problem has been dealt with:* ***no reset commands are accepted during this time.***
Any RESET forced by the user will not be accepted until the problem has been dealt with and the alarm code on the display is "steady".

When an alarm message is noticed: Refer to the table below to find out what the code means and the relevant countermeasures. Apply the countermeasures recommended for the specific circumstances.

For the sake of convenience, the procedures the user is normally required to carry out are summarised below:
1. First, follow the ***DEFAULT PROCEDURE.***
2. If the alarm does not disappear: proceed as described for the ***RESET PROCEDURE.***

1. DEFAULT PROCEDURE
If the event which triggered the alarm is due to a temporary anomaly, the situation can be resolved as follows:
*Switch off using the "****On/Off****" button and then switch on again using the same button. The display shows a flashing "****OFF****" during automatic management of the anomaly. The word "****OFF****" becomes steady once the situation has been resolved.*

2. RESET PROCEDURE *for AF alarms:*

1. *Perform the* ***RESET*** *cycle.*
2. *If the alarm message disappears after the* ***RESET*** *cycle: normal use of the device can be restarted by switching it off and back on with the* ***On/Off*** *button.*
3. *If the alarm message persists after the* ***RESET*** *cycle: switch the device off and back on using the "****On/Off****" button and by* ***disconnecting it from the electricity supply*** *(Wait at least 10 seconds after switching off before switching back on again).*
4. *If the alarm occurs when the device is restarted: retry the* ***RESET****.*

If the alarm persists even after the RESET procedure:

1. ***Turn off the water supply taps.***
2. ***Disconnect the appliance from the electricity supply.***
3. ***Check that all the device's connections*** *(electricity and water) are correct and there have been no changes from the initial installation conditions.*
4. ***Contact the After-Sales Service.***

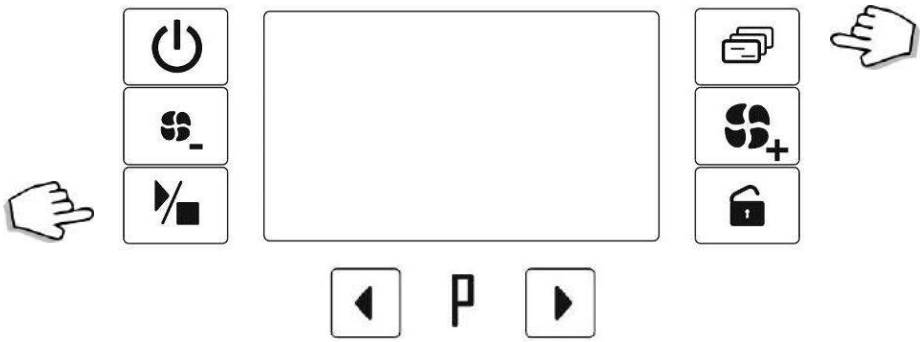


fig. 42 – ***RESET*** *cycle selection buttons ("****Start/Stop" + "Functions****") buttons.*

ALARM ID	DESCRIPTION	USER ACTION
AF:01	Water not heated within time allowed.	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:02	The temperature difference between the two probes, “TL1” and “TC”, is more than 2°C (only active on WD)	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:04	Probe “TL1” (chamber temperature) reads a higher temperature than the effective one.	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:05	Working temperature probe “TL1” is generating an abnormal signal (probe “open”).	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:07	Drying temperature probe TA1 is generating an abnormal signal (probe “open”).	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:10	Control temperature probe TLC is generating an abnormal signal (probe “open”). (only active on WD)	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:11	No cold water during filling.	Check the water supply: 1. Check that the intake tap is open. 2. Check the water supply pressure. 3. Check that the filler hoses are correctly positioned. Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:13	No demineralised water.	Check the water and demi water supply: 1. Check that the intake tap is open. 2. If using water from a tank (with PAD accessory), check that the tank is not empty or placed too low down. 3. Check the water supply pressure. 4. Check that the display settings actually correspond to the water connections (demi water present or not). Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:17	Cold water filling time not correct.	Checks and procedures as for AF:11
AF:19	Demi filling time too long. The appliance is taking too long to take in demineralised water.	Checks and procedures as for AF:13
AF:23	Not enough water. Chamber water level too low.	Checks and procedures as for AF:11 **Also check that there are no leaks from the appliance** (no water around it). **If there are leaks: turn off all water supply taps at once and contact the After-Sales Service.**
AF:25	Water circuit malfunction. Anomaly related to the circulating pump “ML”. Circulating pump pressure too low.	There may be foam in the chamber. Check the type of detergent used. For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**

ALARM ID	DESCRIPTION	USER ACTION
AF:26	Water being taken into chamber at wrong time. Cold water intake valve “EVF” may have failed.	Check the water supply: Check that the water supply pressure is within the permitted range. Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.** **Also check that there are no leaks from the appliance** (no water around it). **If there are leaks: turn off all water supply taps at once and contact the After-Sales Service.**
AF:28	Demineralised water being taken into chamber at wrong time. Cold water intake valve “EVF” may have failed.	Check the water supply: Check that the demineralised water supply pressure is within the permitted range. Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.** **Also check that there are no leaks from the appliance** (no water around it). **If there are leaks: turn off all water supply taps at once and contact the After-Sales Service.**
AF:29	Chamber does not empty. No drainage.	Check the connection to the water drain, especially that the height of the drain connections complies with the specified requirements and that there are no restrictions in the drain hoses.
AF:30	During the working cycle, the chamber water level exceeds the safety level. Water safety level.	Check the water supply to the appliance: 1. Intake pressure. 2. That the connections are correct, as specified in this manual. For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.** **If there are leaks: turn off all water supply taps at once and contact the After-Sales Service.**
AF:32	Water standing in washing chamber with appliance in standby.	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.** If there are leaks: turn off all water supply taps at once and contact the After-Sales Service.
AF:33	Steam condenser water intake anomaly. No water in steam condenser.	Indicates that there is no water in the steam condenser when there should be. Check the water supply: 1. Intake water pressure 2. That the connections are correct, as specified in this manual. 3. Blockages or restrictions in hoses. Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:34	Steam condenser water drainage failure.	Check that the drain connections are correct: 1. Height and position of the drain connection 2. That the connections are correct, as specified in this manual. 3. Blockages or restrictions in hoses. For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**

ALARM ID	DESCRIPTION	USER ACTION
AF:37	Drainage problems when using a mixture of water.	The use of a mixture of water is an option adopted in special cases to cool the water discharged into the drain. Check: 1. The intake water temperature; if the water is not cold enough (recommended T<25°C) there may be difficult in achieving the target temperature. 2. Problems with drain; check that the hoses and drain connections meet the specified requirements.
A-:41	P1 detergent intake anomaly	1. Check that the detergent intake nozzle is correctly positioned in the can. 2. Check for detergent leaks (pools of detergent around the device). This code provides a **warning;** it is not an alarm which cuts out the appliance. Operation of the device can be continued by pressing the **Start/Stop** button. **Report the anomaly to the technical assistance.**
A-:42	P2 detergent intake anomaly	Proceed as for AF:41
A-:43	P3 detergent intake anomaly	Proceed as for AF:41
A-:44	P4 detergent intake anomaly	Proceed as for AF:41
AF:49	P4 Anomaly, pump active when not foreseen.	Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:54	Door opening detected with cycle in progress. Door interlock microswitch malfunction.	1. Make sure the door is closed properly before starting a cycle. 2. Do not force the door open with a cycle in progress; always use the buttons provided on the appliance to stop a cycle and open the door. 3. Check there is nothing between the door and the appliance's chamber preventing the door from closing properly. 3. Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:56	Door locking device malfunction, automatic opening failure	Always make sure the door is closed properly before starting a cycle. Try to open the appliance again by pressing the **Door opening** button. **If necessary, release the door lock by hand as described in this manual.** Follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:58	Dryer heating failure (only for WD4060, WD4190)	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:67	Dryer motor "cooling" malfunction. Cooling is included at the end of the drying phase to bring the load processed and the heating elements to a safe temperature. (only for WD4060, WD4190)	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**

