Service Manual

FAGOR

FAGOR INDUSTRIAL

22/07/2019

SERVICE MANUAL

“EVO FRONT LOADING DISHWASHER”

Service **manual**

MONDRAGON

1. INTRODUCTION

Dear customer,

We would like to thank you for the confidence you have placed in our brands and in our product. We are sure that this machine will meet your requirements.

The equipment must only be used for the purposes established by the manufacturer. Inappropriate use of the same may result in risks to the integrity and safety of users and damage to the equipment. This machine may only be used by professionals or qualified personnel. Any other use will be in conflict with the intended use and is therefore hazardous.

The guarantee does not cover damage to glass components, or damage to insulation material or damage due to the incorrect installation of the equipment, or to inappropriate use, inadequate maintenance or poor repair processes.

This Service Manual is a guide to help in the maintenance of the machine.

This equipment is subject to changes and modifications for its technical progress.

2. SAFETY INSTRUCTIONS

For your safety:

Do not store or use inflammable and/or corrosive liquids or gases near the equipment.

The operation of the machine must never be entrusted to minors or individuals with physical, mental or sensory disability. Nor to individuals without the experience and/or necessary knowledge, unless under the supervision of a safety manager.

The machine must only be operated by hand. Any damage resulting from the use of sharp, pointed objects or similar will invalidate all warranty rights.

To avoid the risk of accidents and damage to the machine, operators must receive adequate safety training by means of relevant courses, seminars and programmes.

Warning: The incorrect adjustment, substandard cleaning or installation, or inadequate maintenance or service, together with the renovation of the machine may result in property damage and/or personal injury, or even loss of life. Please read the instructions in the manual supplied with the machine carefully before starting the machine.

Safety measures for the use of the machine.

- Always open the door very slowly (hot steam) (burn hazard).
- Use suitable protective clothing.
- The exterior temperature of the appliance may reach over 60 °C. Only touch the control elements (burn hazard).
- Cleaning - Aggressive chemical action (risk of abrasion).

During cleaning, always use suitable protective equipment: protective goggles and gloves, face mask, etc. Observe the safety instructions listed in the section “Cleaning”.

- Do not store explosive, corrosive or inflammable substances inside to the appliance (risk of fire).

The positioning and installation, and all repairs and/or modifications, should always be carried out by an **AUTHORISED TECHNICIAN**, in accordance with the applicable legislation of the country or geographical region.

The manufacturer does not accept liability for the consequences if the machine is incorrectly installed.

- It is strictly forbidden to delete, alter, manipulate or suppress the safety devices. Failure to comply with this warning may result in severe risk for the health and safety of individuals.

- Use of spare parts other than original parts will cancel the guarantee.
- To prevent the contamination of recipients and to maintain hygiene standards, the elements in contact with food and surrounding zones should be cleaned after each use.
- Before switching on the newly installed appliance for the first time, the inside should be cleaned with a cloth soaked in soapy water. Then switch on the empty machine for at least two full cycles to eliminate the odours associated with a new appliance.
- This equipment has been designed for use in ambient temperatures between 5 and 40 ^{0}C.
- Do not leave flammable products or objects inside the tub or in its vicinity.

- **This dishwasher has been designed to wash plates, glasses and other similar dishes containing traces of food. Any other use will be considered inadequate.** Objects other than those described above, or objects contaminated with petrol, paint, steel or iron shavings, fragile objects or those which are not dishwasher-resistant must **NOT** be washed in the dishwasher.
- Abrasive or corrosive products, acids, solvents, or CHLORINE/HYPOCHLORITE-based detergents **must never be used.**
- **Never use** the equipment for any of its components as a ladder or means of support, and do not deposit objects on top of the machine.
- Do not open the door of the machine while the machine is operating. Do not immerse hands in the washing solution. Switch off the appliance and drain the tub before accessing the inside of the machine.
- Do not install the appliance in places exposed to jets of water.

USE THE PPE NECESSARY TO GUARANTEE YOUR SAFETY, AND THAT OF THE USER AND THE EQUIPMENT.

IMPORTANT: WAIT AT LEAST 10 MINUTES AFTER SWITCHING OFF THE MACHINE BEFORE CLEANING THE INSIDE OF THE APPLIANCE.
WARNING: DO NOT INSERT HANDS AND/OR TOUCH INTERNAL PARTS OF THE TANK.

WHILE THE MACHINE IS OPERATING AND FOR 10 MINUTES AFTER DRAINING THE WASH TANK.

2.1. PICTOGRAMS

Danger Risk of imminent danger that may lead to serious physical injury or loss of life. Failure to observe this instruction may result in property damage or personal injury.

Warning Risk of potential hazard that may lead to serious physical injury or loss of life. Failure to observe this instruction may result in property damage or personal injury.

Caution Potentially hazardous situation that may lead to minor physical injury. Failure to observe this instruction may result in property damage or personal injury.

Caustic substances. Failure to observe this instruction may result in property damage or personal injury.

Risk of fire. Failure to observe this instruction may result in property damage or personal injury.

Risk  **of burns.** Failure to observe this instruction may result in property damage or personal injury.

Danger high voltage. Failure to observe this instruction may result in property damage or personal injury.

2.2. UPKEEP

To maintain the quality of the stainless steel, ensure good hygiene and prevent the incorrect operation of the machine, it must be cleaned every day. Follow the instructions given in the “Cleaning” chapter.

If the machine is not cleaned correctly and as often as necessary, dirt, grease and traces of food may build up in the tub.
- To prevent the tub from rusting, clean away traces of food every day.

- Do not use high pressure cleaners.
- Do not clean the machine with products containing acid or expose it to the effects of acid vapours. Acid damages the passive layer of the steel and may result in discolouration.
- Use suitable cleaning products for dishwashers. The use of unsuitable products may damage the machine and invalidate warranty rights.
- Do not use abrasive cleaning products or scrubs.

2.3. PROLONGED PERIODS OF INACTIVITY

If the machine is going to be inactive or out of service for a long period of time (holidays, temporary closure, etc.), the following should be observed:

- Drain the machine completely, including the boiler.
- Clean the machine thoroughly.
- Leave the door of the machine open.
- Close the water mains inlet tap.
- Switch off the mains power switch.
- The appliance must not be in left in environments with temperatures less than 5 ºC.

3. MAINTENANCE

- Inspection, maintenance and repair work must be performed by a specialised Official Technical Service.
- When performing cleaning, inspection, repair or maintenance work, the power supply to the machine must be disconnected.

- When changing the position of the equipment, make sure that the power cable and the water and drainage pipes have been correctly disconnected. When returning the machine to its original location, it must be immobilised again. Check that the power supply line and the water and drainage connection pipes are installed in accordance with the regulations.
- To ensure that the machine is in perfect technical order, it should be inspected at least once a year by an "Official Technical Service".

3.1. DAILY MAINTENANCE

The appliance should be cleaned every day.
For the correct working and maintenance of the appliance, it should be cleaned every day using degreasing products specifically designed for this.

IMPORTANT: Sand-based or abrasive products must **not** be used. Nor should a hose be used to clean the outside of the appliance as this could affect the internal components.
The appliance must always be switched off for **Manual Cleaning**.

ATTENTION: The detergents are highly active and therefore extreme caution should be taken as they could cause irritation to the skin or eyes. The manufacturer's instructions must be strictly observed.
When applying detergents and degreasing products, rubber gloves, face mask and protective goggles must be worn, in accordance with the applicable safety regulations.
If the oven is cleaned every day, the operation can be completed quickly, giving an appliance in perfect condition and ready for use the next day.
NOTE: Do not use products or tools which may scratch the surface of the equipment.

- **To ensure the stainless steel maintains its high quality, for hygienic reasons and to prevent the faulty operation of the machine, it must be cleaned every day.**
- **To prevent the tub from rusting, clean the machine every day.**
- Leave the machine door ajar if it is to be out of service for a length of time (e.g. overnight).
- Never clean the equipment with a high pressure cleaner.
- Do not clean the machine with products containing acid or expose it to the effects of acid vapours. This could damage the passivating chrome-plated steel coat, resulting in possible discolouration of the machine.
- To clean, use detergents suitable for use with products in contact with food.
- Do **NOT** use abrasive or corrosive products or acids, solvents and chlorine-based detergents as these may damage the components of the equipment.
- Observe the detergent instructions.
- Do **NOT** direct jets of pressurised water at the internal parts.
- Never insert detergent and rinse aid tablets.
- Only use cleaning products specifically for dishwashers. The use of unsuitable cleaning products may damage the machine and invalidate warranty rights.
- Do not use abrasive cleaning products or scrubs.

WARNING

- **If the cleaning of the machine is inadequate, the build-up of grease and traces of food inside the tub may damage the stainless steel.**
- **Use protective clothing, protective gloves, goggles and face masks in accordance with local legislation.**
- **Do not store chemical cleaning products inside the machine.**

It is essential to carry out all the necessary and relevant cleaning operations in order to increase the service life of the machine and to ensure its correct operation. To ensure the efficient washing of the dishes, the dishwasher must be perfectly clean and disinfected.

	Contact a cleaning product distributor for detailed information about the methods and products available for the regular disinfection of the machine. Only use products suitable for use with industrial dishwashers. The guarantee does not cover damage caused by the incorrect use of chemical products.
	When handling chemical substances, the product safety instructions and recommended doses must be observed. Use protective clothing, gloves and safety glasses when handling chemical products.

The appliance is made of high quality stainless steel. However, under certain conditions, corrosion may appear.
To keep the stainless steel surfaces permanently free of corrosion, only use suitable cleaning products.
To ensure the correct operation of the equipment, Fagor Industrial recommends the following maintenance tasks are performed daily:

- Check daily that the wash/rinsing arms are correctly positioned and fastened and rotate correctly.
- Check that the filters and the relief valve are clean and correctly fitted.
- At the start of each working day, check and maintain the levels of detergent and rinse aid in the containers to ensure they last throughout the working day. Check that the tubes and filter are correctly fitted and submerged. Clean the detergent/rinse aid tube filters regularly to prevent blockages. If the machine has a SOFT appliance, check the levels of salt.
- Different types of detergent or rinse aid must not be mixed.
- The wash water in the tank should be changed every 40-50 washes or twice a day.
- The machine should be cleaned at the end of each working day.
- ATTENTION: Do not use jets of water, pressure or steam cleaners to clean the machine or its environment.
- Do not use abrasive or corrosive, materials, solvents, chlorine or chlorine-based products or hypochlorites to clean the machine. Only use products suitable for cleaning industrial dishwashers in the correct doses.

After switching off and draining the machine, wait approximately 10 minutes until the inside of the appliance

cools. Caution, the heating element of the tank may still be hot. Everyday:

- Close the water mains tap.
- Close the gas shut-off tap (only for gas appliances).
- Disconnect the power switch.
- Remove the filters and clean with a brush under a strong jet of water.
- Remove the wash and rinsing arms by undoing the screws and carefully clean the arms and the nozzles. Rinse with water.
- Replace all the parts correctly.
- Thoroughly clean the tank; food waste attached to the tank or the heating element should be removed with a brush.
- At the end of the day, the door of the machine should be left open.

3.2. SPECIALISED MAINTENANCE

To ensure that the equipment is in perfect and safe condition, it should be maintained and serviced by an Authorised Service Centre at least once a year.

DANGER
• High voltage.
• Before removing the panel from the machine, accessing components and carrying out work on live components, disconnect the machine from the power supply.

Use the resources and tools suited to each operation on the machine.

Call the technical service twice a year to have the machine serviced:

- Cleaning of water filter.
- Cleaning of lime on the resistors, pipes and surfaces of the equipment. The use of phosphoric-based products is recommended.
- Inspection of the condition of the seals.
- Inspection of the condition of the parts.
- Checking the correct operation of the dispensers.
- Tightening of the electrical connections on the terminals, once a year.

If the power cable is damaged, it must be replaced by the manufacturer, After-sales Service or authorised and qualified technical personnel in order to prevent risks.

4. HYGIENE REGULATIONS

- The machines are equipped with temperature sensors which indicate the tank and boiler temperatures TANK TEMPERATURE, BOILER TEMPERATURE on the DISPLAY, or with a MACHINE READY light indicating that the correct temperatures have been reached. It is necessary to wait until the tank and boiler temperatures are reached before starting the wash cycle.
- Before placing dishes in the dishwasher, carefully remove food remains to avoid blocking the filters, jets and tubes.
- Drain the wash tank and rinse the filters at least twice a day or every 40-50 wash cycles.
- Make sure that the quantities of detergent and rinse aid dispensed are correct (as recommended by supplier). At the start of the work day, check that the quantity of product in the reservoirs is enough for the daily requirement.
- Remove the basket from the machine and handle the dishes/glasses/cutlery with gloves or clean hands to prevent contamination. Be careful as the dishes will be hot.
- Do not dry the plates with kitchen towels or cloths that are not sterile.
- The equipment should be kept perfectly clean and maintained.

- Operators must strictly observe all hygiene requirements when handling clean dishes, glasses and cutlery.

5. REMOVAL OF PACKAGING

Remove packaging from the equipment and check for damage during transportation. If any damage is observed, immediately notify the supplier and the transport company. In the event of doubt, do not use the equipment until the problem has been assessed.

Packaging (plastic, wood, staples, etc.) must not be left in the reach of children, it is a potential hazard. It is a potential hazard.

The appliance must be handled using a forklift or similar to prevent damage to the structure of the machine. Transport the equipment to the installation location and then remove its packaging.

5.1. RECYCLING

All the packaging can be recycled. Dispose of packaging correctly.
This machine does not contain components which may damage the environment if not correctly processed. The machine must not be disposed of in the municipal waste.
The machine must be disposed of in accordance with the current local legislation, which can be obtained from the local authorities.
Recycle packaging material correctly at the selective collection points.
Deposit packaging material in the correct bins for recycling.
Help to protect the environment and public health, and to recycle waste from electrical and electronic equipment. Do not dispose of the machine with domestic waste. Take the product to the local recycling centre or contact your local office.

in the reach of children, it is a potential

Packaging (plastic, wood, staples, etc.) must not be left hazard.

At the end of its useful life, this machine must be placed in an electrical waste and disposal.
must not be thrown away in a standard rubbish bin, but electronic equipment collection point for correct

Depending on the features, the materials can be recycled. By recycling and other ways of processing electrical waste and electronic equipment, you can significantly contribute to protecting the environment.
Protect the environment by disposing of waste at the waste disposal points established for this purpose.
The European standard 2012/19/EU Directive on Waste Electrical and Electronic Equipment indicates that this appliance must not be disposed of as a domestic appliance. It must be correctly disposed of in order to optimise the recycling of materials and to protect the environment, as indicated by the WEEE symbol on the machine.
For further information on the correct disposal of the machine, please contact the nearest public waste disposal service or the distributor/supplier of the appliance.

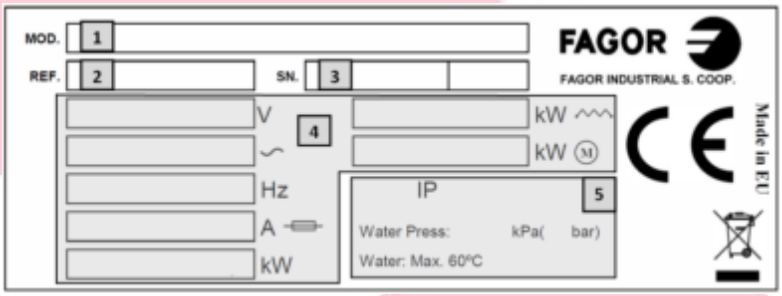
6. TECHNICAL DATA

6.1. MACHINE SPECIFICATIONS

The machine is specially designed for cleaning tableware, glassware and other items of kitchenware, used in the hotel and catering sector.
All the appliances have a specifications plate which identifies the appliance and indicates its technical characteristics, it is located on one side of the machine. Do not remove the plate from the unit.

SPECIFICATIONS PLATE

1: NAME OF THE UNIT
2: CODE OF THE UNIT
3: SERIAL NUMBER + DATE OF MANUFACTURE
4: ELECTRICAL SPECIFICATIONS
5: WATER SPECIFICATIONS



6.2. ELECTRICAL POWER

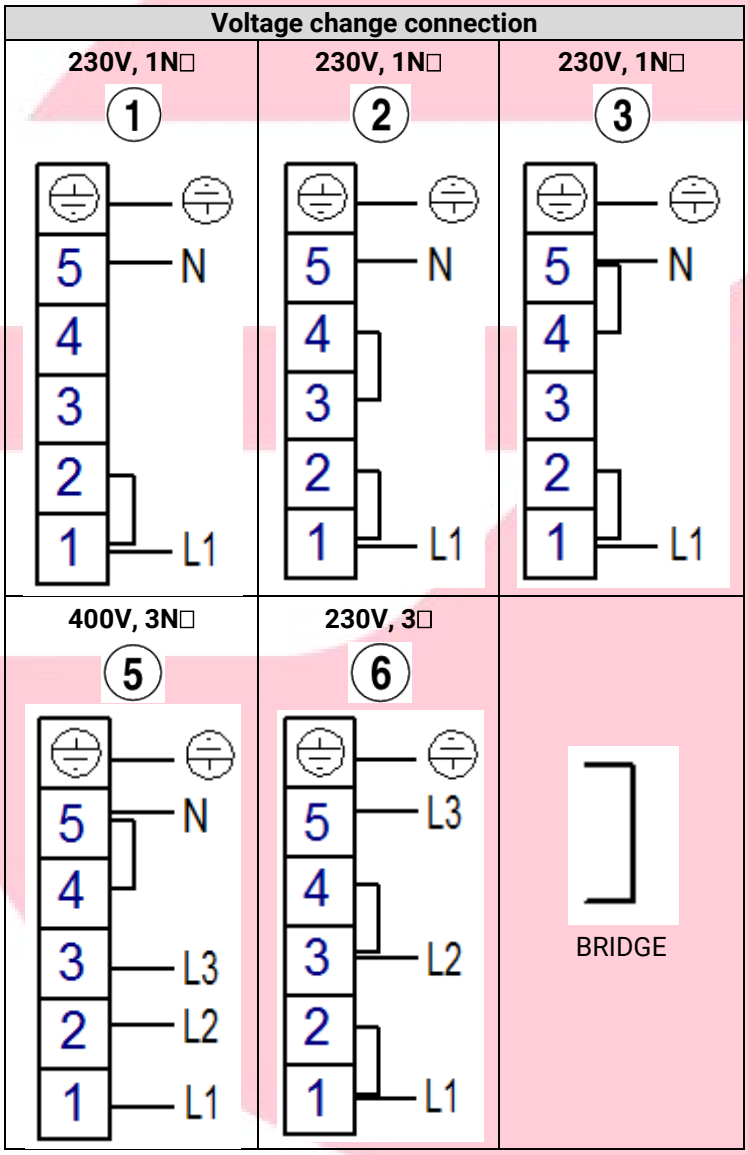
MOD.	CONNECTIONS		Fusible protec.	Total kW	Total Amp.	Cable section	RC (kW)	RT (kW)	MB (kW)
CO-500	230V, 1N□		16 A	3.4 kW	14.7 A	3G 2.5 mm²	2.8	2.8	0.6
CO-501 CO-502 COP-504	230V, 1N□	2	16 A	3.4 kW	14.7 A	3G 2.5 mm²	2.8	2.8	0.6
		3	20 A	4.3 kW	18.8 A	3G 2.5 mm²	3.7	2.8	0.6
	400V, 3N□	5	16 A	6.2 kW	14.7 A	5G 2.5 mm²	5.6	2.8	0.6
	230V, 3□	6	20A	6.2 kW	16.6 A	4G 2.5 mm²	5.6	2.8	0.6
CO-501 CI CO-502 CI COP-504 CI	230V, 1N□	1	13 A	2.8 kW	12.1 A	3G 1.5 mm²	1.9	2.2	0.6
		2	16 A	3.4 kW	14.7 A	3G 2.5 mm²	2.8	2.2	0.6
		3	20 A	4.3 kW	18.8 A	3G 2.5 mm²	3.7	2.2	0.6
	400V, 3N□	5	16 A	6.2 kW	12.1 A	5G 1.5 mm²	5.6	2.2	0.6
	230V, 3□	6	20A	6.2 kW	16.6 A	4G 2.5 mm²	5.6	2.2	0.6
FACTORY ELECTRICAL SETTING									
	230V, 1N□	**2**	**, 3.4 kW,**		**14.7 A**	**3G 2.5 mm2**			
CI →	**230V, 1N□**	**1**	**, 2.8 kW,**		**12.1 A**	**3G 1.5 mm2**			
CO-500 →	**230V, 1N□**		**3.4 kW, 14.7 A, 3G 2.5 mm2**						

MOD.	CONNECTIONS			Fusible protec.	Total kW	Total Amp.	Cable section	RC (kW)	RT (kW)	MB (kW)
AD-505	230V, 1N□	1	ALT	13 A	2.5 kW	10.7 A	3G 1.5 mm²	1.9	1	0.6
	230V, 1N□	1	SIM	16 A	3.5 kW	15 A	3G 2.5 mm²	1.9	1	0.6
		2		20 A	4.4 kW	19.1 A	3G 2.5 mm²	2.8	1	0.6
	400V, 3N□	5	SIM	16 A	7.2 kW	15 A	5G 2.5 mm²	5.6	1	0.6

	230V, 3□	6	SIM	25 A	7.2 kW	21 A	4G 4 mm^2	5.6	1	0.6

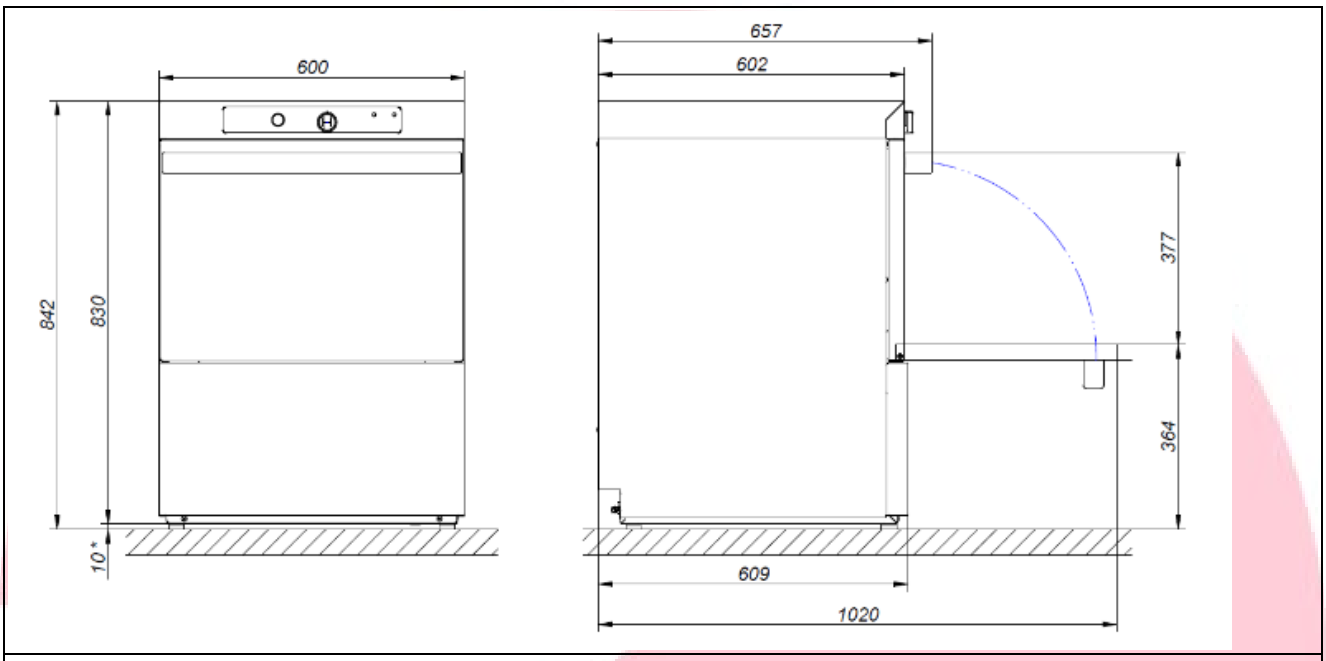
FACTORY ELECTRICAL SETTING					
230V, 1N□	1	SIM	, 3.5 kW,	15 A	3G 2.5 mm2

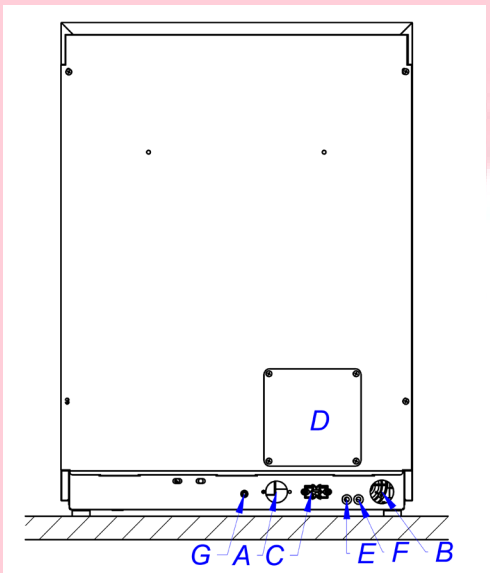
Voltage change connection



:	Earth
N:	Neutral
L1, L2, L3:	Cycle

6.3. DIMENSIONS





GENERAL AND CONNECTION DIMENSIONS (mm)

A	Water inlet and filter
B	Drainage hose
C	Electrical power cable / packing gland
D	Connection box
E	Rinse aid inlet

F	Detergent inlet
G	Equipotential connection

6.4. OTHER DATA

MOD.		 / h	Cycle (s)	Pump	Tank	Boiler	kg	NS
CO-500	500mm x 500mm	30	120/180	2.5 L / cycle	20 L	7 L	70 kg	< 65 dB
CO-501		40	90/120/180					
CO-502								
COP-504				2.4 L / cycle				
AD-505		60	60/90/120/Glass		14 L		71 kg	

7. INSTALLATION OF THE MACHINE

7.1. LOCATION

An extractor hood should be installed to prevent the build-up of steam in the premises.
Place the equipment in a sufficiently ventilated room, in accordance with the current regulations, to prevent the formation of unacceptable concentrations of harmful substances in the installation site.
Inspect final location of the equipment prior to installation to prevent damage during use.
Unless otherwise indicated, the parts that have been protected by the manufacturer must not be manipulated by the installer.

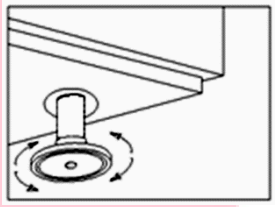
- The placement, installation, repairs and/or modifications must always be carried out by an Authorised Service Technician in accordance with the manufacturer's instructions and the applicable regulations.
- Do not change the position of or handle the machine components, as this may affect the operating safety.
- The appliance must be correctly levelled and the electrical cables, gas pipes, water and drainage hoses must not be trapped or contain kinks.
- The appliance has been designed to operate at ambient temperatures ranging from 5 ^{0}C to 40 ^{0}C and must not be used at temperatures below 5 ºC.
- The appliance or any of its parts **must never be used** as a support and objects must not be placed on top.
- Do not install the appliance in places exposed to jets of water.
- This appliance must be installed in accordance with the current applicable legislation. It may only be installed on premises which are correctly ventilated in order to prevent the formation of unacceptable concentrations of substances harmful to human health.
- You must check that there are no gas leaks. **NEVER** use a flame to check for leaks.

- The gases leaving the fluepipe are at high temperatures and may cause burns. Do **NOT** obstruct the fluepipe output.

7.2. LEVELLING

The appliances have adjustable legs to ensure they are correctly levelled. Turn the leg to obtain the required height. The flooring on which the appliance is to be installed must be able to bear its full weight.

For optimum operation, it is essential that the appliance is correctly levelled.



Fagor Industrial recommends that the place where the appliance is to be installed should be analysed prior to installation to check that it is suitable. The installation location must be able to withstand the weight of the appliance.
Electrical cables, water and drainage hoses must not be trapped or contain kinks.
Turn the leg clockwise to extend and anticlockwise to shorten.
The installation of this appliance requires electrical and hydraulic connections, and an adequate ventilation/extraction system due to the steam emitted by the machine.

8. CONNECTIONS

8.1. ELECTRICAL CONNECTION

Before connecting the machine to the power connection, check that the network voltage and frequency correspond to those indicated on the appliance nameplate. Check that the cross-section of the power cable is appropriate for the required consumption.
It is essential that the electrical installation where it is going to be connected has an EARTHING SOCKET, in addition to the appropriate protection of the magneto-thermal switch and differential.

An AUTHORISED TECHNICIAN should always carry out the appliance's electrical connection.

The legal standards in force in each country on connections to the mains should be taken into account.

- The specifications plate indicates the maximum power in kilowatts (kW) and amperes (A) for the correct sizing of the installation components (line, power supply cable...). If the configuration is changed, the values must be revised.
- Check that the mains voltage corresponds to that indicated on the appliance nameplate.
- The electric cable should be flexible, with an oil-proof covering, and it should not weigh less than the cable in an ordinary sleeve made of standard polychloroprene or an equivalent synthetic elastomer (H05RN-F or H07RN-F).
- The cross-section of the power cable must be suitable for the rated current of the machine.
- The machine must be connected to earth using the connection on the machine connection strip.
- The manufacturer will not be held liable for damage originated by failure to observe this requirement.
- Near the appliance and easily accessible to the user, between the power supply and the appliance, a

suitable omnipolar cut-off Circuit Breaker with a minimum contact separation of 3 mm must be installed. This device should be used to disconnect the appliance during installation, repair, cleaning and maintenance work. It is recommended that it has lockout-tagout capabilities. The manufacturer will not be held liable for damage originated by failure to observe this requirement.

- A suitable safety switch / Residual current device must be installed near the appliance between the power supply and the appliance. The manufacturer will not be held liable for damage originated by failure to observe this requirement.
- If any faults are observed during the installation of the equipment, the supplier should be notified immediately.

To access the connection strip, release the left side panel, pass the cable sleeve through the stuffing box on the lower exterior base and connect as shown on the strip.

.

VERY IMPORTANT: Before installing the left side panel, attach the electrical supply hose securely to the stuffing box.

When several appliances are installed in series, they should be earthed to each other using the point assigned for this purpose, located in the oven base, at the back. The connection is represented by the symbol.

8.2. HYDRAULIC CONNECTION

Before connecting the machine to the mains water supply, the water must be tested and should comply with the following requirements:

pH: 6,5 ÷ 7,5
Total water hardness: 5 ÷ 10 °fH
3.5 ÷ 7 °eH
2.8 ÷ 5.6 °dH
50 ÷ 100 mg CaCo3/L
Impurities: Ø < 0.08 mm
Chlorides: ≤ 150 mg/l
Chlorine: 0.2 ÷ 0.5 mg/l
Conductivity: 400 ÷ 1,000 µS/cm

EQUIVALENCES OF THE DEGREE OF WATER HARDNESS					
	CaCO3 (ppm)	°D	°F	°A	°E
°F	10	0.56	1	10	0.7
°A	1	0.056	0.1	1	0.07
°E	14.26	0.8	1.47	14.26	1
°D	17.85	1	1.785	17.85	1.25

If the water quality does not meet the specified requirements, contact a professional able to advise on the water treatment systems necessary to make the water suitable and to obtain a satisfactory process.
If the water hardness is higher than that indicated, a descaler should be installed to prevent the build-up of lime on the machine and to permit optimum cleaning and drying. It is also possible to install a SOFT model with built-in descaler (n this case if the water hardness is higher than 45 °fH / 31.5 °eH / 25.2 °dH, it will still be necessary to install an external descaler).
In addition to water quality, the pressure of the mains water supply must be considered. This is important to ensure the unit operates correctly. The dynamic pressure of the water inlet must be within the values indicated in the following table.

