

DIHR HT 12

Instructions for Installation and Maintenance





Thank you for choosing our machine. The instructions for installation, maintenance and use found on the following pages have been prepared to ensure a long life and a perfect operation of your unit.

Please, do follow the instructions carefully.

We have designed and built this machine using the latest innovative technologies. Now you shall take good care of it.

Your full satisfaction is our greatest reward.



READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING THE MACHINE.



WARNING: FAILURE TO COMPLY, EVEN PARTIALLY, WITH THE PRESCRIPTIONS IN THIS MANUAL WILL RENDER THE PRODUCT WARRANTY NULL, AND THE MANUFACTURER SHALL NOT BE LIABLE.

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WARNINGS

Please do not hand these instructions manual over to the end user. This manual should be kept available for the Installation/Service Personnel only.

The dishwasher shall be installed in accordance with local codes, or in the absence of local codes, installed in accordance with the applicable requirements in the National Electrical Code, NFPA 70, Canadian Electrical Code (CEC), Part 1, CSA C22.1, and Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, NFPA 96.

These warnings are provided to safeguard the user in conformity with technical standards UL 921 and NSF3.

The user must comply with the following rules:

- **Adaptation of the electrical and water system for dishwasher installation must be carried out by qualified operators only.**
- The user shall not carry out any repair and/or maintenance operations.
- When the main switch is OFF, only qualified personnel can access the control panel.
- Servicing of this machine must be performed by authorized personnel only.
Note: Use genuine spare parts only. Non-genuine parts will void the warranty and the manufacturer will take no responsibility for any damage.
- **Do not use old hose, but only new ones.**
- This appliance can be used by trained youth aged from 15 years and above. It cannot be used by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge.
- Children shall keep off the appliance.
- Cleaning and user maintenance shall not be made by children without supervision.
- **This machine is designed exclusively for washing dishes, glasses, trays and crockery with human food type of residue. DO NOT wash articles different from those stated above and fragile objects or materials not resistant to washing process.**
- **A suitable omni-polar switch shall be installed and sized according to the actual absorption, in order to guarantee completely the disconnection from the power network. A fuse protection system with the characteristics shown on the data-plate shall be installed (or an equivalent system).**
- **This switch shall be included in the power network, be solely and exclusively used for this purpose and be installed in the immediate vicinity of the machine.**
- **Always turn off the machine by this switch: only this switch gives a full warranty of a complete insulation from the electric network.**
- **Make sure the appliance is linked to an efficient ground connection.**

- Do not open the machine door when operating. After switching the machine off, wait for at least 15 seconds after the motors stop.



WARNINGS: IT IS FORBIDDEN TO INSERT HANDS AND/OR TOUCH INTERNAL PART WHEN THE MACHINE IS OPERATING AND/OR AT THE END OF THE WASH CYCLE.

- Before using the machine, the personnel shall know the position of the omni-polar switch that disconnected the machine from the electrical network, the position of the water connection shut-off valve and the procedures to switch off and secure the machine.
- Follow the instructions given in the manufacturer's booklet for cleaning operations (chap. 6).
- **This machine must be disconnected from the main electrical supply after use for any service/maintenance operation following this procedure:**
Switch the machine off from the control panel.
Drain the tank by removing the overflow pipe.
Disconnect the electrical supply by the omni-polar switch (main switch located on the wall).
Shut the water supply valve(s).
Disregarding the aforesaid prescriptions is a serious misuse and can cause damages and injures to property and people, and will relieve the manufacturer from whatever liability.
- Do not use water to extinguish fires on electrical parts.
- Do not cover the intake or dissipation grids.
- Water infeed to the machine 60PSI (400kPa) maximum.



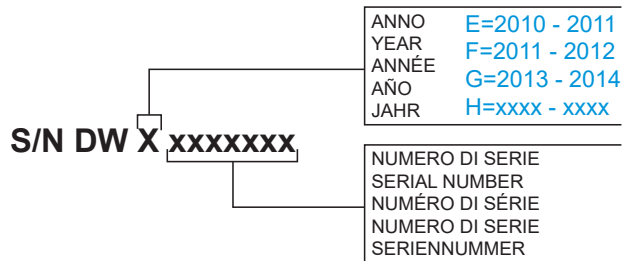
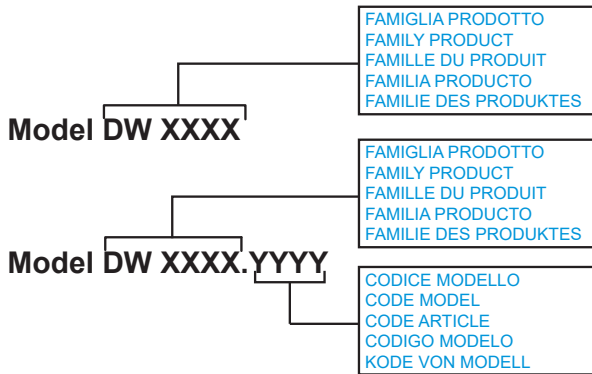
NOTICE: This machine must be operated with an automatic detergent dosing pump including a visual means to verify that detergents are delivered, or a visual or audible alarm to signal if detergents are not available for delivery to the washing system. Please see instructions for electrical and plumbing connections located in this manual and in the feeder equipment manual.

Note: The manufacturer declines any responsibility for accidents to people or any damage deriving from failure to observe the above listed instructions.

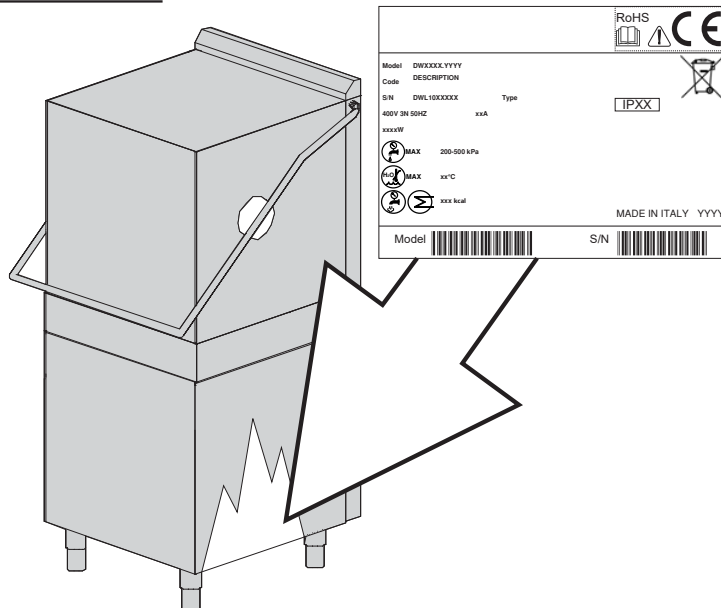
1. MACHINE INSTALLATION

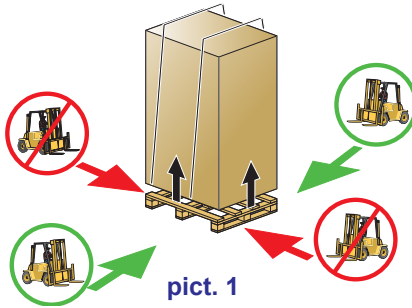
1.1 Serial number data

		RoHS		CE	
Model		DWXXXX.YYYY			
Code		DESCRIPTION			
S/N		DWL10XXXXX		Type	
A	→	400V 3N 50HZ		←	D
B	→	xxxxW			
C	→	MAX 200-500 kPa MAX xx°C xxx kcal			
				IPXX	
				MADE IN ITALY YYYY	
Model				S/N	



- A** Power source
- B** Total power installed
- C** Dynamic pressure
- D** Envelope protection degree
- E** Total electricity absorption





1.2 Receiving the machine

Before accepting the machine, verify that all the data on the data-plate corresponds to the required ones (as shown on par. 1.1) and to the ones of the available electrical supply.

The machines must be handled strictly as shown in pict. 1 regarding the grip points indicated for lifting with a lift truck.

Latch the machine in a way that secures no vibration or shocks during transportation.

Note: Slings with ropes not recommended.

After unpacking, make sure the appliance has not been damaged due to transportation. If it has been, do notify the seller about this problem. If the damage might question the machine's safety, do not install the appliance.