ALARM ID	DESCRIPTION	USER ACTION
A-:68	P1 jerry can empty	**Check that there is detergent in the jerry can** or that the level sensor is operating correctly. This is a warning and not an alarm as such; the washing cycle can be started with this message present (i.e. overriding the warning) by pressing the **Start/Stop** button again (hold it down for 2 seconds). Activated at the end of the cycle and when the user attempts to start a new program. If two or more similar alarms (e.g. cans P1 and P2 empty), the **Start/Stop** button will have to be pressed twice or more before the cycle can be started. (The device's internal memory records the event but allows execution of the cycle).
A-:69	P2 jerry can empty	As for "A-:68"
A-:70	P3 jerry can empty	As for "A-:68"
A-:71	P4 jerry can empty	As for "A-:68"
AF:73	Internal memory data storage error	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:74	Water leak from chamber. Alarm only enabled with the Aquastop accessory fitted.	Turn off the water supply taps. Contact the After-Sales Service.
AF:75	No salt in softener. This alarm does not appear on the Display but is recorded in the appliance memory; the relative LED illuminates on the display.	Add salt to the softener salt tank inside the chamber, accessible with the door open.
AF:77	Intake water temperature over 45°C; prewash temperature must be below 45°C. (Alarm generally disabled on GW series products.)	The alarm occurs when the temperature is over 45°C at the start of the cycle. Wait for the appliance to cool before starting a new cycle.
AF:78	*Restore fail*. Problem of motherboard.	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:79	Program not compatible.	This alarm is triggered if a program is created using the TRACELOG software using procedures not compatible for the proper performance of the cycle. Reconsider the program created phase by phase; it may be useful to compare it with an original program provided as reference (see attached PROGRAMS TABLE doc.). Pay special attention to the version of the appliance being used; e.g. do not activate peristaltic pump P3 when writing the program if this pump is not installed.
AF:84	Dryer temperature reading higher than actual temperature. (only for WD4060, WD4190)	Wait for the alarm to be resolved automatically. **During automatic management of the AF:84 alarm the RESET cycle cannot be started.** **Do not disconnect the electricity supply to the device: the overheating problem is being dealt with automatically, with a heating element cooling cycle.** The **DEFAULT PROCEDURE** described above cannot be implemented until the end of the automatic process.

ALARM ID	DESCRIPTION	USER ACTION
AF:91	Internal memory full.	**This alarm only occurs if the appliance parameter that prevents overwriting in the memory is enabled.** With the default setting, this alarm will not occur. Memory space must be cleared to allow use of the appliance to continue: this can be done by connecting to the appliance by means of the **RS-232** serial port and using the **TRACELOG** software.
AF:92	Drying filter maintenance (Only for WD4060, WD4190)	The absolute filter in the drying system has exceeded the set number of working hours. Contact the After-Sales Service to have the filter changed. The filter is a consumable and is not covered by the warranty. Press the **Start/Stop** button to override the message and continue using the device. The device's internal memory records the event. With a fouled filter, drying will be poor.
AF:93	Appliance maintenance	The appliance has exceeded the set number of operating hours since installation or since its last service: contact the After-Sales Service for routine maintenance. Press the **Start/Stop** button to override the message and continue using the device. The service must be carried out as soon as possible to keep the device in good working order. The device's internal memory records the event.
AF:94	Temperature below actual temperature during extension phase. T not stable	For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**
AF:96	Chamber water level incorrect.	Check the intake and drain water connections and that the appliance has been installed as specified. If leaks are noticed around the device: turn off the water supply taps. For the user: follow the **DEFAULT PROCEDURE** described above. If the alarm does not disappear, follow the **RESET PROCEDURE.**

9 CLEANING AND MAINTENANCE

9.1 PRELIMINARY PRECAUTIONS

DISCONNECTING THE ELECTRICITY AND WATER SUPPLIES
Before doing any work: *disconnect the power supply using the appropriate switch on the panel or disconnecting the power cable, and turn off the water intake tap.*

WORKING SPACE REQUIRED
A ***space of approx 1m² is required in front of the appliance*** *for cleaning and maintenance to be carried out without difficulty.*

AUTHORISED TECHNICAL STAFF.
Any work done on the appliance by unauthorised staff is not covered by the warranty and is performed under the user's responsibility.

During maintenance and cleaning: if appropriate, use ***personal protection equipment****.*

9.2 CLEANING THE DEVICE AND ITS PARTS

General cleaning
The external surfaces and inner door of the device must be cleaned at regular intervals (once a month is recommended) with a soft cloth soaked in water.
The door seals must be cleaned with a damp sponge.
After cleaning, a washing cycle should be carried out without a load for processing, to remove any detergent residues.

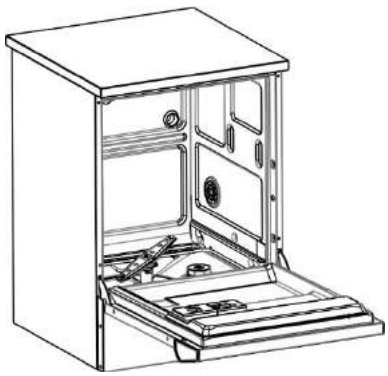


fig. 43 – The inside and outside of the device must be cleaned..

Cleaning the water intake filter

The water intake filter "A" on the outlet of the tap requires regular cleaning; the recommended interval is **once every 2 – 6 months, depending on the intake water** quality. Turn off the water supply tap, unscrew the end of the water intake hose, remove the filter "A" and clean it gently under running water. Fit the filter "A" back in place and reconnect the water intake hose with care.

Keep an eye on the free end of the hose to prevent water spills.

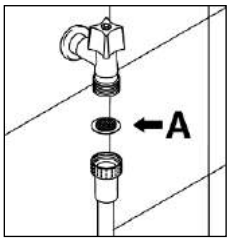


fig. 44 – water intake filter "A"

Cleaning the spray arms

The spray arms can easily be removed by unscrewing the knurled nut that fixes them to the pivot pin, so that the nozzles can be periodically cleaned to prevent fouling.

Wash the spray arms under running water and then fit them back in place. Make sure that they are free to turn unimpeded.

Recommended spray arm cleaning interval: **once a week**.

For trolleys with fixed spray nozzles: refer to the trolley manual for cleaning instructions.

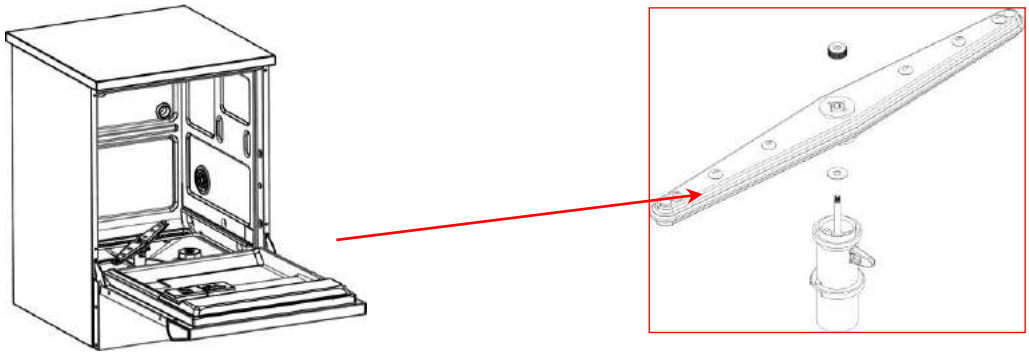


fig. 45 – Appliance bottom spray arm: remove and clean regularly to maintain optimal washing results..

Cleaning the filter unit

The filter unit consists of a coarse filter, a conical fine filter, and a larger external filter. To ensure that the appliance operates effectively, it is extremely important to keep the filters clean. They should therefore be inspected frequently (e.g. if glassware with paper labels is washed, inspect after each cycle - **in normal conditions the filters should be cleaned once a week**) to remove deposits which may adversely affect operation.



WARNING

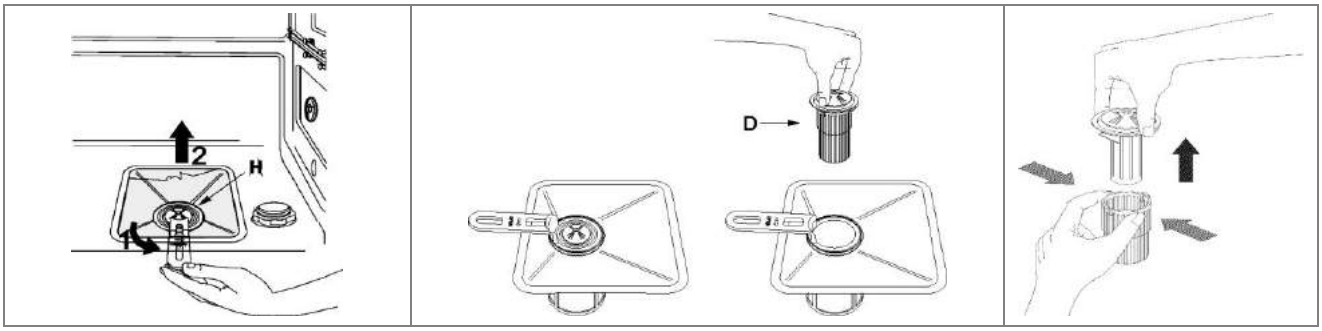
Filters may contain biologically contaminated material and must be handled with due care, using protective equipment (e.g. gloves, protective glasses, lab coat).