DYNAMIC PRESSURE OF WATER INLET					
CONCEPT MOD.	**Min.**	200 kPa	2 bar	2 kg/cm^2	29 psi
	Max.	400 kPa	4 bar	4.1 kg/cm^2	58 psi

If the water pressure is lower than the recommended, a pressure pump must be installed. Please contact your supplier or the manufacturer to request the PRESSURE PUMP KIT.

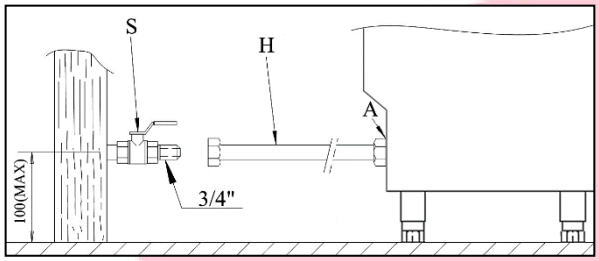
CONCEPT PLUS AND ADVANCE MOD.	**Min.**	100 kPa	1 bar	1 kg/cm^2	14.5 psi
	Max.	400 kPa	4 bar	4.1 kg/cm^2	58 psi

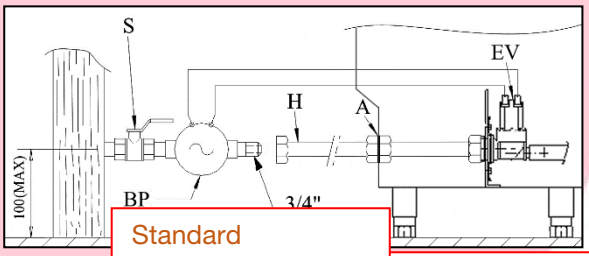
The water inlet temperature is also important. Hot water should be used to optimise the machine operation, as the use of cold water will increase the times required to reach the operating temperatures and productivity will be reduced. If using hot water, the water temperature must not exceed 60 ^{0}C / 140 ºF.

WATER INLET TEMPERATURE	Min.	Max.
Cold Water	15 ºC / 59 ºF	40 ºC / 104 ºF
Hot Water	40 ºC / 104 ºF	60 ºC / 140 ºF

For the correct hydraulic installation of the machine, you must:

- Connect the appliance to a water supply which complies with the requirements specified above. All the machines have a ¾" screw-on water hose connection. Old or used hoses must **NOT** be used.
- Install a shut-off valve on the water supply close to the machine in an accessible position.
- Check that the mains pressure is within the range indicated above.
- Check that there are no leaks





Standard connection

ump connection

S	Water shut-off valve
H	Water inlet hose
	Only AU: Supplies hose and counterflow prevention device assembly
A	Water inlet and filter
EV	Electrovalve
BP	Electropump
F	Filter
CD	Drainage tray
B	Drainage hose

Connect the machine to the mains water supply at the points indicated, using the hose supplied.
The pressure of the incoming water should be between 200 and 400 kPa (2÷4 kg/cm^2 = 2÷4 bar). Fagor Industrial recommends 250 kPa.

STANDARD FILTER SYSTEMS

A) Fine filter

If the water contains impurities such as sand, iron particles or floating substances, we recommend the use of a fine filter at the water input.

B) Activated carbon filter

If the water has a high chlorine content over 0.2 mg/l (this information can be obtained from the relevant water board), an activated carbon filter should be installed.

C) Installation of osmosis recirculation

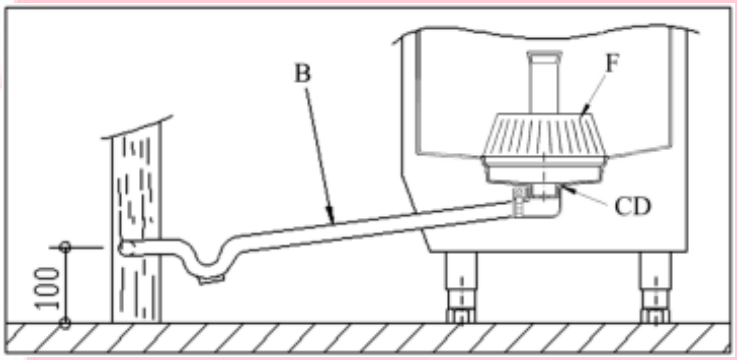
When the chloride concentration is above 150 mg/l (this information can be obtained from the relevant water board), an osmosis recirculation installation should be mounted. In this case, please remember that the minimum conductivity value is 400 µS.

D) Water descaling

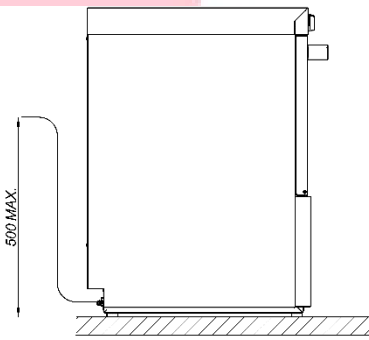
For water with a high level of lime scale (without chloride load) the water should be treated. Systems: H+. Interchange of ions or Kleensteam. We strongly advise against the use of sodium/ion exchangers (normally used in dish washers) due to the formation of sodium sediment and the delay in boiling with common salt.

When selecting filter systems (A, B, C, D), we recommend you contact a specialist water treatment company.

8.3. WASTE WATER CONNECTION



Incorrect installation of the appliance may result in the incorrect operation of it.
A drainage must be installed for this (DN40).
The installation should be in such a way as to ensure that the installed drainage outlet is below the oven outlet with a suitable slope to ensure drainage **(≈ 5 ÷ 3%)**.
Ensure the measurements for the drainage are correct.
Average temperature of waste water: 65 ºC.
Once the drainage has been installed, the discharge to the general drainage must be via a type `AA`, `AB` or `AD` change in water level in accordance with EN 1717.
The machine drainage hose must be connected to the drain so that water draining from the machine flows freely under gravity; therefore, the drain must be lower than the drainage hose.
If the drain is higher, it will be necessary to use an machine fitted with a drainage pump. The maximum permitted height of the drain is 500 mm above the drainage level of the machine. The pump may be requested at the time of purchase or installed subsequently.



The drainage pump must only be installed by personnel authorised by the manufacturer, and the manufacturer does not accept liability in the event of incorrect installation.

The machine drainage hose must be connected to a sump with a drain trap to prevent the return of bad odours.
Check that the drainage system operates correctly and is not blocked.

8.4. CHEMICAL DISPENSERS´ CONNECTION

All machines come equipped with an internal rinse dispenser.
The detergent dispenser is optional in some models and is supplied as standard in others.
All the dispenser tubes must be full before starting to adjust the dispensers.
To access the dispensers and adjust them, first remove the front cover of the appliance. Adjustments must be made at machine operating temperature.

The following installation and adjustment must be carried out by authorised and qualified personnel. Contact a qualified chemical product supplier to determine the most suitable product and dose in order to optimise the wash.
The guarantee does not cover damage caused by the incorrect installation or use of dispensers and chemical products.

The correct selection and dosing of detergent and rinse aid is essential for obtaining an optimum wash. **Only use liquid detergent especially designed for use with industrial dishwashers and which is non-foam forming at high temperatures.** Detergents designed for domestic use should not be used under any circumstances.
The detergent and rinse aid containers must be placed close to the appliance. The results of the wash should be assessed after two fills and at least three wash cycles in order to stabilise the doses. There should not be any foam in the tub after running the cycles.
Scratched dishes and the formation of foam in the wash solution are usually an indication of excess rinse aid.
Dishes with too many water drops or which are slow to dry are usually a sign of insufficient rinse aid.

Contact a chemical product supplier to determine the most suitable product and dose in order to optimise the wash.

The guarantee does not cover damage caused by the incorrect use of dispensers and chemical products.

When handling chemical substances, the product safety instructions and recommended doses must be observed. Use protective clothing, gloves and safety glasses when handling chemical products.
Do not mix different detergents.

Correct selection and dosing of detergent and rinse aid is essential for obtaining an optimum wash.
The quantities/doses recommended by the detergent/rinse aid supplier must be observed.
Check and maintain the levels of detergent and rinse aid in the containers; always check the levels at the start of every workday.
Make sure that the weight and filter are correctly fitted on the ends of the rinse aid and detergent intake tubes and that they are correctly immersed in the correct containers.

Clean the filters regularly to prevent blockages.
Each tube has a label on the end indicating «Rinse Aid» or «/Detergent» to identify them; the blue tube is for rinse aid and the clear tube for detergent.
Place the containers close to the appliance.

IMPORTANT
Do not mix different detergents or rinse aids as they could crystallise and damage the dispensers. Whenever the type of detergent or rinse aid is changed, it is ABSOLUTELY ESSENTIAL to clean and bleed the dispenser and its hoses, by placing the detergent/rinse aid pipe in water for several cycles.
If the rinse aid or detergent is changed, the settings should be adjusted accordingly by qualified personnel.

RINSE AID

The machine is fitted with a rinse aid dispenser as standard. This automatically dispenses the rinse aid in the machine boiler.

Use liquid rinse aid especially designed for use with industrial dishwashers and which is non-foam forming at high temperatures.

Rinse aid is necessary to correctly disperse and drain the water over the dishes in order to avoid stains and to speed up the drying process.

Scratched dishes and the formation of foam in the wash solution are usually an indication of excess rinse aid. Dishes with too many water drops or which are slow to dry are usually a sign of insufficient rinse aid.

DETERGENT

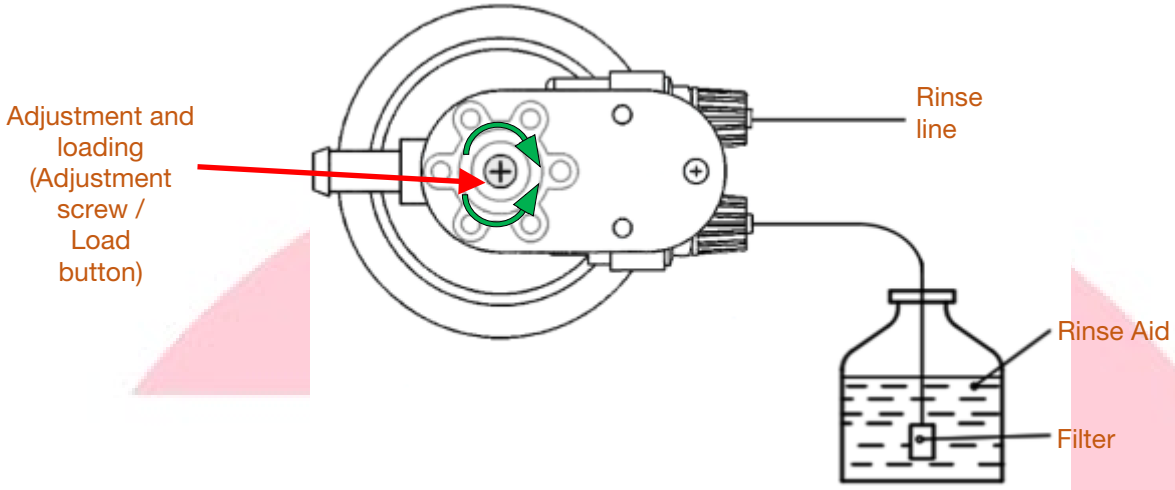
The machine may come fitted as standard with a detergent dispenser. If this is not the case, it can be installed subsequently. Please ask your dealer or the manufacturer.

Use liquid detergent especially designed for use with industrial dishwashers and which is non-foam forming at high temperatures. Detergents designed for domestic use should not be used under any circumstances.

Detergent is necessary to correctly clean the dirt and food remains from the dishes.

If the appliance is not fitted with a detergent dispenser, we recommend you install one. Otherwise it will be necessary to dispense the detergent manually by pouring it into the centre of the tub, taking care to correctly dissolve the detergent (not recommended as this does not guarantee optimum conditions for washing and cleaning).

8.4.1. RINSE AID HYDRAULIC DISPENSER CONNECTION (CONCEPT)



INSTALLATION

The water rinse aid dispenser is pre-installed in the appliance. First, the end of the blue tube with filter located at the back of your machine and marked “Rinse Aid” must be inserted inside the rinse container.
The tubes are see-through to allow you to check that the chemicals are correctly dispensed.
To access the dispensers and adjust them, remove the lower front cover of the appliance.

OPERATION

To operate, this dispenser uses the rinse pressure of the dishwasher, and therefore does not need an electrical connection. In each rinse cycle, it dispenses between 0 and 4.5 cm^3 of rinse aid according to the adjustment made.

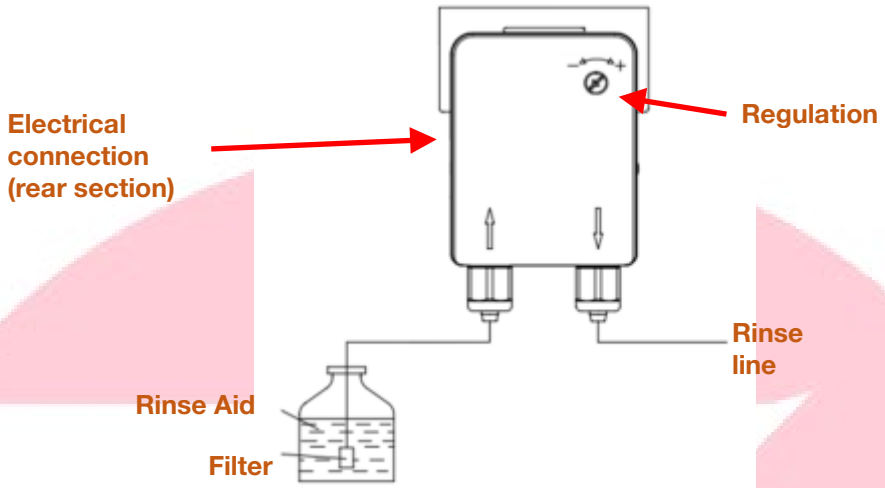
LOADING PROCESS

The dispenser has a button on the front for the initial loading of the dispenser, on the adjustment screw itself. Press the adjustment screw several times until the system is fully loaded.

ADJUSTING THE DOSE

The dispenser should be adjusted when the machine is installed to ensure that the wash is optimised from the start. The setting should be adjusted according to the type of rinse aid and the water hardness. Turn the adjustment screw until the required dose is obtained (turn clockwise to reduce and anticlockwise to increase the dose).
A quantity of rinse aid is injected into each rinse cycle. This quantity can be adjusted between 0 and 4.5 cm^3, equivalent to the movement of rinse aid in the intake tube of between 0 and 40 cm in length.
For each turn of the screw, the dose changes by approximately 4.4 cm of the length of the intake tube (0.5 cm^3/turn).

8.4.2. RINSE AID ELECTRIC DISPENSER CONNECTION (CONCEPT PLUS and ADVANCE)



INSTALLATION

The electric rinse aid dispenser is pre-installed in the appliance. First, the end of the blue tube with filter located at the back of your machine and marked “Rinse Aid” must be inserted inside the rinse container.
The tubes are see-through to allow you to check that the chemicals are correctly dispensed.
To access the dispensers and adjust them, remove the lower front cover of the appliance.

OPERATION

This dispenser absorbs and dispenses the rinse aid when the rinse pump is switched on. That is, when the machine is filling and during the rinse cycle.

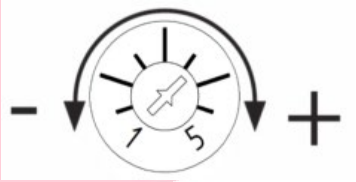
LOADING PROCESS

When the appliance is switched on, the loading process takes place automatically while the machine is filling.

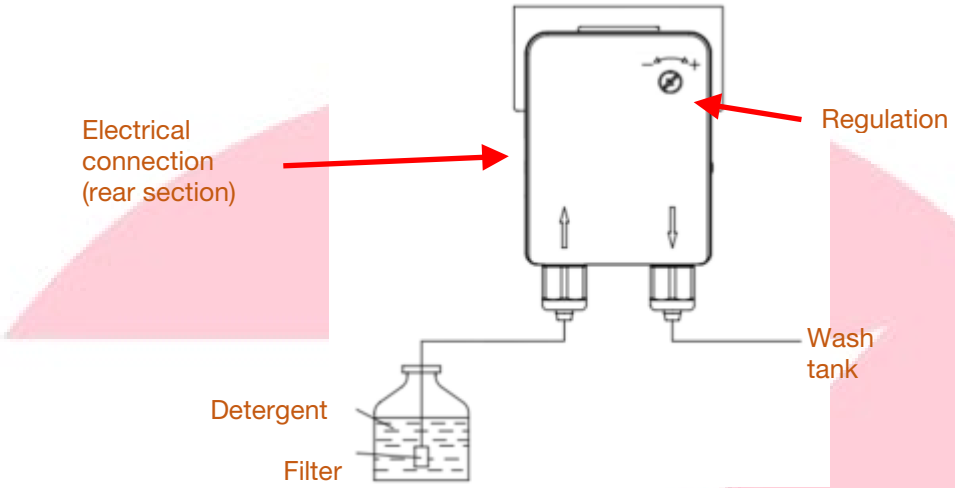
ADJUSTING THE DOSE

The dispenser should be adjusted when the machine is installed to ensure that the wash is optimised from the start. The setting should be adjusted according to the type of rinse aid and the water hardness. Turn the adjustment screw until the required dose is obtained (turn clockwise to increase and anticlockwise to reduce the dose).

Position	1	1.5	2	2.5	3	3.5	4	4.5	5
Dose (l/h)	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63	0.7
Dose during rinse cycle (ml, cc)	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8	2



8.4.3. DETERGENT ELECTRIC DISPENSER CONNECTION (ADVANCE model, optional in CONCEPT and CONCEPT PLUS)



ONLY use liquid detergents which are not foam-forming at high temperatures and which are of commercial quality. Please contact a qualified chemical product supplier.

INSTALLATION

If the detergent dispenser is not pre-installed in the appliance, an installation kit can be ordered from your supplier or manufacturer.

The tub has an opening for the installation of a detergent intake bushing in the appliance. This is marked with the label "DETERGENT CONNECTION" and is located on the front of the wash tank, above the maximum water level. The existing plug should be removed and the bushing inserted in the hole. The detergent dispenser is installed in the lower front of the appliance and is connected electrically using the existing connection and marking it to this effect.

After installing the detergent dispenser or if this has already been pre-installed at the factory, the end of the clear tube with filter at the rear of the machine marked «Detergent» should be inserted in the detergent container.

The tubes are see-through to allow you to check that the chemicals are correctly dispensed.

To access the dispensers and adjust them, remove the lower front cover of the appliance.

OPERATION

This dispenser absorbs and dispenses detergent when the rinse pump is switched on. That is, when the machine is filling and during the rinse cycle.

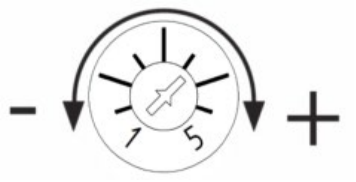
LOADING PROCESS

When the appliance is switched on, the loading process takes place automatically while the machine is filling.

ADJUSTING THE DOSE

The dispenser should be adjusted when the machine is installed to ensure that the wash is optimised from the start. The setting should be adjusted according to the type of rinse aid and the water hardness. Turn the adjustment screw until the required dose is obtained (turn clockwise to increase and anticlockwise to reduce the dose).

Position	2	2.5	3	3.5	4	4.5	5
Dispenser (l/h)	0.5	1.15	1.5	2	2.3	2.6	3
Dose during rinse cycle (ml, cc)	1.5	3.5	4.5	6	7	8	9



Alternatively, an external detergent dispenser may be used. This is connected electrically (see machine circuit diagram) using a H05RN-F or H07RN-F type cable.

9. OPERATION

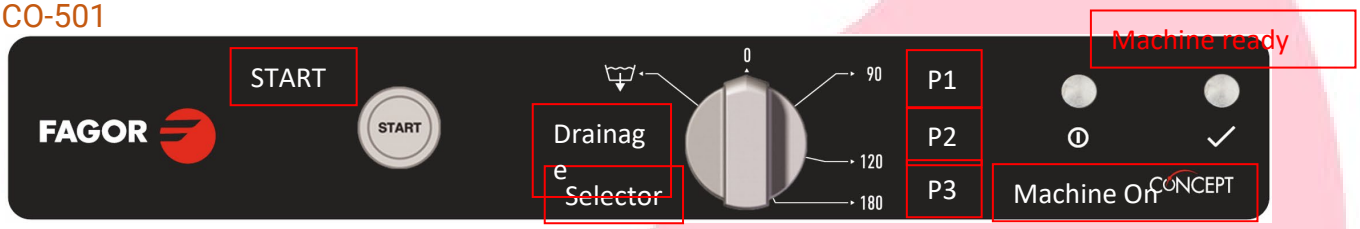
9.1. CONTROL PANEL

evoCONCEPT

EVO CONCEPT - CO-500, CO-501 and CO-502 (B, DD, CI, AU)

CO-500

CO-501

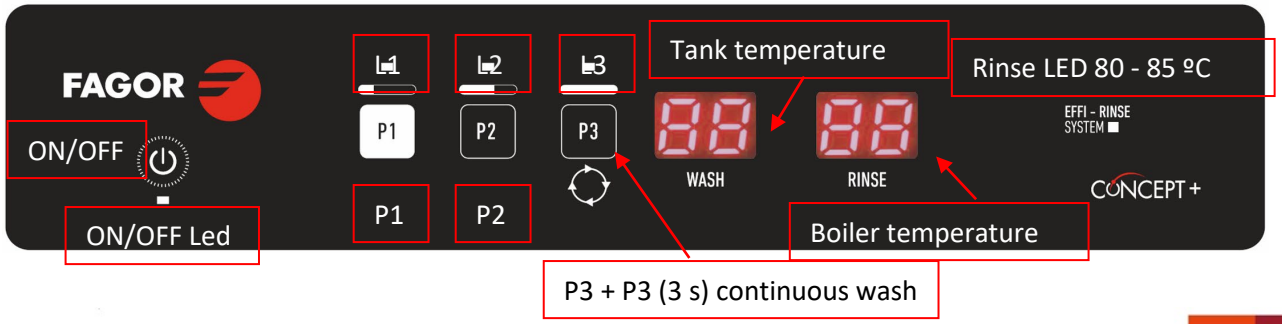


CO-502

evoCONCEPT+

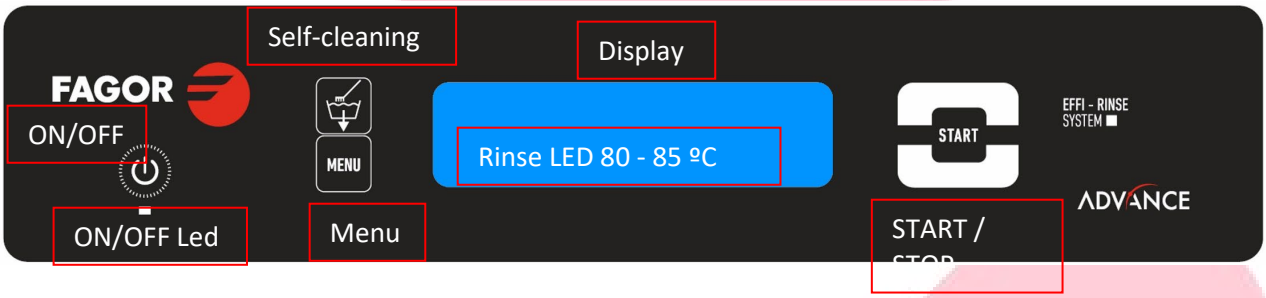
EVO CONCEPT PLUS - COP-504 (B, DD, CI, AG)

COP-504 (B, DD, CI, AG)



ADVANCE - AD-505 (AG, SOFT, AU)

AD-505

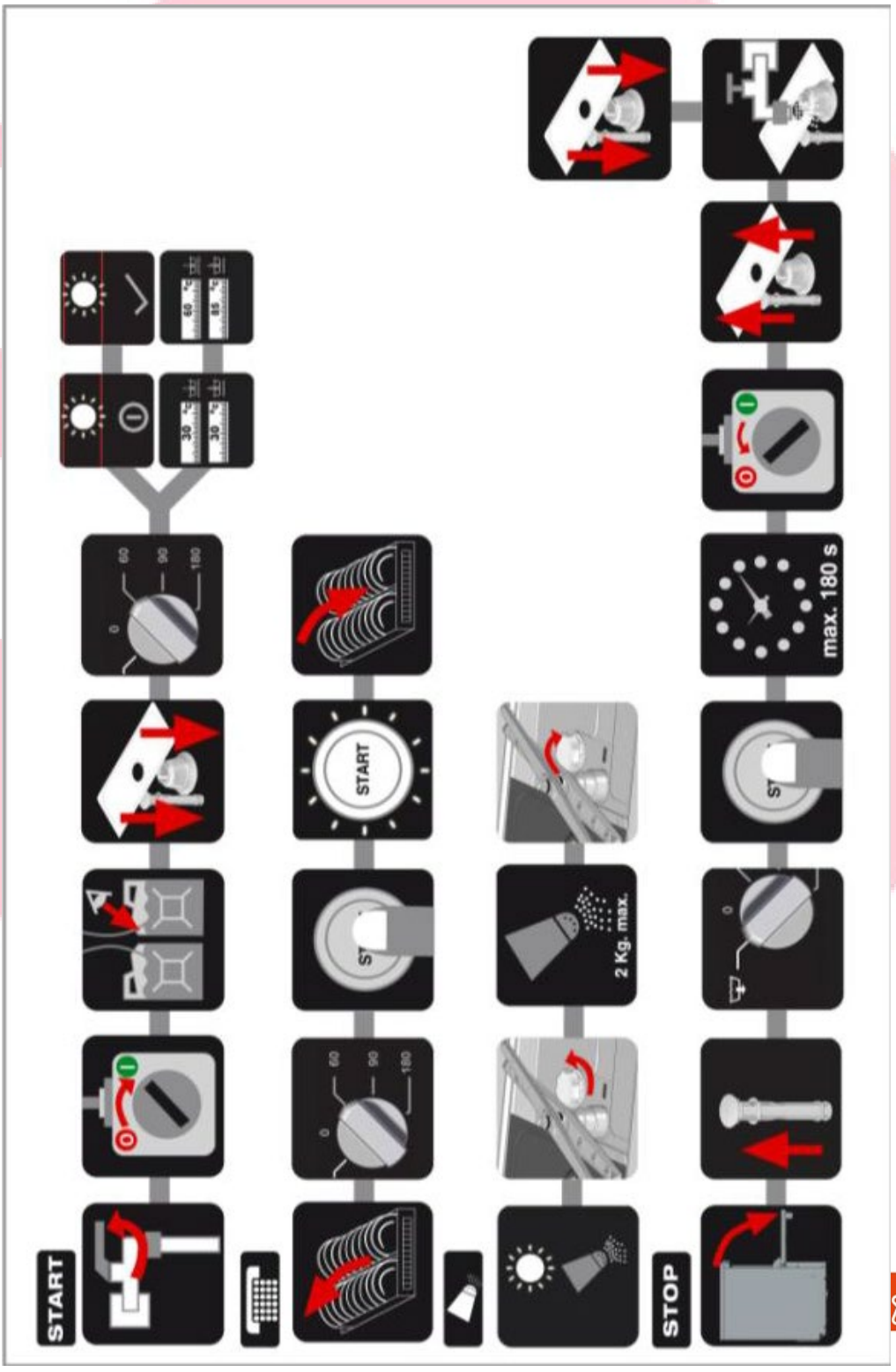


SELECTOR	Cycle selector switch
STANDBY	Standby
P1 - P2 - P3	Wash cycle 1, 2, 3
CONTINOUS WASH / P3 (3s)	Extended wash
REGENERATION	Regeneration
DRAINAGE / P1 (3s)	Drainage
ON/OFF	Button On / Off
LED ON	Machine on pilot light
RUN LED	Machine ready pilot light
CYCLE LED	Cycle running pilot light
RINSE LED	Pilot EFFI- RINSE SYSTEM

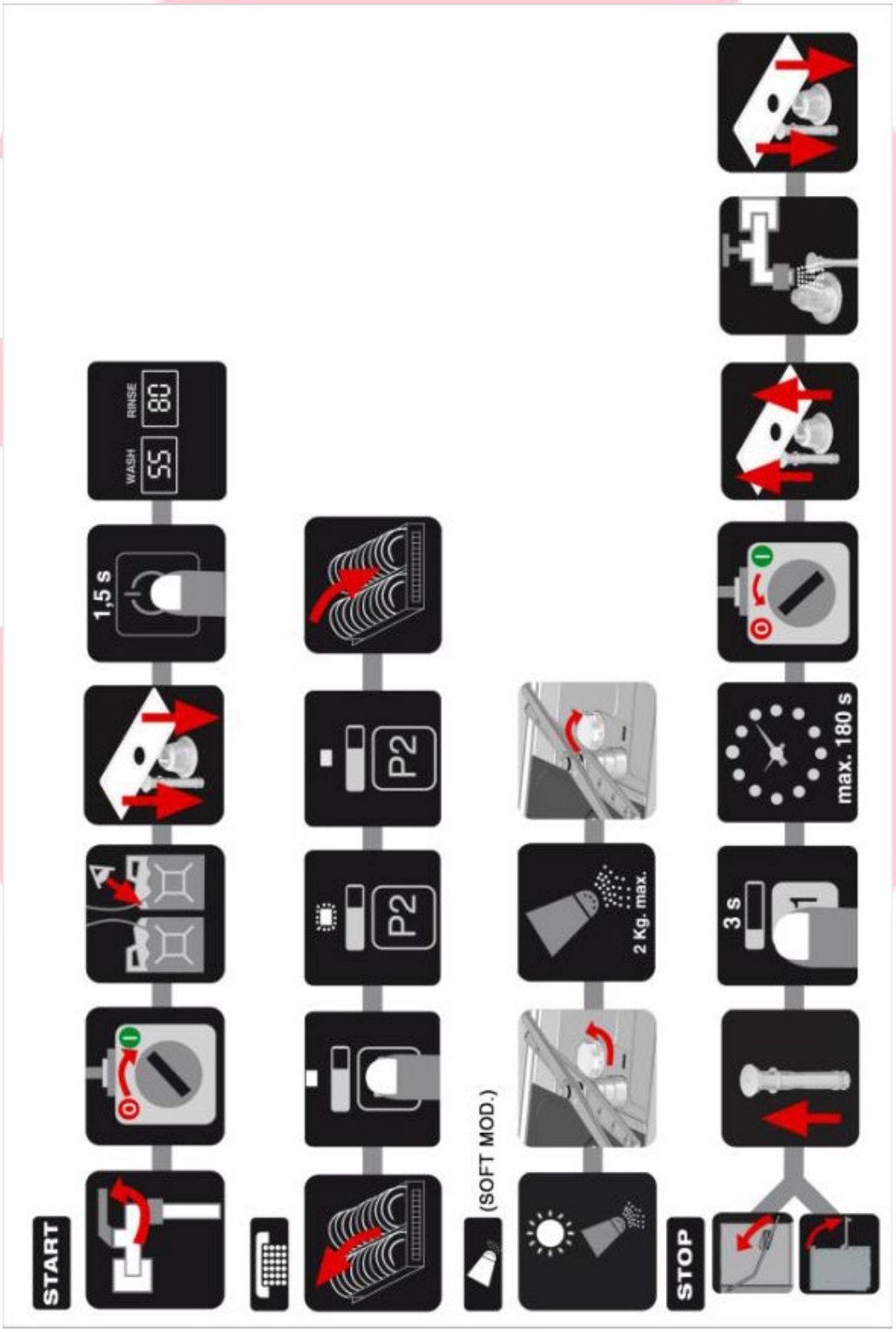
WASHING TEMPERATURE	Wash temperature display
RINSING TEMPERATURE	Rinse temperature display
P1 - P2 - P3	Wash cycle 1–2–3 button
L1 - L2 - L3	Wash cycle 1–2–3 pilot light
LED SAL	Salt low pilot light
START	Start / Stop cycle button
SC	Self-clean button
MENU	Programme/cycle selector switch
DISPLAY	Display screen