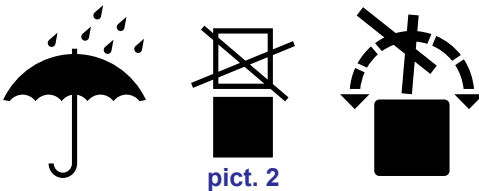
Double check the firm tightness of all hose-clamps on piping, nuts, bolts, and fasteners, that might come loose with the transport, to prevent water dripping leakages, or other damages, during the machine's operation.

The installation and the starting of the machine must be carried out by trained operators only, even if the machine is coming from another site and it has been used, already.

Adaptation of the electrical and water system for dishwasher installation must be carried out by only qualified operators.

See chapter 8 for disposal of the packing material.

This machine has to be used in a place with room temperature between 41°F (5°C) and 95°F max (35°C). The room has to be dry and ventilated.



1.3 Storage

Storage temperature: min. +40°F (+4°C) – max. +122°F (+50°C) - humidity <90%

The stored parts should be checked periodically to detect any sign of deterioration.

Do not store the machine exposing it to atmospheric agents (rain, sun, cold, etc.). Do not place material on the packed machine.

Do not rotate the machine in the storing phase (see pict. 2).

1.4 Machine equipment

Use and maintenance manual

Wiring diagrams

A copy of the wiring diagrams must be kept inside the electrical board.

1.5 Water connection

Water connections must be carried out in compliance with current local standards.

The water system must have characteristics between the parameters specified in table 1.

Water characteristics table	Min	Max
Static Pressure*	30 PSI (200Kpa)	60 PSI (400Kpa)
Dynamic Pressure	21 PSI (150Kpa)	50 PSI (350Kpa)
Water hardness**	5°f	8°f
Cold water-supply temperature***	41°F (5°C)	122°F (50°C)
Hot water-supply temperature****	122°F (50°C)	150°F (65°C)
Capacity	2,6 gpm (10lt/min)	

Table 1

*Should the water supply pressure be more than 60 PSI (400Kpa), a pressure reducer must be installed (only for those versions where it is not a standard supply, already).

**It is compulsory to install a water-softener, in case of water with average hardness above 8°f. Washed objects will be cleaner and the machine will last much longer.

The machine can be equipped with a water softener, on request. If the machine is equipped with a water-softener, a regeneration of the resins shall be done on regular basis (see par. 5.6).

Note: Any damage caused by limestone (calcareous water higher-up than 8°f and without water-softener) will not be covered by warranty.

Once a year a supplied-water hardness check is highly recommended.

***The machine must be supplied with cold water, if equipped with the Heat Recovery System (max 59°F - 15°C).

Machines shall be made with extra power in case of cold water infeed.

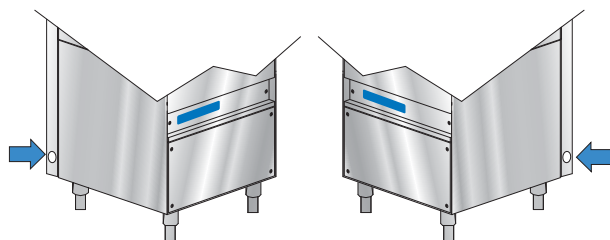
****The water supply temperature shall never exceed 150°F - 65°C.

Connect the machine draining hose to the connection located low on the side (see pict. 3), making sure that the water flows freely (giving, therefore, minimum slope).

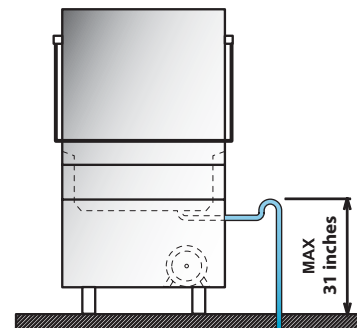
Should not be possible to drain the water at a level lower than the appliance outlet (see pict. 4), it's advisable to choose a machine provided with a drain pump.

The drain tube shall always be connected to a siphon in order to prevent the release of odors.

Maximum drain height = 31 inches (0,80 mt - see pict. 4).



pict. 3



pict. 4

1.5.1 Water supply characteristics

The machine water supply must be potable, in compliance with Directive 98/83/EC.

The inlet water must also meet the parameters given in the table 2.

Water parameters table	Min	Max
Chlorine ¹		2mg/l
pH	6,5 ¹	8,5 ³
Water hardness		8°f ²⁻³
Iron ³		0,2 mg/l
Manganese ⁴		0,05 mg/l
Conductivity ⁵	200µS/cm	

Table 2

¹ Out of range values might lead to corrosion and jeopardize the life of the machine.

² Should the water hardness is higher **it is compulsory** to install a water softener and check periodically its operation.

³ Out of range values might lead scaling and sediments with a consequent lower performance, functionality, and expected life of the machine.

⁴ Desired value: Out of range values might lead stainless steel blackening/tarnishing.

⁵ For machines equipped with Heat Recovery System.

It is recommended a water test once a year.

1.6 Electrical connection

Only qualified and properly trained personnel can operate on the electric board and connections.

Before the installation:

Make sure that the voltage is the same as reported on the data-plate.

Make sure the line voltage matches the machine power and voltage indicated on the machine data-plate (as shown on par. 1.1).

Electrical connection must be carried out in compliance with the current local standards.

Use the data reported on the data-plate to check dimensions and electrical connections.

A suitable omni-polar switch shall be installed and sized according to the actual absorption, in order to guarantee completely the disconnection from the power network. A fuse protection system with the characteristics shown on the data-plate shall be installed (or equivalent system).



This switch shall be included in the power network solely and exclusively used for this purpose and installed in the immediate vicinity of the machine.

This is the only model of switch that guarantees a total electrical power disconnection.

Make sure that the facility is equipped with efficient ground connection.



WARNING: check very carefully if the “ground connection” of the machine, is properly sized and fully efficient, and that not too many units are connected on it. An undersized or poor “ground connection” might lead to corrosion and/or pitting effect on the stainless steel plates, even to perforation.

The machine has a terminal on the back panel indicated by the symbol  that is meant to link the metal structures of different appliances, to prevent electro-static shocks.

IMPORTANT: connect the clamp to other appliances.

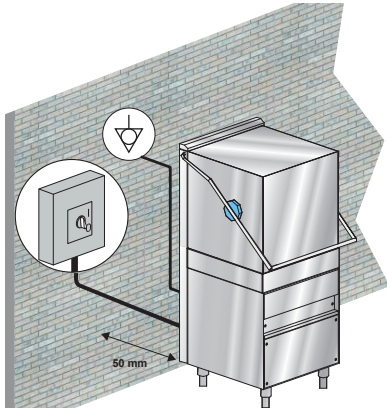
Feed cable: the retailer - importer - installer must ensure that the feed cable complies with the cable insulation category of the workplace, in conformity with current Technical Standards.

Should the electrical supply cable get damaged it shall be changed by the Manufacturer, or his Authorized Service, or other technician with equivalent qualification, to prevent any risk.

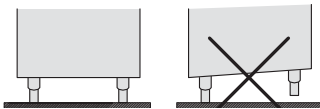
If the machine is fitted with a three-phase pump, check the correct motor rotation (right rotation as per arrow on the casing). This is not needed if the pump is a single-phase model (standard).

1.7 Ventilation

The exhaust air shall not be vented into a wall, a ceiling or a concealed space of the building.



pict. 5



pict. 6

1.8 Steam evacuation

In accordance with regulations of environmental hygiene, for the proper functioning of the machine and a healthy environment for the operator who working in there, it should be at least 10 air volume changes per hour in the room where the machine is installed.

For small wash rooms we recommend at least 15 air volume changes per hour.

1.9 Positioning the machine

Remove the packing with care.

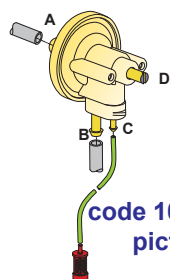
Lift the machine as described in par. 1.2 Receiving the machine.

Position the machine as shown on the installation diagram (lay-out) approved at the time of the offer.

Maintain a minimum distance of about 2 inches (50mm) from the walls, so that motors are ventilated (see pict. 5). Install suction hoods to assure proper ventilation of the room, in order to eliminate steam and excessive humidity.

Check that the machine is properly levelled, by adjusting the legs (see pict. 6).

Make sure the machine is not standing on the power cable or on the filling/drain hoses. Level the machine flat, by adjusting the support feet.



1.10 Rinse-aid dosing pump functioning (pict. 7)

Functioning: The dosing pump is powered by the pressure generated by the rinse pump, used to load a spring.

The release of the spring generates the suction of the rinse-aid chemical from its container to the boiler.

To prime the rinse-aid pump, run some wash/rinse cycles.