The potentially contaminated material in the filters and any other components of the device must be handled and disposed of appropriately.

Recommendations for correct maintenance

- The filters should be cleaned under running water using a stiff brush.
- It is essential to clean the filters carefully in accordance with the instructions given above: the appliance washer will be unable to operate correctly if the filters are fouled.
- Fit the filters back in place with care before starting a washing program.

9.2.1 WD2145 - filter elements



The central filter **"D"** should be inspected regularly and cleaned if necessary. To remove it, take hold of the handle, turn anti-clockwise and lift.
Push the central filter "D" up from below to extract it from the micro-filter and separate the two parts of the plastic filter by pressing the body of the filter in the zone shown by the arrows.
Lift out the central filter.

9.2.2 WD1160, WD4060, WD4190 - filter elements

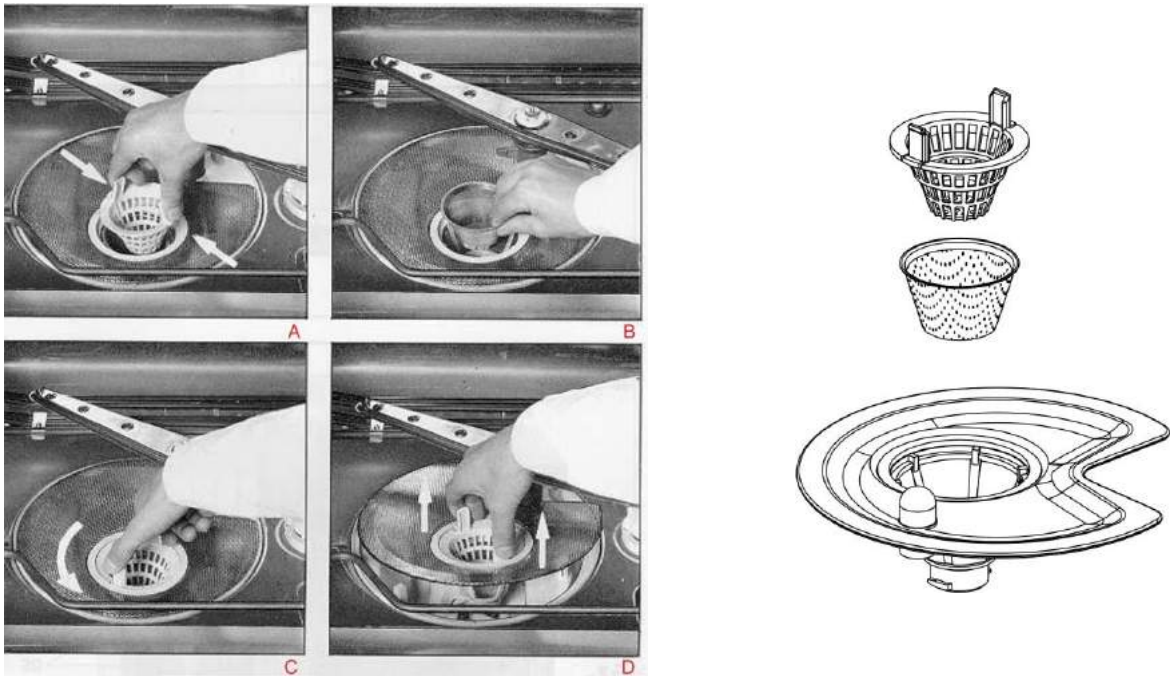


fig. 46 – Draining filters in the chamber; dismantling procedure and detailed view.

Coarse conical filter
To remove the coarse filter, press the "tabs" of the filter and pull upwards (A, fig. 46). Clean the filter and replace it.

Conical fine filter
This is located underneath the conical coarse filter (B) and should be checked and cleaned whenever the coarse filter is inspected. Clean with a brush and hot water for effective removal of deposits.

External circular filter
To remove this filter:

- Hold of the "tabs" of the coarse conical filter and turn it anticlockwise (C).
- Without pressing the tabs, lift the entire unit (D).

When cleaning this filter, it is best also to clean the others.

9.3 IF THE DEVICE IS TO BE OUT OF USE

If the appliance is to be left unused for a long time, follow these recommendations.
The procedure is recommended for periods of 24 hours or more out of use.

- Perform the PREWASH program with the appliance empty.
- If contaminated materials are processed: run program 15 (or a program with a thermal disinfection Td phase) with no load in the appliance.
- **Flushing the detergent system: if the device is expected to be out of use for more than 10 days:**
  - Remove the detergent intake lines from the jerry cans and insert them into containers of warm (approximately 30°C) softened (preferably demineralised) water.
  - Put the caps firmly back on the jerry cans of detergent.
  - Run the "*Service*" program (P 16) twice in succession with no load in the tank.
- Disconnect the electricity supply.
- Leave the door slightly open to prevent unpleasant odours from forming inside the washing chamber.
- Turn off the water intake tap.

Flushing of the detergent system is vital to prevent the chemicals from crystallising and possibly damaging the detergent dispensing system.

9.4 REUSING THE DEVICE AFTER A PERIOD OUT OF USE

If the appliance has been unused for a long time, before starting a cycle, follow these recommendations.

- Inspect the filters at the ends of the water intake hoses and check that no sludge or rust has deposited in the pipelines; if this has occurred, allow water to run from the water supply tap for a few minutes.
- Restore the electricity supply (if disconnected).
- Reconnect the water supply hose and turn on the tap.
- If the detergent system has been flushed, proceed as follows:
  - Return the detergent intake nozzles to the jerry cans of the relative products, taking care to put the right nozzle in each can;
  - Run the "*Service*" program (P 16) twice in succession with no load in the tank.
- **Run a program containing a Td thermal disinfection phase, with no load for processing.**

A thermal disinfection cycle should be performed before using the device if it has been out of use for 24 hours or more.

WARNING: *after 24 hours of inactivity, the device automatically proposes a self-disinfection cycle 93°C. The display shows "**PdIs**". It is advisable to run the program **without load**, no load inside the washing chamber. Press the "**Start / Stop**" button to start the program.*
*Press the Cycle Selection buttons, "**Left selection**" or "**Right selection**" to ignore the suggestion.*



fig. 47 – Self-disinfection Cycle "PdiS"."

9.5 TROUBLESHOOTING

Slight faults can sometimes be eliminated by the user with the aid of the following instructions.

1. If the programme fails to start, make sure that:

- The appliance is connected to the electrical mains.
- The appliance is receiving power.
- The water tap is turned on.
- The door of the appliance has been closed properly.

2. If water stagnates in the device, make sure that:

- There are no tight bends in the drain hose.
- The drain trap is not clogged.
- The appliance filters are not clogged.

3. If the items in the load for washing in general are not cleaned properly, make sure that:

- The right amount of detergent has been added.
- There is regenerating salt in the tank.
- The instruments have been positioned correctly.
- The program selected is suitable for the type and degree of dirt on the instruments.
- All the filters are clean and correctly fitted.
- The spray arm water outlet holes are not clogged.
- Nothing is preventing the spray arms from turning.
- Make sure that the salt tank cap is firmly closed.

4. If the items in the load fail to dry or are dull, make sure that:

- Absolute filter condition: operating hours can be viewed as an appliance parameter (the default operating hours are set for normal conditions of use; the drying filter's working life will be reduced by dirtier than average environments).
- There is neutralising agent in the container.
- The neutralising agent dispenser is set correctly.
- The detergent used is of good quality and has not lost its characteristics (e.g. owing to incorrect storage, pack left open, etc.).
- Make sure that the salt tank cap is firmly closed.

5. If the elements processed are streaked, stained, etc. make sure that:

- The amount of neutralising agent dispensed is not excessive.

6. If there are visible traces of rust in the chamber:

- The chamber is made of corrosion-proof steel, so any rust marks are due to external factors (pieces of rust from the water pipes, etc.). Specific products for removal of these stains are commercially available.
- Make sure that the detergent doses are correct. Some detergents can be more corrosive than others.
- Make sure that the salt tank cap is firmly closed.

7. If the optional printer does not work:

- Check that the accessory is fitted with suitable thermal paper.
- Check that the device is connected properly (both electricity supply and data connection).
- On WD4190: check that the data output switch (next to the on-off switch) is set correctly for operation of the printer.