9.2. QUICK START-UP GUIDE

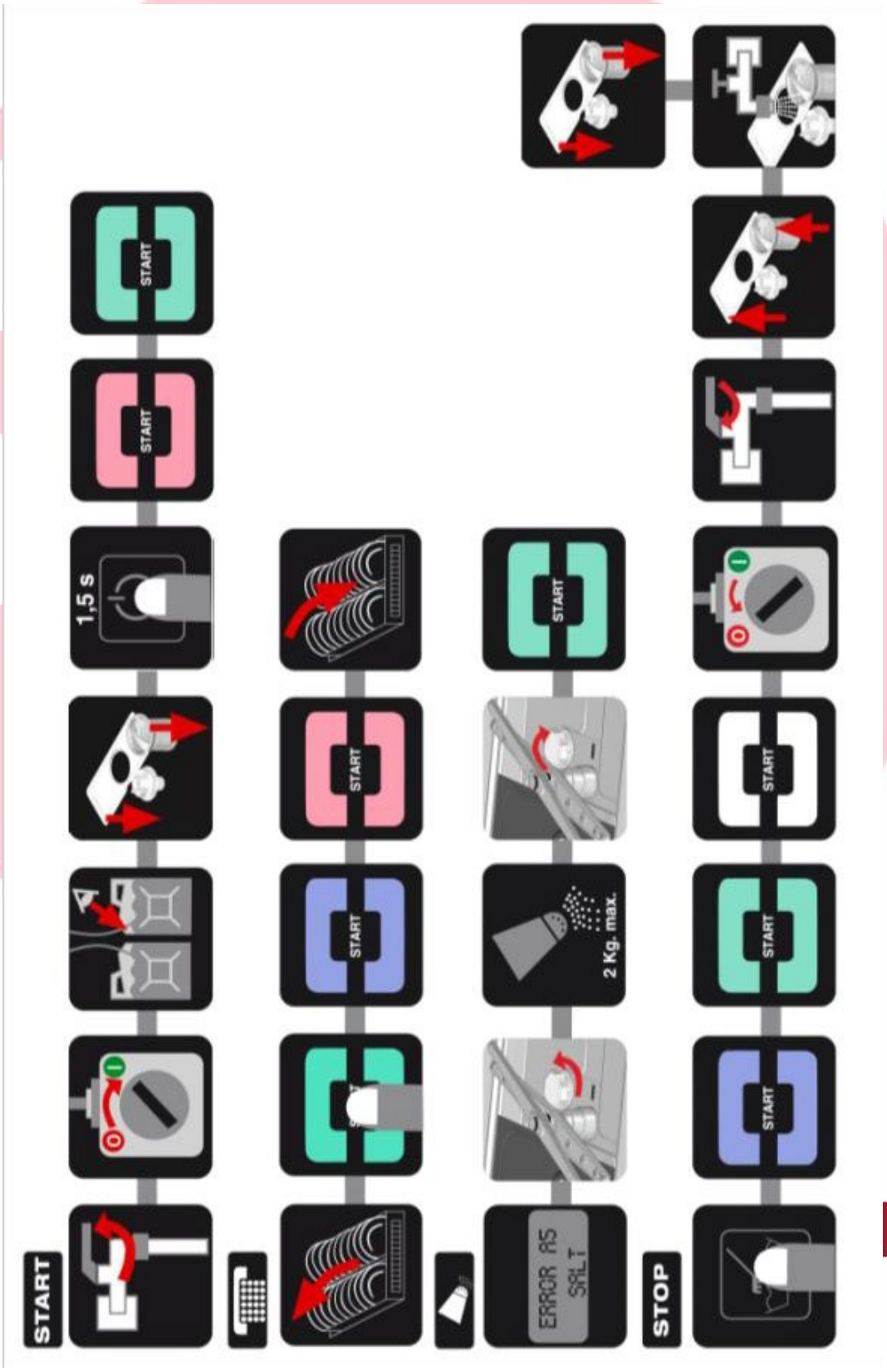
CO-500 and CO-501



CO-502 and COP-504



AD-505


START
START
START
1,5 s
START
START
START
START
START
START
START
2 Kg. max.
START
START
START
ERROR AS
SAL.T
STOP

9.3. INITIAL STAR-UP

The electrical protection system must be tested before starting the appliance.
The machine must have been installed and/or inspected by qualified personnel. who will start up the machine for the first time and provide the corresponding operating instructions.
Check that the wash and rinsing arms, the filters and the trays are correctly fitted and in place.
The electrical protection system must be tested before starting the appliance.
The machine must have been installed and/or inspected by qualified personnel. who will start up the machine for the first time and provide the corresponding operating instructions.
Check that the wash and rinsing arms, the filters and the trays are correctly fitted and in place.

9.3.1. PREPARATION OF THE DISH

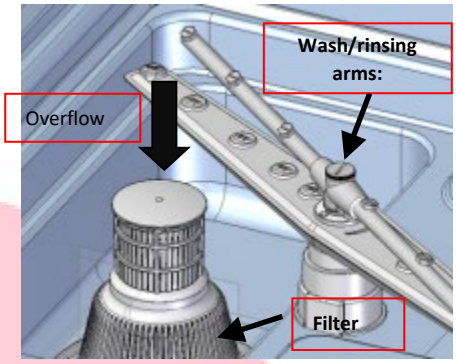
To correctly prepare the dishes to be washed, Fagor Industrial recommends you proceed as follows:

- Remove the largest pieces of waste food from the dishes before placing them in the baskets.
- Pre-wash the dishes/cutlery with jets of water and never with soapy water to remove waste such as olive stones, toothpicks, grease, etc.
- First wash the glasses, then the cutlery and lastly the dishes.
- Insert the plates at an angle with the inner side of the plate facing upwards in the rack basket.
- Place wineglasses, cups and glasses upside down in the basket.
- Plan cutlery in the cutlery baskets, handles down, (different types of cutlery can be mixed), and place the cutlery baskets in the base basket.
- Do not overload baskets.
- Dishes should be washed as soon as possible after use to prevent the dirt from drying on the plates.

9.3.2. PREPARATION AND SWITCHING ON THE MACHINE

Before switching on the machine:

- ✓ Check that the wash/rinsing arms are correctly positioned and fastened and rotate correctly.
- ✓ The corresponding filters must be clean and in place.
- ✓ The overflow should be mounted in place. Press until it is firmly inserted.
- ✓ Check and maintain the levels of detergent and rinse aid in the containers to ensure they last throughout the working day. Make sure that the weight and filter are correctly fitted on the tubes and that the tubes are correctly immersed in the correct containers.



Open the water mains tap and check that there is water.
Switch on the mains power switch.
Close the door of the machine.
To switch on the machine, turn the cycle selector switch SELECT to any wash cycle P1, P2, P3 , and the Led ON light will come on.
If the machine does not have a cycle selector switch, just press the ON/OFF button for 2 seconds, and the Led ON light will come on.
In the ADVANCE model, in addition to the Led ON light, the DISPLAY light will also come on, indicating that the machine is filling. The START button will light up in red.

ATTENTION: DO NOT INSERT HANDS AND/OR TOUCH THE INTERNAL PARTS OF THE TANK WHILE THE MACHINE IS OPERATING AND WAIT 10 MINUTES AFTER THE WASH TANK HAS DRAINED.

9.3.3. FILLING AND HEATING

The hood must be fully closed for the machine to start filling.

When the machine is switched on, the boiler and the wash tank are filled with water which is heated to the correct wash and rinse temperatures.
The CONCEPT PLUS and the ADVANCE model are fitted with a thermostatic filling system, so that the filling process is a cyclical repetition of the following sequence: fill boiler, preheat and partially fill wash tank. This system allows the machine to be filled more quickly as it uses the boiler's increased power to heat the water.
The filling and heating process will last several minutes, the time depending on the water intake temperature and the power of the machine; the machine is designed to start cleaning the dishes when the MACHINE READY pilot light or the thermometers indicate temperatures between 55 ^{0}C - 65 ^{0}C / 131 °F - 149 ^{0}F in the wash tank TANK TEMPERATURE and between 80 °C - 85 °C / 176 °F - 185^{0}F in the rinse boiler BOILER TEMPERATURE.
In the ADVANCE model, the START button changes from red to green when the filling process has finished and the correct wash and rinse temperatures have been reached.

During the first heating of the day, the boiler may reach higher temperatures than normal due to the heating inertia as the boiler water is cold. This is normal.

9.3.4. DRAINAGE

At the end of the working day or when it is necessary to change the wash water because it is too dirty, the wash tank should be drained.

Wait at least 10 minutes after switching off the machine before cleaning the inside of the appliance.

For correct drainage with the drainage pump, the height of the drain must not be more than 500 mm above the level of the machine drainage.

The dishwashers have two types of drainage; gravity drainage or using a drainage pump.

Drainage by gravity
If the drain is lower than the appliance drainage pipe, just remove the relief valve to allow the water to flow freely under gravity.
The machine should be switched off first.

Drainage using the drainage pump
The pump may be ordered prior to the purchase of the machine or installed subsequently. ADVANCE models are fitted with a drainage pump as standard.
If the appliance has a drainage pump and the drain is higher than the machine drainage pipe, the drainage method is as follows:

CONCEPT and CONCEPT PLUS models

- Remove the overflow valve.
- In the models with Cycle SELECTOR switch , turn the switch to DRAIN, then open and close the hood.
- If the machine does NOT have a Cycle SELECTOR switch, just press and hold the P1 button for 3 seconds with the hood open, and the drainage cycle will start immediately. The Led L1 lights up while the cycle is running.
- On completion of the drainage, replace the relief valve and switch off the machine.

ADVANCE model
ADVANCE models are fitted with a drainage pump as standard and there are three ways of draining the tub:

Automatic drainage
Five minutes after switching off the machine, the wash tub is automatically drained, unless a Manual Drain or Self-cleaning Cycle are run first.

Manual drainage
To drain the machine immediately without waiting 5 minutes, when the machine is switched off go to the User Menu and select YES in the DRAIN option. Keep the door closed.

DRAIN
NO / YES

9.3.5. SWITCHING OFF THE MACHINE

- In the models with Cycle SELECTOR switch, turn the switch to 0.
- If the machine does not have a Cycle SELECTOR switch just press and hold the ON/OFF button for 2 seconds.

In the ADVANCE models, 5 minutes after switching off the machine, an Automatic Drainage of the wash tub is run, unless a Manual Drainage or a Self-cleaning Cycle are run first.
If the machine is a SOFT model, it is possible that 15 minutes after switching it off, the appliance will run a regeneration lasting 15 minutes, during which the message REGENERATION is displayed.

At the end of the day, the machine must be cleaned. Follow the instructions given in this manual with respect to cleaning.

9.3.6. SELF-CLEANING CYCLE:

It is also possible to use the Self-cleaning option, which in addition to draining the tub, runs an internal cleaning cycle. Without removing the filters and with the door closed, press SC, and SELF-CLEANING is displayed. Next press START to start the cycle. After several minutes, the cycle ends and a message is displayed together with a buzzer alarm and the machine automatically switches off.

The Self-cleaning cycle does not replace the need for a more exhaustive manual clean as necessary.

9.4. OPERATION OF THE CONCEPT

The wash cycle of the machine includes a wash, drainage and a final rinse.
The tank thermostat maintains the wash water temperature and a motor pump sends this water with detergent to the washing arms. The jets of water reach the dishes from different directions in order to guarantee a uniform wash.
Between the wash cycle and the rinse cycle there is a pause of a few seconds to allow the detergent to drain off the dishes into the wash tub. If the machine has a drainage pump, part of the water is drained from the tank and replaced by clean rinsing water.
Lastly, the dishes are rinsed with mains water heated to between 80 ºC - 85 ºC / 76 ºF - 85 ^{0}F to remove the detergent from the dishes and at the same time regenerate the water in the wash tank, making it less dirty.
To start the wash process in the models with Cycle SELECTOR switch, turn the switch to the required cycleP1, P2, P3, CONTINUOUS WASH, insert the basket with the dishes in the machine and close the hood. The CYCLE Led lights up while the cycle is running.
If the machine does NOT have a Cycle SELECTOR switch, just press the button corresponding to the required cycle P1, P2, P3, insert the basket with the dishes in the machine and close the hood. The Led L1, L2 or L3 corresponding to the selected cycle flashes while the cycle is running. For the CONTINUOUS WASH cycle, press and hold P3 for more than 3 seconds with the hood closed; to stop the continuous wash cycle, press and hold P3 again for more than 3 seconds with the hood closed.
The cycle selected will remain selected until the selection is changed or the appliance is switched off.

Selecting the wash cycle:

	C1 - Medium	C2 - Largo		
CO-500	120s	180s		
	C1 - Short	**C2 - Medium**	**C3 - Long**	
CO-501	90s	120s	180s	
	P1 - Short	**P2 - Medium**	**P3 - Long**	**PG - Glass**
CO-502	90s	120s	180s	-
Tank temp.	55 - 65 ºC / 131 - 149 ^{0}F			
Boiler temp.	80 - 85 ºC / 176 - 185^{0}F			65 ºC / 149 ºF

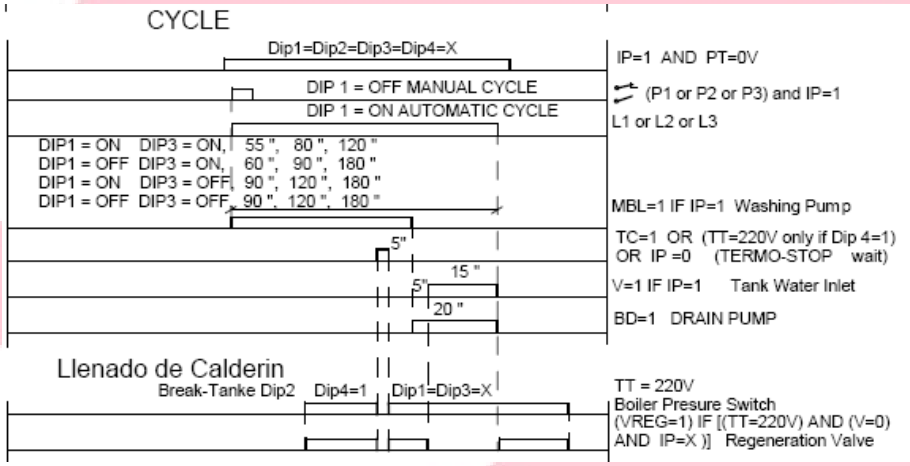
The cycle should be selected according to the dirt on the dishes:
Short cycle (for dishes which are not very dirty).

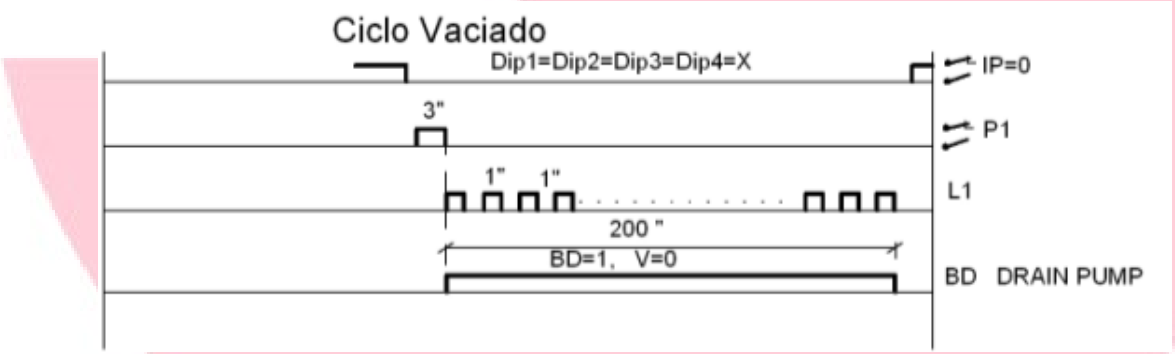
Medium/standard cycle (for fairly dirty dishes).
Long cycle (for very dirty dishes or dishes with dried-on dirt).
PG (Glass Programme): Glass wash cycle with rinse temperature of 65 ºC / 149 ºF.

9.4.1. NO CLINIC-LINE DISHWASHER

To switch on the machine, press "ON/OFF", and when the required programme button is pressed, the dishwasher will start, provided that the water level in the tank is correct.
Selection of the programme (P1, P2 or P3) will start the machine for the time stipulated for this cycle. If the door is open at any time, a PAUSE is made in the cycle, in both the operation and the countdown time, and normal operation is restored as soon as the door is closed.
When a programmed cycle ends, the glasswasher remains in stand-by until:

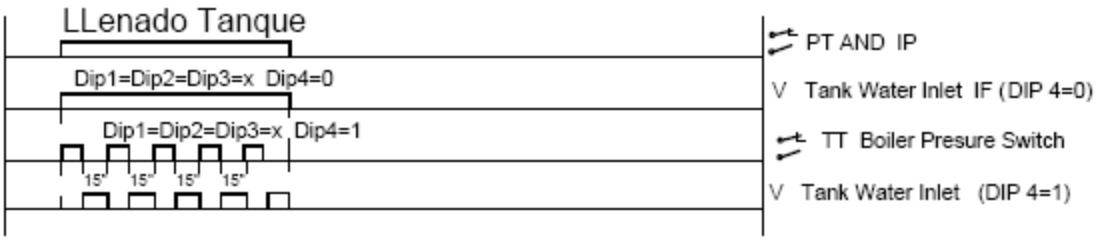
- A new programme is selected or START is pressed.





9.4.2. CLINIC-LINE DISHWASHER

- Vreg (the output Vreg is used as a boiler filler valve).
  - If rinsing: Vreg=0.
  - If we are not in the rinse cycle and TT (PC in this case)=1: Vreg=1 (Fill drum to point indicated by boiler pressure switch).
- When the boiler is full (PC=0), activate V (fill tank using the filler pump) for 15 seconds. Then, fill the boiler using Vreg until PC=0 and activate V for another 15 seconds. Continue in this way until the tank is full (PT=0).



9.4.3. THERMO-STOP

The "Termostop" is a function which guarantees the water temperature during the rinse cycle.

- If the "Termostop" is not active: Even if the wash time for the selected programme has ended, the wash will not end until PC=0. Then, the appliance switches to the rinse cycle.
- If the "Thermostop" is active: Even if the wash time for the selected programme has ended, the wash will not end until PC=0 and (TC=0 or TC=1 after 8 minutes). Then, the appliance switches to the rinse cycle.
- The rinse time will depend on the configuration of the DIP4.
  - If DIP4=0: Rinse time=14 sec.
  - If DIP4=1: Rinse time=11 sec.

9.4.4. SOFT START

"Soft Start" is a function which controls the start-up of the pump so that the pump starts at a low speed which increases gradually.
The wash pump has a "Soft Start" for a gentle start. The ramp for this "Soft Start" is defined below:

- Time (s): 0Voltage: 115
- Time (s): 1Voltage: 115
- Time (s): 2Voltage: 115
- Time (s): 3Voltage: 115
- Time (s): 4Voltage: 115
- Time (s): 5Voltage: 115
- Time (s): 6Voltage: 115
- Time (s): 7Voltage: 115
- Time (s): 8Voltage: 135
- Time (s): 9Voltage: 165
- Time (s): 10 Voltage: 200
- Time (s): 11 Voltage: 230

9.4.5. DIAGNOSTICS

Any faults arising in the machine are notified with impulse trains from the "ON/OFF" led. The trains are formed of X 0.5 second impulses ON and 2 seconds OFF, as shown in the diagram below.


Example of a 2 impulse train

The diagnostics defined are listed below:

1. Door open: If DIP1=0 (Not top loading), Ip=0 (door open) and programme running (start or in middle): This is indicated by a one-impulse train.
2. Filling error: If PT=1 (Tank not full) for 10 minutes, and V=1 (filling): This is indicated by a two-impulse train.
3. Drainage error: If PT=0 (Tank full) for 3 minutes, and BD=1 (draining): This is indicated by a three-impulse train.
4. Boiler heating error. If PT=0 (Tank full) and TC=1 (boiler temperature not reached) for 35 minutes. This is indicated by a four-impulse train. The error is reset when the machine is switched off.
5. Tank heating error: If Dip4=0: If TT=0 (tank temperature not reached) for 90 minutes and MBL=V=0 (Wash pump motor stopped and without entering water): This is indicated by a five-impulse train. The error is reset when the machine is switched off.

9.5. OPERATION OF THE CONCEPT PLUS

The wash cycle of the machine includes a wash, drainage and a final rinse.
The tank thermostat maintains the wash water temperature and a motor pump sends this water with detergent to the washing arms. The jets of water reach the dishes from different directions in order to guarantee a uniform wash.
Between the wash cycle and the rinse cycle there is a pause of a few seconds to allow the detergent to drain off the dishes into the wash tub. If the machine has a drainage pump, part of the water is drained from the tank and replaced by clean rinsing water.
Lastly, the dishes are rinsed with mains water heated to between 80 ºC - 85 ºC / 176 ºF - 185^{0}F to remove the detergent from the dishes and at the same time regenerate the water in the wash tank, making it less dirty.
If the machine does NOT have a Cycle SELECTOR switch ,just press the button corresponding to the required cycle P1, P2, P3, insert the basket with the dishes in the machine and close the door. The Led L1, L2 or L3 corresponding to the selected cycle flashes while the cycle is running. For the CONTINUOUS WASH cycle, press and hold P3 for more than 3 seconds with the door closed; to stop the continuous wash cycle, press and hold P3 again for more than 3 seconds with the door closed.
The cycle selected will remain selected until the selection is changed or the appliance is switched off.

Selecting the wash cycle:

	P1 - Short	P2 - Medium	P3 - Long	PG - Glass
COP-504	90s	120s	180s	-
Tank temp.	55 - 65 ºC / 131 - 149 ^{0}F			
Boiler temp.	80 - 85 ºC / 176 - 185^{0}F			65 ºC / 149 ºF

The cycle should be selected according to the dirt on the dishes:
Short cycle (for dishes which are not very dirty).
Medium/standard cycle (for fairly dirty dishes).
Long cycle (for very dirty dishes or dishes with dried-on dirt).
PG (Program Glass)**:** Glass wash cycle with rinse temperature of 65 ºC / 149 ºF.

9.5.1. THERMO-STOP

When the thermo-stop is activated, the wash cycle is extended, if necessary, until the boiler reaches a rinse

temperature which will guarantee correct hygienisation in accordance with health regulations.

> If the water input temperature is lower than 40 ^{0}C / 104 ^{0}F, the times required to reach the operating temperatures will increase and productivity levels will decrease. The thermo-stop function may extend the wash cycle times.

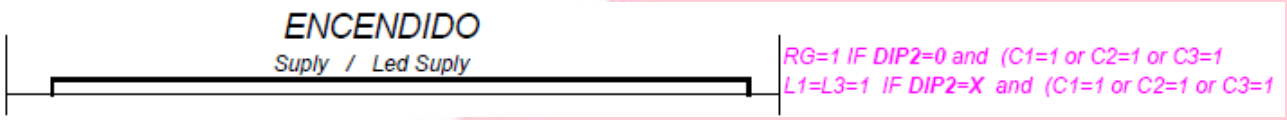
In models fitted with this function, the wash cycle may be extended by up to a maximum of 8 minutes, at which point the rinse cycle will start regardless of the rinse temperature.
Models CONCEPT PLUS also have the EFFI-RINSE SYSTEM, which ensures a correct hygienisation temperature at all times and a constant rinse pressure.
When the machine is switched on, it is possible to configure the "Thermostop".
When the machine is in position 0, with the START button pressed, if the encoder is turned to P1, the "Thermostop", is enabled, and the L2 Led lights up for 5 seconds to show that it has been activated.
When the machine is in position 0, with the START button pressed, if the encoder is turned to drain, the "Thermostop", is disabled, and the LMP Led lights up for 5 seconds to show that it has been deactivated.
By default, the "Thermostop" will be enabled or disabled depending on the status of DIP4:

- If DIP4=0: "Termostop" disabled.
- If DIP4=1: "Termostop" enabled.

If the user configures it as enabled or disabled, this configuration is observed and the dip switches are ignored.

9.5.2. SWITCHING ON THE MACHINE

When the machine is switched on, i.e. it is not in position 0 and it is a machine without regeneration (DIP2=0), the RG output will always be active.
In addition, when the machine is running, the L1 led (machine on) and the L3 led (machine active) are always lit regardless of the DIP2.



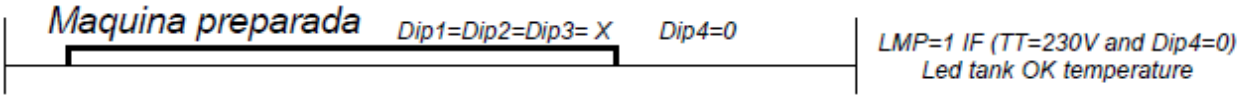
9.5.3. FILLING

If the machine is not at the "0" position, the fill cycle will start, provided it is not already full.

9.5.4. FILLING DISHWASHER WITHOUT AIR BREAK

In dishwashers without Air Break, if the door is closed (IP=1) and the tank is not full (PT=1), the output V is activated until the tank is full. The water enters the boiler and fills the tank thanks to the mains pressure.

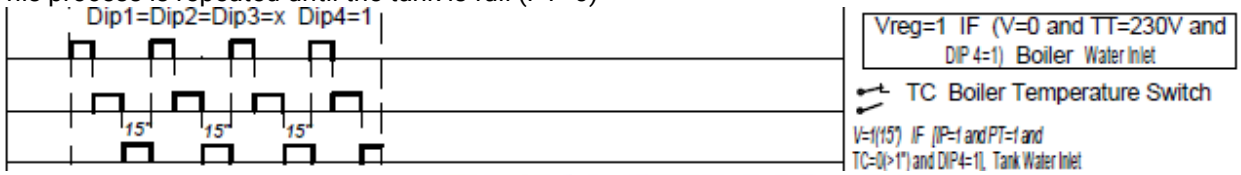
When the sensor detects that the tank has reached the required temperature, the Machine Ready LED (LMP) lights up.



9.5.5. FILLING DISHWASHER WITH AIR BREAK

However, in dishwashers with Air Break, the boiler is filled through the Vreg outlet (until PC=0), the water is heated and the tank is filled using the rinse pump (V=1) for 15 seconds provided the door is closed (IP=1).
While the tank is filling, at the same time water is loaded into the boiler.

This process is repeated until the tank is full (PT=0)



9.5.6. RUN CYCLE

With the encoder in the position P1, P2, or P3, if the tank is full (PT=0) and the door closed (IP=1), when the START button is pressed, the selected programme starts to run, and the machine active led (L2).
When the cycle starts, the wash pump is activated (MBL=1) for the time defined for the cycle (configured by DIP1 and DIP3) minus the drain and rinse time.
The rinse time will depend on the configuration of the DIP4.

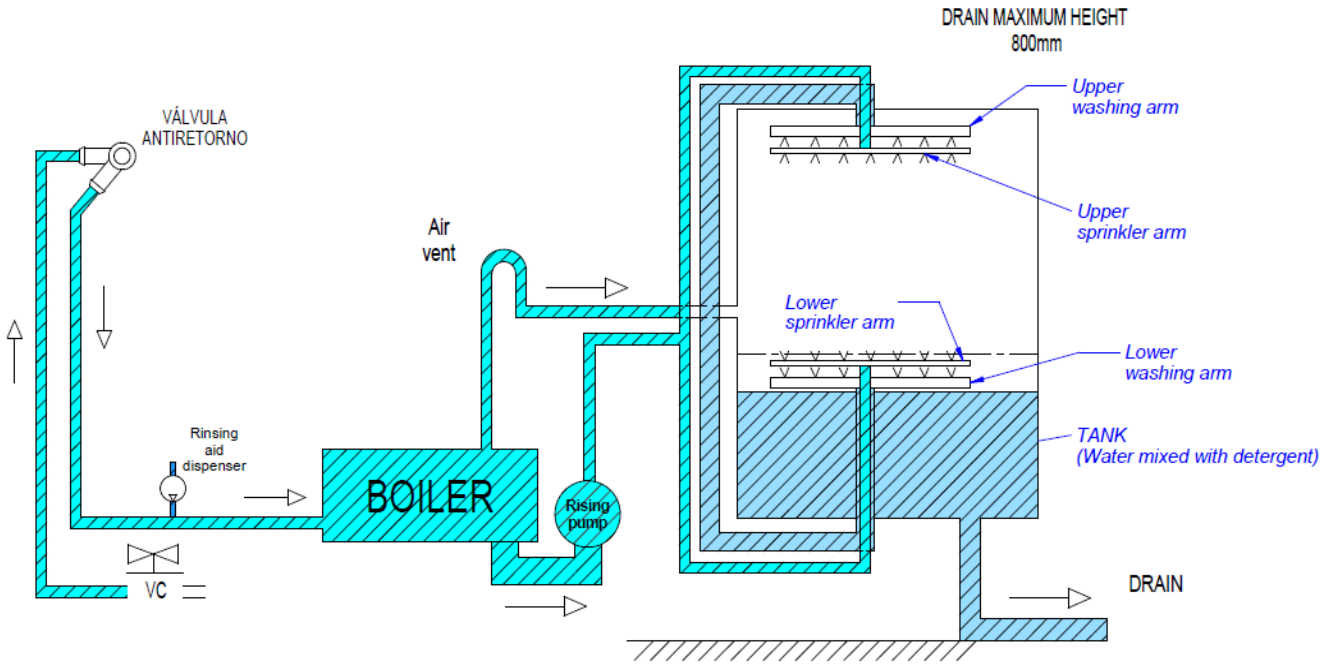
- If DIP4=0: Rinse time=14 sec.
- If DIP4=1: Rinse time=11 sec.

