

PROHS®

THINK HEALTH THINK PROHS



TECHNICAL CHARACTERISTICS MANUAL

Instruments Washer Disinfector

WD-8



PROHS instruments washer disinfectors have been developed to meet the high demand hygiene standard EN ISO 15883-1/2. Our washer disinfectant is an indispensable tool in places where high levels of washing, disinfection and drying are required.

The machine is designed open free chemical products with an efficient steam-condensation system, along with an electrically-heated filtered air system and a powerful air pump to dry the instruments. Moreover, the instrument-washing machine has a basket identification system (optional) used to start only some programs, depending on the basket inserted, to ensure the instruments are thoroughly washed. The water is heated with heating elements on the bottom of the tank. This process is accelerated with a boiler (optional) that heats up demineralized water for the disinfection stage, while the machine is performing the previous washing stages.

Thanks to the touch-screen LCD display (70x50) WD-8 and (80x50) WD-8L/WD-8L-SC , you can select the desired program or access the machine's parameters. Moreover, the LCD display shows the machine status through animations related to the program stages. They are designed and developed to satisfy all kinds of requests of the medical field, offering different models and a large choice of washing trolleys, suitable for the several instruments found in hospital departments, clinics, surgical and central sterilization rooms.

Our products are manufactured in accordance with safety and quality control standards by certified and qualified technicians. Throughout the various stages of production, all products are submitted to rigorous tests and essays in accordance with the European norms and directives, to ensure high quality and reliability.

The selection of certified components of high quality, allow us a significant reduction of the cost along the useful lifetime of the equipment as well as its easy substitution in any brand agent.

PROHS is an ISO 9001:2015 (Quality Management System) and an ISO 13485:2016 (Quality management system for medical devices manufacturers) certified company, working according to the finest rules of hygiene and safety at work. The instruments washer disinfectors have CE mark (CE 0123) under the directive 93/42/EEC - Medical Devices.

We leave nothing to chance.

Available Models

	Model	Useful Dimensions <i>(Width / Depth / Height)</i>	Exterior Dimensions <i>(Width / Depth / Height)</i>
PROHS	WD-8	550 / 500 / 600 (mm)	600 / 650 / 860 (mm)
	WD-8L	550 / 500 / 600 (mm)	900 / 650 / 860 (mm)
	WD-8L-SC	550 / 500 / 600 (mm)	900 / 650 / 860 (mm)

Optional Features

- Built-in boiler for water pre-heating of 4,5 Kw (faster washing cycle - SC);
- Washing chamber light;
- Demineralized water inlet.
- Conductivity probe for advanced washing;
- Spray arm monitoring to prevent bad washings or spray arms block;
- Washing trolley recognition;
- Up to 2 extra chemicals dosing pumps;
- Stainless steel support;
- Printer;
- Water Softener;
- Low consumption heating system by net steam or Hybrid system (net steam + electric heaters);
- 4 wheels, 2 with breaks.

Standard Characteristics

- One glass door with manual opening at height (H=248 mm)



- The door, thanks to its ergonomic handle, is easy to open and close, without having to push it hard.
- Wash chamber made in stainless steel 316L (Volume=165 l).
- Machine easy to use and guided by a touch screen display; LCD 3,5" (WD-8) and LCD 4" (WD-8L/WD-8L-SC) graphic display.
- Electronic control with microprocessor; USB and RS232 for PC or bar code scanner connection
- Electric water heating with 5,25 kW heaters
- Washing pump of 0,7 Kw (400 lt/min)
- Drying pump (Air pump)
- 2 internal dosing pumps, for chemical liquids, complete of flowmeter

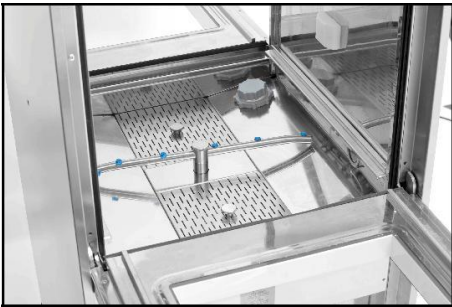
- 2 independents PT1000 temperature sensors in the washing chamber
- 20 standard washing programs, plus 40 custom- free programs, where the user can select a specific program according to his needs
- Data Storage: 1000 cycles
- High power drying system (0,3 kW - 150 m³/h, Drying Temperature up to 130°C)
- Steam condenser (if the "steam drain" system isn't available)
- Plumbing connections: hot water, cold water and demineralized water. All internal connections made in stainless steel 304L or 316L (option).
- Floor drain (available also wall drain system)
- Electric connections 400V 3/N/PE (available also 208V 3/PE)
- 5-liter liquid detergent drums are placed inside the base of the machine (max. 4 drums)
- Emergency stop button