If the faults persist after the instructions given above have been followed, contact your nearest authorised service centre.

9.6 SERVICING AND ROUTINE CHECK TIME INTERVALS

9.6.1 DAILY

1. Check the detergent and neutralising agent levels in the cans and fill up if necessary.
2. Check spray arm rotation and inspect the water outlet holes visually to check that they are clean.

9.6.2 WEEKLY

1. Clean the sump filters, following the instructions provided.
2. Run PROGRAM 6, or another program with a thermal disinfection phase, without instruments for processing in the appliance, for precautionary cleaning/disinfection of the washing chamber.

9.6.3 EVERY SIX MONTHS

1. Inspect the water solenoid valve intake filters; if necessary, clean them by pouring hot water through them in the opposite direction to the operating flow.
2. Inspect the intake and outlet hoses of the detergent and neutralising agent pumps.

9.6.4 EVERY YEAR

Contact your nearest authorised service centre to have the appliance completely checked over at the end of the warranty period and annually for successive years, or, if this occurs before the end of the year, when the "Appliance maintenance" LED illuminates.



***Maintenance operations are not covered by the product Warranty**, which does not include the replacement of components which deteriorate due to normal wear and tear.*

The operations which authorised staff will carry out are:

1. Inspection and if necessary replacement of worn **peristaltic pump** components (especially the internal hose)
2. Inspection of the **detergent intake** pipes and replacement if necessary
3. Inspection of the **door gasket** and replacement if necessary
4. Inspection of the **drying system filters** (relative and absolute) and replacement if necessary
5. Inspection and if necessary cleaning/replacement of the **filters** (water intake filters on the filler pipes, detergent filters on the suction systems)
6. Checking of the intake **water hardness setting** (the user must first have the intake water analysed to allow the correct settings to be made)
7. Checking of the **detergent dosage settings.**
8. Inspection of the **steam condenser** assembly
    a. Inspection of the **nozzles**, check that water is flowing correctly
    b. Inspection of the connection, water intake, water drainage and level pressure switch connection **hoses**
9. **Performance of a complete operating cycle**, including the drying phase, to check for any leaks or malfunctions



WARNING
The manufacturer declines all responsibility in the event of appliance malfunctions, or injury or damage, arising from the failure to comply with the above recommendations.

10 INSTALLATION

The device's characteristics and positioning and installation instructions are provided below.

10.1 TECHNICAL DATA

The documentation includes a description of the rated characteristics of the electrical connection, all the intake and outlet connections and the ambient conditions for which the appliance was designed (ref. point 5.4.2 of IEC61010-1). For “non electric” intakes, the pressure and flow ranges are provided (ref. point 5.4.2 IEC61010-2-040).

WATER SUPPLY REQUIRED		
Type of water required	1 - Mains (required)	2 - Demineralised (recommended)
Pressure	200 kPa – 500 kPa (2 bar – 5 bar)	
Type of threaded connection	3 / 4 ”	
Required flow [min - max]	2 - 12 litres / min	
Mains water hardness [max]	42 °f (for models equipped with a steam condenser, the use of purified water with hardness below 15°f is recommended).	
Fe2+ / Fe3+ [max]	0.5 ppm	
Cold water temperature [max]	8°C - 35°C	8°C - 50°C
Demineralised water conductivity [max]	-	30µS/cm
Limits depending on microbial contamination	Minimum microbiological quality required: “potable water" (ref. limits in accordance with Italian Legislative Decree 31/2001)	

DIMENSIONS and WEIGHT			
Models	**WD2145**	**WD1160, WD4060**	**WD4190**
Standard External [Height x Width x Depth]	**850 x 450 x 620**	**850 x 600 x 600**	**850 x 900 x 600**
Standard External - aquastop accessory [Height x Width x Depth] - overall height is increased by **+7mm**	**-**	**857** x 600 x 600	**857** x 900 x 600
Standard External - PAD1 accessory [Height x Width x Depth] - overall depth is increased by **+110mm / +150mm** (depending on the model of PAD installed)	**850 x 450 x 730 / 770**	850 x 600 x **710 / 750**	850 x 900 x **710 / 750**
Standard External - peristaltic pump P3 accessory [Height x Width x Depth] - (overall depth of WD1160, WD4060) is increased by **+60mm.** **Models with P4 pump installed:** **WD1160P4, WD4060P4, WD4190P4**	-	850 x 600 x **660**	850 x 900 x 600
Net weight	56 kg	72 kg	105 kg
Weight of appliance + packaging	66 kg	90 kg	120 kg

MATERIALS I	
Washing tank	AISI 316L
External surface	AISI 304

ELECTRICITY SUPPLY			
MODEL	**VARIANT**	**ELECTRICITY SUPPLY**	**INTEGRAL PROTECTIVE DEVICES**
WD2145			
50Hz	230V single phase 50Hz	230V ~ / 50Hz / 14A / 3300W	FUSES **10.3x38 16 A** ON POWER SUPPLY [L1, N]
	230V single phase UK market	230 V ~ / 50Hz / 13A / 3000W	FUSES **10.3x38 16 A** ON POWER SUPPLY [L1, N] + 13 A "BS1362" FUSE incorporated in UK "BS1363" plug.
60Hz	220V single phase 60Hz	220 V ~ / 60 Hz / 14A / 3100W	FUSES **10.3x38 16 A** ON POWER SUPPLY [L1, N]
WD1160, WD4060, WD4190			
50Hz [* default connection]	standard	400V N~ / 50Hz / 12A / 7000W * 230V ~ / 50Hz / 12A / 2800W	FUSES **10.3x38 16 A** ON POWER SUPPLY [L1, L2, L3]
	Three-phase model, 230V between phases, no neutral.	230V 3~ / 50Hz / 19A / 7000W	FUSES **10.3x38 20 A** ON POWER SUPPLY [L1, L2, L3]
	230V single-phase	230V ~ / 50Hz / 12A / 2800W	FUSES **10.3x38 16 A** ON POWER SUPPLY [L1, N]
	Single phase "Full power"	230V ~ / 50Hz / 30A / 7000W	FUSIBILI **10.3x38 32 A** ON POWER SUPPLY [L1, N]
60Hz [* default connection]	standard	380-400V N~ / 60Hz / 12A / 7000W * 220-230V ~ / 60Hz / 12A / 2800W	FUSES **10.3x38 16 A** ON POWER SUPPLY [L1, L2, L3]
	Three-phase model, 220-230V between phases, no neutral.	220-230V 3~ / 60Hz / 19A / 7000W	FUSES **10.3x38 20 A** ON POWER SUPPLY [L1, L2, L3]
	220-230V single-phase	220-230V ~ / 60Hz / 12A / 2800W	FUSES **10.3x38 16 A** ON POWER SUPPLY [L1, N]

OTHER DATA		
DATA COMMUNICATION - PRINTER CONNECTION	RS-232 PORT	
MAX. NOISE LEVEL	50dB	
MODEL	**WD2145**	**WD1160, WD4060, WD4190**
HEAT EMISSION INTO THE ROOM - CYCLE RUNNING (assessed considering a cycle containing a 93°C thermal disinfection cycle - not including the heat emitted by the steam vent)	600W	900W

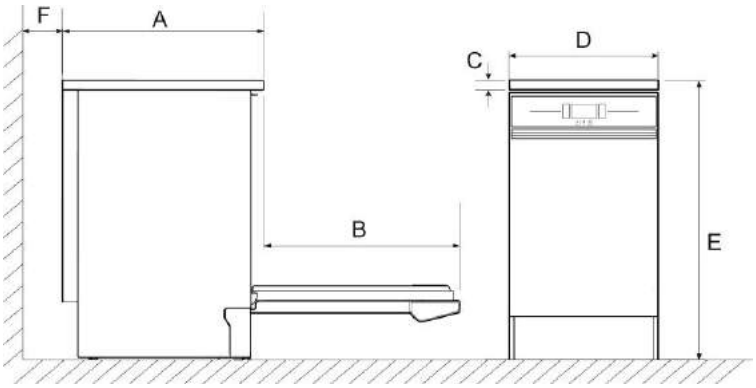
AMBIENT CONDITIONS	
USE	Indoor
ALTITUDE	Up to 1000m
AMBIENT TEMPERATURE	From 5°C to 40°C
MINIMUM LIGHTING LEVEL REQUIRED	300 lx
MAX RELATIVE HUMIDITY	80% for temperatures up to 31°C with linear decrease to 50% at the temperature of 40°C
INSTALLATION CATEGORY (OR SURGE CATEGORY or *INSTALLATION CATEGORY*)	II
ELECTRICAL INSULATION CLASS (ref. IEC 61140)	I
DEGREE OF POLLUTION	2 (ref. 61010-1, point 3.6.6.2)

STANDARDS AND CLASSIFICATION	
CONFORMITY	- European directive 2014/35/EU (2006/95/CE) [Safety]: European Standard EN61010-1:2010, EN61010-2-040:2015. - European directive 2014/30/EU (2004/108/CE) [Emc] : European Standard EN61326:2013 - European directive 2011/65/CE [RoHS 2] : European Standard EN 50581 :2012 - European directive 93/42/CE, 2007/47/CE [MD]: European Standard EN ISO 14971:2012, EN 62304:2006+AC:2008, EN62366:2008, EN ISO 15883-1:2009+A1:2014, EN ISO 15883-2:2009 - Other: European Standard EN 61770:2009
MEDICAL DEVICE CLASSIFICATION – WD family only	class **IIb** medical devices (in accordance with the classification criteria established by Directive 93/42 and subsequent additions and amendments, extended and amended by EC Directive 2007/47).