If the door is opened at any time (IP=0), a PAUSE is made in both the operation and the countdown time, and normal operation is restored as soon as the door is closed.
In addition, if START is pressed again during a cycle, the programme will be aborted.

9.5.7. DISHWASHER WITHOUT AIR BREAK

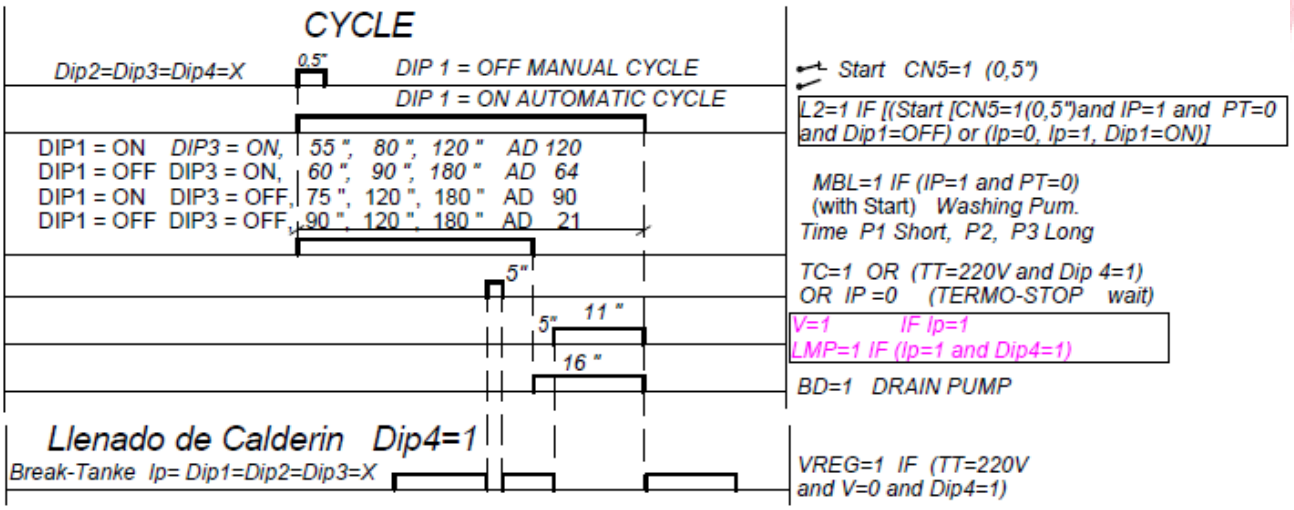
If the "Thermostop" is active and the boiler has not reached the required temperature (TC=1), the wash pump will continue active (MBL=1) until the required temperature is reached in the boiler (TC=0) or until the established time-out period has ended (8 minutes), going on to the drain and rinse phase and activating the drainage pump (BD=1) the whole time.
After 5 seconds draining, the rinse cycle starts (the drainage pump remains active (BD=1)), maintaining the fill output active (V=1).

9.5.8. HYDRAULIC DIAGRAM OF DISHWASHER WITHOUT AIR BREAK

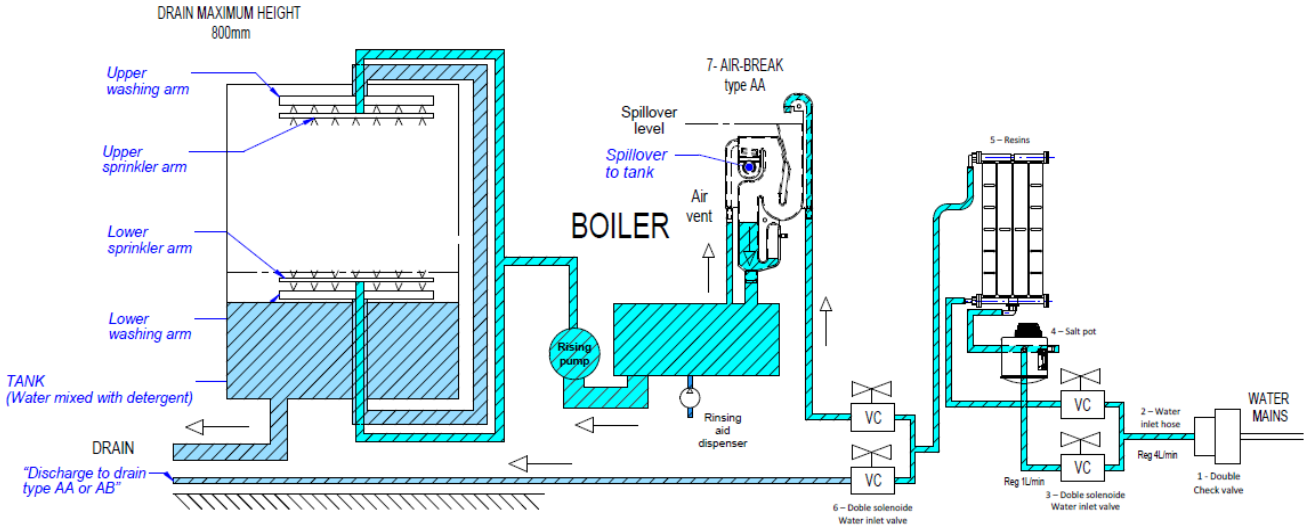


9.5.9. DISHWASHER WITH AIR BREAK

In machines with Air Break, if the "Thermostop" is active, the wash pump will continue active (MBL=1) until the required temperature and level are reached in the boiler (TC=0 and PC=0) or until the established time-out period has ended (8 minutes), going on to the drain and rinse phase.
After 5 seconds draining, the rinse cycle starts (the drainage pump remains active (BD=1)), maintaining the rinse pump active (V=1) with the Machine Ready LED active (LMP=1).
Note that it will never be possible to fill the boiler (Vreg=1) while the rinse pump is running (V=1).

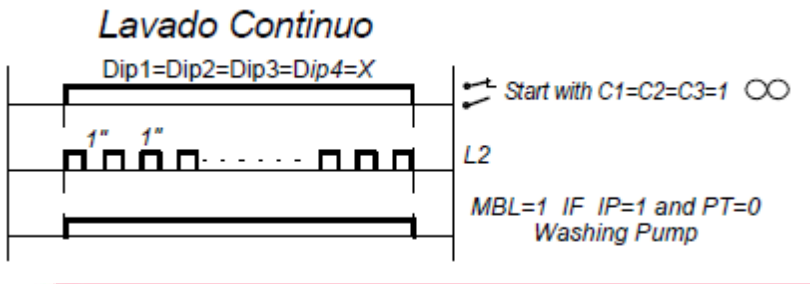


9.5.10. HYDRAULIC DIAGRAM OF DISHWASHER WITHOUT AIR BREAK



9.5.11. LONG WASH

In a dishwasher, with the encoder set to long wash, if the door is closed (IP=1) and the tank full (PT=0), the long wash cycle starts to run, and the machine active LED L2 flashes the whole time.



9.5.12. SOFT START

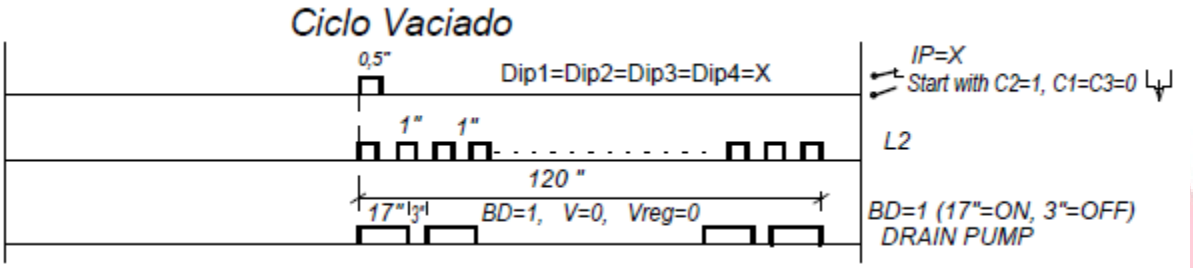
"Soft Start" is a function which controls the start-up of the pump so that the pump starts at a low speed which increases gradually.
The wash pump has a "Soft Start" for a gentle start. The ramp for this "Soft Start" is defined below:

- Time (s): 0Voltage: 115
- Time (s): 1Voltage: 115
- Time (s): 2Voltage: 115
- Time (s): 3Voltage: 115
- Time (s): 4Voltage: 115
- Time (s): 5Voltage: 115
- Time (s): 6Voltage: 115
- Time (s): 7Voltage: 115
- Time (s): 8Voltage: 135
- Time (s): 9Voltage: 165
- Time (s): 10 Voltage: 200

- Time (s): 11 Voltage: 230

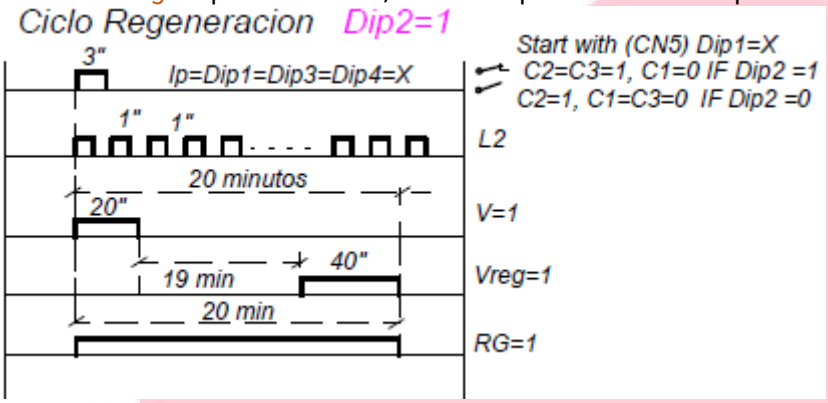
9.5.13. TANK DRAINAGE

With the encoder in the drainage position, when the START button is pressed on a front opening appliance (DIP1=0) or the lid is closed on a top-loading machine (DIP1=1), the drainage cycle starts, and the machine active LED (L2) flashes throughout the process.
During the drainage cycle, the drainage pump (BD) runs cycles of 17"ON/3"OFF for 120 seconds.



9.5.14. REGENERATION

If the regeneration is active (DIP2=1), with the encoder set to regeneration, irrespective of the door status, when the START button is pressed, the regeneration cycle is run, and the machine active led L2 flashes for the duration of the cycle which is equal to 20 minutes.
As can be seen from the diagram below, the RG output is active throughout the cycle, whereas the V output is activated for the first 20 seconds and the Vreg output for the last 40 seconds.
If the V or Vreg outputs are active, the BD output is activated in parallel.



9.5.15. DIAGNOSTICS

Any faults arising in the machine are notified with impulse trains from the "L1" led. The trains are formed of X 0.5 second impulses ON and 2 seconds OFF, as shown in the diagram below.


Example of a 2 impulse train

The diagnostics defined are listed below:

1 Door open: If DIP1=0 (not top-loading) and START is pressed while IP=0 (door open): This is indicated by a one-impulse train
2 Filling error: If PT=1 (tank not full) and Vreg=1 for 10 minutes: This is indicated by a two-impulse train

3 Drainage error: If PT=0 (tank full) for 1.30 minutes, and BD=1 (draining): This is indicated by a three-impulse train
4 Boiler heating error. This is indicated by a four-impulse train.
   a. If DIP4=0 (no Clinic Line): If PT=0 (Tank full) and TC=1 (boiler temperature not reached) for 35 minutes.
   b. If DIP4=1 (Clinic Line): If TT=0 (in fact it refers to PB) (Tank full) and TC=1 (boiler temperature not reached) for 35 minutes.
5 Tank heating error: If DIP4=0, PT=0 (Tank full) and TT=0 (tank temperature not reached) for 90 minutes and MBL=V=0 (Wash pump motor stopped and without entering water): This is indicated by a five-impulse train.
6 Boiler fill error: While DIP4=1, if Vreg is on for 5 minutes and the boiler level is not reached (TT=1). This is indicated by a six-impulse train.

9.6. ADVANCE OPERATION

The wash cycle of the machine includes a wash, drainage and a final rinse.
The tank thermostat maintains the wash water temperature and a motor pump sends this water with detergent to the washing arms. The jets of water reach the dishes from different directions in order to guarantee a uniform wash.
Between the wash cycle and the rinse cycle there is a pause of a few seconds to allow the detergent to drain off the dishes into the wash tub. If the machine has a drainage pump, part of the water is drained from the tank and replaced by clean rinsing water.
Lastly, the dishes are rinsed with mains water heated to between 80 ºC - 85 ºC / 176 ºF - 185^{0}F to remove the detergent from the dishes and at the same time regenerate the water in the wash tank, making it less dirty.
By default, the ADVANCE model always starts with the P1 cycle selected. To change the wash cycle **P1**, **P2** or **P3** press the MENU button and the selected cycle and its length will be displayed in the DISPLAY. Once the wash cycle has been selected, insert the basket with the dishes and close the hood. The START, button changes from green to blue at the start of the wash cycle and flashes during the rinse cycle.
The wash and rinse temperatures are briefly shown in the DISPLAY at the start of the cycles. In the lower band of the display, a decreasing bar indicates the percentage of the cycle remaining (if the cycle is extended by the TERMOSTOP or a regeneration, the bar stops until the rinse has been completed).
At the end of the wash cycle, the START button changes to red and the DISPLAY advises that the cycle has ended. When the hood is opened, the message disappears and the START button changes to green.
The cycle selected will remain selected until the selection is changed or the appliance is switched off.
The hood should not be opened while the machine is running, but if it is opened, the cycle will pause, and resume when the hood is closed again.

RED: Machine getting ready (filling and/or heating).

GREEN: 

Machine ready

BLUE: Cycle running

In models with EFFI-RINSE SYSTEM (CONCEPT PLUS and ADVANCE) the RINSE led pilot light lights up when a rinse is run at temperatures which guarantee the correct sanitisation in accordance with health regulations, and at a constant rinse pressure.
When the wash cycle ends, open the door and remove the basket, allowing the dishes to dry by evaporation for a

minute.

- Remove the basket from the appliance and handle the dishes/cutlery with gloves or clean hands to prevent contamination. Be careful as the dishes will be hot.
- Do not dry the dishes with kitchen towels or cloths that are not sterile.
- Operators must strictly observe all hygiene requirements when handling clean dishes and cutlery.

To stop the wash cycle before it has finished:

- Models with START button: press START
- Models with cycle SELECTOR switch: Turn the SELECTOR switch to another position.
- Models with ON/OFF button: Press the ON/OFF button and switch off the machine.

The CONTINUOUS WASH P3 cycle stops when P3 is held down for more than 3s with the hood closed.

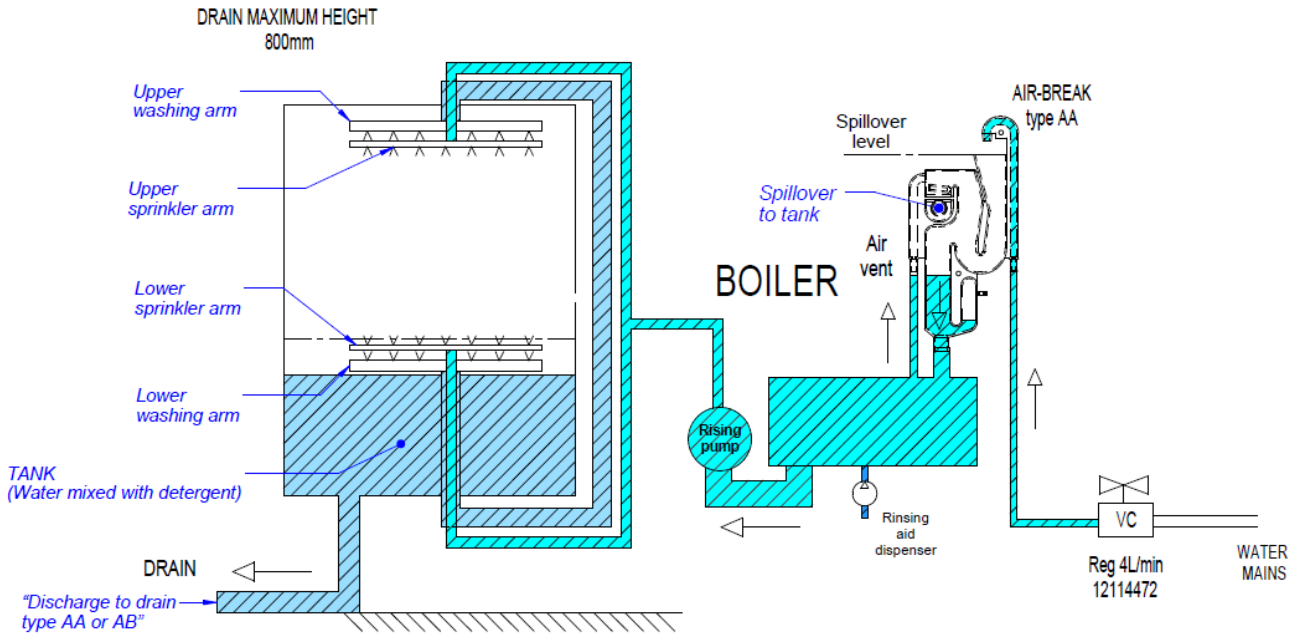
Selecting the wash cycle:

	P1 - Short	P2 - Medium	P3 - Long	PG - Glass
AD-505	60s	90s	180s	90s
Tank temp.	55 - 65 ºC / 131 - 149 ^{0}F			
Boiler temp.	80 - 85 ºC / 176 - 185 ^{0}F			65 ºC / 149 ºF

The cycle should be selected according to the dirt on the dishes:
Short cycle (for dishes which are not very dirty).
Medium/standard cycle (for fairly dirty dishes).
Long cycle (for very dirty dishes or dishes with dried-on dirt).
PG (Program Glass)**:** Glass wash cycle with rinse temperature of 65 ºC / 149 ºF.

In the ADVANCE model, the technical service may modify the following parameters in any of the cycles at the request of the user and under their responsibility:
Wash temperatures →[55÷71 ºC] / [131÷159 ºF]
Rinse temperatures →[65÷85 ºC] / [149÷185 ºF]
Cycle times →Wash: P1: 39s→[35s÷60s] / P2: 59s→[55s÷80s] / P3: 104s→[100s÷500s] / PG: 74s→[70s÷95s]
Rinse: 11s [10s-14s]

9.6.1. ADVANCE HYDRAULIC DIAGRAM



9.6.2. START -UP

- When the electrical power to the machine is switched on, the software version is displayed for 5 seconds.
- On pressing ON/OFF (while the machine is powered), the appliance is switched ON. All the relays are disconnected except RG.
- On pressing ON/OFF (while the machine is powered), the machine is switched off, OFF. All the outputs are set to 0.
- Whenever the machine loses the mains power supply, the appliance switches to OFF when the power supply is recovered.
- If the door is opened (IP=0 contact) while the machine is operating (in cycle), the time counter stops and outputs, CMBL1, CBML2, BA are set to "0". When the door is closed again (IP=1 contact), all the outputs are restored and the time counter resumes counting.
- Press START/STOP to run START or stop STOP a programme. If a programme is stopped by pressing START/STOP, when it is restarted by pressing START/STOP again, the programme returns to the start of the programme. i.e. the programme does not make a pause.
- While the tank is filling, the tub is filled to the correct level. This level varies with the model.

9.6.3. ADJUSTMENT OF PARAMETERS

The configuration and parameters may ONLY be adjusted by QUALIFIED AND AUTHORISED PERSONNEL.

The **"ADVANCE"** model has a system configuration menu for the use of the technical support service.

The default setting of the appliance is English. Therefore go to LANGUAGE (LANG) to change the language. To go to the User Menu in the LANGUAGE (LANG) option, press START. Select the required language by pressing MENU to select and START to confirm.
To configure the date and the time, go to DATE/TIME. With the format DAY/MONTH/YEAR HOUR/MINUTE ($D_1D_2/M_1M_2/A_1A_2$ H_1H_2/m_1m_2) use the MENU and START buttons to change the digits one by one (the active digit flashes).

When the machine is installed, the following parameters should be configured if necessary:

CONFIG. SYSTEM
HEATING TYPE
SIMULTANEOUS / ALTERNATE

TEMP SCALE
ºC / ºF

SOFT appliance → The default setting of the SOFT models is highlighted, but this value must be configured depending on the water hardness measurement.

WATER HARDNESS
0-9 ºfH (NO-SOFT) / 9-18 ºfH / 18-27 ºfH / 27-36 ºfH / 36-45 ºfH / >45 ºfH

It is also possible to modify the following parameters at the request of the user:

CONFIG. SYSTEM
TEMP. RANGE.
WASH
P1:60 ºC (140 ºF) / P2:60 ºC (140 ºF)/ P3:60 ºC (140 ºF)/ PG:60 ºC (149 ºF) → [55-71 ºC] (131 ÷ 159 ºF)
RINSE
P1:82 ºC (180 ºF) / P2:82 ºC (180 ºF) / P3:82 ºC (180 ºF) / PG:65 ºC (149 ºF) → [65-85 ºC] (149 ÷ 185 ºF)

CYCLE TIME
WASH
TOP-LOADING
P1:39s→[35s-60s] / P2:59s→[55s-80s] / P3:104s→[100s-500s] / PG:74s→[70s-95s]
RINSE
P1:11s / P2:11s / P3:11s / PG:11s → [10s-14s]
DRAINAGE CYCLES
100 (50-400)

9.6.4. THERMO-STOP

When the thermo-stop is activated, the wash cycle is extended, if necessary, until the boiler reaches a rinse temperature which will guarantee correct hygienisation in accordance with health regulations.

If the water input temperature is lower than 40 ^{0}C / 104 ^{0}F, the times required to reach the operating temperatures will increase and productivity levels will decrease. The thermo-stop function may extend the wash cycle times.

In models fitted with this function, the wash cycle may be extended by up to a maximum of 8 minutes, at which point the rinse cycle will start regardless of the rinse temperature.

Models ADVANCE also have the EFFI-RINSE SYSTEM, which ensures a correct hygienisation temperature at all times and a constant rinse pressure.

In ADVANCE machines, this function can be activated or deactivated using the User Menu.

THERMO-STOP
NO / YES / BACK

9.6.5. SOFT START

"Soft Start" is a function which controls the start-up of the pump so that the pump starts at a low speed which increases gradually.
The wash pump has a "Soft Start" for a gentle start. The ramp for this "Soft Start" is defined below:

- Time (s): 0Voltage: 115
- Time (s): 1Voltage: 115
- Time (s): 2Voltage: 115
- Time (s): 3Voltage: 115
- Time (s): 4Voltage: 115
- Time (s): 5Voltage: 115
- Time (s): 6Voltage: 115
- Time (s): 7Voltage: 115
- Time (s): 8Voltage: 135
- Time (s): 9Voltage: 165
- Time (s): 10 Voltage: 200
- Time (s): 11 Voltage: 230

9.6.6. SOFT MODELS:

In the SOFT version, the dishwasher is fitted with an inlet water softener system.
If the water hardness is more than 45 ºfH / 31.5 ºeH / 25.2 ºdH, an external descaler must be installed.
The built-in descaler eliminates the water hardness resulting from excess calcium and magnesium, which are the causes of scale on the appliance.
Before starting the appliance, fill the corresponding reservoir with regeneration salt for descalers (coarse salt, max. grain size 5 – 7 mm, do not use tablets) and potable water (do not use common salt or any other type of liquid).
To fill the regeneration salt reservoir, proceed as follows:

- Open the door of the appliance.
- Remove the basket from the machine.
- Unscrew the salt reservoir cap located in the upper part of the tub.
- Using a funnel, pour regeneration salt into the reservoir. The first time, fill with 1 kg of regeneration salt and top up the remaining space with potable water. On subsequent occasions, only add 0.5 kg of regeneration salt, the reservoir will have the required amount of water.
- Clean the seal and the edges of the reservoir carefully before replacing the cap in order to prevent oxidisation.
- Replace the cap and tighten securely.

After analysing the hardness of the water, the technician should change the water hardness setting in accordance with the measurements in the configuration menu.

WATER HARDNESS
0-9ºdF(NO-SOFT) / 9-18 ºdF / 18-27 ºdF / 27-36 ºdF / 36-45 ºdF / >45 ºdF

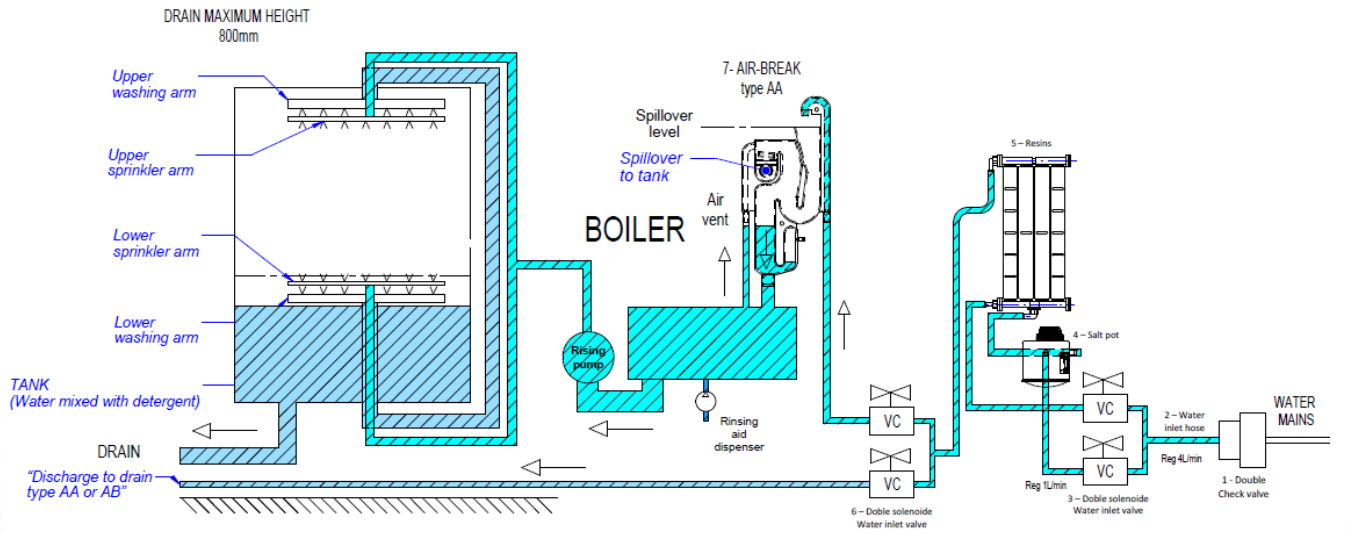
WATER HARDNESS				
ºhF French degree	ºeH English degree	ºdH German degree	Classification	Cycles for short regeneration
0-9	0-6.3	0-5	Very soft	--
9-18	6.3-12.6	5-10	Soft	35
18-27	12.6-19	10-15.1	Medium hard	25
27-36	19-25.3	15.1-20.2	Hard	18
36-45	25.3-31.5	20.2-25.2	Very hard	10
>45	>31.5	>25.2	Extremely hard	8

The machine notifies the user with a flashing message on the DISPLAY that the salt reservoir requires filling A5-LOW SALT. This warning usually takes several cycles to disappear after the reservoir has been topped up.
The regeneration process is automatically carried out in accordance with the hardness of the water, but this is not detected by the user as it takes place in the background. Sometimes however, the wash cycle may be extended by a few minutes.
Sometimes when the machine is switched on, the message "REGENERATION", is displayed, indicating that the regeneration process will take place in a few minutes before the appliance is filled.
Occasionally the machine runs a more exhaustive regeneration cycle 15 minutes after it is switched off. The message "REGENERATION" is displayed for 15 minutes.
By far the most used unit in the water treatment sector is the French degree, written as follows: hFº. This unit indicates the amount of lime and magnesium in the water.
However there are many other units which are used frequently. Ideally these should be converted to French degrees as described below:

Mg/l of calcium:
Equivalent to 0.25 ºhF. That is, if we have 60 mg/l of calcium, we multiply this by 0.25 ºhF to obtain the figure of 15 ºhF. In this particular case, we must add the result for mg/l of magnesium in French degrees.
Mg/l of magnesium:
Equivalent to 0.413 ºhF. That is, if we have 30 mg/l of magnesium, we multiply this by 0.413 ºhF to obtain the figure of 12.39 ºhF. In this particular case, we must add the result for mg/l of calcium in French degrees.
(To determine the final hardness of the above units, the two results are added together in hFº. In the above case: 15 ºhF + 12.39 ºhF = 27.39 ºhF).
Mg/l de CaCO3:
Equivalent to 0.1 ºhF. That is, if we have 250 mg/l of CaCO3, we multiply this by 0.1 ºhF to obtain the figure of 25 ºhF.
Ppm of CaCO3:
Important! Do not confuse the reading offered by a TDS. Many of our users call us worried because their water is at 400 ppm. A TDS only measures conductivity. The ppm of CaCO3 are equivalent to mg of CacO3 in one litre.
ºdH (German degrees):
Equivalent to 1.78 ºhF. That is, if we have 36 ºdH and we multiply this by 1.78 ºhF we obtain the figure of 64 ºhF.
ºeH (English or Clark degrees):
Equivalent to 1.43 ºhF. That is, if we have 28 ºeH and we multiply this by 1.43 ºhF we obtain the figure of 40 ºhF.
Mmol/l:
Equivalent to 10 ºhF. That is, if we have 2 mmol/l and we multiply this by 10 ºhF we obtain the figure of 20 ºhF.
Mval/l (eq/l):
Equivalent to 5 ºhF. That is, if we have 3 mval/l and we multiply this by 5 ºhF we obtain the figure of 15 ºhF.

To convert French degrees (hF°) to milligrammes of calcium carbonate (CaCO3), multiply the number of French degrees by 10. Example: 22 hF° x 10 = 220 mg/l of CaCO3.

9.6.7. SOFT MODEL HYDRAULIC DIAGRAM



9.6.8. LEVELS

			FRONT OPENING
	LEVEL	**FUNCTION**	**AD-505**
TANK	PT1	Tank MIN safety level	15
	PT2	Tank MIN operating level	80
	PT3	Tank MAX operating level	100
	PT4	Tank MAX safety level	135
BOILER	PC-HIGH	Boiler MAX operating level	35
	PC-LOW	Boiler MIN operating level	15

Tank and boiler pressostat values

PT1:
Tank minimum safety level (the level must be detected for at least 2 seconds).
If this level is reached during the wash cycle, the machine is completely disabled and error 12 is displayed.

PT2:
Tank minimum operating level
On completion of the wash process, the water is drained off until this level is reached.
PT3:
Tank maximum operating level.
Operating start level. When filling with water for the first time, this level is reached.
PT4:
Tank maximum safety level (the level must be detected for at least 2 seconds).
Safety level, not operating level.
If this level is detected, the machine is completely disabled, error 11 is displayed and the water is drained until reaching the level PT3
PC-HIGH:
Maximum boiler level.
When this level is detected, the VC is automatically deactivated.
PC-LOW:
Minimum boiler level.
When this level is detected, the VC is activated to fill the boiler with water up to PC-HIGH.