Technical Data

Chamber

The chamber is totally made in AISI 316L stainless steel, a material with high resistance to corrosion. The chassis is made of stainless steel AISI 304L.



Doors

One double-glassed door, made using 2 panels of tempered glass to permit visibility inside the chamber during a program.

The door, thanks to its ergonomic handle, is easy to open and close, without having to push it hard.

Cold water softener system

This system softens the cold water that enters the chamber, in order to reduce the formation of limescale inside the machine.

Cold water passes through resins, reducing its limescale content. The device automatically regenerates the resins after a certain amount of performed programs (depending on the hardness of the water).

To regenerate the resins, water passes through a bowl filled with salt and then through the resins, thus regenerating them. This process takes place when the right program starts.

Chemical products flowmeters

The dosing of the chemical products can be made measuring time or controlled by flowmeters.

If the flowmeters do not feel the chemical liquid passing, an alarm will be displayed after few seconds, informing the operator that no liquid has entered the washing chamber.

Chemical products level

The device is equipped with sensors inside the liquid canisters that constantly monitor the level of the liquids. When a product is nearly consumed, an alarm will be displayed on the LCD monitor.

HEPA H14 Filter

This filter blocks fine dust in the air with a 99.995% efficiency. Moreover, not to damage the filter itself, a prefilter is placed before it, to block bigger particles, in order not to clog the HEPA filter.

A pressure switch, placed behind the HEPA filter, tells the machine if the filter is clogged, thus generating a dedicated alarm that signals the clogging. If this is the case the HEPA filter must be replaced.

Tank water heating

Water in the tank is heated by 3 resistors (total 5,25 kW) with tri-phase connection (standard).

Two independent PT1000 probes constantly monitor the temperature inside the washing chamber.

Boiler (Speed cycle)

The speed cycle version comes with a boiler on the washing chamber's side.

This boiler is used during the disinfection phase, greatly reducing the disinfection phase's time.

During the drying phase demineralized water is used inside the steam condenser, where a heat exchange takes place between steam and cold demineralized water. The output is hot demineralized water (energy saving) that enters the boiler, ready to be used in the following cycle. This water is then further heated up to 85° for the disinfection phase and it is released inside the chamber when needed.

The boiler is equipped with two level probes to monitor the water level, a temperature probe and a safety thermostat.



Printer

The printer can be placed on top of the machine (WD-8) or on the side of the washing chamber (WD-8L/ WD-8L-SC).

The printer prints a ticket reporting the program that was completed, the time required to carry it out and the temperatures that were reached in each phase. It also indicates whether or not chemicals were used, their quantities and any alarms that may have taken place.



Washing trolley recognition

The machine is able to understand whether a trolley is inserted or not. In fact, it is impossible to start a program if there are no trolleys in the washing chamber. The trolley recognition application must be added in order to recognize the type of trolley that is inserted. This application allows the machine to recognize the type of trolley being inserted. Therefore, when a trolley is inserted the machine automatically suggests which programs to use for that type of trolley. It is also possible to start a program which is not suggested by the machine. Properly setting the trolley recognition parameters can also disable programs which are not recommended for that type of trolley.



Spray arm monitoring

The first way to check if the spray arms (located at the top and bottom of the chamber) are rotating is for the user to look through the machine's door: this has two large glazed windows for inspecting inside during washing.

Every machine is also equipped with a dedicated pressure switch (pressure sensor). Other sensors can also be added to each spray arm to enhance monitoring capacity.

The following section explains the two monitoring systems.

In order to the spray arms to properly rotate there must be enough pressure in the machine's plumbing system. A pressure sensor is installed to monitor the pressure in the machine's pipelines. If pressure drops, possibly causing the spray arms to stop, an alarm appears on the display.