10.2 PRODUCT DIMENSIONS - MEASUREMENTS IN MM

10.2.1 WD2145

The device can be requested with top for built-in installation for special requirements.
In this case, the product is 20 mm shorter than the stated height.



VERSION	A	B	C	D	E	F
STANDARD	620	600	30	450	850	> 10
STANDARD + PAD1	**730 / 770**	600	30	450	850	>10

10.2.2 WD1160, WD4060

The appliance can be requested with top for built-in installation for special requirements.
In this case, the product is 30 mm shorter than the stated height.

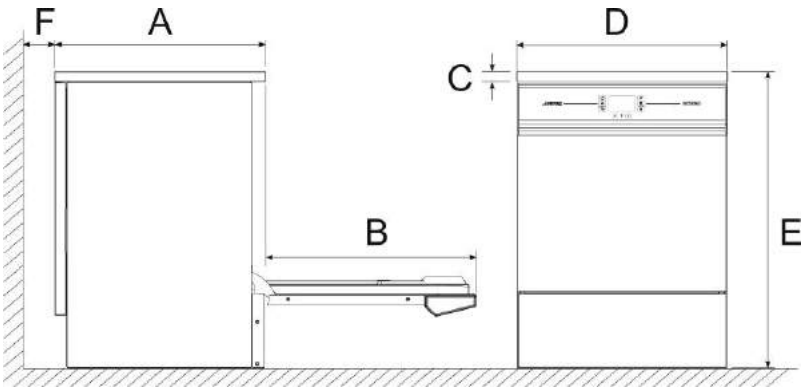


fig. 48 – WD1160, WD4060 - Product overall dimension diagram

VERSION	A	B	C	D	E	F
STANDARD	600	600	30	600	850	> 10
STANDARD + ACQUASTOP	600	600	30	600	**857**	> 10
STANDARD + PAD1	**710 / 750**	600	30	600	850	>10
STANDARD + P3 or P4	**660**	600	30	600	850	> 10

10.2.3 WD4190

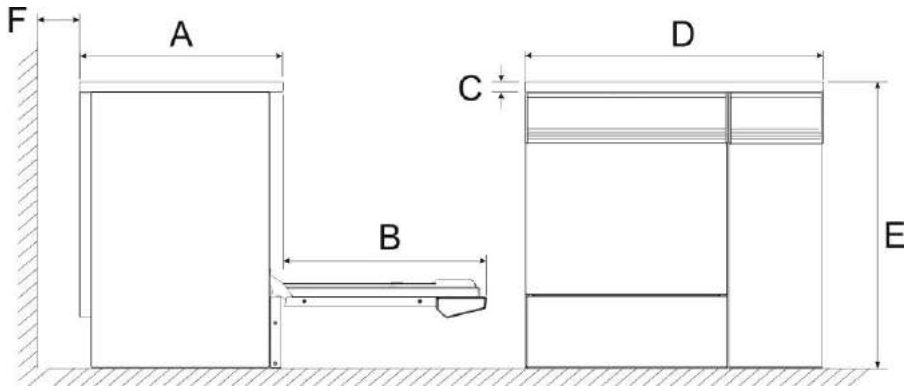


fig. 40 – WD4190 - Simplified drawing, product overall dimension diagram

N.B.: on the WD4190 series, the optional peristaltic pump P3 does not cause an increase in depth

VERSION	A	B	C	D	E	F
STANDARD	600	600	30	900	850	> 10
STANDARD + ACQUASTOP	600	600	30	900	**857**	> 10
STANDARD + PAD1	**710 / 750**	600	30	900	850	>10
STANDARD + P3 or P4	**600**	600	30	900	850	> 10

10.3 POSITIONING THE APPLIANCE

IMPORTANT

The appliance must be positioned with its back near a wall (with a gap of at least 10 mm) and must be installed by an authorised engineer.

The installer engineer is responsible for the correct operation of the appliance after installation and must also provide the user with all information required for its correct use.

During installation, the protective film must be removed from the steel outer surfaces.

The set of installation accessories (seals and hose ties) is inside the chamber.

The appliance can be installed with its sides flush against those of the adjacent cabinets, taking care not to obstruct the steam vent on the rear. The wall at the back should be in masonry or another waterproof material.

Also take care that the heat does not reach any electrical circuits or sockets behind the appliance.

The appliance has water intake and drain hoses which can be positioned leading to the right or left, depending on installation requirements.

If ordered in the appropriate version, the appliance can be installed built under a worktop; installation must be carried out by skilled staff.

LEVELLING

After positioning the appliance, screw the feet down or unscrew them to adjust its height and level with the aid of a spirit level so that it will be perfectly horizontal (max angle tolerance allowed: 0.5 °, corresponding to a maximum permissible difference in height between opposite corners of the appliance of about 5 mm).

Correct levelling will ensure that the appliance operates correctly.

WARNING

Any adjustments, maintenance, etc. must be performed with the device switched off and disconnected from power sources.

LIFTING AND TRANSPORT

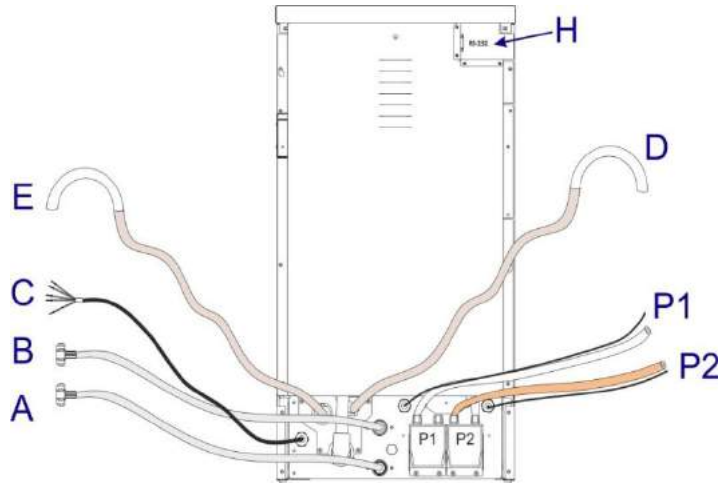
Before shipment from the factory, the base of the appliance is fixed to a pallet used for both lifting and transport.

When moving the appliance around, a forklift truck or pallet truck must be used.