- VC acts when in the boiler the water level (PC<PC-LOW) is requested, except in the tank fill or rinse process with BA (VC=0 if BA=1).
- The heating and boiler temperature control is performed with a hysteresis of 2 ºC:
  If X ºC is the temperature defined in the boiler TC:
  - If TC<(X-1), CC operates.
  - If TC>(X+1), CC does not operate.
  - If (X-1)<TC<(X+1).
    - CC operates, if the machine is in the heating stage
    - CC does not operate, if the machine is in the cooling stage.

  The value X used, depends on the operating state of the appliance, and may take the following values:
    - Stand-by mode: 5 ºC less than the set temperature.
    - Energy saving mode: 10 ºC less than the set temperature.
    - Wash programme running: configurable range (70 ºC ÷ 90 ºC).
- The boiler resistor operates if the temperature programmed in the boiler falls below the set level and if the water level in the boiler is OK (PC>PC-LOW).
- The boiler resistor does not operate in the following cases:
  - Machine off.
  - Boiler empty or minimum water level in boiler (PC<PC-LOW) not reached.
  - During the rinse or tank filling process (CC=0 if BA=1).
  - During the automatic drainage process and the drainage programme with self-cleaning.
    - In the event of a probe error (see table of errors).
- The tank resistor operates if the level condition in the tank is met (PT>PT1) and if the temperature in the tank is less than that programmed (TT<programmed wash temp).
- The heating and tank temperature control is performed with a hysteresis of 2 ºC, and therefore it follows this algorithm:
  If X ºC is the temperature defined in the tank (TT):
  - If TT<(X-1), CT operates.
  - If TT>(X+1), CT does not operate.
  - If (X-1)<TT<(X+1).
    - CT operates, if the machine is in the heating stage.
    - CT does not operate, if the machine is in the cooling stage.

  The value X used, depends on the operating state of the appliance, and may take the following values:
    - Stand-by mode: Same value as the set temperature.
    - Energy saving mode: 5 ºC less than the set temperature.
    - Wash programme running: configurable range (55 ºC – 71 ºC). Default setting: 60 ºC.

- The tank resistor does not operate in the following cases:
  - Machine OFF.
  - If the tank temperature condition is met (TT≥Set temp).
  - If the tank level condition is not met (PT<PT1).
  - During automatic drainage or the running of a drainage programme with self-cleaning.
  - In the event of a tank probe error (see table of errors).

- Depending on the heating configuration, the tank and boiler resistors may or may not operate together at the same time
  - For the alternate heating type: The tank and boiler heating are alterate, i.e. the 2 resistors never operate at the same time. If both are due to start, the boiler takes precedence over the tank.
  - For the simultaneous heating type: The tank and boiler heating may be simultaneous, both heaters may operate together without problem.

9.6.9. SCREEN ON/OFF

When the dishwasher is switched off, none of the Led are lit. The message on the display shows the name of the model, the date and the time.

LS					A	D	-	1	2	5						
LI	0	1	/	1	2	/	2	0	1	0		1	4	:	3	2

Characters for the date

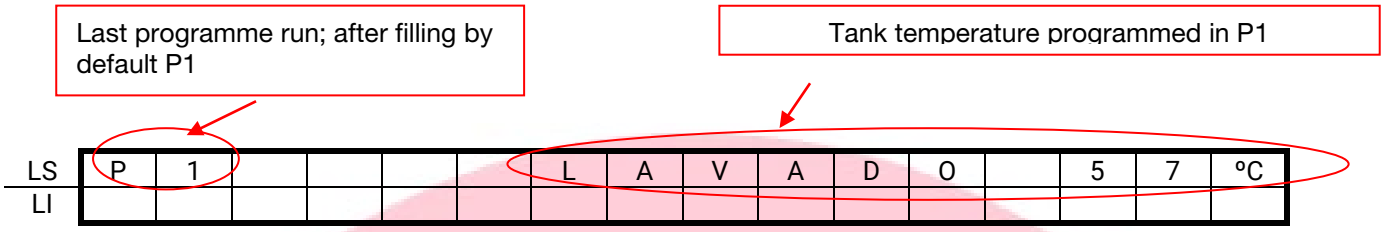
Characters for the time

The machine is switched on and off by pressing ON/OFF **for one second**. ON is lit whenever the machine is on.
When the machine is on, RG is active, as this is the general relay of the electrical installation.
In ON, the display shows the messages for each operating mode.

9.6.10. FILL AND PREPARATION

If the machine is empty and the user presses ON/OFF, the dishwasher will come on and the machine filling and heating process is run automatically. This process is known as machine filling and only L1 (red LED) remains lit with the message "FILL" on the display.
When the machine is switched on, if PC>=5 the rinse pump (BA) is activated until PC<5 + 5 seconds.
During the filling the procedure is as follows: VC is activated, waiting until PC gives the signal that the boiler is full.
In models with a water softener, EVR1 is activated with VC but is deactivated with a delay of 8 seconds to prevent the water returning to the salt circuit.
On reaching the level, VC is deactivated, CC is activated (after a delay of 10 seconds to update the temperature). CC remains active until TC reaches 65 ºC or the error "E5 FAULT IN BOILER HEATING", is triggered, in which case an error is given. BA is activated for 15 seconds.
Next the boiler is filled for the second time, BA is activated for 15 seconds when it is full and hot.
This sequence is repeated as often as necessary until PT (tank pressure switch) gives the tank full signal (PT=PT3). This indicates that the machine is full and it goes from the filling stage to the preparation stage (TT=60 ºC and TC=65 ºC by default), and the boiler fills again and the water is heated to 82 ºC (programmable rinse temperature). Similarly the tank water is heated to 60 ºC (programmable wash temperature).
L1 (red LED) remains lit until the programmed tank level is reached and TT<=(Setting -10), indicating that the machine is not ready to run a cycle. In any case, if the defined level is reached, the user may run a cycle, in which case WARNING A3 is given.
When the tank level is reached and TT>(Setting-10), L2 (green LED) is lit, indicating that the machine is now ready.
In addition, the display will show the tank temperature (wash Temp) and the selected wash programme (P1 by

default).



.

9.6.11. STAND-BY AND ENERGY-SAVING

- Stand-by: Whenever the machine is at rest, it is considered to be in "Stand-by Mode" in which the boiler temperature is 5 ºC lower than the set temperature to save energy. The tank temperature in stand-by is the same as the set temperature.
- Energy-saving: If the machine does not run a programme within 30 minutes, the dishwasher switches to "Energy-saving Mode", in which the boiler temperature is 10 ºC lower than the setting temperature to save energy. The tank temperature is 5 ºC lower than the set temperature.
- When the machine is in either of these 2 modes, if the water level falls below PT2, fill to PT3 (to compensate for water lost in evaporation)

9.6.12. WASHING PROGRAMMES

The 4 wash programmes (P1, P2, P3 and PGLASS) are selected by successively pressing SELEC. The display indicates the messages corresponding to the programmes. Only L2 remains lit. The selected programme starts when the user closes the door. Led L2 goes out and L3 lights up indicating that a programme is running. If the door is opened, the programme goes to PAUSE. If the door is closed again the cycle continues from where it left off before the pause to the end of the programme.
When a programmed cycle finishes, L3 goes off and L2 lights up, indicating the option to select or run a new programme. The machine remains on stand-by with the message "END WASH" until the door is opened. When the door is opened the message "END WASH" changes to the normal operating message, showing the wash temperature and the programme run.
The last programme run is stored in the memory (shown on the left of the display). Therefore when the door is closed, the last programme used is run (unless the user selects another programme by pressing SELEC).
When the user presses SELECT, the display indicates which programme is being selected, and the sequences of the table below are displayed for 5 seconds.

Cycle time

PROGRAMME SELECTED	BUTTON TO PRESS	LED ON	MESSAGE DISPLAYED
P1: short programme	P-SELEC x 1	L2	P 1 0 1 0 0
P2: medium programme	P-SELEC x 2	L2	P 2 0 1 : 3 0
P3: long programme	P-SELEC x 3	L2	P 3 0 2 : 0 0
PGLASS: Glass wash programme	P-SELEC x 4	L2	P G L A S S 0 1 : 3 0

Informative messages (generic) about programme selection. Each model has its own.

After 5 seconds (and if the cycle has not been run in the 5-second interval), the display returns to its normal operating state, that is, it displays the wash temperature and the programme running/selected. Once the hood has been closed, the selected programme is started and the following messages are displayed.

SELECTED PROGRAMME	LED ON	MESSAGE DISPLAYED
P1	L3	L A V A D O 6 0 °C P 1
P2	L3	L A V A D O 6 2 °C P 2
P3	L3	L A V A D O 5 9 °C P 3
PGLASS	L3	L A V A D O 6 0 °C P G

Messages while a programme is running

While a cycle is running, the display shows the wash temperature together with the programme which is running, a progress bar and the estimated time remaining to complete the cycle.

When the programme moves to rinse, the display shows the boiler temperature, with the rest of the information, and the L3 led flashes.

If the rinse is run at the correct temperature, the EFFI RINSE led lights up.

Both the wash temperature and the rinse temperature are only displayed for 3 seconds at the start of each cycle, the temperature is then hidden. If the user wishes, they can display the corresponding temperature by pressing the button SELEC.

SELECTED PROGRAMME	LED ON	MESSAGE DISPLAYED
P1	L3	A C L A R A D O 8 5 °C P 1
P2	L3	A C L A R A D O 8 2 °C P 2
P3	L3	A C L A R A D O 8 7 °C P 3
PGLASS	L3	A C L A R A D O 9 0 °C P G

Messages while a programme is running

On completion of the cycle, the display flashes the message "END WASH", until the door is opened or the appliance is switched off. L2 lights up to indicate that the programme has ended.

9.6.13. FUNCTIONAL DESCRIPTION OF THE WASH

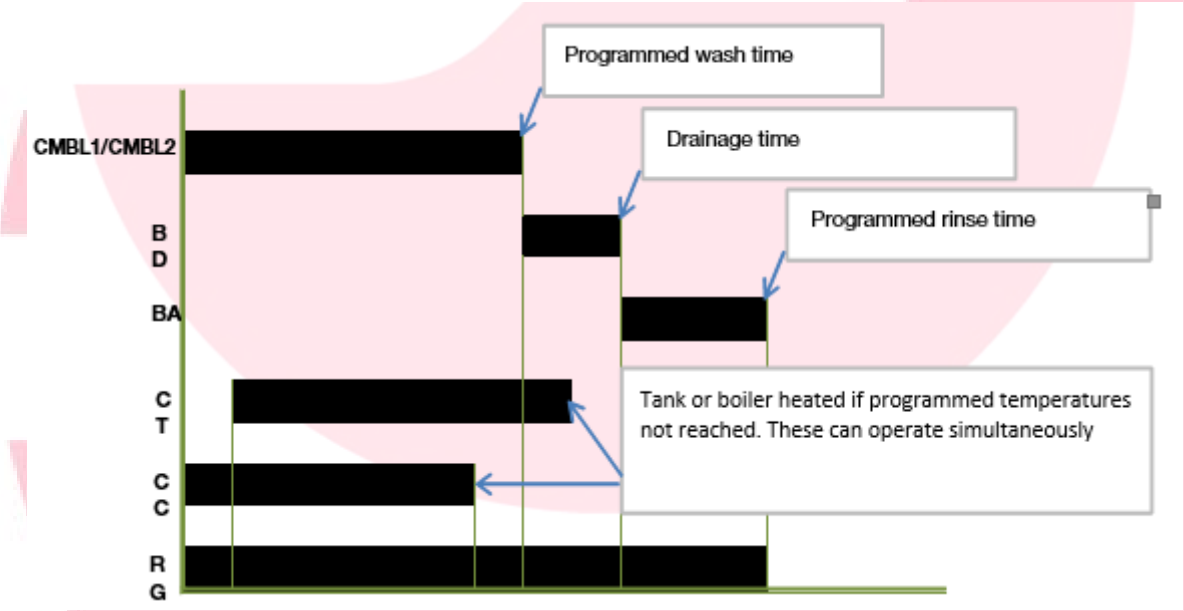
difference between the 4 wash programmes is the length of the cycle. P1 is the short wash programme; P2 is the medium length wash; P3 is the long wash programme and PGLASS is the intensive wash programme for cleaning glasses.

The phases of the wash programme are as follows:

- Wash: the wash pump/s CMBL are activated during the programmed wash time (depends on the model and programme).
- Drain: The drainage pump BD is activated for a minimum of 5 seconds and continues draining until the level PT2 is reached.
- Rinse: new water at the programmed rinse temperature is added.

In all the wash programmes P1, P2, P3 and PGLASS, when the user presses START/STOP with the door closed the programme is run. If during the programme, the user presses START/STOP, again, the programme will end without rinsing.
On the other hand, if during the wash programme the user opens the door, a PAUSE is made.
If during a wash cycle P1, P2, P3 or PGLASS a short regeneration is made, the rinse is not carried out until the regeneration programme has ended, therefore the control will wait in wash phase. On completion of the regeneration programme, the control will end the wash programme, moving to the drain and rinse cycles.
If during the wash phase, the boiler does not reach the maximum level or rinse temperature (programmable parameter) the control will wait in the wash phase until this is reached (thermostop function). If after 8 minutes of washing the boiler has not reached the required level or rinse temperature, the control switches to the drain and rinse mode, displaying the warning "A4-Low rinse temperature" (if this is 10 ºC below the set temperature).
VC is cancelled during the rinse. On completion of the rinse, the programme displays "END WASH" and the control activates VC to send water to the boiler. VC remains active until the level PC≥Pc-HIGH is reached, even if the door is opened (no pause is made).

WASHING PROGRAMMES: P1, P2, P3, P4



9.6.14. MANUAL /AUTOMATIC, DRAINAGE

ADVANCE models are fitted with a drainage pump as standard.
There are several ways to drain the tank:

Automatic drainage
5 minutes after switching off the machine, the wash tub is automatically drained, unless a Manual Drainage or Self-cleaning cycle are run first.

Manual drainage

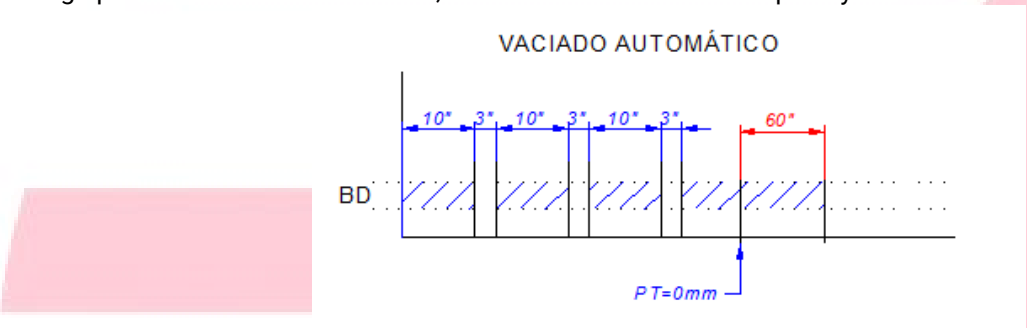
To drain the machine immediately without waiting 5 minutes, when the machine is switched off go to the User Menu and select YES in the DRAIN option. Keep the hood closed.

DRAIN
NO / YES

If the user switches off the machine without running the self-cleaning programme, the machine will automatically run a drainage programme. This programme will run 5 minutes after the appliance is switched to OFF provided the tank level is less than 20 mm.
The machine will appear to be off, therefore the display is shown as in OFF mode.

9.6.15. AUTOMATIC DRAINAGE FUNCTIONAL DESCRIPTION

Automatic drainage takes place intermittently, and the drainage pump BD is active for 10 seconds and then stops for 3 seconds. This loop is repeated as many times as are required to drain the whole tub. When PT=10, a last drainage pulse of 60 seconds is made, and the tank is drained completely



Automatic drainage sequence

9.6.16. SELF-CLEANING PROGRAMME

Press SELF-CLEANING and the control selects the self-cleaning programme, displaying the message "SELF-CLEANING". Next press START to start the cycle. After several minutes, the cycle will end and the message END SELF-CLEANING is displayed for 5 seconds, accompanied by a buzz lasting 1 second, and the machine switches off automatically (screen OFF)
A PAUSE is made if the door is opened (door open warning message on the display for 5 seconds).
If the door is closed again the cycle continues from where it left off before the pause to the end of the programme.

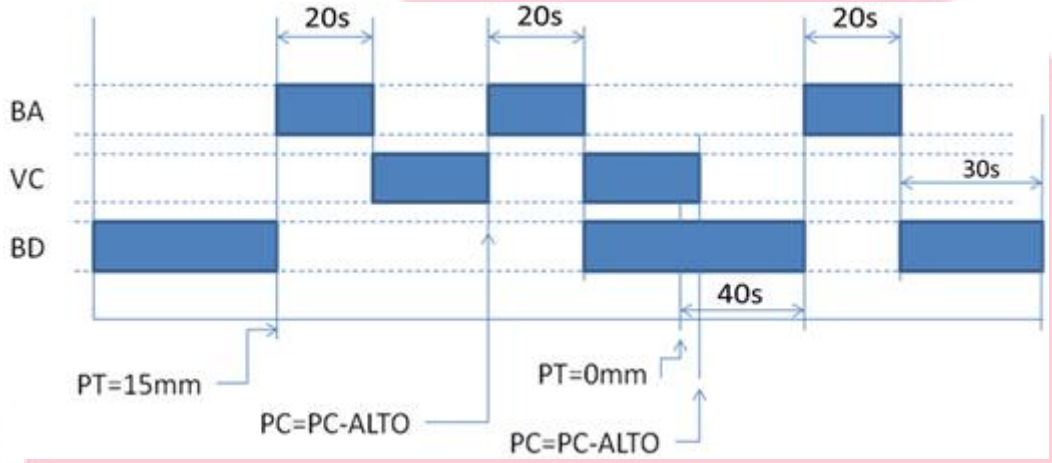
SELECTED PROGRAMME	BUTTON	LED ON	MESSAGE DISPLAYED
Selection of drainage cycle	P-AUTO	-	A U T O L I M P I E Z A
During the drainage cycle	-	-	A U T O L I M P I E Z A
At the end of the drainage cycle	-	-	F I N A U T O L I M P I E Z A

Message while the self-cleaning programme is running

The SELF-CLEANING cycle does not replace the need for a more exhaustive manual clean as necessary.

9.6.17. FUNCTIONAL DESCRIPTION OF THE SELF-CLEANING

Each output interprets a sequence, which is shown on the diagram in the picture below.
During the self-cleaning programme, the level control is not performed in either the tank or the boiler. Similarly, the tank and boiler resistors remain cancelled.



Self-cleaning programme sequence

9.6.18. REGENERATION PROGRAMME

Programme for models: AD-125 SOFT, AD-125 SOFT HRS

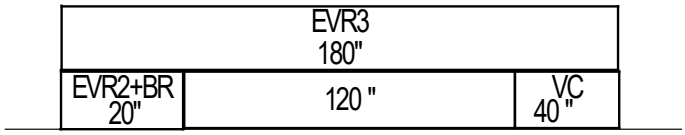
There are two types of regeneration:

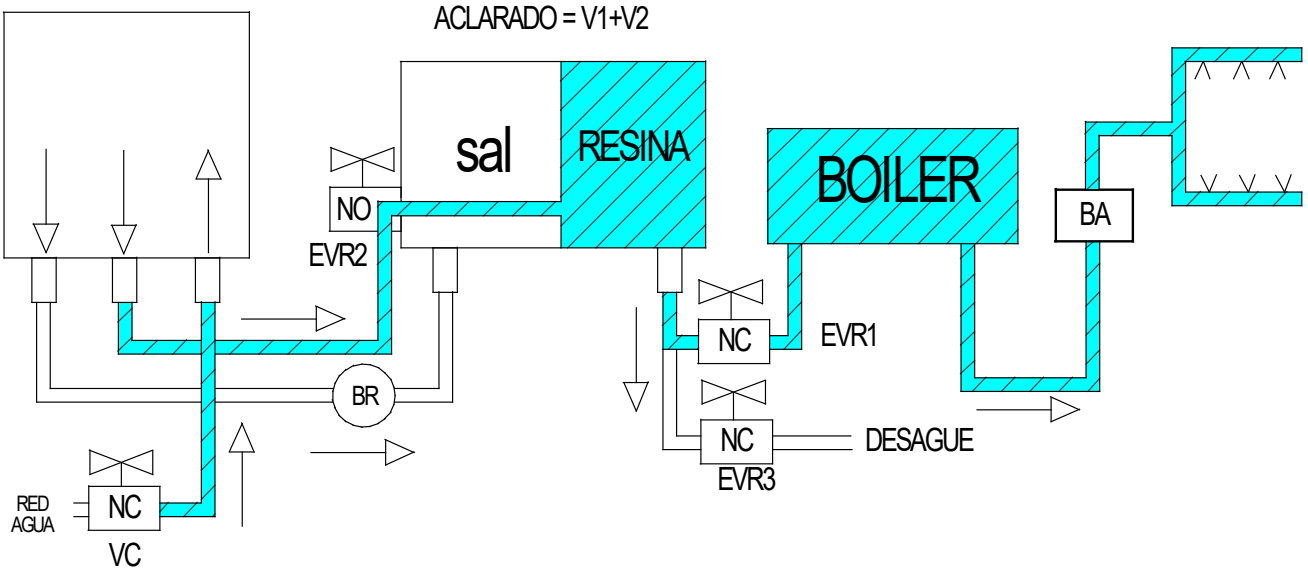
1. Short regeneration: When the stipulated cycles have been run, the control performs a short regeneration.
   The number of cycles depends on the degree of water hardness that has been defined.
   In this type of regeneration, the display does not show any different messages, i.e., if it is in wash cycle, the messages corresponding to the wash cycles are displayed.
   The short regeneration will begin as soon as the currently running wash cycle has ended (if the stipulated number of cycles has been finished) and the boiler has been filled. If the user runs another cleaning programme, the regeneration stops, but the rinse process will not be able to start until the regeneration process has ended.
2. Long regeneration: Every 4 cycles of short regeneration, a long regeneration takes place. The long regeneration takes place 15 minutes after the machine is switched off. If the machine is not switched off, it continues running short regenerations as required, but a long regeneration will not take place until the machine has been switched off and 15 minutes have elapsed.
   The display shows the message "REGENERATION" during the operation.

9.6.19. FUNCTIONAL DESCRIPTION REGENERATION PROGRAMME

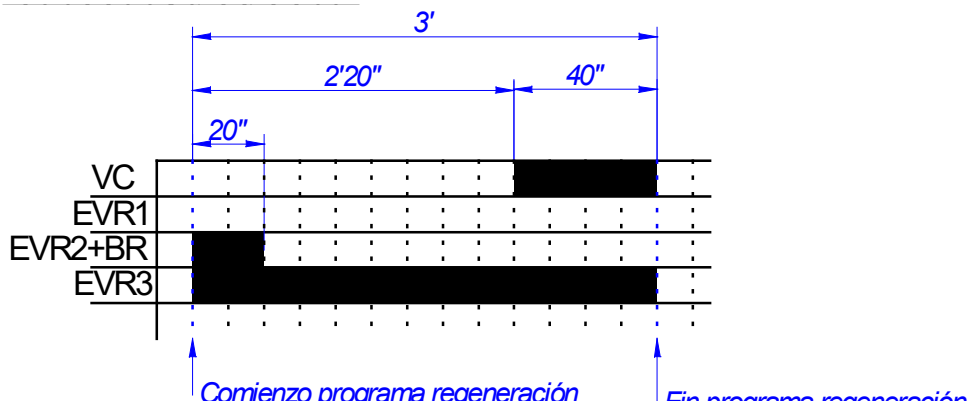
The sequences to be followed for the short regeneration (3 minutes) and the long regeneration (13 minutes) are described below.
If the power supply is disconnected during any of the regeneration cycles, or the machine is switched off, when the machine is switched on again, it should automatically start the short regeneration cycle (otherwise salt water will enter the tank), displaying the message "REGENERATION" on the screen.

CICLO DE REGENERACION

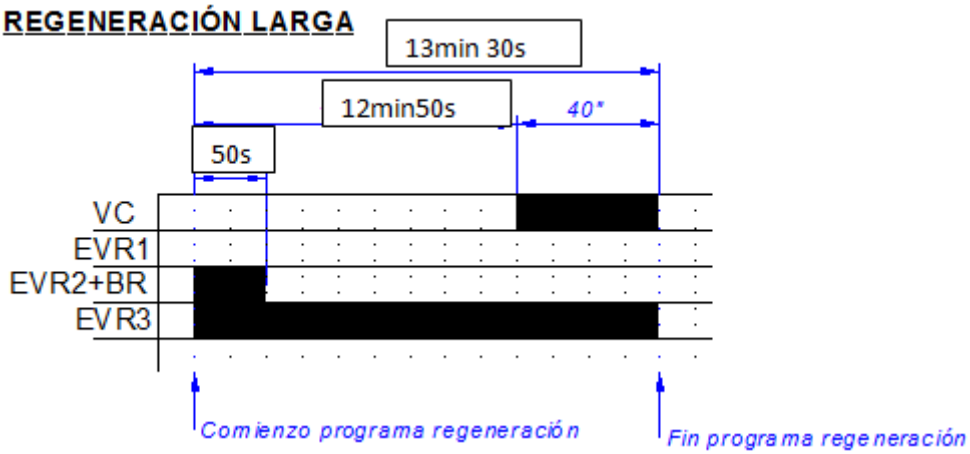




REGENERACION CORTA



REGENERACIÓN LARGA



9.6.20. ENERGY SAVING FUNCTION:

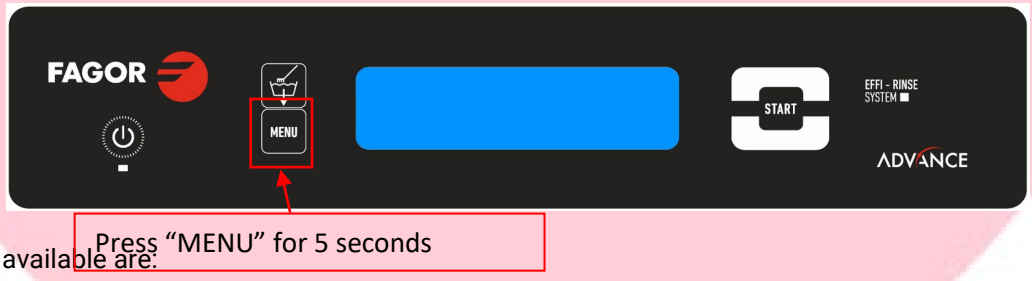
The ADVANCE model has a energy saving function which operates as follows:

- Stand-by mode: When the machine is on stand-by, the boiler maintenance temperature is 5 ºC lower than the setting temperature.

- Saving mode: If the machine does not run a programme in an interval of 30 minutes, the dishwasher switches to SAVING MODE. In this mode, the boiler maintenance temperature is 10 ºC lower and the tank temperature 5 ºC lower than the setting temperatures

9.6.21. USER OPTIONS MENU

To access the User Menu, press the "MENU" key for 5 seconds
To access the User options menu with the machine OFF press the "MENU" key for 5 seconds.
Press the "MENU" key to scroll through the different options in the "MENU".
Press the "START" key to select the value of the different options.
To scroll through the User Menu press the MENU button to change option and the START button to select an option and enter the different levels.
The default setting of the appliance is English. Therefore go to LANGUAGE to change the language. To go to the User Menu in the LANGUAGE option, press START. Select the required language by pressing MENU to select and START to confirm.
To configure the date and the time, go to DATE/TIME. With the format DAY/MONTH/YEAR HOUR/MINUTE ($D_1D_2/M_1M_2/A_1A_2$ H_1H_2/m_1m_2) use the MENU and START buttons to change the digits one by one (the active digit flashes).
It is also possible to confirm the setting without reaching the last value, by pressing the START button for 3 seconds.



The options available are:

Standard Models (AD-505, AD-125, AD-125 HRS)	SOFT models (AD-505 SOFT, AD-125 SOFT HRS)	ECO Models (AD-125 ECO)
LANGUAGE	**LANGUAGE**	**LANGUAGE**
SPANISH	SPANISH	SPANISH
ENGLISH	ENGLISH	ENGLISH
FRENCH	FRENCH	FRENCH
GERMAN	GERMAN	GERMAN
ITALIAN	ITALIAN	ITALIAN
BACK	*BACK*	*BACK*
DATE/TIME	**DATE/TIME**	**DATE/TIME**
DRAIN	**DRAIN**	**DRAIN**
NO / YES	NO / YES	NO / YES
THERMO-STOP	**REGENERATION**	**EXIT**
NO / YES / BACK	NO / YES	
EXIT	**THERMO-STOP**	
	NO / YES / BACK	
	EXIT	

9.6.22. ADVANCE SAT MENU

To access the SAT Menu, press the "MENU" and "START" keys at the same time for 5 seconds and enter the password "1357".

To access the SAT Menu when the machine is "OFF", press the "MENU" and "START" keys at the same time for 5 seconds.

Press the "MENU" key to scroll through the different options in the "MENU".

Press the "START" key to select the value of the different options.

You have three opportunities to enter the password. If the incorrect message is entered three times consecutively, the system automatically exits the "SAT Menu"

Press "MENU" and "START" for 5 seconds.

The options available in the "SAT Menu" include:

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4

CONFIG. SYSTEM				
MODEL	FRONT OPENING	AD 505	AD 505 SOFT	BACK
	TOP-LOADING	AD 125	AD 125 SOFT	AD 125 HRS
		AD 125 SOFT HRS	AD 125 ECO	BACK
	BACK			

SERIAL NO	INSERT / DISPLAY						
TEST NO	INSERT / DISPLAY						
SOFTWARE VERSION	DISPLAY						
TOP-LOADING /FO MODE	FRONT OPENING	TOP-LOADING	BACK				
HEATING TYPE	SIMULTANEOUS (Defect)	ALTERNATE	BACK				
FILL THERMOSTAT	YES	NO	BACK				
TEMP SCALE	°C	°F	BACK				
TEMP. RANGE	WASH (Default 60 °C)	P1	P2	P3	PG	BACK	
	RINSE (Default 82 °C)	P1	P2	P3	PG (65° C)	BACK	
	BACK						
CYCLE TIME	WASH	P1	P2	P3	PG	BACK	
	RINSE (Default 11s)	P1	P2	P3	PG	BACK	
	BACK						
WATER HARDNESS Defect 0-9 °DF (18-27 °DF in SOFT)	0-9 °fH	9-18 °fH	18-27 °fH (SOFT)	27-36 °fH	36-45 °fH	>45 °fH	BACK
(Cycles for short regeneration)	0	35	25	18	10	8	
DRAINAGE CYCLES (no of cycles for drainage)	FROM 50 TO 400, CHANGES IN STEPS OF 10. STANDARD VALUE 100.						
AV. SOUND A2-A5	YES	NO	BACK				
RESET (of model and configuration)	CONFIRMATION MESSAGE (NO/YES)						
ERROR REGISTER	DISPLAY						
	BACK						
VALUES REGISTER	PARTIAL REGISTER	DISPLAY (PROGRAMMES / ERRORS / BACK)	BACK				
	COMPLETE REGISTER	DISPLAY (PROGRAMMES / ERRORS / BACK)	BACK				
	BACK						
SAT MODE	PC	PT	TT	TC	IP	SAL	
	RG	MBL1	MBL2 *(Only mode 125)*	BA	VC	CC	
	CT	BD	BR *(Only mode SOFT)*	EVR1 *(Only mode SOFT)*	EVR3 *(Only mode SOFT)*	BACK	
EXHIBITION MODE	DEACTIVATE	CONTROL HOLDER	WASH	BACK			
EXIT							

10. TROUBLESHOOTING

A list of possible causes and solutions in the event of anomalies or operating errors is given below. In the event of doubt, or if you are unable to resolve the problem, please contact the technical service.