Another monitoring system is to install an application on the machine consisting of a sensor for each spray arm that checks whether the spray arm is rotating or is blocked. The machine is also able to detect if a spray arm is rotating slower than it should. If every spray arm is working properly, the display shows two green dots, one for each arm. If one spray arm rotates slower, then the dot on the display referring to that spray arm turns orange, without stopping the program.

If the spray arm is blocked the system generates an alarm signal to make sure that the instruments are washed properly.

A blocked spray arm may be caused by dirt in the arm or, more frequently, by instruments inside the carts that are not properly positioned, blocking the spray arm.

Conductivity probe

This application monitors whether rinse water is pure prior to disinfection, meaning that the μS (micro-Siemens) value measured by the probe is lower than the value that is set for the kind of water being used.

Washing chamber light

A spotlight can be installed inside the washing chamber for greater visibility during washing and for greater safety during trolleys loading and unloading procedures.

This application includes a switch, installed in the peristaltic pump panel, that can turn the washing chamber light on at any time. The spotlight consists of a LED, granting great illumination with low energy consumption.

Drain cooling

Throughout some program phases, during drainage, the machine discharges hot water at a temperature of 90°C.

The drain cooling application lowers the temperature of the discharged water to avoid heat damage to drain pipelines by automatically introducing cold water into the washing chamber during the drainage phase.

Steam condensing system

The machine is equipped with a performing steam condensing system.

This system starts to operate when steam starts forming inside the machine, during the disinfection phase.

Steam is condensed inside a manifold to prevent it from exiting the washing chamber. This system also starts to operate to reduce steam releasing during the drying phase, when the temperature in the washing chamber is very high.



Drying

Forced air is introduced into the washing chamber during the drying phase, pushed by a blower pump through a set of heating elements that heat it up to 130°C.

Air, like water, exits from the spray arm nozzles in order to dry evenly both instruments and trays.

The drying phase takes place in a “smart” way: at the start, when the temperature inside the washing chamber is very high, air is pushed into the washing chamber with less force and at intermittent intervals to avoid the release of a great mass of steam formed in the washing chamber. Subsequently, when most of the steam has been diminished by the “steam – condensing” system, air is pushed with greater force and constantly in order to complete the drying phase.

A pressure switch (pressure sensor) is installed to check for air leaks and make sure that the right pressure is constantly present inside the ducts carrying air to the washing chamber.

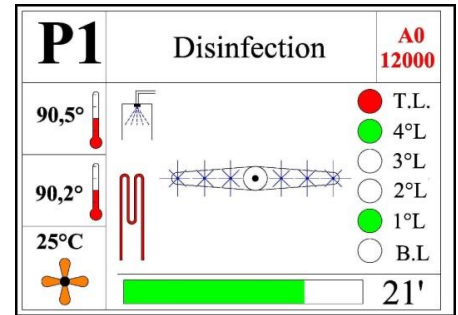
An alarm signal on the display alerts the user of any air leak that may occur.

Touch-pad keyboard with graphic display

The operator interacts with the machine with a touch-screen panel placed in the upper section of the machine. This keyboard can be used to carry out these procedures:

- Quick selection of the 3 main programs using the 1, 2, 3 keys;
- Selection of one of the 20 programs loaded in the machine (40 programs that can be set according to the customer needs) using the P+ key;
- Start a program by pressing the “Start” key;
- Reset an alarm using the “Reset” key;
- Enter machine programming mode using the “PRG” key;
- Select standard program cycles: Pre-wash, Wash, Rinse, Cleaning, Thermal Disinfection, Drying
- Enable or disable the drying phase in a program that includes this phase.
- Accessing the system service and diagnostics menu by password

The color graphics display immediately shows the state of the machine by displaying animated graphics and texts. The display also shows the temperatures of the two probes positioned in the washing chamber and the probe of the drying air temperature as well as disinfection value A0, the time remaining to terminate the program and the number of the program that has been started. It is possible, thanks to the LCD graphic touch display, to choose the desired program or to enter the machine parameters. Moreover, the LCD display shows the machine status through animations related to the program stages. The menu and interface is in different languages such as: English, Russian, Portuguese, Spanish, etc.