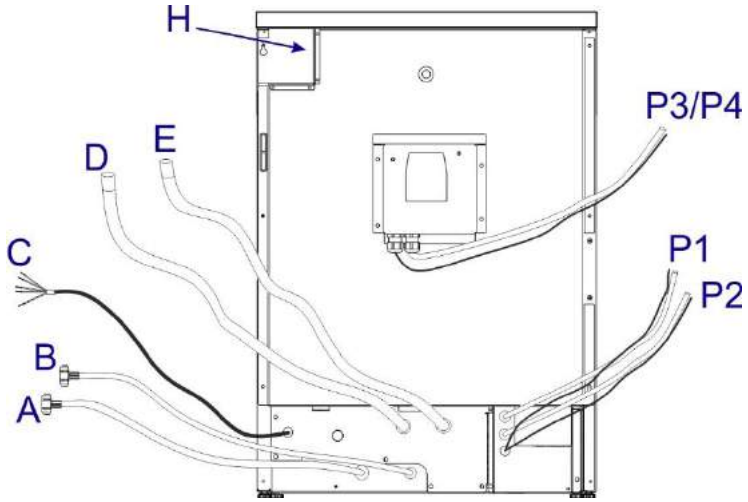
10.3.1 CONNECTIONS ON THE BACK OF THE APPLIANCE

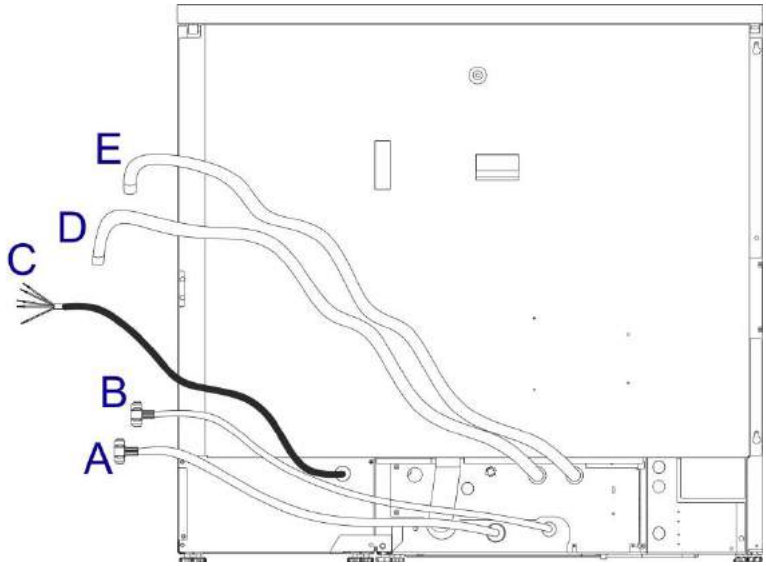
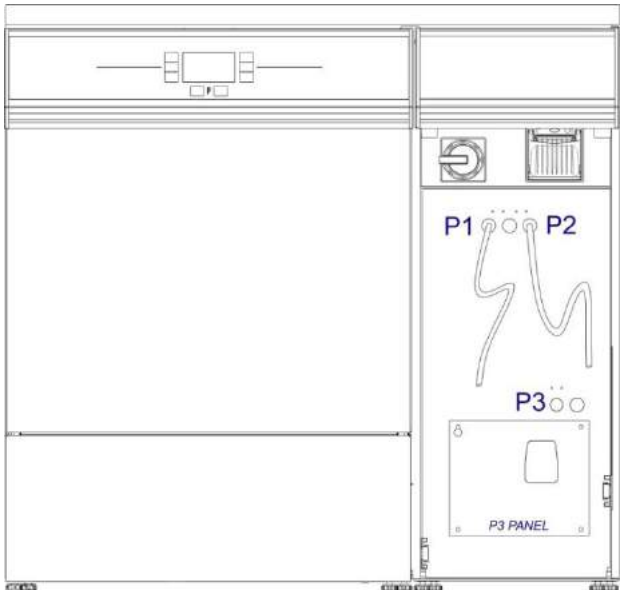
ID.	DESCRIPTION
A	Demi water intake hose
B	Mains water intake hose
C	Electricity supply cable
D	Steam condenser exhaust hose
E	Appliance drain hose
P1	Peristaltic pump P1 intake hose and P1 can detergent level sensor cable
P2	Peristaltic pump P2 intake hose and P2 can detergent level sensor cable
P3/P4	Peristaltic pump P3/P4 intake hose and P3/P4 can detergent level sensor cable
H	RS-232 port for PC or printer connection Cables with connectors for correct connection are provided with the following accessories: 1. “WD-PRINTE” printer 2. PC connection cable, for communication of data by means of TRACELOG software.

WD2145



WD1160, WD4060



WD4190
On the WD4190 series, the detergent intake connections “P1” and “P2” are inside the side cabinet and are accessed by opening the hatch. The connections are marked for identification with P1 (detergent) and P2 (acid neutraliser).

WD4190 - Rear of WD4190

WD4190 - front view, side cabinet open.

10.3.2 INSTALLATION ON STAND– APPLIANCE STAND

If the device is installed on a stand (e.g. product **“B6040L”** for WD1160, WD4060, “**B9040L**” for WD4190) with having height (base height) "HB", all the measurements of height above the supporting surface provided in this document must be increased by the said height “HB”.

HMi = Hi + HB

Where:
Hi = normal height stated in the document
HB = height of appliance stand
HMi = height recalculated for appliance installed on stand



fig. 49 – B6040L Stand.

10.4 ELECTRICAL SYSTEM REQUIREMENTS

	***WARNING*** *The electrical system to which the appliance is connected must comply with the relevant regulations in the place of installation.* *All electrical checks and system installation must be carried out to the proper standard by skilled staff with proven experience, qualified to work on electrical systems.* ***The skilled staff are responsible for ensuring that the ground connection is in good working order.*** *These devices are fitted with power surge protection devices: however, where possible a specific overload cutout suitably rated to protect the equipment should be installed for each device.* *For any spare parts: use only genuine parts, ordering them from your service centre.* *Please refer to the "TECHNICAL CHARACTERISTICS" section for all specifications regarding the device's voltage requirements and power drawdown.*
	***POWER CABLE REPLACEMENT*** *If damaged power cables have to be replaced, cables with the same characteristics and gauge as the cables mounted in the factory must be used (the cables fitted are marked with their types and characteristics).* ***This replacement may only be made by authorised technical staff****. Use genuine spare parts.*

10.4.1 WD2145 - Power supply cable and disconnection device

Characteristics of the power supply cable supplied with the appliance:

- U.K. market: H05V2V2-F 3 x 1.5 mm^2, (for 230V single-phase version, UK market), UK BS1363 plug.
- Other markets: H05V2V2-F 3 x 2.5 mm^2 (single-phase version, 50Hz and 60 Hz): Schuko plug.

	***WARNING*** *The device is supplied complete with power cable with plug for connection to the electrical mains:* ***the plug constitutes its disconnection device and must be easily accessible to the user after the installation.*** *If the type of electrical socket is different from the one supplied: the application of a suitable plug, including any cable adaptation, must be performed by competent technical personnel.* *The installation of a different plug takes place under the responsibility of the customer and the technician who performs the operation, and is in charge of the customer.* ***The plug used must comply with the regulations in force in the country / region of installation, suitable for the cable and suitably sized based on the electrical characteristics of the device.***

10.4.2 WD1160, WD4060, WD4190 - Power supply cable and disconnection device

Characteristics of the power supply cable supplied with the appliance.

Updated characteristics of the power cable:

- H07RN-F 5 x 2.5 mm^2 (5G2.5), 450/750 V (three-phase version)
- H07RN-F 4 x 2.5 mm^2 (4G2.5), 450/750 V (three-phase without neutral version)
- H07RN-F 3 x 2.5 mm^2 (3G2.5), 450/750 V (single-phase 2.8kW version)
- H07RN-F 3 x 6 mm^2 (3G6), 450/750 V (“Maximum power” or “Full power” single-phase version, 7.0kW)

***

The device comes in its standard version supplied without plug, with cable equipped with pre-insulated terminals.
The electrical connection of the device must be made using a plug suitable for the cable and suitably sized based on the electrical characteristics of the device.
The plug and mounting of the same are the responsibility of the user.

Note: It is suggested to use industrial type plugs (IEC 60309), designed to operate safely in difficult environmental conditions and to prevent accidental disconnections. They can only be disconnected from the socket if there is no power present.

	***CIRCUIT-BREAKER*** **A CIRCUIT-BREAKER** must be installed for each appliance. ***Circuit-breaker characteristics*** *a. Omnipolar: must break all live conductors;* *b. Easily accessible to the user;* *c. Easily operated (no tool must be required);* *d. Located in close proximity to the appliance;* *e. Clearly marked as the appliance circuit-breaker* ***The appliance is fitted with overcurrent protection devices.*** *However, a protective device specifically for the appliance (e.g. magnetothermal breaker or fuse on every phase, suitably rated for the electrical data stated above) should be installed in the room’s electrical panel.*

10.5 WATER CONNECTION FITTINGS

Key to abbreviations used for water connections.

CODE	FILLING/DISCHARGE	WATER TYPE
cw	INTAKE	cold water hose - cw (*cold water*)
hw	INTAKE	hot water hose – hw (hot water) – not used on this series
dw	INTAKE	pressurised demineralised water hose - dw (*demi water*)
d	DRAIN	appliance drain hose - d (drain)
cd	DRAIN	steam condenser drain hose - cd (condenser drain)

10.5.1 WATER INTAKE

10.5.2 WATER INTAKE CONNECTION

The appliance has **two intake hoses, for mains and demineralised water**.
The hoses are designed to be connected to taps with 3/4'' gas threaded attachment.
Use the filter provided, "A" in the illustration, when connecting the end of the intake hose.