THIS APPLIANCE MAY ONLY BE REPAIRED BY AN AUTHORISED AND QUALIFIED TECHNICAL SUPPORT SERVICE.

THE MANUFACTURER MAY NOT BE HELD LIABLE FOR ANY PROPERTY DAMAGE OR PERSONAL INJURY RESULTING FROM THE INCORRECT INSTALLATION, USE, MAINTENANCE OR REPAIR, OR CAUSED BY FAILURE TO COMPLY WITH THE STANDARDS AND INSTRUCTIONS PROVIDED.

FAULT	POSSIBLE CAUSE	ACTION
The machine does not come on	The appliance does not receive mains power.	Check whether the magneto-thermal circuit breaker or the differential switch has tripped.
	Blown fuses.	Change fuses
Water does not enter the machine.	Interruption to the supply of water or the intake water valve is closed.	Check whether there is water in the main system and open the shut-off valve.
	Rinse nozzles blocked.	Clean the nozzles. If there is a build-up of lime on the arm, contact the technical service to have the appliance cleaned.
	Solenoid valve filter blocked.	Clean solenoid valve filter
	Faulty solenoid valve.	Replace solenoid valve
	Rinse pump faulty	Replace pump
	Pressostat is broken.	Replace pressure switch
Incorrect wash.	There is no detergent.	Fill recipient.
	Insufficient detergent.	Contact chemicals supplier.
	Wash distributors obstructed.	Clean distributors thoroughly.
	Dirty filters.	Clean the filters thoroughly.
	Presence of foam.	Inadequate detergent. Change detergent.
		Too much rinse aid. Call the technical service to reset the dispenser.
	Temperature in tank less than 50 ºC / 122 ºF.	Faulty thermostat or incorrect setting. Contact your Technical Assistance Service.
	Cycle length too short.	Select a longer cycle in accordance with the dirt on the dishes.
	Water too dirty.	Drain the wash tub and fill with clean water.
Dishes and kitchenware are not dry	There is no rinse aid	Fill the rinse aid container.
	Insufficient rinse aid.	Contact chemicals supplier.
	Dishes left inside dishwasher for too long.	Remove the dishes at the end of the wash cycle and leave to dry by evaporation for a minute.
	Rinse temperature lower than 80 ^{0}C / 176 ^{0}F.	Allow the boiler to reach the rinse temperature before starting the cycle. If the problem persists, call the technical service.
Dishes stained or scratched.	Too much rinse aid.	Contact chemicals supplier.
	High water hardness.	Check the water hardness, it should be less than 10 ºfH.
	SOFT models: Not enough salt in salt deposit or incorrect regeneration.	Top up salt container. If necessary, contact the technical service for the adjustment of the water hardness setting.
	Traces of salt in tub.	When filling the salt deposit, take care not to spill salt in the tub and clean thoroughly.

FAULT	POSSIBLE CAUSE	ACTION
Machine stops during operation.	Check whether the magneto-thermal circuit breaker or the differential switch has tripped.	Reset safety device and if it trips again, call technical service.
Machine stops and fills with water when it is washing.	Overflow incorrectly mounted.	Mount overflow correctly.
	Pressure switch pipe blocked.	Empty the tub and clean thoroughly.
	Pressure switch faulty.	Contact your Technical Assistance Service.
The machine does not start with the wash cycle.	Hood not closed properly.	Close the hood properly. If the door opens on its own, contact the technical service to have the tensioners tightened.
	Hood closed sensor faulty.	Replace magnetic sensor
Machine does not drain completely.	Machine not levelled correctly.	Level the machine
	Pressure switch faulty.	Contact your Technical Assistance Service.

If the fault cannot be found, call the technical support service.
The manufacturer reserves the right to modify the technical characteristics of the machine without prior warning.

11. CONCEPT & CONCEPT PLUS ALARMS

The errors are indicated by an LED error code with the Led ON light which flashes a set number of times depending on the error with intermediate pause, in repeated cycles. For example in Error 3: this consists of 3 continuous flashes and one longer intermediate pause.

ERROR / FLASHES	DESCRIPTION	DESCRIPTION	POSSIBLE CAUSE
1	OPEN DOOR	A cycle is trying to run with the hood open or the hood is opened mid-cycle.	Door open Defective hood sensor
2	TANK FILL ERROR	The tank has not reached the correct water level within 10 minutes.	Solenoid valve dirty Supply shut-off valve closed Water leaks through relief valve
3	TANK DRAINAGE ERROR	The drainage pump has not drained the tank in the time established.	Blocked drain Blocked drain pipe Faulty drainage pump
4	BOILER HEATING ERROR	The tank has not reached the correct temperature in the time established.	Faulty thermostat Contactor defective. Resistor defective
5	TANK HEATING ERROR	The tank has not reached the correct temperature in the time established.	
6	BOILER FILLING ERROR	The boiler has not reached the correct water level in the time established.	Faulty solenoid valve Solenoid valve dirty Supply shut-off valve closed

12. ADVANCE MODEL ALARMS

The errors are shown on the DISPLAY by a flashing error waning and a buzzer alarm. The buzzer alarm has a cycle

of 30 s active and 150 s off until it is switched off after 15 minutes. The warning message continues to be displayed until the error is resolved or the machine is switched off.

ERROR DISPLAY	DESCRIPTION	CONSEQUENCE	POSSIBLE CAUSE
E1-TC-T. BOILER	Faulty boiler temperature probe	Machine disabled.	Probe defective. Probe disconnected.
E2-TT-T. TANK	Faulty tank temperature probe.	Machine disabled.	
E3-TANK TEMP.	Tank overheating TT > 90 ºC	Machine disabled.	Faulty thermostat Contactor defective.
E4-BOILER TEMP.	Boiler overheating TC > 105 ºC	Machine disabled.	
E5-BOILER DOES NOT HEAT	Boiler heating faulty TC does not increase 3 ºC in 5 minutes.	Alarm	Faulty thermostat Contactor defective. Resistor defective
E6-TANK DOES NOT HEAT	Tank heating failure 60 min without reaching temperature.	Alarm	
E7-NO AGUA	The boiler does not fill After 10 minutes, the boiler does not fill.	Machine disabled.	Faulty solenoid valve Solenoid valve dirty Supply shut-off valve closed
E8-TANK DOES NOT FIL	The tank does not fill. After 30 minutes, the tank does not fill.	Machine disabled.	Faulty solenoid valve Solenoid valve dirty Supply shut-off valve closed - Water leaks through relief valve
E9-DOES NOT DRAIN	Does not drain After 1 minute with the drainage pump running, the level of the tank has not dropped 5 mm.	Machine disabled.	Blocked drain Blocked drain pipe Faulty drainage pump
E10-INCORRECT RINSE	Rinse error The boiler level does not decrease during the rinse cycle.	Alarm	Faulty rinse pump Faulty boiler pressure switch
E11- TANK MAX. LEVEL	Max. tank level error. The tank contains too much water.	The drainage pump runs until the water level is lowered.	Blocked drain Blocked drain pipe Faulty drainage pump Faulty tank pressure switch
E12- TANK MIN. LEVEL	Min. tank level error The tank is running dry while in standby mode.	Machine disabled.	Water leaks through relief valve

13. COMPONENTS

13.1. ELECTRONIC CONTROL CARDS, VIEWERS, PROGRAMMERS, REGENERATION PROGRAMMERS, ELECTRONIC REGENERATION CARD AND BACKLIGHT

The models are identified by their baskets/hour production capacity. Previously the plates/hour capacity was measured.
Essentially, we can say that:

- CONCEPT – Rinse using mains pressure (solenoid valve)
- CONCEPT PLUS – Rinse with pump and square boiler
- ADVANCE – Rinse with pump, square and electronic boiler

The digit for the "unit (XX?)" identifies the control type in the machine.

- CO-XX0 – Basic model.
- CO-XX1 – Basic model with certain extras with respect to the CO-XX0.model.
- CO-XX2 – Model with display and membrane.
- COP-XX4 – Model with display, membrane and rinse pump.
- AD-XX5 – Fully electronic model with rinse pump and air break.

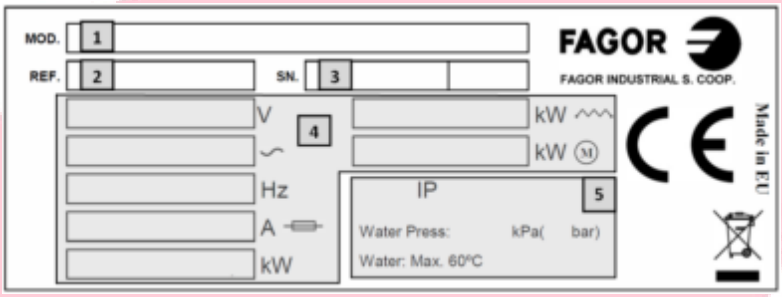
The hardware is the same in the CO-XX0 and CO-XX1 models but the software is different.
The hardware is the same in the CO-XX2 and CO-XX4 models but the software is different.
The hardware and the software are specific for the AD-XX5 models.

There are two generations of EVO front-loading dishwashers:

- EVO 1.0 machine code up to 19047000
- EVO 2.0 machine code after 19047000

SPECIFICATIONS PLATE

1: NAME OF THE UNIT
2: CODE OF THE UNIT
3: SERIAL NUMBER + DATE OF MANUFACTURE
4: ELECTRICAL SPECIFICATIONS
5: WATER SPECIFICATIONS



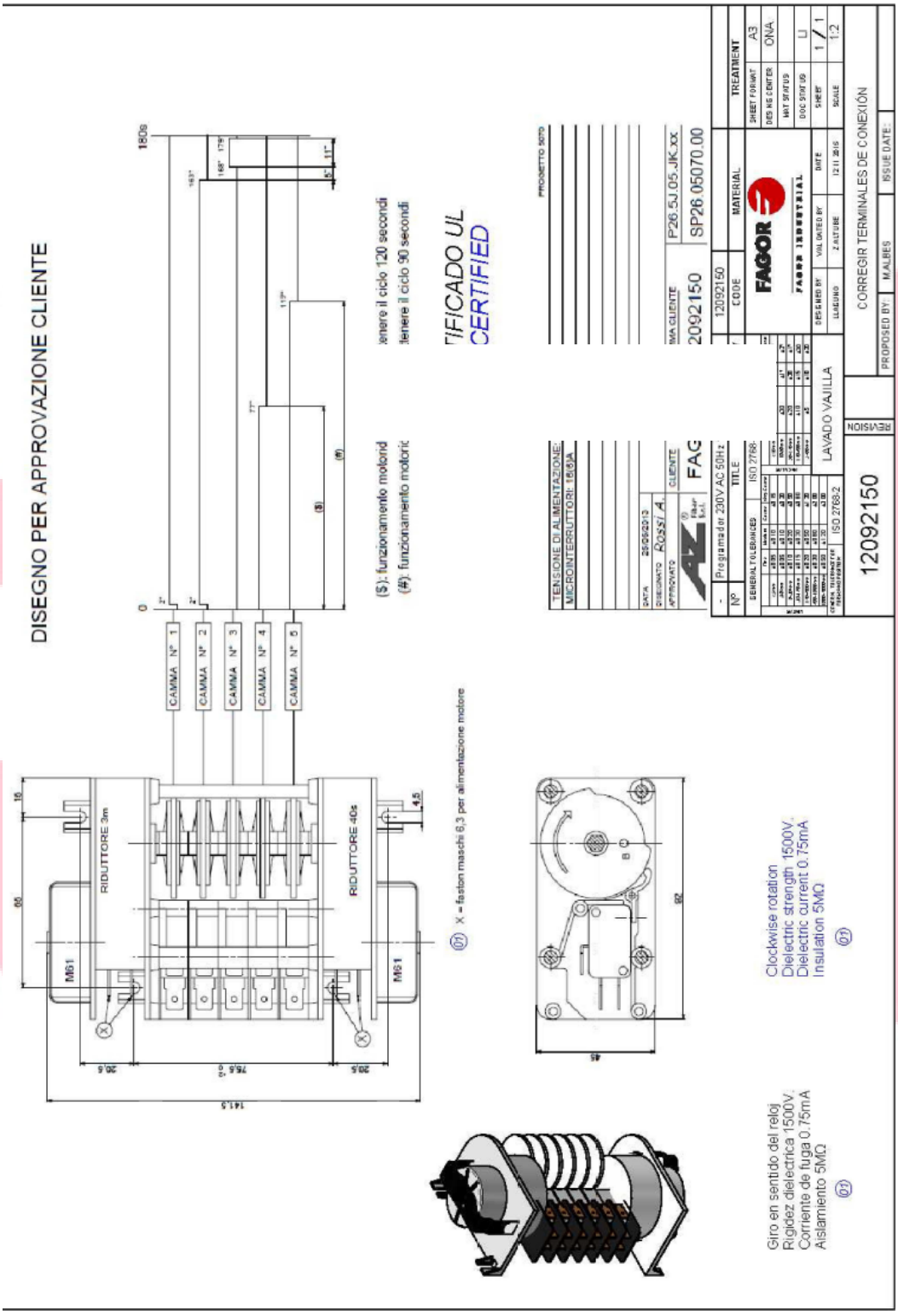
The following table shows the codes for the electronic cards and programmers in their different versions:

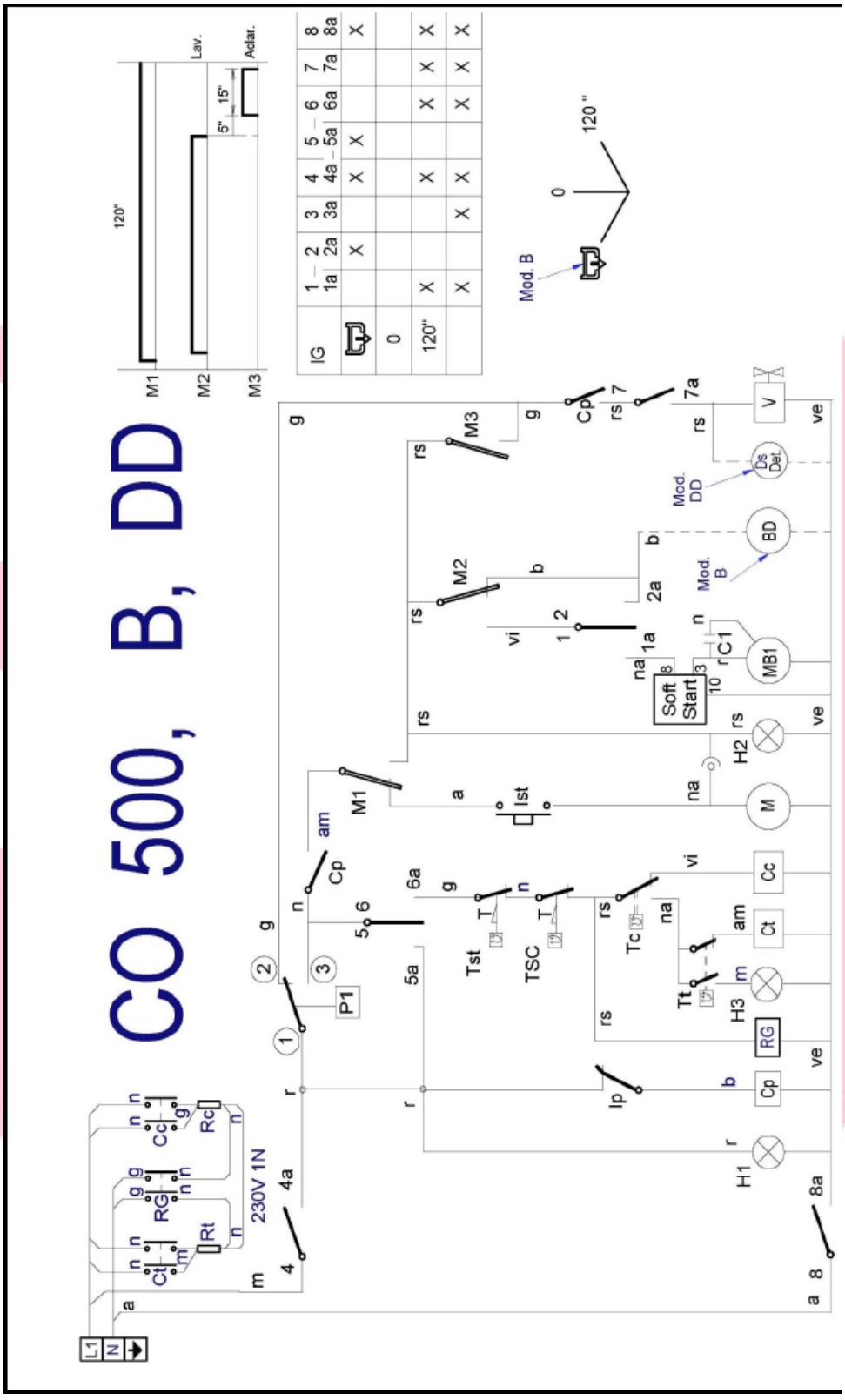
	Model	Card		Display		Regeneration (only SOFT)	BACKLIGHT
		EVO 1.0	EVO 2.0	EVO 1.0	EVO 2.0		
Front Opening	CO-500	12092150 (programmer)	12189021				
		12110837					
	CO-501	12092150 (programmer)	12189021				
		12110837					

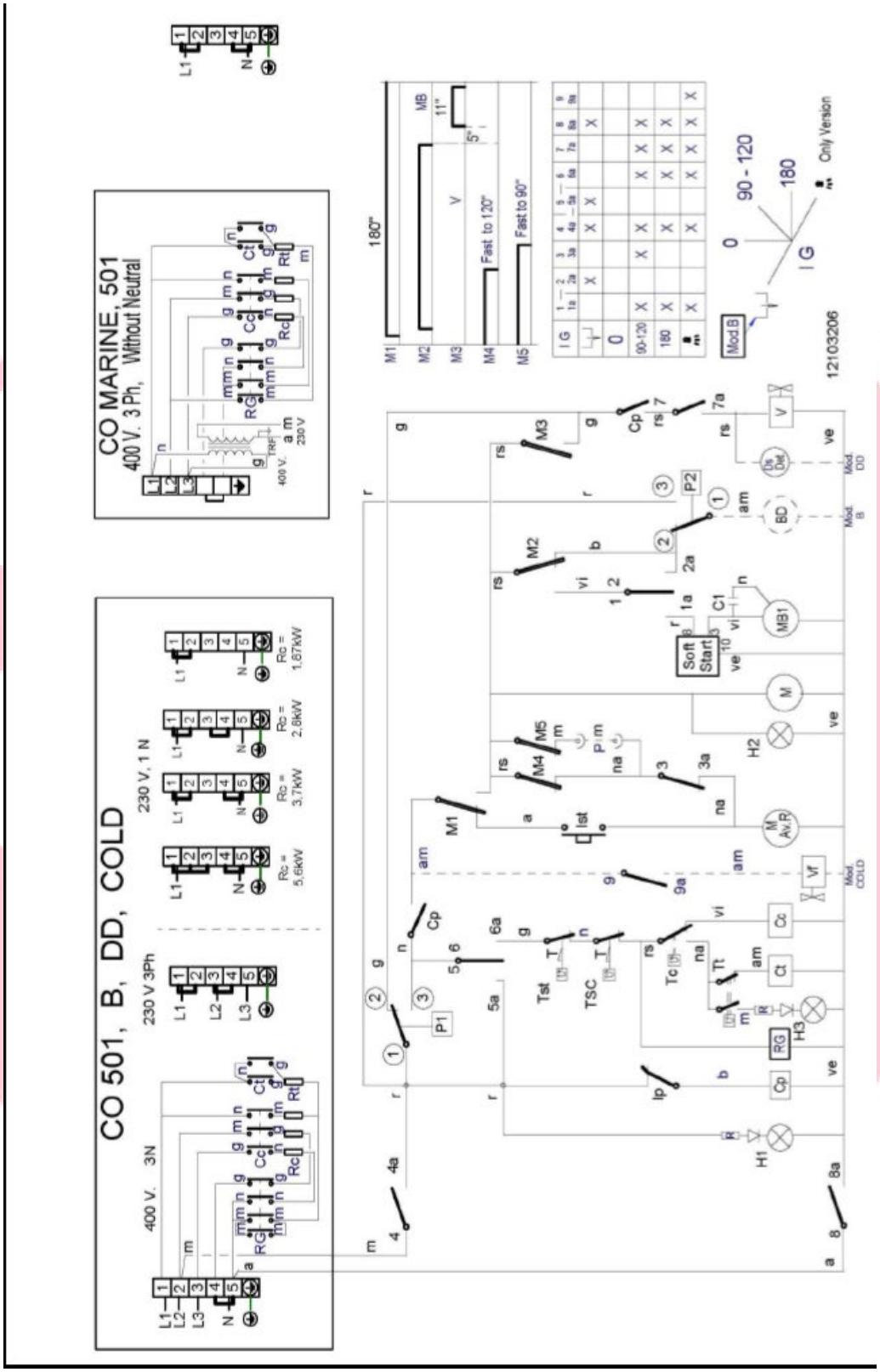
	CO-502	12008750	12185533	12024028			
	CO-502 W	12008750		12014017			
	COP-503	12008750					
	COP-504	12008750	12185533	12024028			
	COP-504 W	12008750		12014017			
	AD-505	12048024	12189023	12048027		12120189	12097036

12008750 = 12185533 + box
12048024 = 12189023 + box

13.1.1. PROGRAMMER CYCLE 12092150 (CO-500 and CO-501)




CO 500, B, DD
M1
M2
M3
120"
5"
15"
Lav.
Aclar.
IG
0
120"
Mod. B
120 "
Mod. DD
Mod. B
Soft Start
P1
Tst
TSC
Tc
Tt
Ip
Cp
Cc
Ct
RG
Rt
Rc
Ist
C1
MB1
BD
V
H1
H2
H3
M
230V 1N


CO 501, B, DD, COLD
400 V. 3N
230 V 3Ph
230 V, 1 N
Rc = 5.6kW
Rc = 3.7kW
Rc = 2.6kW
Rc = 1.87kW
CO MARINE, 501
400 V. 3 Ph, Without Neutral
180"
Fast to 120"
Fast to 90"
0
90 - 120
180
I G
Only Version
Mod B
12103206
Soft Start
H1
H2
H3
M1
M2
M3
M4
M5
P1
P2
RG
Cp
Cc
Ct
Rt
Rc
Tst
TSC
Tc
Ip
Ist