Adjustment: The dosing pump takes a determined quantity of rinse-aid chemical at each rinse.

This quantity is adjustable from 0 to 0,24 cubic inches (from 0 to 4 cm³), equivalent to circa 0 to 11 inches (from 0 to 30 cm) length of the suction hose.

Turn the adjustment screw clockwise to reduce capacity.

Turn the adjustment screw anticlockwise, to achieve the maximum capacity (up to 20 turns).

1.11 Thermostop Function

The machine features a standard Thermostop safety system.

The Thermostop system guarantees that the rinse cycle is started only when and if the water temperature in the boiler has reached the temperature selected in the **SET RINSE TEMP.** parameter (see paragraph 4.1.2).

The duration of the wash cycle is extended in time till the water temperature in the boiler has reached the set temperature.

The wash cycle gets longer in time if the machine is fed with water at the wrong temperature (cold water, below 122°F - 50°C) or if there is a failure in heating the water in the boiler.

1.12 Heat Recovery system - installation (optional)

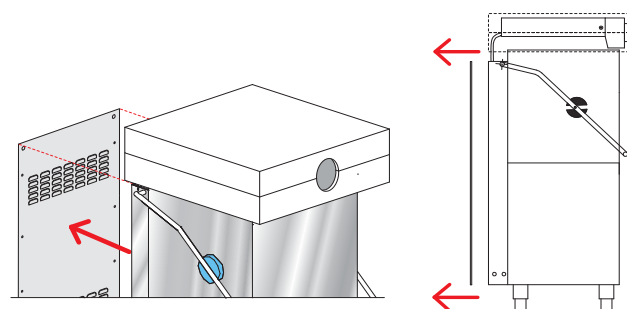
The machine can be equipped with a built-in Heat Recovery system (TR).

The Heat Recovery system reduces significantly the humidity in the dishwashing-room.

In case the machine is equipped with the Heat Recovery system, the water in-feed must be done with cold water (min 41°F - 5°C / max 59°F - 15°C).



**IT IS STRICTLY FORBIDDEN TO CONNECT THE MACHINE'S VENT DIRECTLY WITH THE OUTDOOR!
COLD WEATHER CONDITIONS MIGHT SERIOUSLY DAMAGE THE THERMAL RECOVERY SYSTEM AND THE STEAM CONDENSER.**



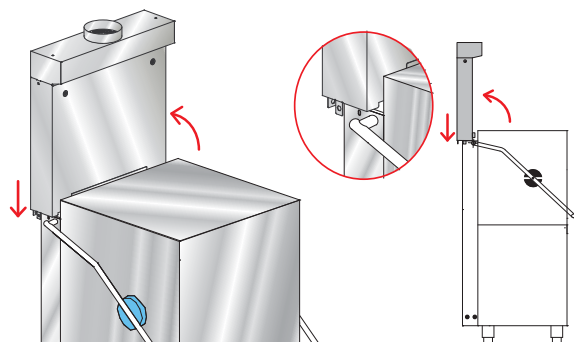
pict. 8

To start this optional system, proceed as follows:

Free the machine from all packing materials.

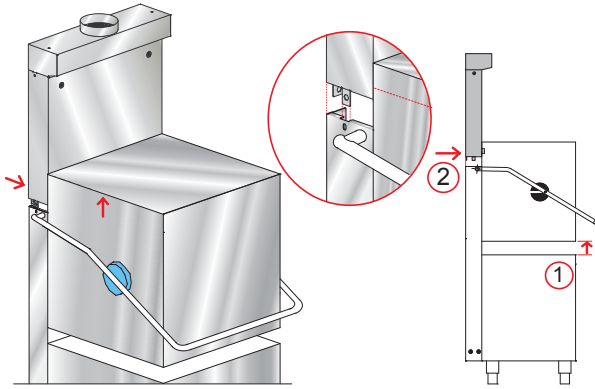
Remove the back-panel (see pict. 8).

Remove all polystyrene packaging, covering the Heat Recovery unit.



pict. 9

Put the Heat Recovery unit vertical above the back-panel structure (see pict. 9).

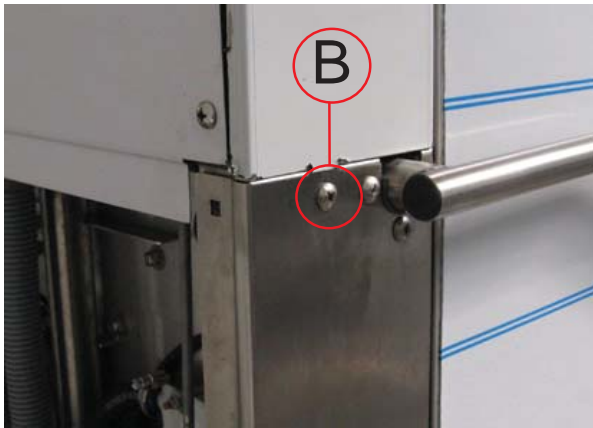


Lift the hood of the machine for about 4 inches (10 cm. - see pict. 10 - detail 1).

Align the Heat Recovery unit above its final seat. (see pict. 10 - detail 2).

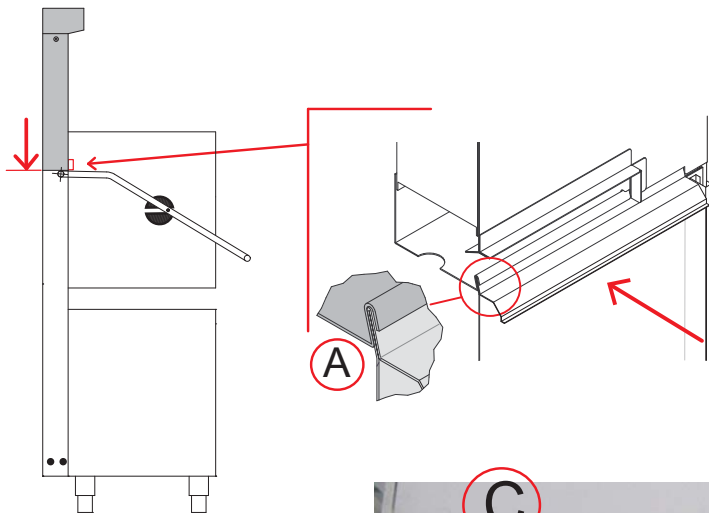
Lower the Heat Recovery unit until firmly set in its seat (see pict. 10).

pict. 10



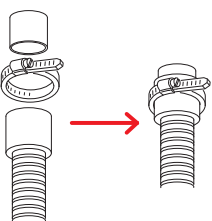
Fix 2 screws (M6 x 12mm, provided) on the structure side (see photo 1 - detail B).

photo 1



Check the right framing of the profile (see pict. 11 - detail A).

pict. 11



pict. 12

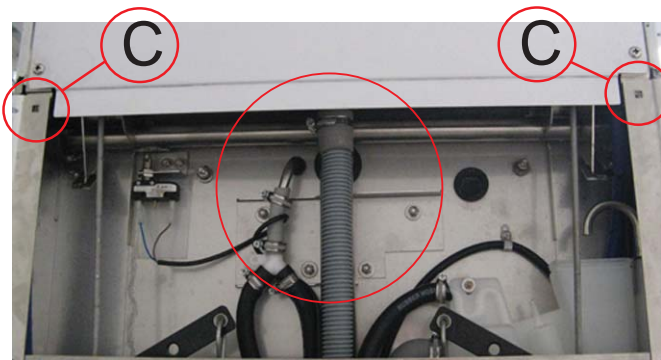


photo 2

Connect the drain hose of the steam condenser, firmly tightening by the hose-clamp provided (see pict. 12 and photo 2).