Alarm-check system

Audible and visual alarms.

Alarms: power failure, overheating, water lack, disinfection cycle failure

The system alerts the user about the completion of the sterilization program

This system helps understanding why an alarm has taken place and suggests how to deal with it without having to refer to the manual.

In fact, when an alarm is triggered, the error number appears at the top of the display with an image that shows the error in the central part of the display along with an acoustic signal alert the operator.

After a few seconds, a message appears that explains the possible causes that may have led to the alarm.

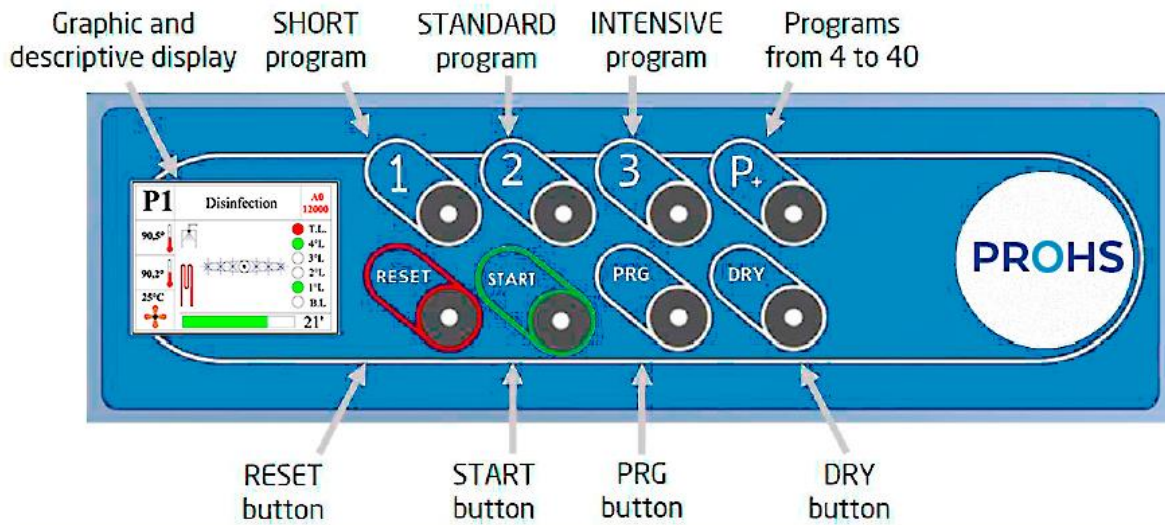
RS232 port

A RS232 port is located on the mainboard that allows uploading programs from a PC into the machine and also uploading the programs installed on the machine to the PC.

It is also possible to copy the last alarms that took place in the machine onto the PC.

This port also allows connecting a barcode scanner to the machine for instruments traceability.

Instrument Washer Disinfector (Operation)



Touch the button to select program 1 (SHORT).



Touch the button to select program 2 (STANDARD).



Touch the button to select program 3 (INTENSIVE).



Touch the button to select a program between 4 and 40.



Touch the button to reset the alarms.



Touch the button to start the previously selected program (it is possible to start a program only if a cart is inserted in the tank).



Touch the button for 5 seconds to enter the programming menu.



Touch before pressing START if you want to enable or disable the previously selected program during the drying phase.

SPECIAL SEQUENCE:

It is possible to stop the program in progress by pressing the RESET button for 5 seconds

WHAT TO DO IF THE FOLLOWING DISPLAY MESSAGES ARE COMPOSED:

E75: Supply Prod. 1

Replace empty tank of product 1 with new tank

E77: Supply Prod. 3

Replace empty tank of product 3 with new tank

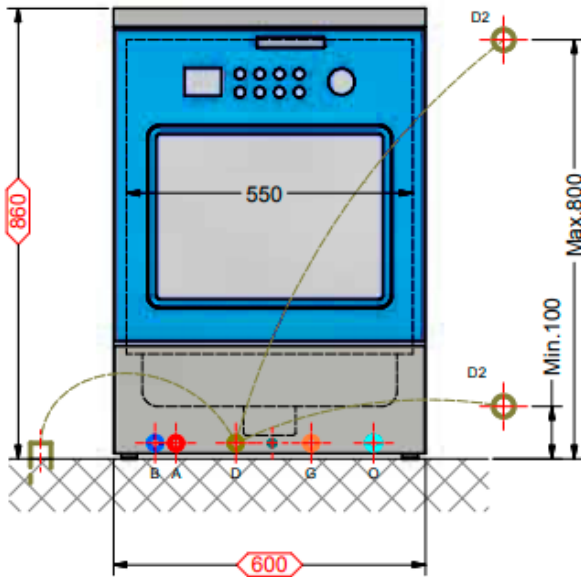
E76: Supply Prod. 2

Replace empty tank of product 2 with new tank

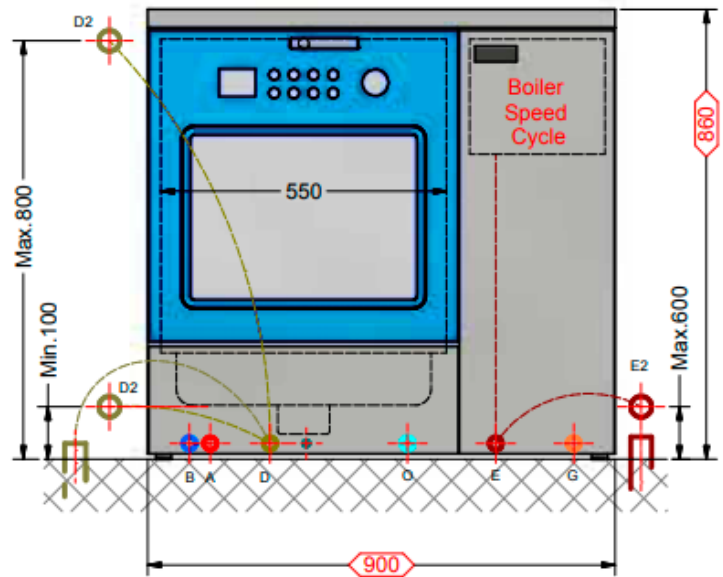
E78: Supply Prod. 4

Replace empty tank of product 4 with new tank

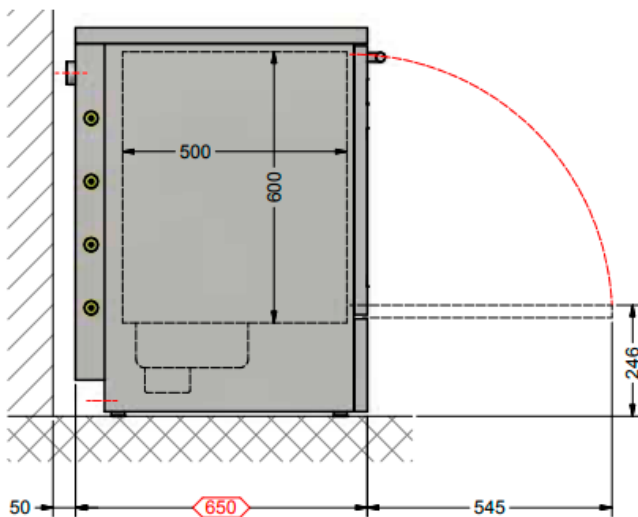
Installation Requirements



WD-8



WD-8L / WD-8L-SC



- A** Hot water connection-3/4"G (tube 1/2"G)
- B** Cold water connection-3/4"G (tube 1/2"G)
- D2** Drain DN 40 - hose connection 25mm (at wall)
- G** Electrical connection
- O** Demineralized water connection-1/2"g
- E2** Drain DN 40 - hose connection 25mm (at wall)

Notes: Please request the installation drawing. For any additional clarification, please contact us.

Quality and Security

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Throughout its production and before being shipped from the factory, PROHS Instrument Washer Disinfectors are submitted to several tests according to the safety and performance standards (EN ISO 15883-1/2:2009).