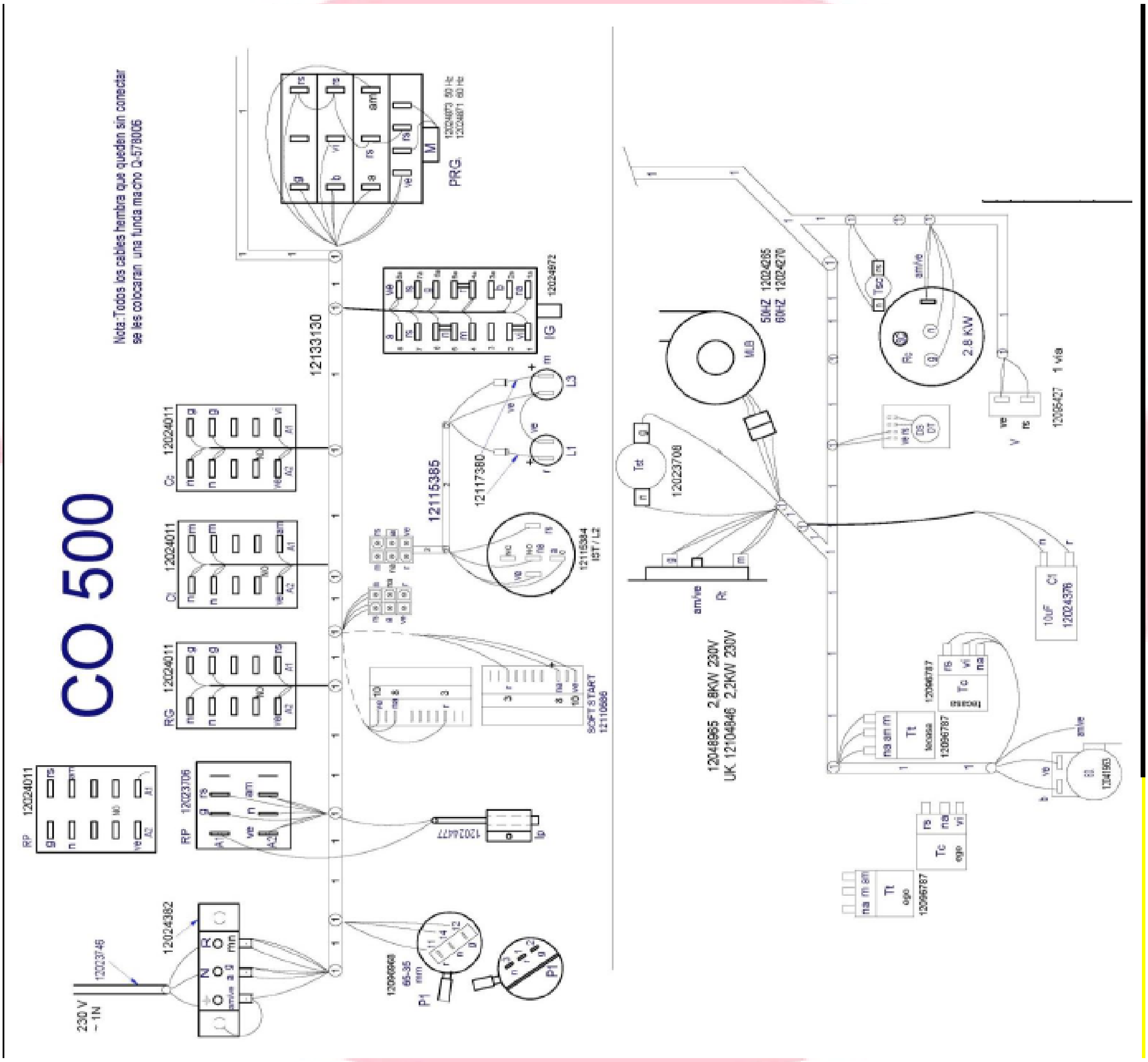
LEYENDA APERTURA FRONTAL Y CAPOTA

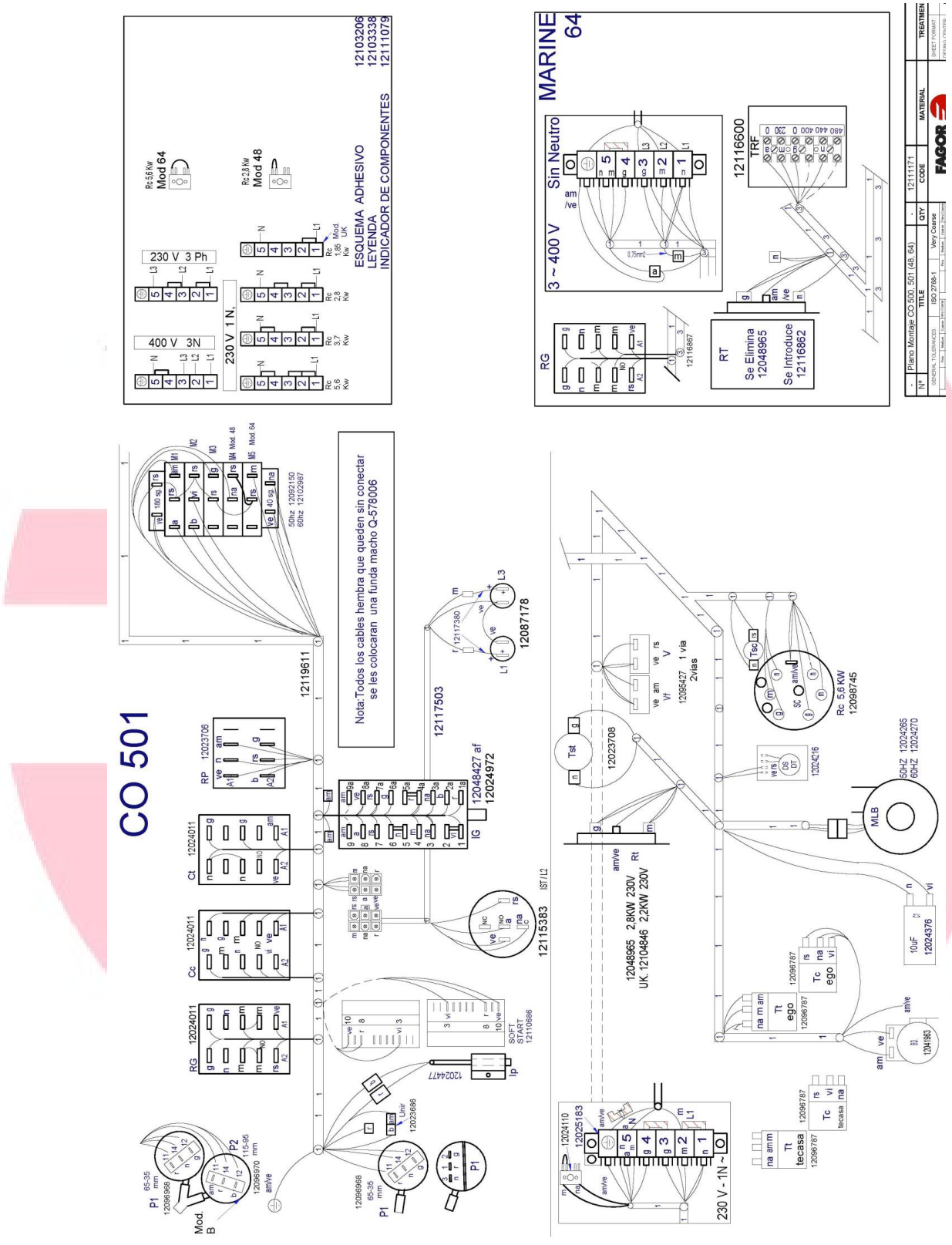
	ESPAÑOL	ENGLISH	FRANÇAIS	DEUTSCH	ITALIANO	中文
Ⓐ Ⓡ	Puntos de conexion con R	Conection point with R	Points de conexion R	Anschlußpunkte mit R	Punti di collegamento con R	带R接触点
BA	Bomba Aclarado	Rinse pump				
BD	Bomba desagüe	Drain pump	Pompe de vidange	Abflußpumpe	Pompa scarico	排水泵
C1, C2, C3	Condensador	Condenser	Condensateur	Kondensator	Condensatore	电容
CMB	Contactor bomba lavado	Wash pump contactor	Contacteur pompe lavage	Türrelais	Contattore pompa lavaggio	清洗泵接触器
Cc	Contactor calentamiento calderin	Boiler heating contactor	Contacteur chauf. surchauffeur	Kontaktschütz Waschpumpe	Contattore riscaldamento boiler	升温箱加热接触器
Ct	Contactor calentamiento tanque	Tank heating contactor	Contacteur chaufage cuve	Kontaktschütz Boilerheizung	Contattore riscaldamento serbatoio	水箱加热接触器
CP	Rele puerta	Door relay	Relais porte	Kontaktschütz Heizung Tank	Rele porta	门继电器
Ds.	Dosificador	Detergent doser	Dosseur	Dosierer Spülmittel	Dosatore detersivo	清洗剂药液泵
E B	Electrobomba de presion	Electric pressure pump	Electropompe de pression	Elektro-Drucksteigungspumpe	Electropompa pressione	电子压力泵
IG	Interruptor general	Main switch	Interrupteur general	Hauptschalter	Interruttore generale	主开关
IP	Micro puerta	Door microswitch	Micro porte	Mikroschalter Tür	Micro porta	门磁开关
H1	Piloto de encendido	Operation light	Voyant funcionement	Betriebsanzeigelampe	Spia accensione	运行指示灯
H2	Piloto marcha	Start light	Voyant demarrage	Startanzeigelampe	Spia avvio	开始指示灯
H3	Piloto maquina preparada	Light machine ready	Voyant machine prêt	Betriebsbereitschaftsanzeigelampe	Pilota macchina preparata	加热完成 指示灯
HSal	Piloto falta de Sal	Light Lack of Salt				
MB1, MB2	Bomba lavado	Wash pump	Pompe lavage	Waschpumpe	Pompa lavaggio	清洗泵
M	Motor programador	Motor programmer	Moteur du programmateur	Motor Programmiervorrichtung	Motore programmatore	程序电机
M Av. R	Motor program. avance rapido	Motor program. rapid advance	Moteur du progr.avance rapide	Motor Programmiervorrich. Betrieb	Motore programmatore avanzamento rapido	程序电机, 高速高级
M1	Micro programador marcha	Micro programmer on	Micro du programm. de marche	Motor Programmiervorrich. Waschen	Micro programma. di funzionamento	微程序 开
M2	Micro programador lavado	Micro programmer wash	Micro du programm. de lavage	Motor Programmiervorrich. Spülen	Micro programmatore di lavaggio	微程序 清洗
M3	Micro programador aclarado	Micro programmer rinse	Micro du programm. de rinçage	Motor Programmiervorrich. Vorlauf	Micro programmatore di risciacquo	微程序 喷淋
M4, M5	Micro programador avance	Micro programmer advance	Micro du programm. avance	Motor Programmiervorrich. schneller Vorlauf	Micro programmatore avanzamento	微程序 高级
P1, P3	Presostato	Pressure switch	Pressostat	Druckwächter	Pressostato	压力开关
P2	Presostato limitador	Hi-limit pressure switch	Pressostat de securité	Begrenzer Druckwächter	Pressostato limitatore	高水位限制 压力开关
R	Rele de Generador de A.C.	Generator relay	Relais du Generateur	Relais Generator	Rele Generatore	热水供应器继电器
RG	Rele General	Main Relay		Stromversorgungsanschluß Gener.		
Ⓛ① Ⓛ② Ⓛ③ Ⓝ	Alimentac. Generador A.C.	Water heater feeding	Alimentation generateur		Alimentazione generatore	热水供应器电源线
RC	Resistencia calderin	Boiler heating element	Resistance surchauffeur	Heizwiderstand Boiler	Resistenza boiler	升温箱加热管
RT	Resistencia tanque	Tank heater	Resistance cuve	Heizwiderstand Tank	Resistenza serbatoio	水箱加热管
T1	Termostato tanque	Tank thermostat	Thermostat de cuve	Thermostat Tank	Termostato serbatoio	水箱温控器
TC	Termostato calderin	Boiler thermostat	Thermostat surchauffeur	Thermostat kessel	Termostato boiler	升温箱温控器
Tst	Limitador tanque	Tank limiter	Limitateur de cuve	Begrenzer Tank	Limitatore serbatoio	水箱安全温控器
TSC	Limitador calderin	Boiler Hi-limit	Limiteur surchauffeur	Begrenzer Boiler	Limitatore boiler	升温箱安全温控器
TST P	Termostato termo-stop	Termo-stop Thermostat	Thermostat Termo-stop	Thermostat Termo-stop	Termostato Termo-stop	温度停止温控器
V	Electrovalvula llenado y aclarado	Fill and rinse valve	Electrovan. remplissage rinçage	Elektroventil Füllen und Spülen	Elettroval. riempimento e risciacquo	电磁阀
Vf	Electrovalvula Aclarado Frio	Cold Water rinse valve				
VR1, VR2, VR3, BR	Electrovalvula Descalcificacion	Soft Water valve				
VE,	Ventilador cuadro electrico	Switchboard fan	Ventilateur tableau electrique	Schalttafelventilator	Ventilatore quadro elettrico	风机
HRS	Sistema recuperacion energia	Heat Recovery System				

COLOR	COLORES	COLOUR	COULEURS	FARBEN	COLORE	颜色
a = BLU =	Azul	Blue	Bleu	Blau	Blu	蓝
am = YEL =	Amarillo	Yellow	Jaune	Gelb	Giallo	黄
am/ve = YEL/GRN	Amarillo/verde	Yellow / green	Jaune / vert	Gelb/grün	Giallo/verde	黄/绿
b = WHT =	Blanco	White	Blanc	Weiß	Bianco	白
g = GRY =	Gris	Grey	Gris	Grau	Grigio	灰
m = BRN =	Marrón	Brown	Marron	Braun	Marrone	棕
n = BLK =	Negro	Black	Noir	Schwarz	Nero	黑
na = ORG =	Naranja	Orange	Orange	Orange	Arancio	橙
r = RED =	Rojo	Red	Rouge	Rot	Rosso	红
rs = PNK =	Rosa	Pink	Rose	Rosa	Roseo	粉
ve = GRN =	Verde	Green	Vert	Grün	Verde	绿
vi = PRP =	Violeta	Purple	Violet	Violett	Viola	紫

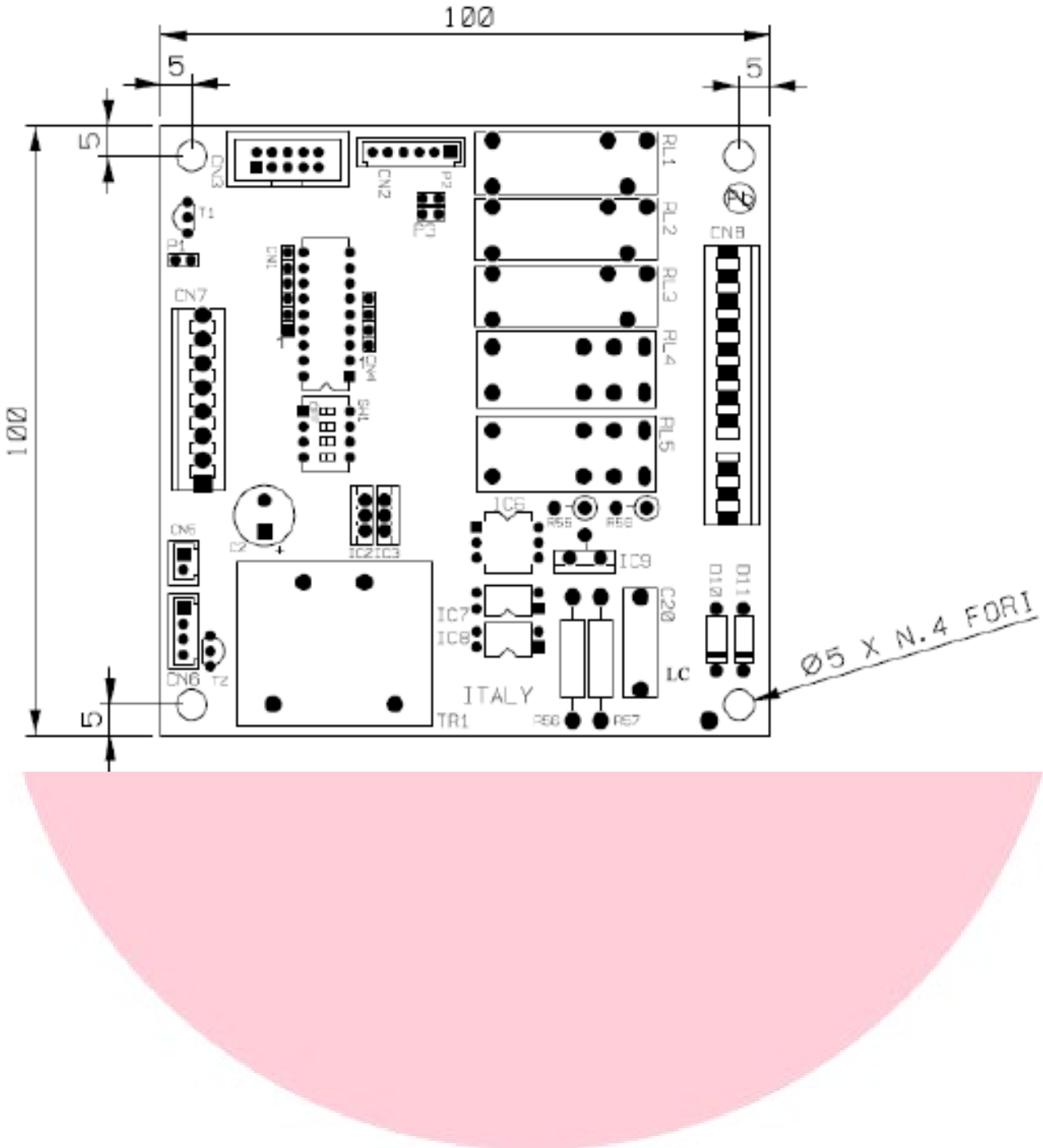
12103338

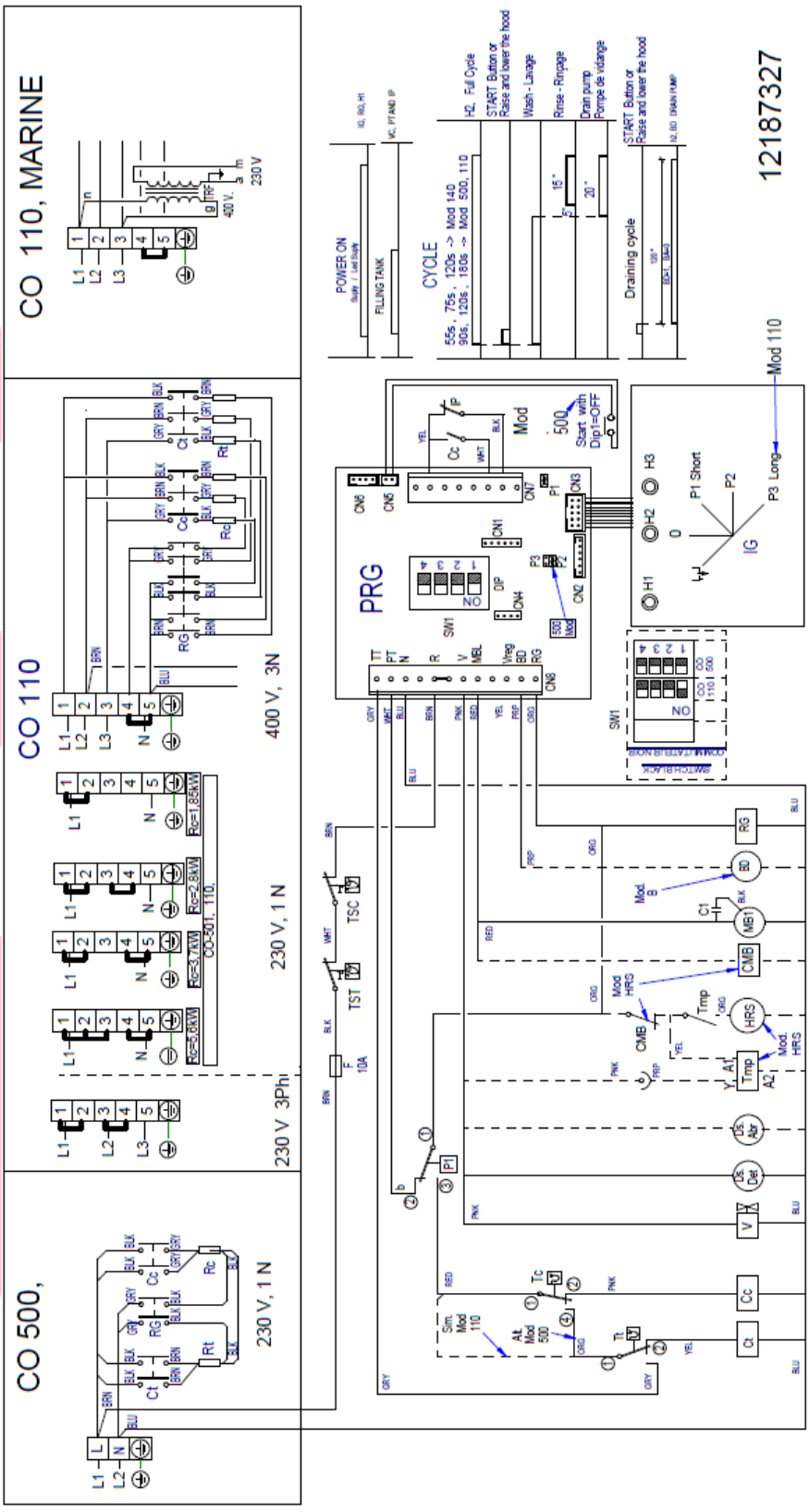
EVO FRONT LOADING DISHWASHER



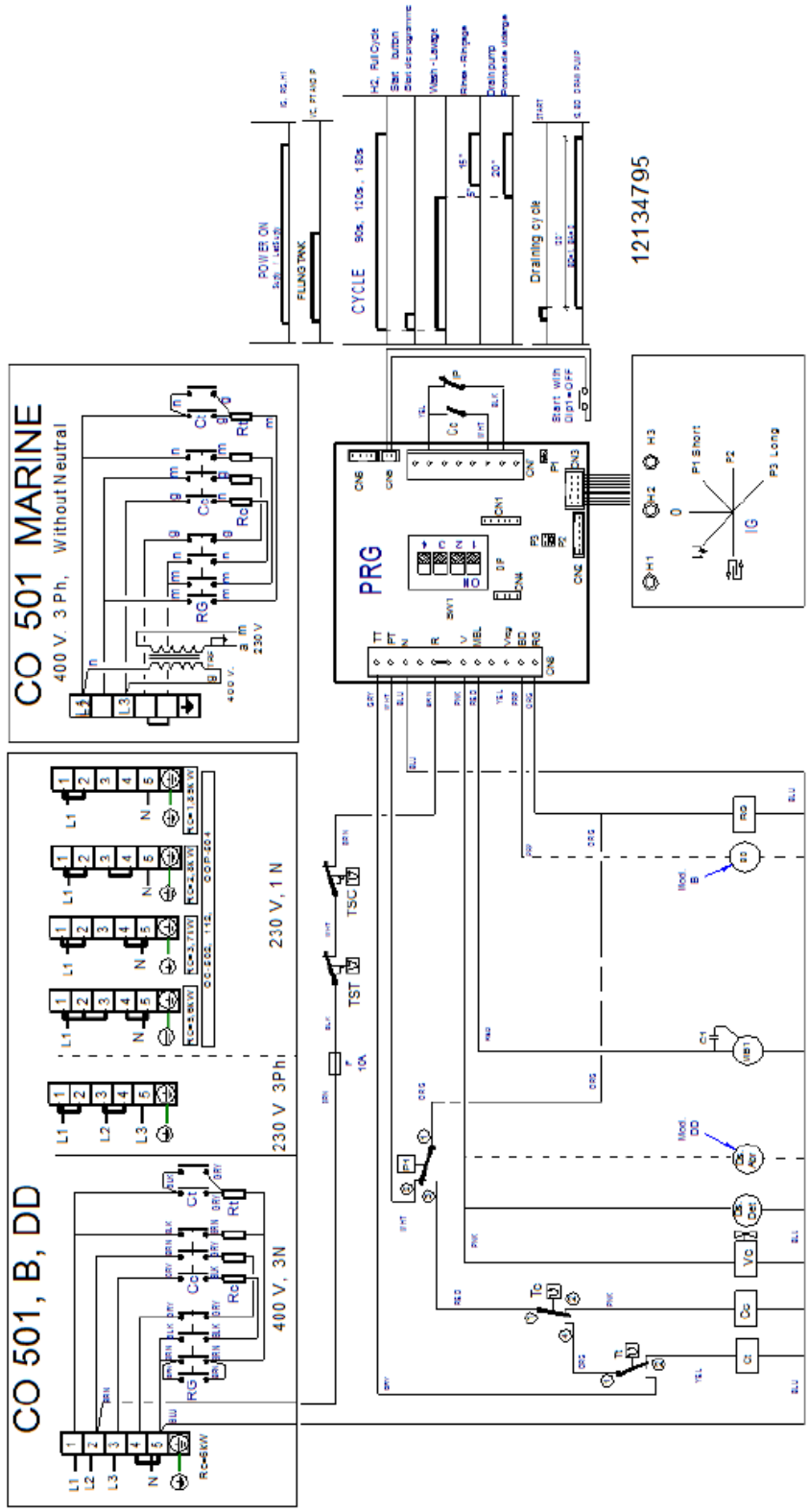

CO 501
MARINE 64
3 ~ 400 V
Sin Neutro
12116600
TRF
RG
RT
Se Elimina 12048965
Se Introduce 12116862
ESQUEMA ADHESIVO
LEYENDA
INDICADOR DE COMPONENTES
12103206
12103338
12111079
230 V 3 Ph
400 V 3N
230 V 1 N~
Mod 64
Mod 48
Nota:Todos los cables hembra que queden sin conectar se les colocaran una funda macho Q-578006
12119611
12117503
12048427 af
12024972
12087178
12115383
12048965 2.8KW 230V
UK 12104846 2.2KW 230V
Rc 5.6 KW
12098745
MLB
230 V - 1N ~
Plano Montaje CO-500_501 (48, 64)
12111171
TREATMEN
MATERIAL
CODE
QTY
TITLE
ISO 2768-1
Very Coarse
GENERAL TOLERANCES
SHEET FORMAT

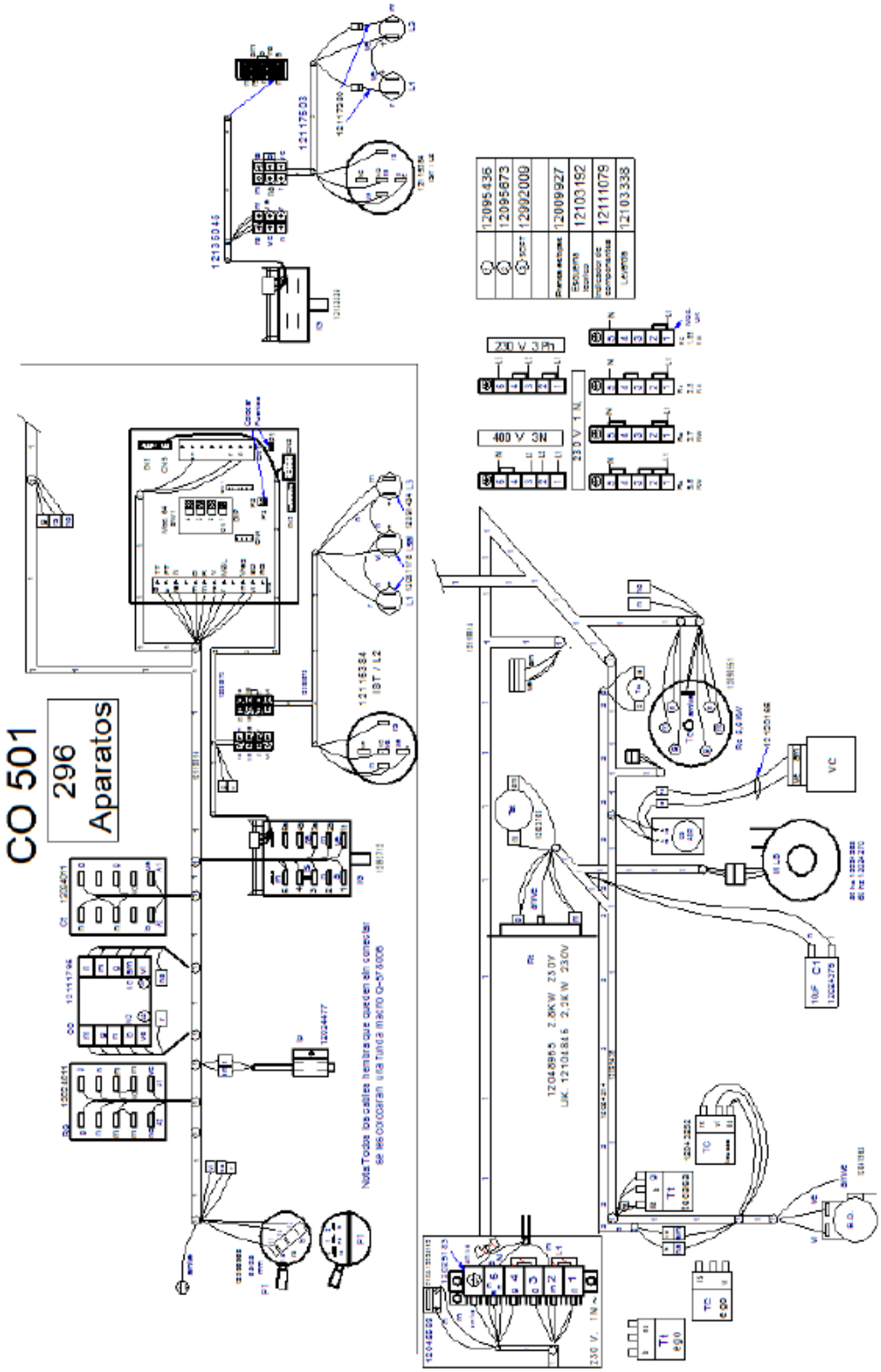
13.1.2. ELECTRONIC CONTROL CARD 12189021 (CO-500 and COP-501)

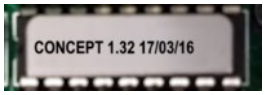



CO 110, MARINE
CO 110
CO 500,
400 V, 3N
230 V, 1 N
230 V 3Phi
230 V, 1 N
12187327
POWER ON
FILLING TANK
CYCLE
55s , 75s , 120s -> Mod 140
90s , 120s , 180s -> Mod 500, 110
H2, Full Cycle
START Button or
Raise and lower the hood
Wash - Lavage
Rinse - Rinçage
Drain pump
Pompe de vidange
Draining cycle
PRG
Mod
500
Start with
Dip1=OFF
P1 Short
P2
P3 Long
IG
Mod 110
TSC
TST
F
10A
Mod.
B
Mod.
HRS
Tmp
Sim.
Mod
110
At
Mod
500
Tc
Tt
Cc
Ct
Rc
Rt
RG
Rc=1.85kW
Rc=2.8kW
Rc=3.7kW
Rc=5.6kW
CO-301, 110

Simb / LENG		ESPAÑOL	ENGLISH	FRANÇAIS
A,B (OCIO)	=	Puntos de conexión con K1	Connection points with K1	Points de connexion K1
C1,C2,C3,C4	=	Condensador electrico	Electric condenser	Condensateur électrique
CA	=	Rele Auxiliar de Aclarado	Rinse Auxiliary Relay	Relais auxiliaire rinçage
CMBL1,2	=	Contactor Bomba lavado 1,2	Wash 1,2 Pump Contactor	Contacteur pompe lavage 1,2
CMBPL	=	Contactor Bomba PreLavado	Prewash Pump Contactor	Contacteur Pompe prélavage
CMEV	=	Contactor Motor Extractor de Vahos	Steam Exhaust Motor Contactor	Contacteur Moteur Extraction vapeur
CMS	=	Contactor Motor Secado	Drying Motor Contactor	Contacteur moteur Séchage
CMREC	=	Contactor Motor Recuperador	Contactor Motor Recover	Contacteur moteur Recuperateur
CRC11,12,13	=	Contactor Calentamiento Calderin	Boiler Heating Contactor	Contacteur Chauffage Chaudière
CRS11,12,21,22	=	Contactor Calentamiento Secado 1,2	Drying 1, 2 Heating Contactor	Contacteur chauffage séchage 1,2
CRTA1,2	=	Contactor Calentamiento Aclarado	Rinse heating Contactor	Contacteur chauffage Rinçage
CRT11,12	=	Contactor Calentamiento Tanque 1	Tank 1 Heating Contactor	Contacteur Chauffage Cuve 1
CRT21,22	=	Contactor Calentamiento Tanque 2	Tank 2 Heating Contactor	Contacteur Chauffage Cuve 2
DS.ABR	=	Dosificador Abrillantador	Rinse doser	Doseur tensoactive
DS.DET	=	Dosificador Detergente	Detergent doser	Doseur détergent
F	=	Fusible	Fuse	Fusible
FMEV	=	Termico Motor Extractor	Steam Exhaust Motor Thermal Overload	Thermique Moteur Extraction vapeur
FML1,2	=	Termico Motor Bomba Lavado1,2	Wash 1,2 Pump Motor Thermal Overload	Thermique Moteur pompe lavage 1,2
FMS1,2	=	Termico Motor Secado 1,2	Drying Motor Thermal Overload	Thermique du Moteur Séchage
FMREC	=	Termico Motor Recuperador	Recover Motor Thermal Overload	Thermique du Moteur Recuperateur
H1	=	Lampara Indicador Marcha	Operation light	Voyant de fonctionnement
H2	=	Lampara Indicador Atorado	Stuck indicator Lamp	Voyant Bloqués
IA	=	Interruptor Accionamiento Aclarado	Rinsing actuator Switch	Interrupteur d'actionneur de rinçage
IE1,2	=	Pulsador Parada de emergencia 1,2	Emergency 1,2 stop push button	Bouton-poussoir Arrêt d'urgence 1,2
IG	=	Interruptor general.	Power On	Interrupteur général
IGS	=	Interruptor General de seguridad.	Disconnect Switch	Interrupteur Général de sécurité
IL	=	Interruptor Accionamiento Lavado	Wash actuator Switch	Interrupteur d'actionneur de lavage
IM / IP	=	Pulsador Marcha / Parada	Start / Stop push button	Bouton de démarrage / arrêt
IPA	=	Interruptor Puerta Lavado	Washer Door Switch	Interrupteur de porte de lavage
IPPL	=	Interruptor Puerta PreLavado	Prewash Door Switch	Interrupteur de porte prélavage
IPT1,2	=	Interruptor Puerta Tanque 1,2	Tank 1,2 Door Switch	Interrupteur de porte cuve 1,2
IR	=	Interruptor Retroceso Desenganche	Reverse stuck Switch	Interrupteur marche arrière à la blocage
ISV	=	Interruptor Seguridad Enganchon	Overload stuck Switch	Interrupteur marche à la blocage
PRG	=	Control Electronico	Electronic Control	Contrôle électronique
KA1, 2	=	Rele Auxiliar Llenado y Aclarado 1, 2	Fill and Rinse 1, 2 Auxiliary Relay	Relais auxiliaire remplissage et rinçage 1, 2
KP	=	Rele de Puerta	Door Relay	Relais de porte
KTT1	=	Rele Auxiliar Termostato Tanque1	Auxiliary Relay Tank Thermostat1	Thermostat Relais auxiliaire cuve 1
K1	=	Rele Auxiliar Generador Agua Caliente	Auxiliary Relay Hot Water Generator	Générateur auxiliaire Relais eau chaude
MBA	=	Moto Bomba Aclarado	Pump Rinsing	Pompe Rinçage
MBL1,2	=	Moto Bomba Lavado1,2	Washed Pump 1,2	Pompe de lavage 1,2
MBP	=	Moto Bomba Llenado	Filling Pump	Pompe de remplissage
MBPL	=	Moto Bomba PreLavado	Prewash Pump	Pompe à prélavage
MEV	=	Motor Extractor de Vahos	Steam extractor motor	Moteur extracteur vapeur
MREC	=	Motor Recuperador	Motor Recovery	Moteur Récupérateur
MS1,2	=	Motor Secado 1,2	Drying motor 1,2	Moteur de séchage 1,2
MV	=	Motor Arrastre	Advance Motor	Moteur d'entraînement
PA	=	Presostato Aclarado	Rinsed tank Pressure Switch	Pressostat de rinçage
PPL	=	Presostato Prelavado	Prewash tank Pressure Switch	Pressostat de prélavage cuve
PT1	=	Presostato Tanque 1	Washed tank 1 Pressure Switch	Pressostat de lavage cuve 1
PT2	=	Presostato Tanque 2	Washed tank 2 Pressure Switch	Pressostat de lavage cuve 2
R,N	=	Puntos conexión 230V	230V connection points	Points de connexion 230V
RC11,12,13	=	Resistencia Calentamiento Calderin	Boiler Element Heating	Resistance Chauffage Chaudière
RS1, 2	=	Resistencia Calentamiento Secado 1, 2	Drying Element Heating	Resistance Chauffage séchage
RTA	=	Resistencia Calentamiento Aclarado	Rinse tank Element Heating	Resistance Chauffage rinçage
RT11,12	=	Resistencia Calentamiento Tanque 1	Washed Tank 1 Element Heating	Resistance Chauffage lavage cuve 1
RT2	=	Resistencia Calentamiento Tanque 2	Washed Tank 2 Element Heating	Resistance Chauffage lavage cuve 2
SF	=	Interruptor Fin recorrido	Safety end Switch	Interrupteur fin de coourse
TA	=	Termostato Aclarado	Rinse Thermostat	Thermostat de rinçage
TC11	=	Termostato Calderin Temperatura Max.	Boiler thermostat Max. temperature	Thermostat Température max. chaudière
TC12	=	Termostato Calderin Temperatura min.	Boiler thermostat min. temperature	Thermostat Température min. chaudière
TREC	=	Termostato Recuperador	Recovery Thermostat	Thermostat récupérateur
TRF	=	Transformador	Transformer	Transformateur
TSA	=	Termostato Seguridad Aclarado	Rinse Hi-limit Thermostat	Thermostat Limiteur rinçage
TS1,2	=	Termostato Secado 1, 2	Drying 1,2 Thermostat	Thermostat séchage 1, 2
TSC1	=	Termostato Seguridad Calderin 1	Boiler 1 Hi-limit Thermostat	Thermostat Limiteur Chaudière
TST1,2	=	Termostato Seguridad Tanque 1,2	Washed 1,2 Hi-limit Thermostat	Thermostat Limiteur lavage 1, 2
TT1,2	=	Termostato Tanque 1, 2	Washed 1,2 Thermostat	Thermostat lavage 1, 2
VA	=	Electrovalvula Llenado y Aclarado	Filling and Rinse Solenoid Valve	Electrovanne Remplissage et rinçage
VEV	=	Electrovalvula Extractor de Vahos	Steam extractor Solenoid Valve	Electrovanne extracteur vapeur
VF	=	Variador de Frecuencia	Variable frequency drive	Variateur de fréquence
VL1,2	=	Electrovalvula Llenado Tanque 1, 2	Filling Tank 1, 2 Solenoid Valve	Electrovanne de remplissage 1, 2
VG	=	Electrovalvula General Recuperador	Recovery Solenoid Valve main	Electrovanne général Recuperateur
VREC	=	Electrovalvula Recuperador	Recovery Solenoid Valve	Electrovanne Recuperateur
ZA	=	Alarma Enganchon	Buzzer alarm stuck	Alarme buzzer blocage
	=			
COLOR	=	COLORES	COLOUR	COULEURS
BLK, bk, n	=	Negro	Black	Noir
BLU, bl, a	=	Azul	Blue	Bleu
BRN, bn, m	=	Marrón	Brown	Marron
GRN, gn, ve	=	Verde	Green	Vert
GRY, gy, g	=	Gris	Grey	Gris
ORG, or, na	=	Naranja	Orange	Orange
PNK, pk, rs	=	Rosa	Pink	Rose
PRP, pr, vi	=	Violeta	Purple	Violet
RED, rd, r	=	Rojo	Red	Rouge
WHT, wh, b	=	Blanco	White	Blanc
YEL, yw, am	=	Amarillo	Yellow	Jaune
YELGRN, am/ve	=	Amarillo/verde	Yellow / green	Jaune / vert
			L 37	12168021