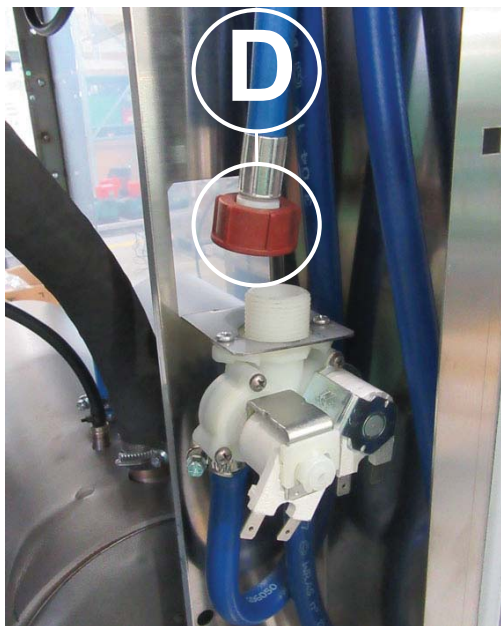
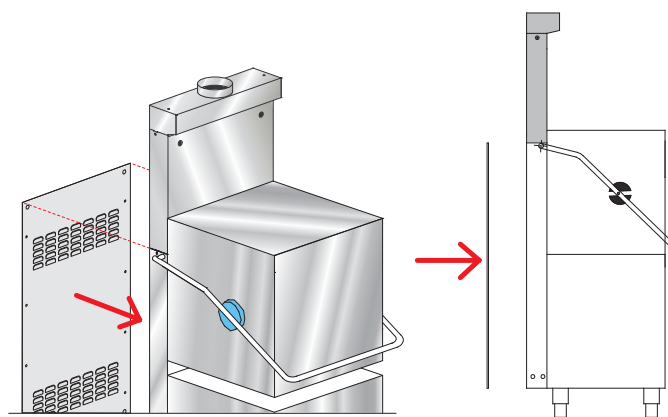


photo 3



pict. 13

- Fasten the ring nut to the solenoid valve (see photo 3 - detail D)
- Reassemble the back-panel adding the 2 screws provided (M6 x 12mm) in the holes (see photo 2 - detail C - see pict. 13)
- Fittings provided
- 4 screws M6 x 12mm (DW11168)
- 1 hose-clamp 25-40 (DW11806)

2. DETERGENT DISPENSER RETROFIT

2.1 Electrical connection

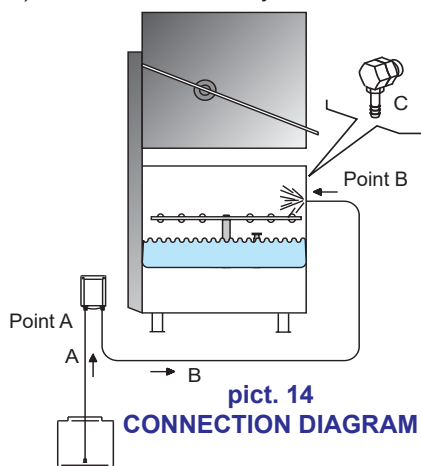
Read the electric diagram, enclosed with the machine.

ATTENTION: output arranged for electrical dispenser 230V max 50W.

2.2 Pipe connection

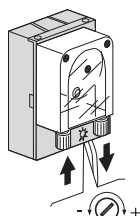
- a) A \varnothing 1/2" (12mm) hole must be made on the back wall of the appliance. On some models the hole has already been made and is plugged with a plastic cap. Remove the cap from the hole and fit the delivery connection.
- b) In case a different injector is fitted, drill a hole of the same diameter as the injector on the back wall of the sump (see pict. 14); this operation must be carried out by the Technical Service. The hole must be made above the water level. It's important to make the hole in a far position from the overflow pipe, so that the detergent does not flow out immediately. Fix the detergent dispenser in vertical position, with hose connections downwards, making sure not to place it on energized components. Clean the inside of the machine from any drilling residual.
- c) Correctly mount the injector **C** using the appropriate fixtures.
- d) Connect the suction hose to the suction connection of the dispenser (see pict. 14 point **A**).
- e) Connect the delivery hose to the other connection of the dispenser, and the delivery fitting (see pict fig.14 point **B**).

- f) Insert the suction hose with filter in the detergent tank.
- g) Prime the detergent pump and proceed to dispense.



pict. 14

CONNECTION DIAGRAM



pict. 15

2.3 Dispensing the detergent

The detergent dispenser capacity can be adjusted using a screwdriver as shown in pict. 15.

Every $\frac{13}{16}$ (2 cm) of product drawn into the tube corresponds to $\frac{1}{64}$ cubic inches (0,25 cm³) equivalent to 0,01 oz (0.3 g - with a concentration of 0,70 oz/cubic inches - 1,2g/cm³).

3. TECHNICAL DATA AND USEFUL INFORMATION ON PUMPS

3.1 Washing pump

When the dishwasher has not been used for some time, check that the washing pump turns freely.

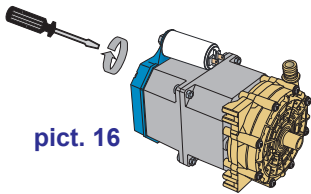
To do this, operate using a screwdriver in the special slot on the ventilating side of the motor shaft.

In case of blocking, turn the main switch off and move the motor shaft, inserting the screwdriver in the notch, turning it clockwise and anticlockwise.

3.2 Booster pump

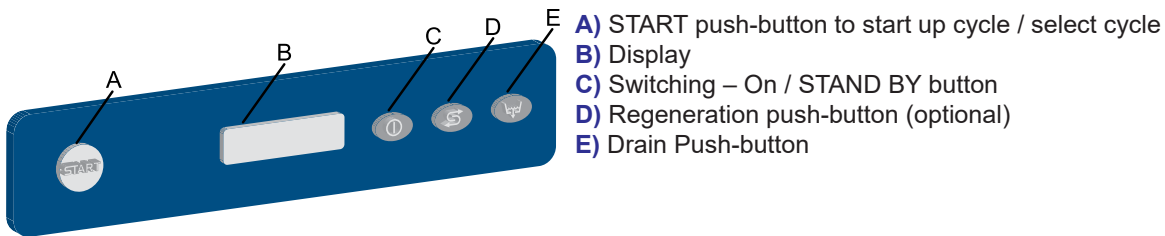
After a period of inactivity of the machine, check if the rinse booster pump rotates freely.

To do that, use a screwdriver in the slot on the fan side of the motor shaft (see pict. 16) to release.



pict. 16

4. CONTROL PANEL AND RELATIVE SYMBOLS



4.1 Setting the Parameters

Some parameters are adjustable upon different application needs.

To set the parameters you enter by a “key” into the **SERVICEMAN MENU**.

Machine switch ON. To enter the **SERVICEMAN MENU** keep pressed for a few seconds both the **On/Off C** and **Start A** keys.

The **Start A** button will light in white.

By the **D** (decrease) and **E** (increase) keys, select the parameter 15.

Confirm the selection by pressing the **Start A** key.



Select the parameter you need to modify by acting on the **D** (decrease) key and the **E** (increase) key.

Confirm the selection by pressing the **Start A** key.

To exit the programming menu press the **On/Off C** key.



4.1.1 LANGUAGE Selection

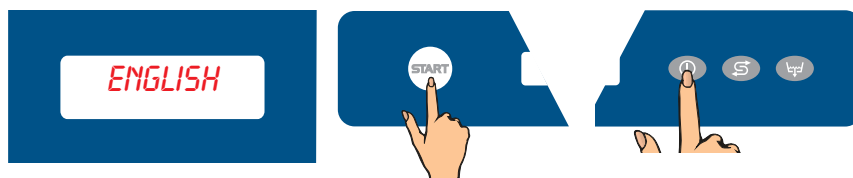
By the **D** (decrease) key and the **E** (increase) key, select the parameter **LANGUAGE**.
Confirm the selection by pressing the **Start A** key.



Choose the desired language (**ITALIAN, ENGLISH, FRENCH, GERMAN, SPANISH, ...**) by using the **D** (decrease) key and the **E** (increase) key.

Confirm the selection by pressing the **Start A** key.

To exit the programming menu press the **On/Off C** key.



4.1.2 SET RINSE TEMP. parameter

By the **D** (decrease) key and the **E** (increase) key, select the parameter **SET RINSE TEMP.** parameter.
Confirm the selection by **pressing** the **Start A** key.



Set the desired boiler temperature (rinse) by using the **D** (decrease) and **E** (increase) keys.

Factory-set rinse temperature: 185°F (85°C)

The above indicated settings are valid for any cycle available on the machine.

Confirm the selection by pressing the **Start A** key.

To exit the programming menu press the **On/Off C** key.



4.1.3 SET WASH TEMP. parameter

By the **D** (decrease) key and **E** (increase) key, select the **SET WASH TEMP.** parameter.
Confirm the selection by pressing the **Start A** key.



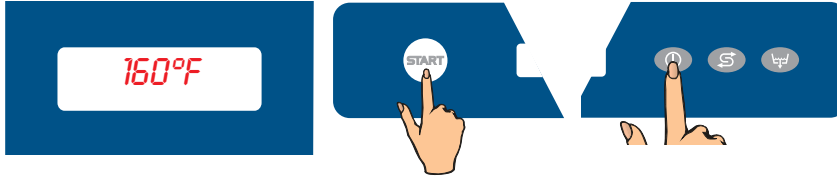
Set the desired wash temperature, by using the the **D** (decrease) key and the **E** (increase) key.