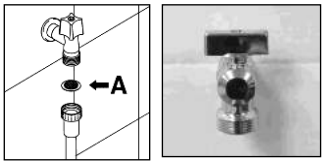


fig. 50 – Fit the filters provided when connecting the intake hose

MODELS	*NUMBER CONNECTIONS*	*CONNECTION TYPE*		
		cw	*dw*	*hw*
WD2145, WD1160, WD4060, WD4190	**2**	**1**	**1**	**---**

10.5.3 WATER SUPPLY TAP POSITION

Water supply taps must be positioned close to the appliance, in a position accessible to the user. With reference to the diagram below, the recommended measurements are:

I < 50 cm
HC < 100 cm

There are no particular height requirements for the position of the water supply taps, but bear in mind that the hoses supplied are about 2 metres long.

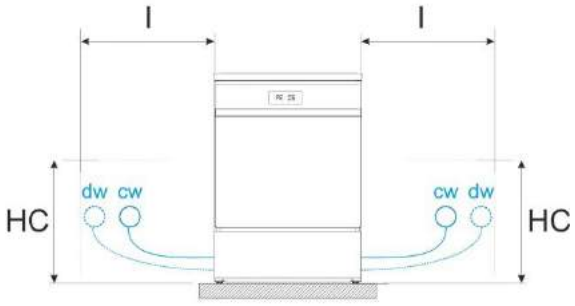


*fig. 51 – Diagram. The water supply connections may be on the right or left of the appliance, always considering the maximum distance "**I**".*

Note to prevent the risk of clogging or damage: if the water pipe is new or has been unused for a long time, before connecting the water supply make sure that the water is clear and free of impurities.

10.5.4 WATER SUPPLY SYSTEM REQUIREMENTS

Preliminary checks

1. **The water supply pressure must be within the required limits: min. 2 bar - max 5 bar.**
2. **The water supply taps must be accessible.**

WATER SUPPLY CHARACTERISTICS

Cw: MAINS WATER - essential	
The appliance must be connected to “potable” mains water having hardness 42°f max. and with total dissolved iron content, Fe2+ e Fe3+, not exceeding 0.5 ppm. For models equipped with a steam condenser, the use of purified water, preferably with hardness below 20°f, is recommended. **N.B.:** If the water supply contains more than 0.5 ppm of iron (Fe2+/Fe3+) and/or the hardness of the water supply exceeds 42°f (French degrees), the water must be pretreated by installing an iron removal and/or softening system upstream of the appliance.	
	***WARNING - MAINS WATER HARDNESS*** ***User’s responsibility: the hardness of the mains water must be checked prior to installation.*** *The authorized engineer will not be able to set the parameters of the appliance’s integral water softener unless the hardness of the intake water is known.* ***Regular checks must be made*** *(e.g. every 6 months/year) on the intake water to ensure that the initial values are maintained, to allow the appliance parameters to be corrected if the characteristics change.*

Dw: DEMINERALISED WATER - optional connection but strongly recommended	
If available, the use of demineralised water (conductivity < 30 µS) is recommended to ensure that washing is optimal from the chemical point of view, through better removal of the chemical residues in the water supply; however, dirt residues will still be effectively removed even if ordinary mains water is used.	
	***WARNING - NO DEMI WATER*** *If demineralised water is not available, do not connect the relative hose to hot and/or cold water intakes. Leave the “demineralised water" hose disconnected.* ***The appliance’s SETTINGS must be corrected accordingly by the Authorised Service Centre.***

10.5.5 PAD ACCESSORY FOR UNPRESSURISED DEMI WATER

Connection to a non-pressurised demineralised water line (e.g. a tank operating by gravity) is only possible if a special demineralised water pump is installed. Specific PAD model for WD1160, WD4060, WD4190: “PAD1”.

WARNING

- WHEN INSTALLING THE “PAD” ACCESSORY, MAKE SURE THAT:
The supply pressure of the PAD is less than 1 bar and greater than 0.1 bar.

- "PAD" IN COMBINATION WITH AN UNPRESSURISED TANK
With reference to the illustration below, the tank must be at a height L such that:
L > 100 cm

The height is measured between the surface on which the appliance stands and the bottom of the tank.
This height ensures that water is supplied to the PAD at a pressure of about 0.1 bar.

The manufacturer declines all responsibility for any damage or injury caused by incorrect installation of the pump by unauthorised technical staff.

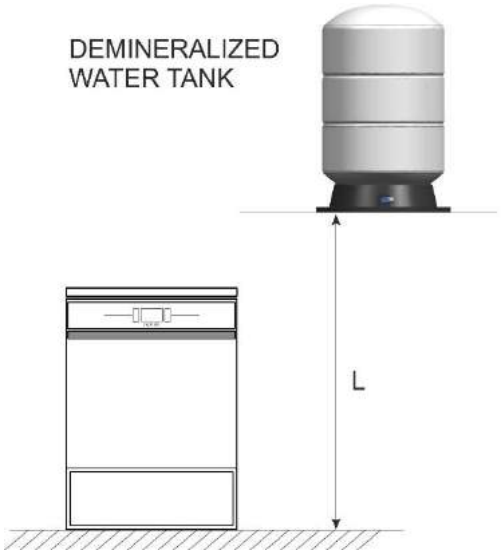


fig. 52 – Unpressurised tank, height above appliance installation surface.

10.5.6 WATER DRAIN

Appliance drain hoses:
Rubber fitting for hose connector diameter 21mm (1/2").

WATER DRAIN CONNECTION
The appliance is equipped with one or more drain hoses, depending on the model.
The drain hoses are identified as:

- **d** - appliance drain hose – **d** (*drain*)
- **cd** - steam condenser drain hose – **cd** (*condenser drain*)

The diagram and summary table are provided below.

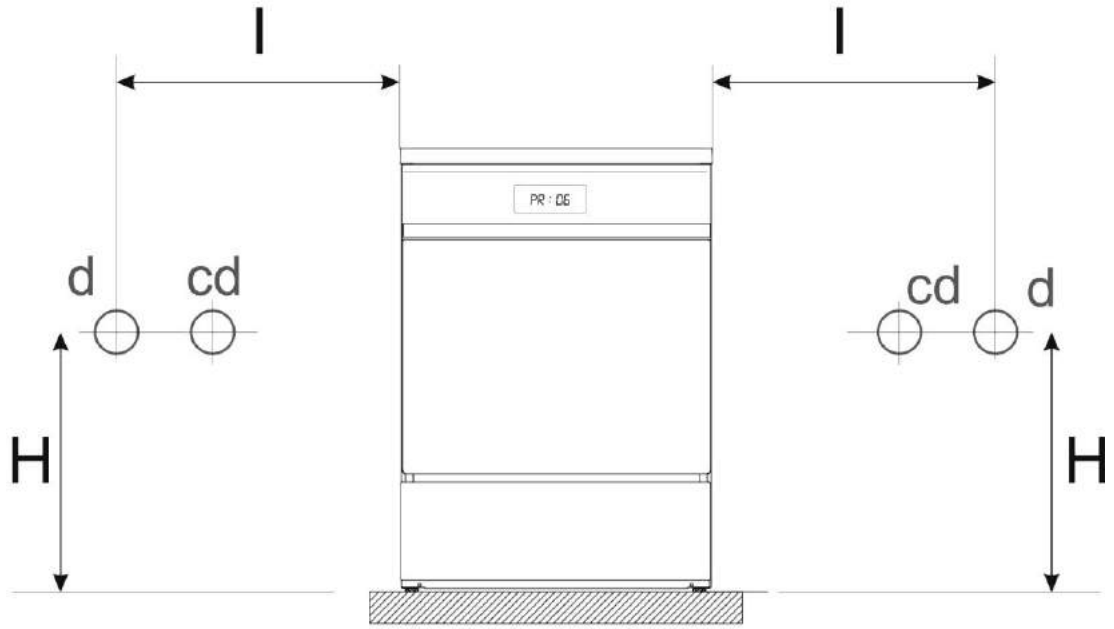


fig. 53 – Diagram. The water drain connections may be on the right or left of the appliance, always considering the maximum distance "I

MODELS	No. OF DRAIN HOSES	Distance "I" Distance between drain and side of appliance [cm]	DRAIN TYPE AND HEIGHT "H" ABOVE APPLIANCE INSTALLATION SURFACE [cm]		
			Type	Hmin	Hmax
WD2145 WD1160 WD4060 WD4190	2	50	d	65	80
			cd	65	80