Technical Characteristics

	WD-8	WD-8L	WD-8L-SC
Physical Characteristics			
Useful Dimensions (Width / Depth / Height)	550 / 500 / 600 (mm)		
External Dimensions (Width / Depth / Height)	600 / 650 / 860 (mm)	900 / 650 / 860 (mm)	900 / 650 / 860 (mm)
Volume	165 L		
Weight	125 kg	160 kg	160 kg
Load height	248 mm		
Electrical Characteristics			
Installed power (400V 3N~ 50Hz)	8.3 kW	8.3 kW	12.8 kW
Maximum absorbed power (400V 3N~ 50Hz)	6 kW	6 kW	7.9 kW
Absorbed Current (400V 3N~ 50Hz)	8.7 A	8.7 A	11.4 A
Main Switch	16 A		
Washing pump power	0.7 kW		
Drying pump power	0.3 kW		
Chamber heating element power	5.25 kW / 2.5 kW (low power)		
Boiler heating element power (optional)	4.5 kW		
Air heating element power	2 kW		
Various utilities power	100 W		
Performance Characteristics			
Fan flow rate	150 m ³ /h		
Washing pump flow rate	400 l/min		
Noise	56 dB		
Temperature range	0 - 99 °C		
Water Consumption (Standard Cycle)	<i>Cold</i>	15 l/cycle	
	<i>Hot</i>	30 l/cycle	
	<i>Demi.</i>	15 l/cycle	
Installation Requirements			
Main Water pressure	2 - 5 bar (10l/min)		
Cold water connection	12 (½") – 15 (¾" G-M) DN		
	5°C - 15°C Max. 7 F		
Hot water connection	12 (½") – 15 (¾" G-M) DN		
	45°C - 60°C Max. 7 F		
Purified water connection	12 (½") – 15 (¾" G-M) DN		
	5°C - 15°C Max. 7 F		
Facility steam connection	½ G DN		
	150°C 3 - 5 F		
Drain trap (Corrosion-proof and 93°C resistant pipe)	40 mm DN (Ø)		
Chamber exhaust air connection	50 mm Ø		
Chamber exhaust air flow rate	120 Mc/h		
Working temperature	5 - 30 °C		
Max humidity of usage environment	90%		
Atmospheric pressure of usage environment	> 0.8 ATM		

Programs

Programs*	Average Program Duration (min)		Washing Phase		Thermo Disinfection Phase	
	Without SC	With SC	Time (min)	Temperature (°C)	Time (min)	Temperature (°C)
Short	49	36	3	40	1	90
Standard	52	38	3	50	1	90
Intensive	68	49	6	65	3	90

*Possibility to create /adjust up to 40 programs. All cycles can be adjusted according to customer demand

Trolleys and accessories



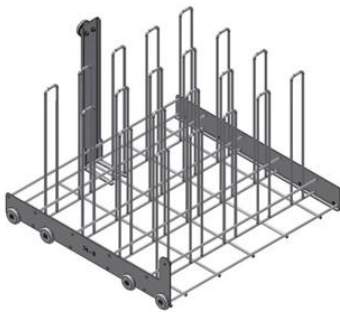
2/3/4 levels trolley for DIN baskets



Washing Trolley 4 Vessels



Trolley for Container Washing



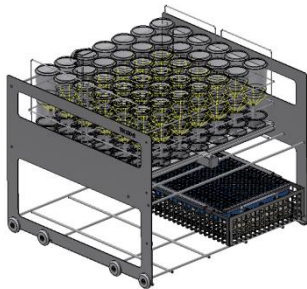
Shoe Washing Trolley



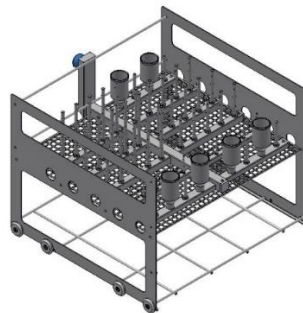
Anesthesia trolley



Mini Invasive Instruments trolley



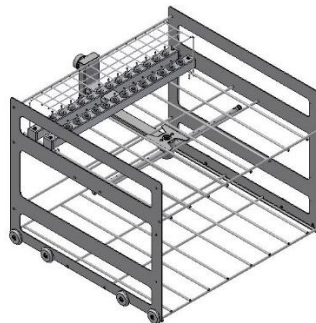
2-Level Washing Trolley for Baby's bottles



Inhalation Trolley



3-Level Washing Trolley for Dental & Ophthalmic



2-Level Washing Trolley for Dental Handpieces

Many other trolley and accessories are available, please contact us.