Factory-set wash temperature: 160°F (71°C)

The above indicated settings are valid for any cycle available on the machine.

Confirm the selection by pressing the **Start A** key.

To exit the programming menu press the **On/Off C** key.



4.1.4 WATER HARDNESS Setting (optional)

This parameter is visible and adjustable only on those models equipped with the optional built-in **Water Softener**.

Before setting this parameter a proper measurement of the water hardness is needed.

By the **D** (decrease) key and the **E** (increase) key, select the **WATER HARDNESS** parameter.

Confirm the selection by pressing the **Start A** key.



Set the desired value, by using the the **D** (decrease) key and the **E** (increase) key.

This parameter allows the selection of the right water feed hardness to the machine.

It is possible to select one of the following four parameters:

LOW 10 - 15°F (5 - 8°d)

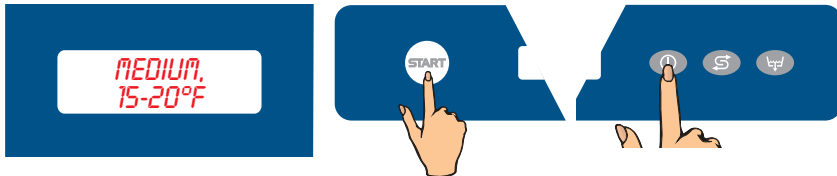
MEDIUM 15 - 20°F (8 - 11°d)

MED/HIGH 20 - 25°F (11 - 14°d)

HIGH 25 - 35°F (14 - 20°d)

Confirm the selection by pressing the **Start A** key.

To exit the programming menu press the **On/Off C** key.



4.1.5 START BY DOOR - Function activation

As a factory setting the cycle starts by shutting the machine hood down.

This is a feature reserved to Hood machines only.

In case of Customers' need it is possible to deactivate this function and start the machine by using the **Start A** key only.

By the **D** (decrease) key and the **E** (increase) key, select the **START BY DOOR** parameter.

Confirm the selection by pressing the **Start A** key.



Set the desired function, by using the the **D** (decrease) key and the **E** (increase) key.

It is possible to select one of the two following parameters:

YES (activates the **HOOD START**)

NO (deactivates the **HOOD START**)

Confirm the selection by pressing the **Start A** key.

To exit the programming menu press the **On/Off C** key.

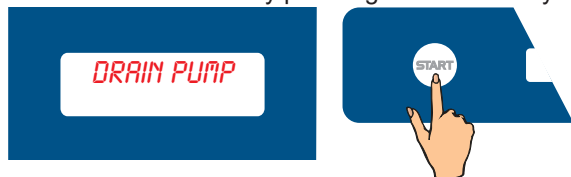


4.1.6 DRAIN PUMP - Activation

This parameter is visible and adjustable only on those models equipped with the optional built-in **Drain Pump**.

By the **D** (decrease) key and the **E** (increase) key, select the **DRAIN PUMP** parameter.

Confirm the selection by pressing the **Start A** key.



Set the desired function, by using the the **D** (decrease) key and the **E** (increase) key.

It is possible to select one of the two following parameters:

YES (activates the **DRAIN PUMP**)

NO (deactivates the **DRAIN PUMP**)

Confirm the selection by pressing the **Start A** key.

To exit the programming menu press the **On/Off C** key.



4.2 Changing the circuit board

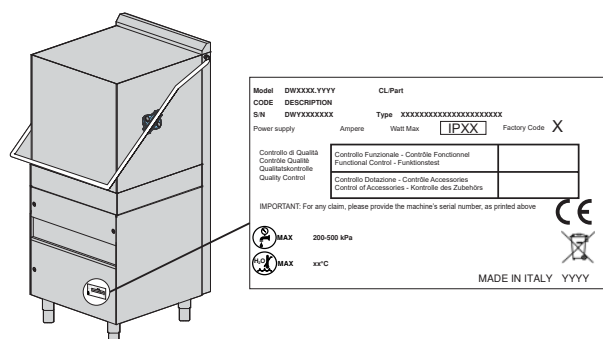
In case of substitution of the circuit board, a new start set up has to be made by inserting in the board the factory bar-code that can be found inside the lower front panel of the machine.

This bar-code allows the habilitation of the circuit board, with factory settings.

Only qualified and authorized personnel can modify or personalize some parameters, by programming the circuit board (see paragraph **4.1 Parameters setting**).

At the very first start, on the circuit board display the text **FACTORY CODE** will appear.

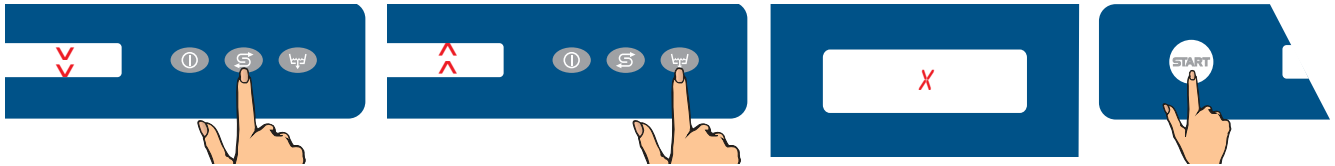
The key **Start A** will light in red and start flashing.



The key **Start A** will remain red and keep flashing till the end of the programming.



By using the keys **D** (decrease) and **E** (increase), insert the factory bar-code of the machine. Confirm the selection by pressing the **Start A** key.



Then the display will show the text: **LANGUAGE**.

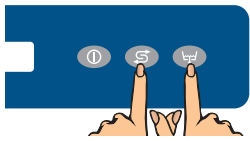
If the machine is equipped with the optional Water Softner, the display will afterwards show the text: **WATER HARDNESS**.



The value of the water hardness is indicated in French degrees.

At the end of the programming, the machine will enter in **Stand-by** mode.

It is possible to reprogram or initialize again the circuit board.



To modify the parameter **FACTORY CODE**:

With the machine in **Stand-by**, keep pressed for some seconds (about 9") both the key **D** and the key **E**.

The circuit board will reset and a new request for the **FACTORY CODE** will appear.

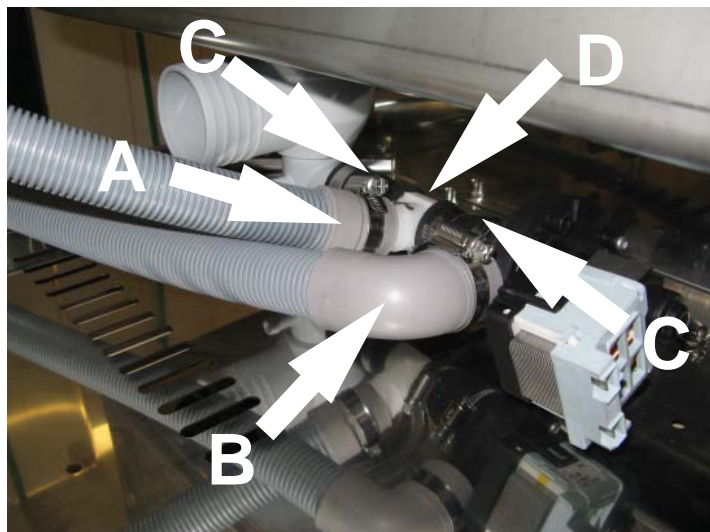
ATTENTION! When resetting the circuit board, all "menu 15" parameters will be canceled as well.

4.3 DRAIN PUMP – Installation

Electrical connection: Connect the drain pump cables to the numbered connections (2-11) predisposed in the wiring.