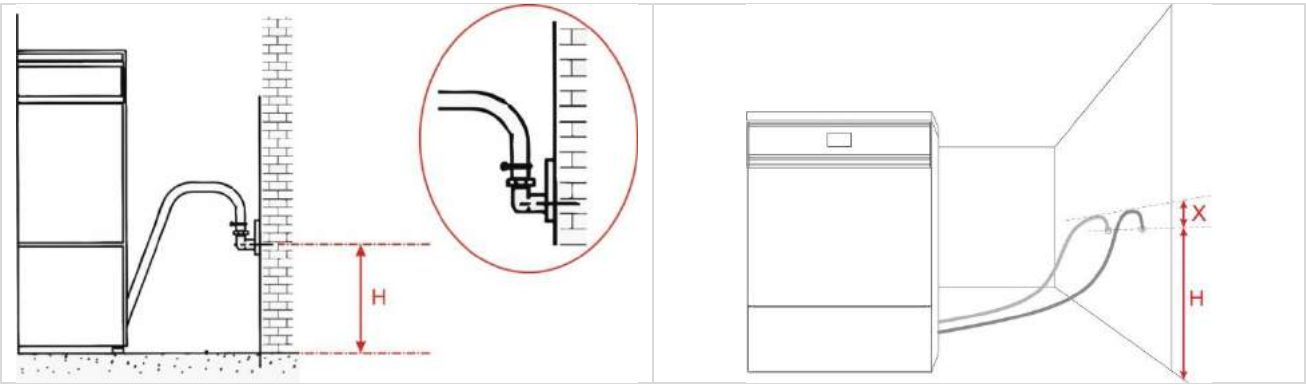


fig. 54 – Drain connection. 65 cm < H < 80cm, X < 20cm. N.ro 2 drain pipes are provided. Height difference "X": only use original drain hoses and the "hose guide" elbows provided. The height difference "X" between the drain connection and the highest point of the hose must never exceed 20 cm.

WARNING
The drain must comply with international regulations: our company accepts no liability for pollution caused by improper use of the appliance.



fig. 55 – Adapter with connector for 1/2" hose

General guidelines for installing the drain
The use of a drain with syphon trap is recommended. During installation, the following precautions should be complied with:

- Since the drain water temperature is 95°C, **the end of the drain hose must be permanently connected to the hose connector**, using the **ties** provided.
- There must be no sharp bends in the drain hose which might cause restrictions.
- The difference in height between the end of the drain hose and the surface on which the appliance is installed **must comply with the stated specifications.**
- The end of the hose must never be submerged in water.
- The **inside diameter** of the drain pipe to which the hose is connected must be **at least 40 mm**.
- A drain pipe **50 mm in diameter** is recommended.
- No extensions must be added to the drain hose supplied with the appliance. Any extensions might cause problems of flow-back into the chamber.

10.6 DATA CONNECTION

The device has a data communication port which can be used for one of the following functions:

1. **Connection** to an optional **external** "WD-PRINTE" **printer**. The printer produces a brief report with the key cycle data.
2. **PC connection** for digital data storage and interaction with the appliance by means of the "TRACELOG" program.

Reference should be made to the specific instructions of the above accessories for any connection details.

The RS-232 cable used for the connection must have the following characteristics:

CONNECTION TYPE	CONNECTOR
Crossover (Null Modem)	Female/Female

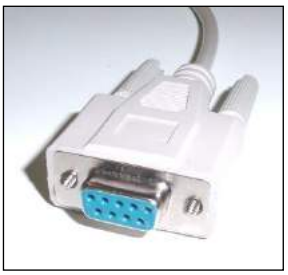


fig. 56 – – RS-232 female connector

Not all PC models have serial ports:
In these cases a **USB/SERIAL adapter accessory** must be used.
When choosing the accessory, bear in mind the following characteristics:

- Adapter: USB female –> RS-232 serial, 9 pins, MALE
  (USB port; Type B female -> RS232 ports; 9-pin male).
- Device driver compatible with the operating system of the PC used.

Contact your dealer for advice/explanations: instruments@smeg.it



fig. 57 – USB/serial adapter – guideline illustration.

10.6.1 WD2145, WD1160, WD4060

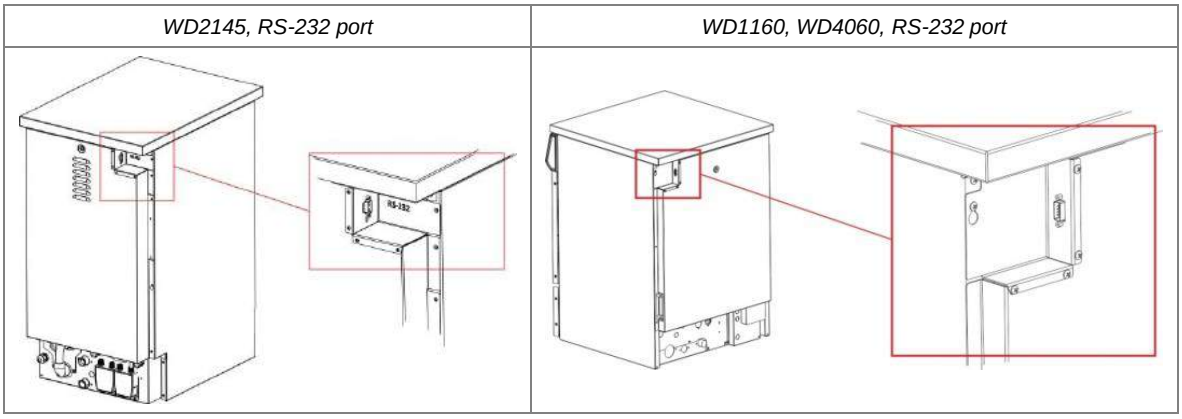


fig. 58 – Position of the RS-232 serial port on the rear of the device

10.6.2 WD4190

The following are located above the panel that carries the main switch and the printer (if installed):

- **RS232 port**: for data transmission – connection by means of TRACELOG software.
- **"Data output" switch**: used to activate the panel printer or data transmission on the RS232 port. These two devices can never operate simultaneously. The data output switch activates the printer when turned to "II" or the RS-232 port when turned to "I".

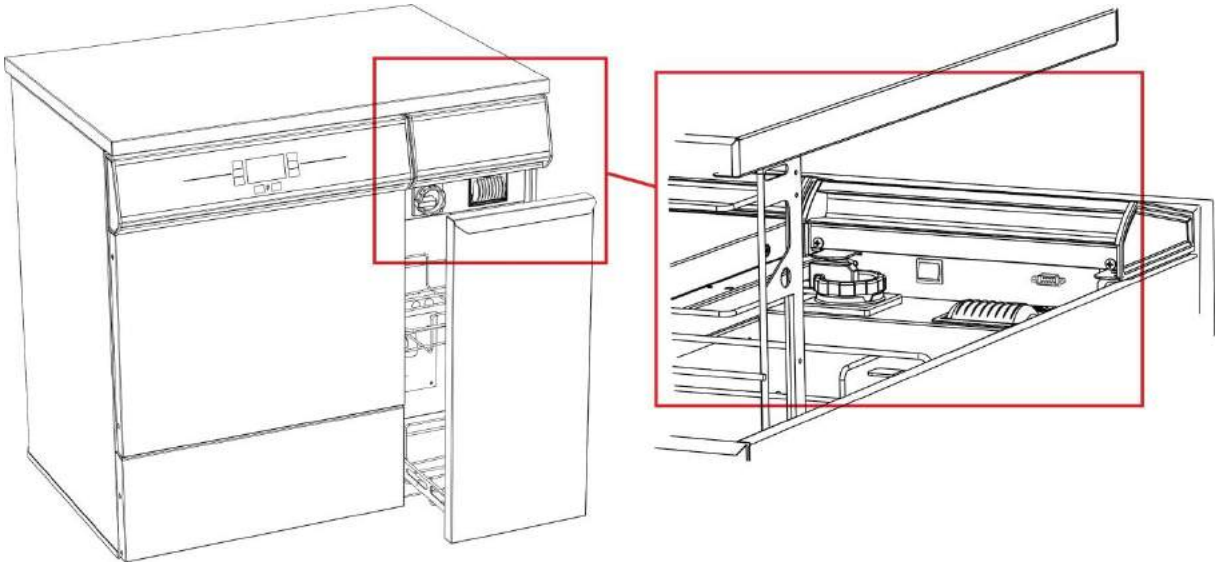


fig. 59 – WD4190: Position of the RS-232 port and the data output switch which activates the printer or the RS-232 port.

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