Water connections:

Standard Plus version + Drain Pump:



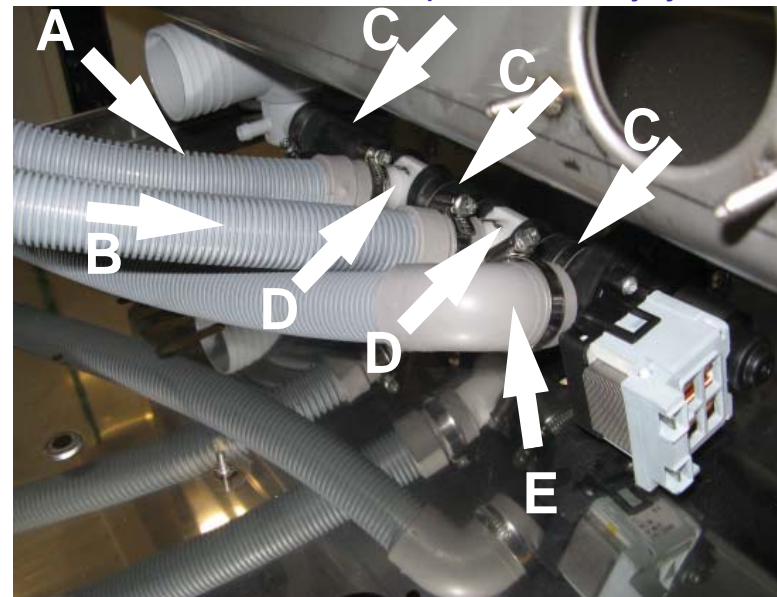
A) Drain hose for condensate water

B) Drain hose

C) Sleeve Ø 28 mm

D) 3 ways connection

Standard Plus version + Drain Pump + Heat Recovery system:



A) Overflow pipe, break tank

B) Drain hose for condensate water

C) Sleeve Ø 28 mm

D) 3 ways connection

E) Drain hose

Activate the **DRAIN PUMP** parameter as indicated at paragraph **4.1.6 DRAIN PUMP -Activation**.

5. OPERATION

5.1 Machine start-up

5.1.1 Start-up

- Check if the pump suction filter is properly inserted in its seat in the wash-tank bottom (see pict. 17).

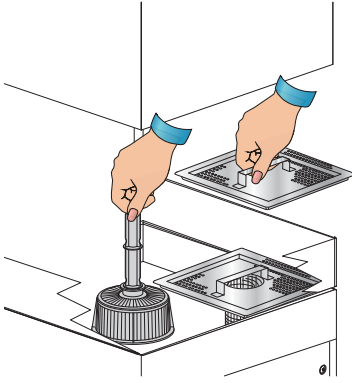
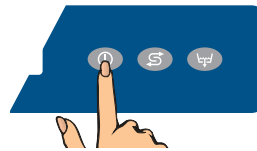


fig. 17

This filter must be cleaned every 20 wash-cycles or whenever necessary.

DO NOT use the appliance without the filter.

- Insert the overflow pipe in its seat inside the pump suction filter (see pict. 17).
- If supplied, put the surface filters in place (see pict. 17).
- Shut the dishwasher hood.
- Turn the water valve “open”.
- Turn the main power switch ON.
- The machine is on **STAND-BY**. In the **B** display, the message **STAND-BY** will appear.
- Turn the button **C**.



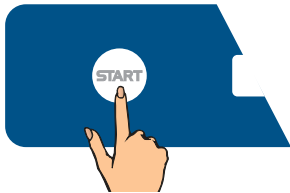
The machine start will be active when the **A** button will light and on the **B** display the **STAND-BY** message will be off. The button **A** will light in white for a few seconds, while loading the software. After loading is complete, the button will light in red. This happens only at the first start of the day of the machine.

The water filling of the wash-tank is done by pre-heating via the boiler. On the **B** display, the messages **FILLING WATER** and **HEATING** will alternate.



The display will read **HEATING**, till wash-tank and boiler will reach the set temperatures. During this process, the machine will not allow any cycle selection or start.

5.1.2 Operation



- Insert the rack filled with dishes to wash. The plates must be correctly placed in the rack (see par. 5.2).
- Select the wanted washing cycle by pushing the green **START** button **A**; the display will show in sequence all these available programs. Once the wanted program is displayed, do release the button.



- Close the hood: the wash cycle starts automatically. The button **A** will light in blue. All wash-time long the display will read the wash-tank temperature and the boiler temperature. Below the temperatures indications line-bar is displayed to show the progression of the wash-cycle.



At the end of the washing cycle, a hot rinse cycle will take place. A blue/green flashing on the button **A** will indicate the **CYCLE ENDED**.

By selecting the option **SELECT CYCLE** the wash-cycle will not start, when lowering the hood. This function is meant to shut the hood without activating the wash-cycle, in order to keep the machine closed and reduce cooling-down during stand-by periods.



NB: At cycle-end, keeping the hood closed, dishes will not dry. Take out the rack or keep the hood open to allow evaporation, helping the drying of the dishes.

When opening the hood, the button **A** will turn green, indicating that the machine is ready for a new wash-cycle. We recommend to change water at least twice a day, or whenever needed.

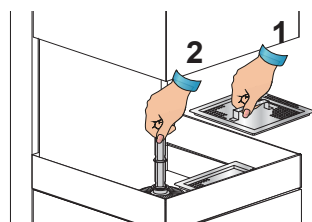
5.1.3 Switching OFF

- Turn the button **C**. The display will show **STAND-BY**.



To drain completely the wash-tank, remove the rear surface filter and take off the overflow pipe (see pict. 18). For machines equipped with drain pump see par. **5.5**.

- At the end of the day, clean the machine (see chap. **6 Maintenance**).
- Shut the water valve.
- Switch the main power switch OFF.

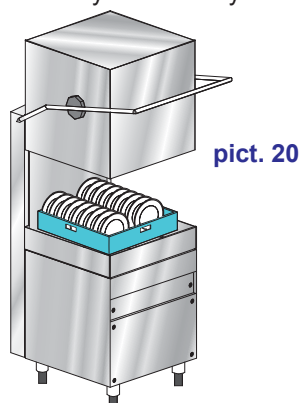
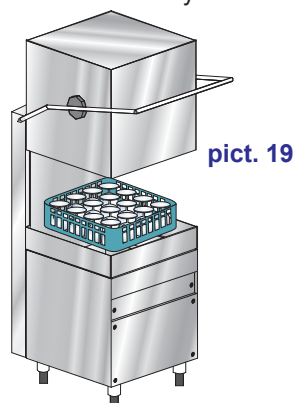


pict. 18

5.2 Cutlery and crockery loading

Before cutlery and crockery loading in the machine, coarsely clean them from the leftover food.

It isn't necessary to rinse the cutlery and crockery under water.



ATTENTION: Do not wash articles polluted with petrol, paint, chips of steel or iron, ash, sand, wax, lubricant grease. These substances damage the machine. Do not wash fragile objects or material not resistant to the washing process.

Note the following recommendations:

- Crockery and cutlery should not be inserted inside one another, covering each other.
- Place the crockery in order to all surfaces can be reached by water; otherwise the dishes are not washed.

- Make sure all the crockery are in a stable position and that the hollow containers don't overturn (cups, glasses, bowls, etc.) .
- Place in the rack all the hollow containers such as cups, glass, etc. **upside-down**.
- Place the crockery with deep hollow with upper face downwards, so that water can flow out.
- Make sure the smaller crockery do not fall from the rack.
- Check all the wash arms runs freely and they are not blocked by too tall or too prominent crockery. Eventually, run a manual rotation of the arms to check it.

Some foods, such as carrots, tomatoes, and others, may contain some natural dyes substances, that in large amounts, can alter the crockery and plastic parts colors.

Any discoloration does not mean that the plastic is not heat resistant.

Crockery and cutlery not suitable for dishwasher

Not suitable for dishwasher:

- Wooden crockery and cutlery or with wooden parts; water at high temperature causes deformation to wood. Also the adhesives used are not suitable for treatment in the dishwasher; a consequence could be the handles detachment.
- Crafts, precious vases or decorated glasses.
- Not heat-resistant plastic crockery.
- Copper, brass, pewter or aluminum objects: they may become discolored or opaque.
- The decorations on glass, after a certain number of washes, can lose gloss.
- Fragile glasses or crystal items, if often washed, can become opaque.

We recommend to buy exclusively crockery and cutlery suitable for dishwashing.

After several washes, the glass can become opaque.

It is mandatory to repeat the washing cycle if at the end of the cycle the crockery are not well clean or if there are washing residues (glasses, cups, bowls, etc. with liquid inside).

5.3 Detergent use

The machine has a standard detergent dispenser. The machine automatically sucks the product. The detergent shall be the NO FOAM type, suitable for industrial dishwashers. The detergent must be introduced in the tank. The use of good quality liquid detergents is recommended. By request the dishwasher can be equipped with an electric detergent dispenser (always recommended).

Follow the manufacturer's recommendations for chemical dosage, related to the local water hardness. $\frac{3}{8}$ inches (1 cm) of the product drawn into the tube is equal to about $\frac{3}{32}$ Dr (0,15g). A correct amount of detergent is very important for a successful wash.

Should the detergent lack, the display will show **DETERGENT LEVEL** (only with optional "Sensor for Chemicals Low Level").

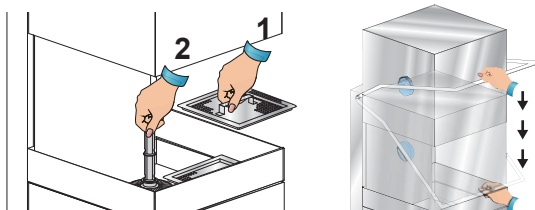
5.4 Rinse aid use

The machine has a standard rinse aid dispenser. The machine automatically sucks the product. The rinse-aid chemical, shall be suitable for professional glass and dishwashers. It is advisable to rely on specialized retailers in the sector.

Should the detergent lack, the display will show **RINSE-AID LEVEL** (only with optional "Sensor for Chemicals Low Level").

5.5 Drain pump system

To drain completely the wash-tank keep the machine ON, extract the overflow pipe and shut the hood (see pict. 21).



pict. 21

After that, press the key **E** till the display will show **TANK DRAINING**.

The discharge pump will automatically drain the wash-tank. During the drain process, the button **A** will light in blue and will be flashing. After the draining is complete, the machine will turn automatically in **STAND-BY** mode.



If you want to refill the machine for a new cycle, see par. 5.1.2.

The drain pump will operate also during the rinse cycle, to drain the water in excess from the wash tank.

5.6 NSF hygiene regulations

- The machines are equipped with a temperature indicator to indicate the boiler and tank temperature. Wait until the set temperatures are fully reached.
- Remove solids from the crockery, not clog filters, nozzles and pipes.
- Drain the wash tanks and clean the filters at least twice a day.
- Check that detergent and rinse aid dosing is correct (as recommended by the supplier). Before starting the machine make sure the amount of chemicals in the tanks is sufficient for the daily requirement.
- Keep the tables surfaces clean.
- Remove the basket from the machine with clean hands or gloves, not to contaminate the cutlery.
- Do not dry or polish the crockery with unsterile cloths, brushes or rags.

6. MAINTENANCE

6.1 Routine maintenance

WARNING: The machine is not protected against pressurized water jets. Do not use pressure cleaning system against the machine.

It is recommended to contact the seller of chemicals for proper cleaning instructions, in order to have detailed indications on methods and products for the correct periodical machine sanitation.

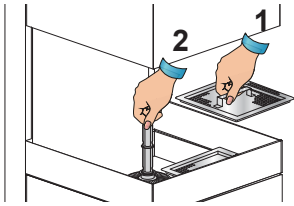
Do not use bleach or chlorine based detergents.

Daily cleaning is needed to ensure that the machine runs perfectly. The following shall be carried out:

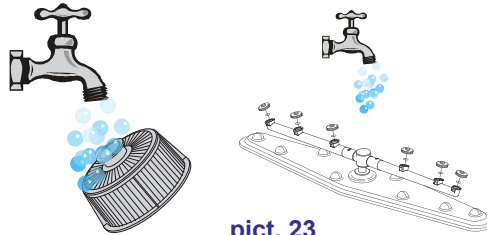
- Turn the machine in **STAND-BY** mode, by pressing the push-button **C** of the control panel (see chap. 4).



- Remove the filter and clean with a brush and a water shower. Drain the water by removing the overflow pipe (see pict. 22).
For machines equipped with drain pump, follow all indication at par. 5.5.
- Remove the pump filter and clean with a brush and a water shower.
- Remove the arms by loosening the fixing screws, and thoroughly clean them, and the nozzles under running water (see pict. 23).

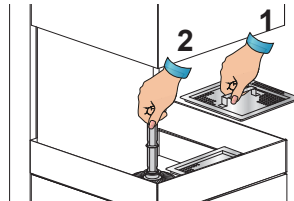


pict. 22

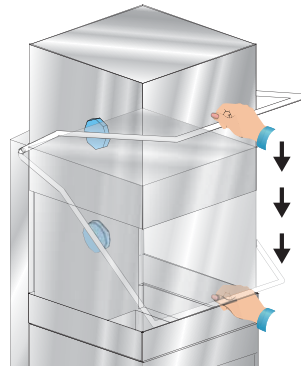


pict. 23

- Reassemble the parts and reposition the wash pipes firmly in place. Take extreme care to re-assemble the nozzles in the right position (open and / or closed nozzles) and that the arms are installed with the right axial angle.
- Clean the tank very carefully, using a water shower.
- It is recommended to leave the machine hood open at the end of the day.
- **Automatic cycle of machine self-cleaning/rinsing:** recommended at each day end.
The machine should be in **STAND-BY** mode. Remove the overflow pipe. Wait the tank to be totally empty and close the hood (see pict. 24 and 25). For machines equipped with drain pump, follow all indication at par. 5.5.

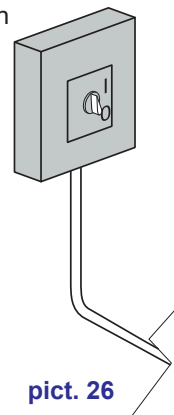


pict. 24



pict. 25

Push START button **A**; an automatic cycle of 30 seconds will start, after this the machine will be in **STAND-BY** mode.



- Shut the water valve.
- Turned off the machine by switching the main power switch OFF (see pict. 26).

6.2 Extraordinary Maintenance – by qualified Service Personnel

At least once per year, the machine should be supervised by qualified Service Personnel:

- 1 Clean the solenoid-valve(s) filters.
- 2 Remove scale from the heating elements.
- 3 Control the status of the seals.
- 4 Control for components integrity and/or consumption.
- 5 Control the dispenser(s) efficiency;
- 6 Check the efficiency of the door safety switch.

A qualified electrician, should check all electric connections inside the machine, at least once a year.

7. SIGNALS AND ALARMS

7.1 Signals

The signals messages are displayed, based upon their meaning.

When on the display appears **DETERGENT LEVEL** it means that the detergent level is low (only on machines equipped with the optional "Chemicals level Sensor").

When on the display appears **RINSE-AID LEVEL** it means that the rinse-aid chemical level is low (only on machines equipped with the optional "Chemicals level Sensor").

When on the display appears **SHUT HOOD** it means that you are trying an operation that cannot be done with the open Hood or that you opened the Hood, interrupting a cycle in progress.

When on the display appears **DRAIN WATER IN WASH TANK** it means that you are trying an operation that cannot be done with the wash tank full.

When on the display appears **SELF-CLEANING: REMOVE FILTERS AND PRESS START** it means that the machine requires a self-washing cycle.

When on the display appears **SELF-CLEANING CYCLE OVER** it means that the machine has concluded its self-washing cycle.

7.2 Alarms

The alarm messages are displayed, based upon their meaning.

TYPE OF ALARM	CAUSE
B1	BOILER FILLING FAIL
B2	BOILER PROBE FAIL.
B3	BOILER HEAT. ALARM
B4	RINSING FAILED
B5	BOILER OVERHEATING
E1	WATER LOAD FAILED
E2	TANK PROBE FAIL.
E3	TANK HEATING ALARM
E5	TANK OVERHEATING
E6	TANK DRAINING FAIL.
Z10	ALARM SL8 - BREAK TANK HIGH LEVEL

Table 3

B1
BOILER FILLING FAIL.

B1 BOILER FILLING FAIL.:

Cause:

The machine boiler fill-up was not achieved in the maximum foreseen 5 min. time limit.

Check:

1. The correct water supply from the piping network.
2. If the solenoid-valve filter is clogged. Clean the filter if needed.
3. Solenoid valve **Y5** failure. Change the solenoid valve.
4. The boiler pressure-switch failed. Replace if needed. Before replacing the pressure-switch, drain the boiler completely.
5. Circuit board failure. Change the circuit board.
6. The **Y6** solenoid valve on the heat recovery coil is blocked (on machines equipped with the optional **Heat Recovery System**). Replace if needed.

B2
BOILER PROBE FAIL.

B2. BOILER PROBE FAIL.:

Cause:

The circuit board does not detect the boiler sensor.

Checks:

1. Check the electrical connection between circuit board and sensor.
2. Check if the sensor works properly.
3. Check that the sensor did not overheat.

B3
BOILER HEAT. ALARM

B3. BOILER HEAT. ALARM:

Cause:

The factory-set boiler temperature was not achieved in the maximum foreseen 30 min. time limit.

Checks:

1. If the boiler heating element heats properly.
Check the integrity of the electrical heating element.

Check the electrical connection.

Check the boiler coil-switch (**remote control switch**) protection.

Check the boiler safety thermostat. Should the thermostat be overheated, press the reset button to check its efficiency.
Replace if needed.

2. Circuit board failure. Change the circuit board.

B4
RINSING FAILED

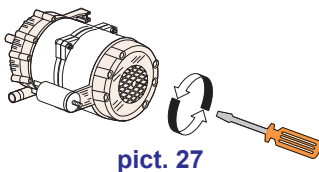
B4. RINSING FAILED:

Cause:

The rinse water was not used during the rinse cycle.

Check:

1. Check the free rotation of the rinse pump. Should the impeller be blocked, rotate the motor shaft manually, by a screw-driver (see pict. 27)
2. Check the rinse nozzles are not obstructed and/or encrusted and they don't allow the water sprays. Clean carefully the nozzle.
3. Drain completely the boiler; disconnect the pipe from the pressure-switch and check it is obstructed; check also if the air trap assembly is not obstructed.
4. The boiler pressure-switch failed. Replace if needed. Before replacing the pressure-switch, drain the boiler completely and check, blowing into the hose, that it is not obstructed.
5. Rinse pump damaged. Replace if needed.
6. Circuit board failure. Change the circuit board.



B5
BOILER OVERHEATING

B5. BOILER OVERHEATING:

Cause:

The water temperature in the boiler exceeded 221°F (105°C).

Checks:

1. The boiler pressure-switch failed. Replace if needed.
Before replacing the pressure-switch, drain the boiler completely.
2. Check the sensor integrity. Replace if needed.
3. Check the boiler coil-switch protection.
4. Check the boiler safety thermostat. Should the thermostat be overheated, press the reset button to check its efficiency. Replace if needed.
5. Circuit board failure. Change the circuit board.

E1
WATER LOAD FAILED

E1. RIEMPIMENTO VASCA:

WATER LOAD FAILED:

Cause:

The machine wash-tank was not filled in the maximum foreseen 15 min. time limit.

Checks:

1. No water supply to the machine. Open all water supply valves.
2. Check the right functioning of the solenoid valve.
Solenoid valve filter clogged. Clean the filter.
Solenoid valve **Y5** failure. Change the solenoid valve.
3. Check the free rotation of the rinse pump. Should the impeller be blocked, rotate the motor shaft manually, by a screw-driver (see image 27).
4. Rinse pump failure. Change the pump.
5. The filling of the wash-tank does not stop. Check the tank pressure switch.
6. The rinse nozzles are obstructed. Clean the rinse nozzles.
7. Circuit board failure. Change the circuit board.

E2
TANK PROBE FAIL

E2. TANK PROBE FAIL.:

Cause:

The circuit board does not detect the wash-tank sensor.

Checks:

1. Check the electrical connection between circuit board and sensor.
2. Check if the sensor works properly.
3. Check that the sensor did not overheat.

E3
TANK HEATING ALARM

E3. TANK HEATING ALARM:

Cause:

The factory-set wash-tank temperature was not achieved in the maximum foreseen 60 min. time limit.

Checks:

1. If the tank heating element heats properly.

Check the integrity of the electrical heating element.

Check the electrical connection.

Check the tank coil-switch (**remote control switch**) protection.

2. Circuit board failure. Change the circuit board.

E5
TANK OVERHEATING

E5. TANK OVERHEATING:

Cause:

The wash-tank temperature exceeded 194°F (90°C).

Checks:

1. Check the sensor integrity. Replace if needed.
2. Check the wash-tank coil-switch protection.
3. Circuit board failure. Change the circuit board.

E6
TANK DRAINING FAIL.

E6. TANK DRAINING FAIL.:

Cause:

The draining of the wash-tank was not completed within the maximum foreseen time limit.

Checks:

1. Check if the overflow pipe has been removed.
2. Check if the drain pipe is clogged.
3. Check if the drain pump is working properly (on machines equipped with the optional **DRAIN PUMP**).
4. Circuit board failure. Change the circuit board.

Z10
ALARM SL8

Z10 ALARM SL8 - BREAK TANK HIGH LEVEL

Cause:

The Break Tank safety pressure-switch detects a high level.

Checks:

1. Check if the pressure-switch **SL1** is working properly.
2. Check the solenoid-valve **Y5** (stuck open).

8. ENVIRONMENTAL ASPECTS

8.1 Packaging



Packaging is made of the following components:

- a wooden pallet
- a nylon sack (LDPE)
- a multi-layer carton
- polystyrene (PS) strips
- polypropylene (PP) banding.

All above materials, shall be disposed and treated in accordance with the Local Laws in force.



8.2 Disposal

The machine must be disposed of according to current regulations: contact the Municipalized Firm responsible for collection of urban solid waste.

Before disposing of the appliance, disconnect all water and electrical connections.

■ Cut the electrical cable in such a way as to prevent further use.

As all metal parts are stainless steel, they are therefore recyclable.

Recyclable plastic parts are identified by the plastic symbol.

9. ECOLOGICAL ASPECTS



9.1 Recommendations for optimal use of energy, water and additives

Use the machine fully loaded when possible: This shall prevent detergent, rinse aid, water and energy consumption waste.

Detergent and rinse-aids: Use detergents and rinse-aid chemicals with high biodegradability, to best respect the environment. Verify proper dosage in relation to water hardness at least once a year. Excess product pollutes rivers and seas while an insufficient dose results in unsatisfactory dish washing and/or hygiene.

Boiler and Wash-Tank temperatures: The boiler and tank temperatures are set by the manufacturer in order to obtain the best washing results with detergents on the market. The temperatures can be reset by the installer in relation to your detergent.

Pre-washing: Carefully pre-wash with a moderate amount of water at room temperature to facilitate the removal of animal fats. To remove encrusted materials warm water soaking is recommended.

Note: Wash objects as soon as possible to avoid deposits from drying and compromise effective washing.

For effective washing routine dishwasher cleaning and maintenance is advised (see chap. 6).

Disregarding the points listed above and of any the information contained in this manual can cause energy, water and detergent waste with a subsequent increase in running costs and/or performance reduction.

10. TROUBLESHOOTING

Type of Problem	Possible Causes	Cure
The machine does not turn on.	Main switch not ON.	Turn switch ON.
The machine does not load water.	Water valve shut.	Open the hot and/or cold water valve.
	Rinse area nozzles or solenoid-valve filter blocked and/or scaled with limestone.	Clean the rinse arm nozzles, conductors and solenoid-valve filter.
	Defective pressure-switch.	Replace pressure-switch.
Cycle LED A flashing (red colour)	See chapter 7 Alarms	---
Washing results are unsatisfactory.	The washing nozzles are obstructed or the rack does not rotate.	Clean the nozzles carefully, and check the right positioning of the wash-arm, tightening firmly.
	Foam is present.	Use no-foam detergents or reduce the dose in use. Check the rinse-aid dosage.
	Fats or starches not removed.	Insufficient detergent concentration.
	Filter is dirty.	Remove filter, clean with brush under a jet of water and replace in original position.
	Check tank temperature	Adjust the thermostat or check correct heating element operation.
	Wash time insufficient for the type of dirt.	Select a longer wash-cycle, if possible, otherwise repeat the wash cycle.
	Wash water is dirty.	Drain the tank water, clean the filters; refill the tank and replace the filters correctly.
Objects are not properly dried.	Not enough rinse aid.	Increase dosage by turning the dispenser screw (see par. Rinse aid dispenser).
	Rinse temperature under 176°F (80°C)	Check the boiler thermostat temperature
Streaks and spots on objects	Too much rinse-aid chemical.	Reduce the rinse aid amount by turning the micrometric dispenser screw (see par. Rinse aid dispenser).
	Too hard water.	Check the water quality. Water must not exceed 8°f in hardness.
The machine suddenly stops during operation.	The machine is connected to an overload device.	Connect the machine on a own overload device.
	A machine safety device was triggered.	Check the electrical devices.
The machine stops during the wash stage and starts refilling water.	The previous day's water was not changed.	Drain the tank totally and refill.
	Excessive water temperature in tank.	Replace the thermostat and/or the pressure-switch
	Defective pressure switch.	
	Overflow pipe improperly positioned.	Remove and reposition the overflow pipe properly.
The booster pump can't prime.	Scarce pressure on the water intake.	Remove the boiler pipe and prime the pump.
The washing pump doesn't work	The pump is blocked	Check the free rotation of the wash pump shaft

**N.B.: For any other question, please contact your Service provider.
The manufacturer has right to modify any technical characteristics without prior notice.**