12134795
CO 501 MARINE
400 V. 3 Ph, Without Neutral
CO 501, B, DD
230 V, 1 N
230 V 3Ph
400 V, 3N
PRG
POWER ON
FILLING TANK
CYCLE
Draining cycle
Start with Digit=OFF
P1 Short
P2
P3 Long
TSC
TST


CO 501
296 Aparatos
230 V 3Ph
400 V 3N
230 V 1N
12095436
12095673
12092009
12089927
12103192
12111079
12103338



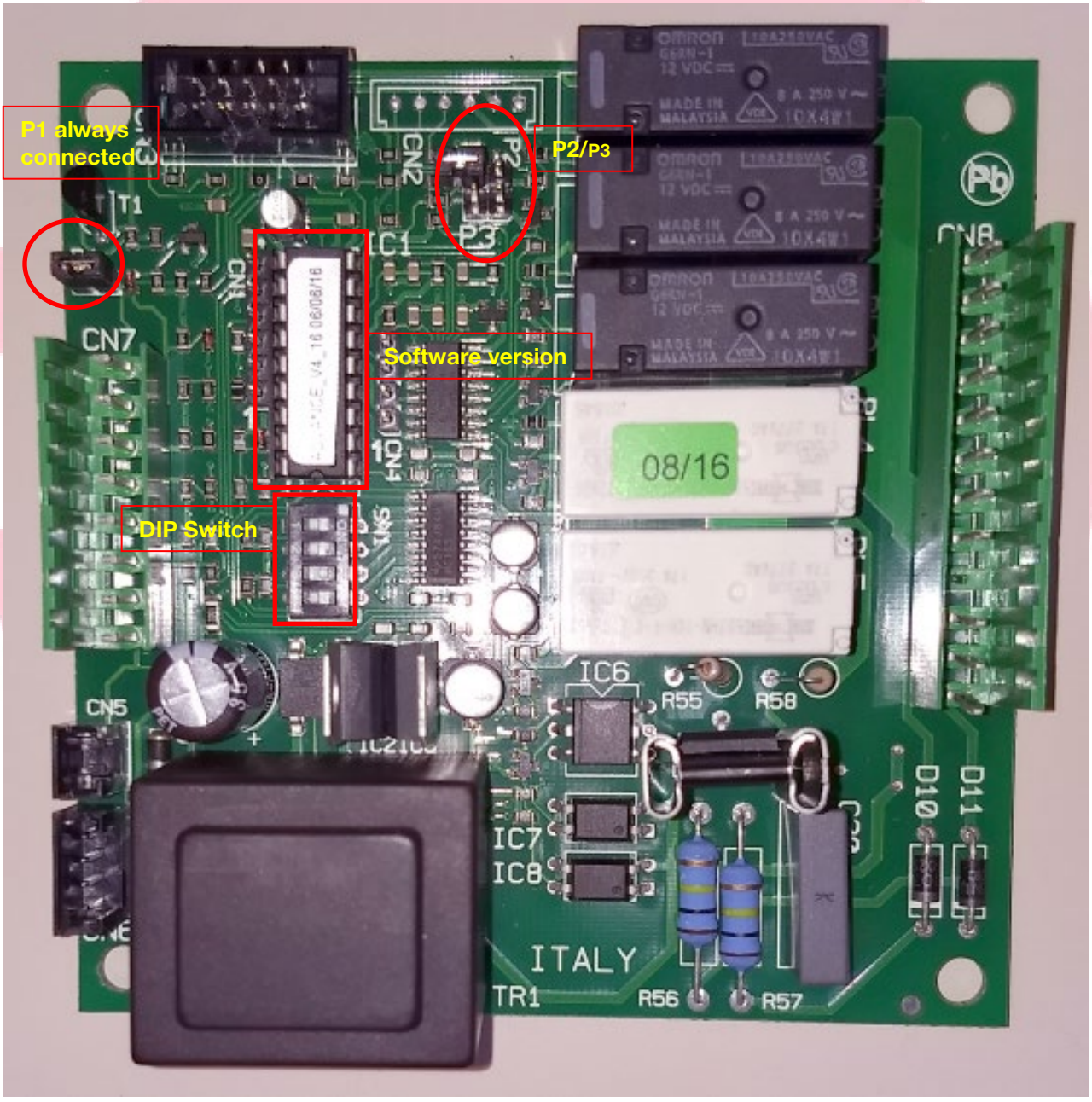
The digit for the “unit (XX?)”identifies the control type in the machine.

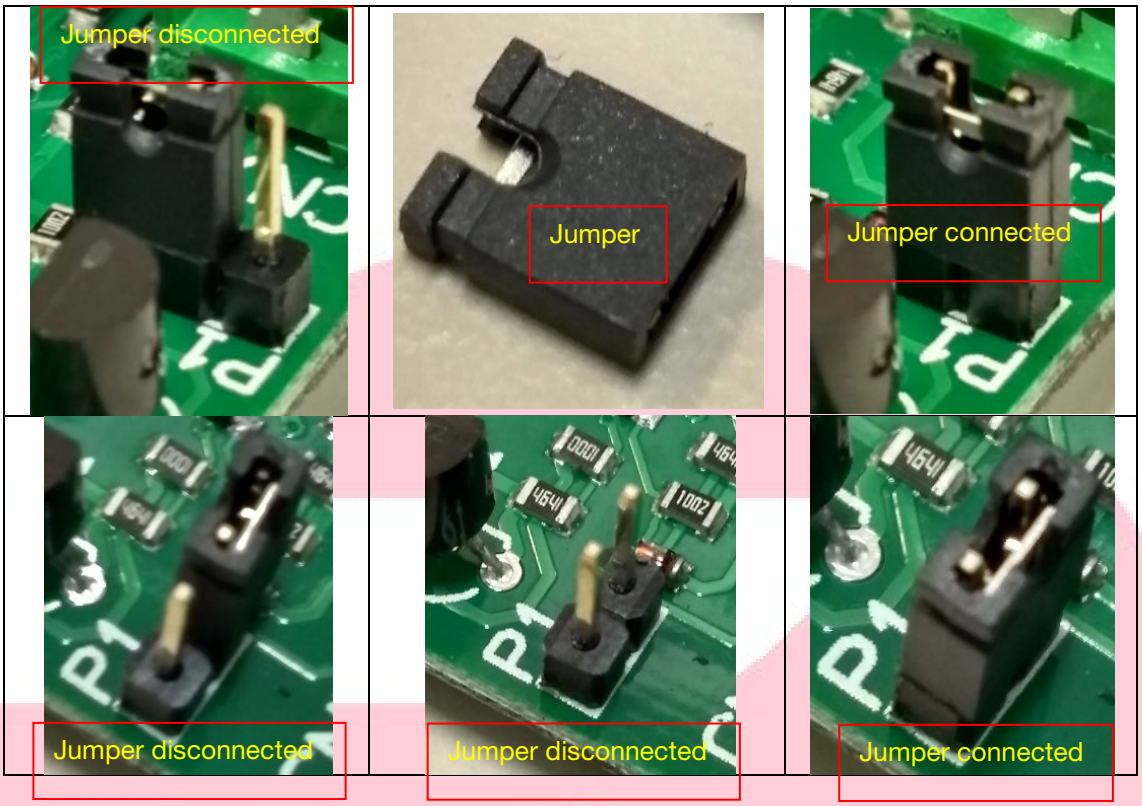
- CO-XX0 – Basic model.
- CO-XX1 – Basic model with certain extras with respect to the CO-XX0.model.
- CO-XX2 – Model with display and membrane.

The hardware is the same in the CO-XX0 and CO-XX1 models but the software is different.

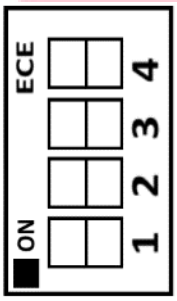
MODELS XX0 and XX1 (Software: CONCEPT PLUS)

12189021 Control Card 230V AC 50/60Hz 5rel UL (CO-500 and CO-501)





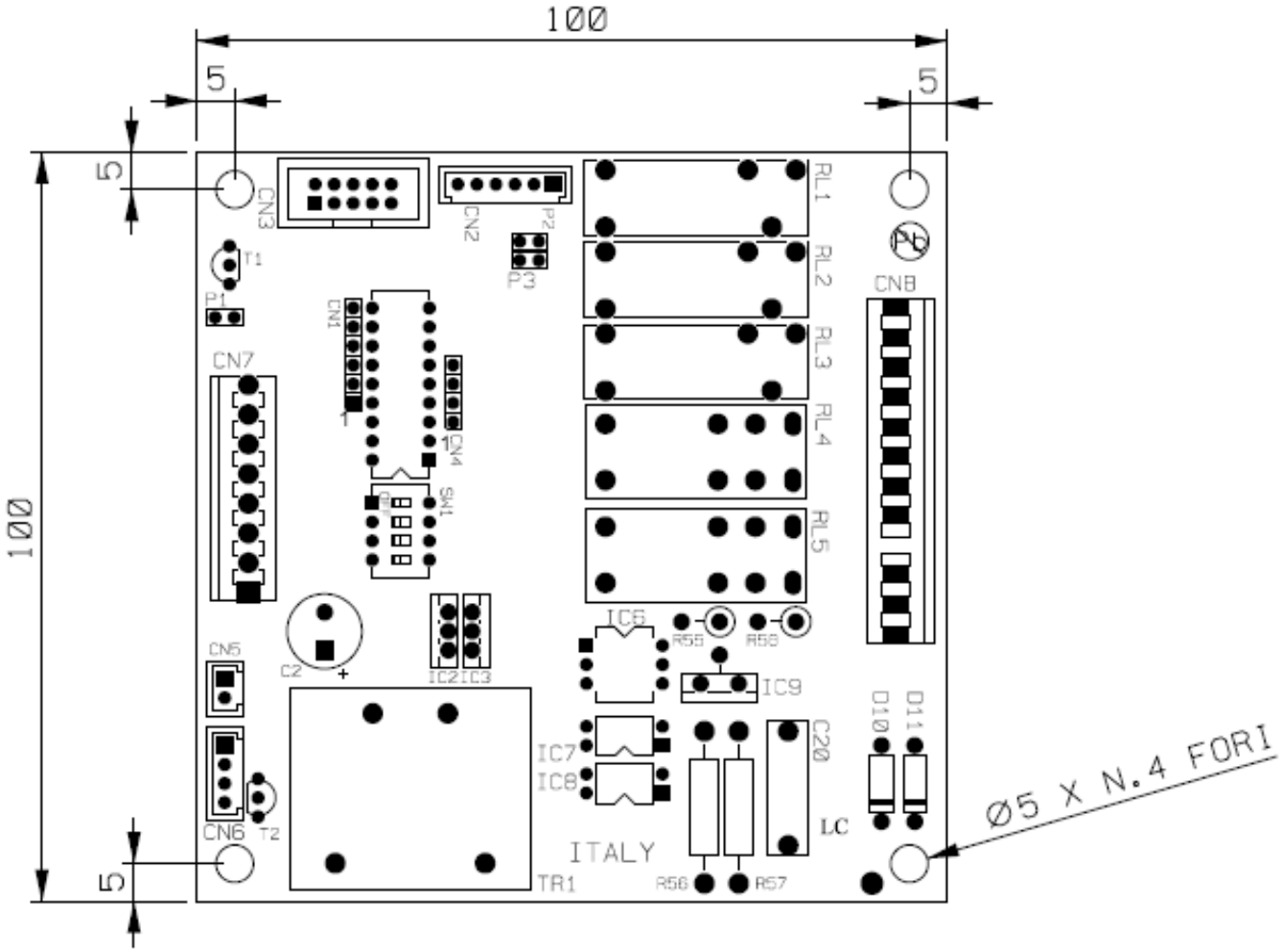
P1: with Jumper (door safety switch not active, not all outputs are disconnected if door is open)
P2: with Jumper, Soft Start active
P3: Out of use

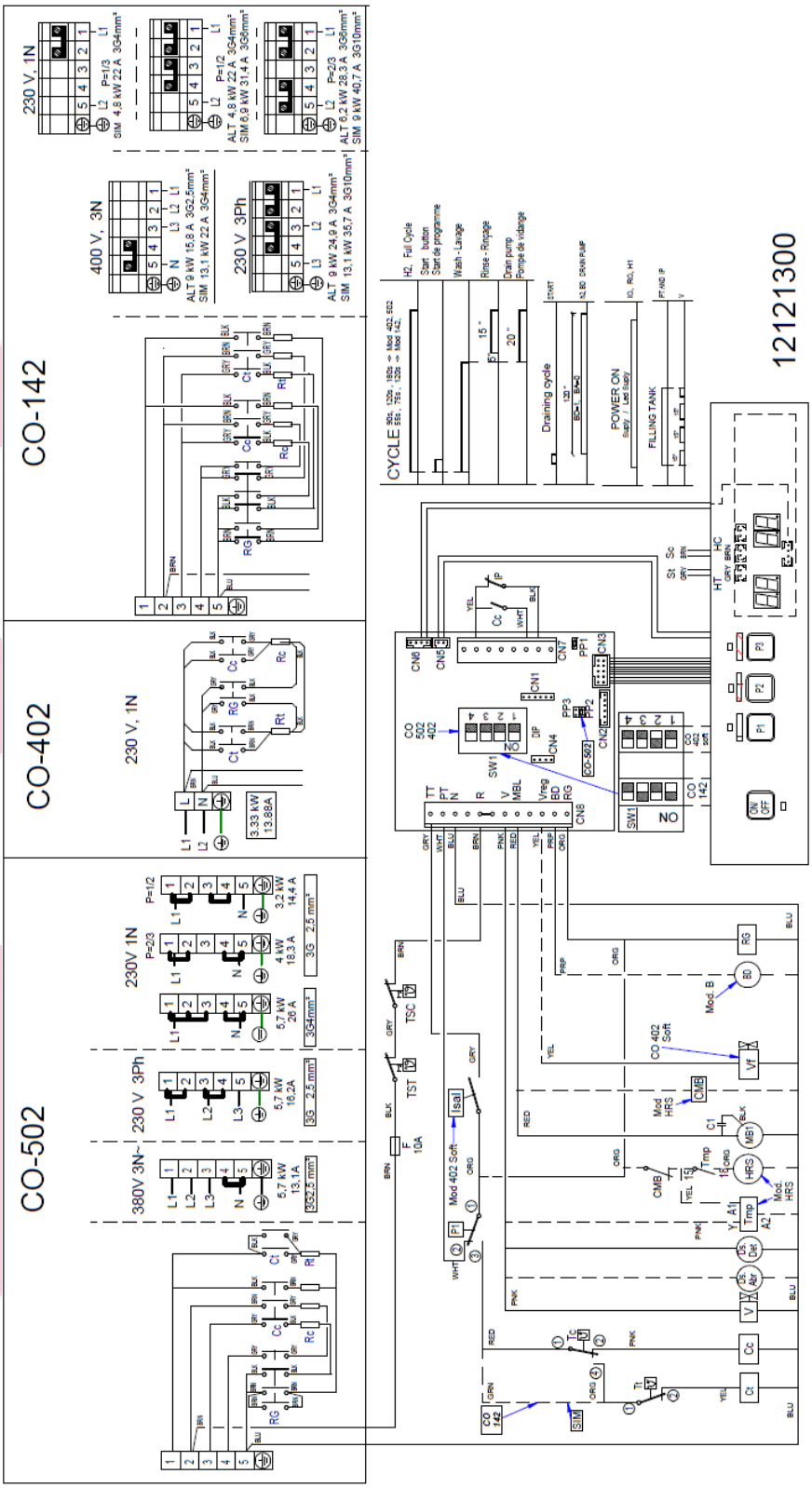
5 RELAY CARD 12189021		
	DIP1 → Door	DIP1=0 → Glass washer / Front Loading To begin a new wash cycle, select the required programme, the appliance is on stand-by meanwhile DIP1=1 → Hood type To start a new wash cycle, just open and close the door, and the last used programme is run
	DIP2 → Regeneration	DIP2=0 → Standard Appliance without descaler DIP2=1 → SOFT Models The appliance has descaler/regeneration
	DIP3 → Cycle Times	Together with DIP 1 Defines the cycle times See next page
	DIP4 → Rinse Pump	DIP4=0 → CO Model No rinse pump DIP4=1 → COP Model Has rinse pump

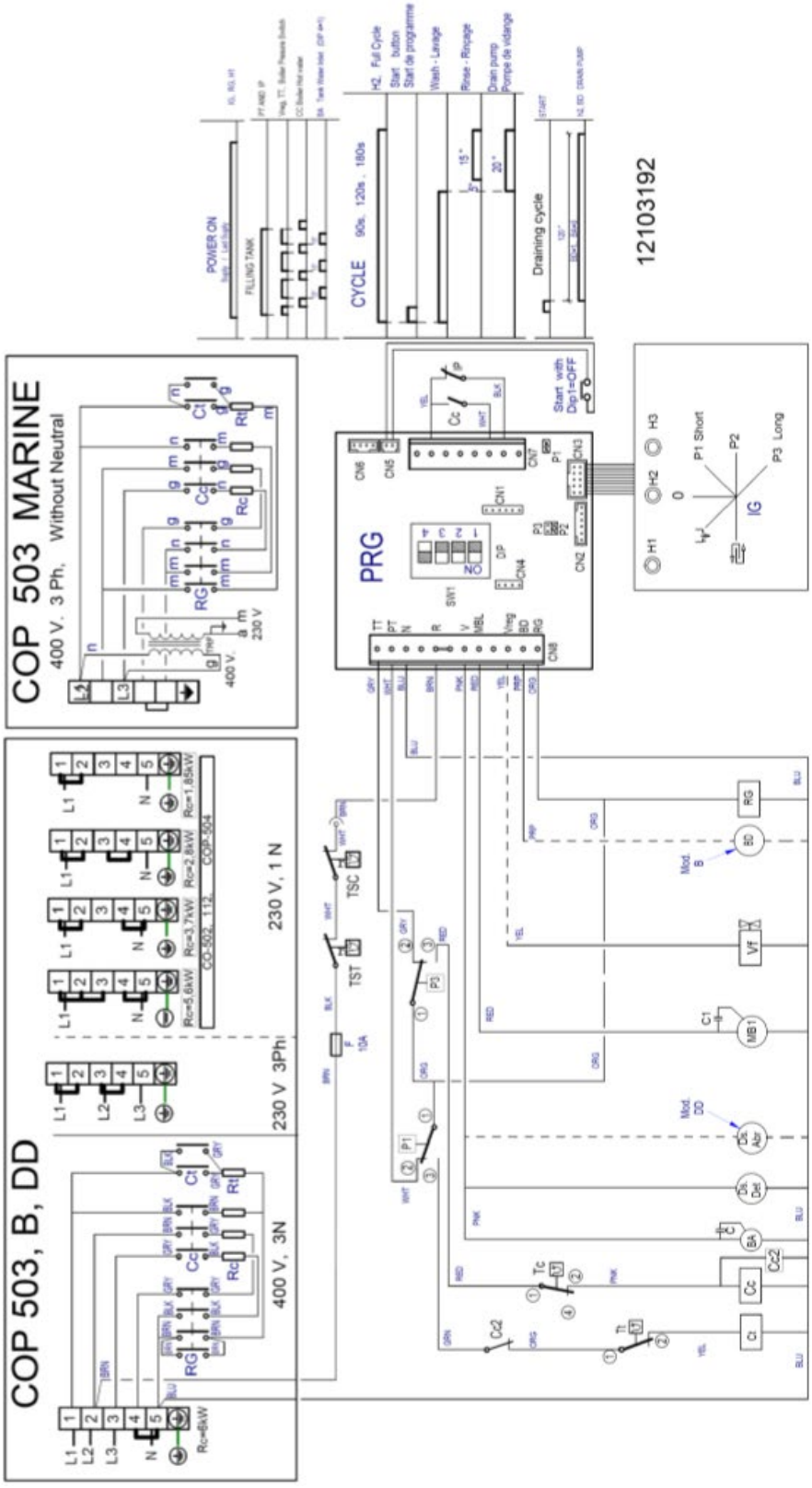
	CYCLE TIMES WASH:		P1	P2	P3	P4
FRONT OPENING	DIP1=1	DIP3=0	90	120	180	600
	DIP1=1	DIP3=1	55	75	120	600

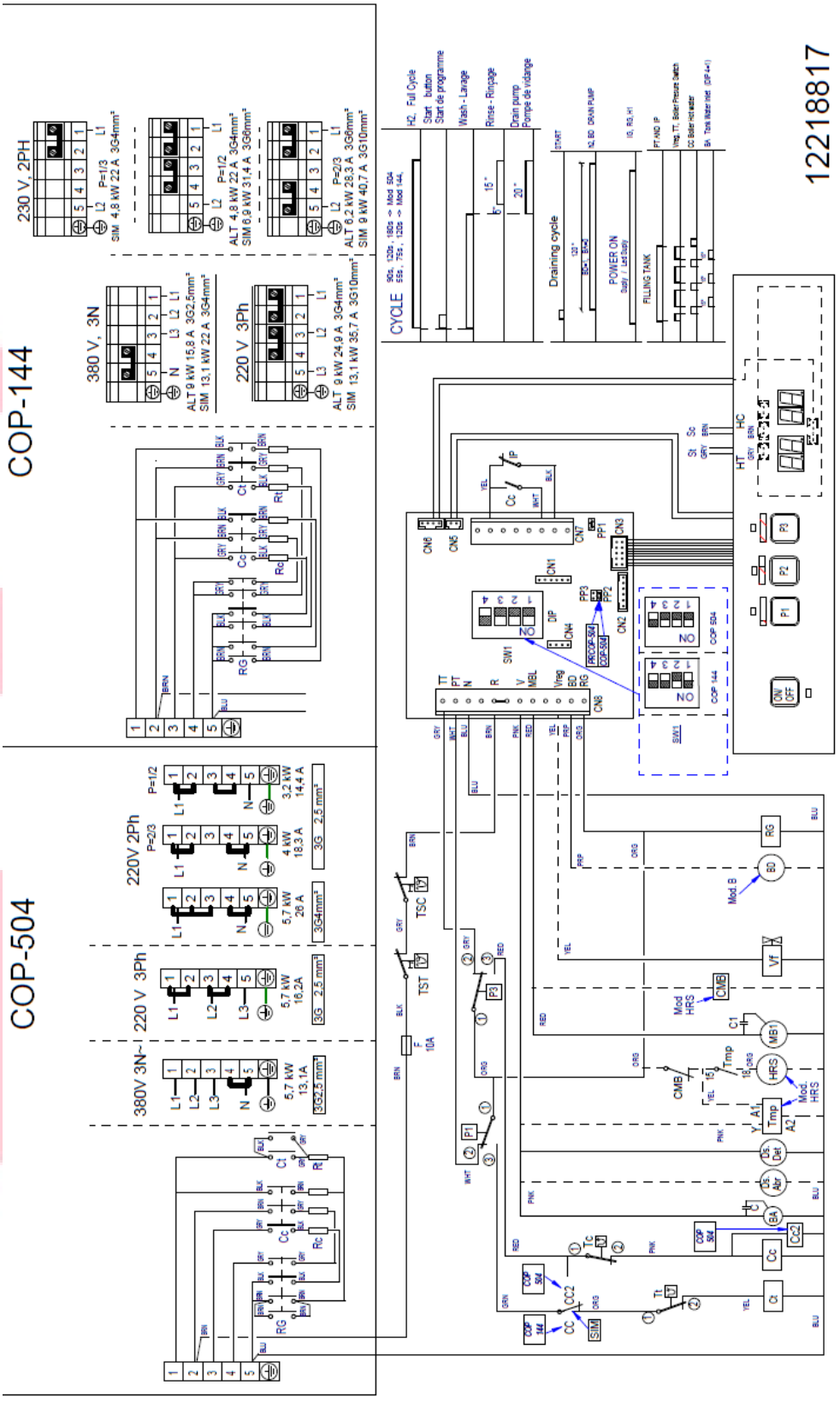
13.1.3. ELECTRONIC CONTROL CARD 12008750 (CO-502, CO-502 W, COP-503, COP-504 and COP-504 W)

This electronic card has the same hardware as the electronic card 12185533. The difference is that the 12008750 is in fact the 12185533 + box.




CO-142
CO-402
CO-502
230 V, 1N
400 V, 3N
230 V 3Ph
380V 3N~
CYCLE
Draining cycle
POWER ON
FILLING TANK
12121300


12103192
POWER ON
FILLING TANK
CYCLE
90s. 120s. 180s
H2. Full Cycle
Start button
Start de programme
Wash - Lavage
Rinse - Rinçage
Drain pump
Pompe de vidange
Draining cycle
15'
25'
Start with Dip1=OFF
COP 503 MARINE
400 V. 3 Ph. Without Neutral
400 V.
à m
230 V
COP 503, B, DD
230 V, 1 N
230 V 3Phi
400 V, 3N
PRG
P1 Short
P2
P3 Long
IG
H1
H2
H3
0
TSC
TST
10A
Mod. B
Mod. DD
MB1
Tc
Cc2
Cc
Ci
Vf
RG
BD


COP-144
COP-504
12218817
230 V, 2PH
380 V, 3N
220 V 3Ph
380V 3N~
220V 2Ph
CYCLE
Draining cycle
POWER ON
FILLING TANK

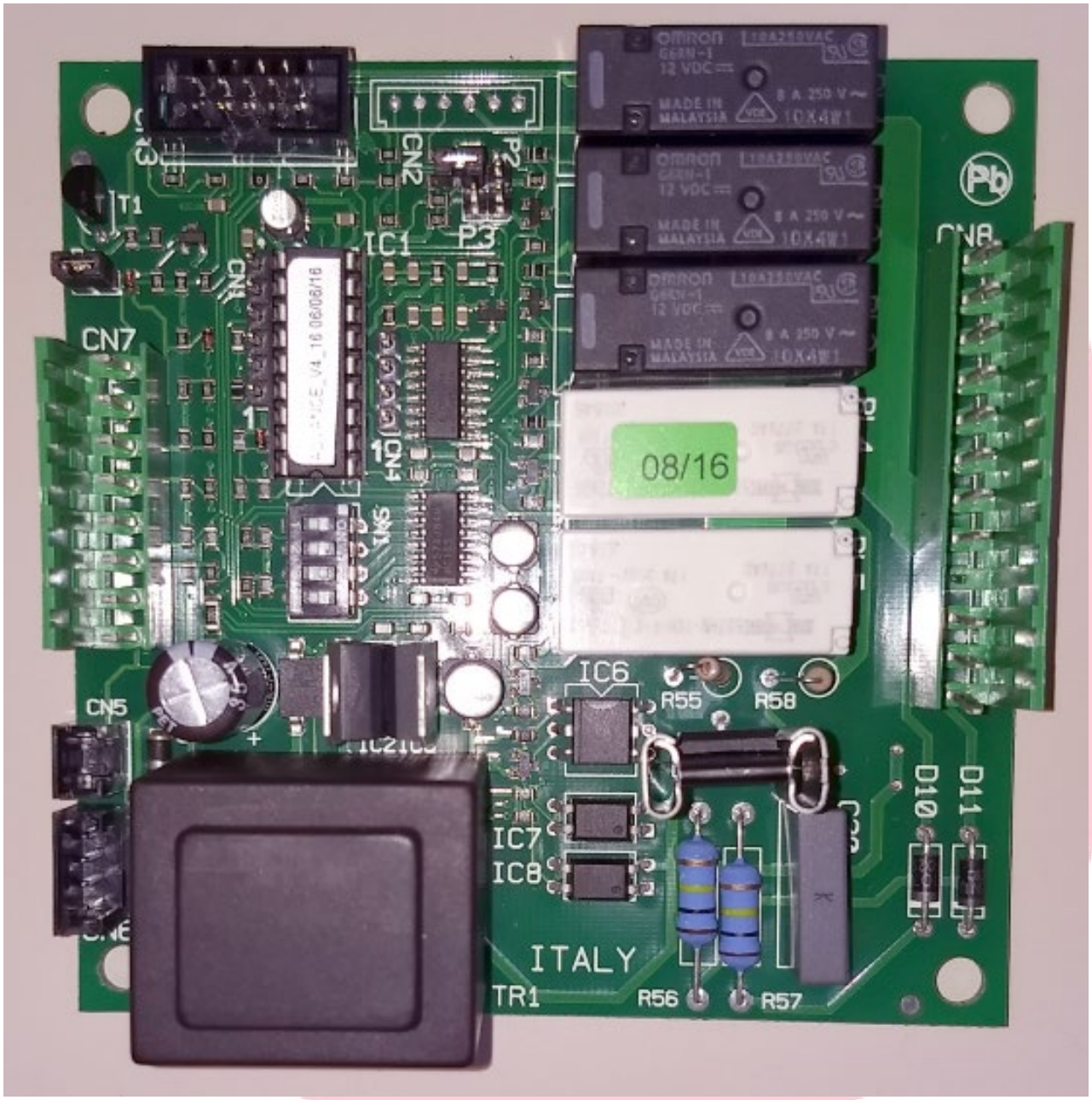
Simb / LENG		ESPAÑOL	ENGLISH	FRANÇAIS
A,B (CCO)	=	Puntos de conexión con K1	Connection points with K1	Points de connexion K1
C1,C2,C3,C4	=	Condensador electrico	Electric condenser	Condensateur électrique
CA	=	Rele Auxiliar de Aclarado	Rinse Auxiliary Relay	Relais auxiliaire rinçage
CMBL1,2	=	Contactor Bomba lavado 1,2	Wash 1,2 Pump Contactor	Contacteur pompe lavage 1,2
CMBPL	=	Contactor Bomba PreLavado	Prewash Pump Contactor	Contacteur Pompe prélavage
CMEV	=	Contactor Motor Extractor de Vahos	Steam Exhaust Motor Contactor	Contacteur Moteur Extraction vapeur
CMS	=	Contactor Motor Secado	Drying Motor Contactor	Contacteur moteur Séchage
CMREC	=	Contactor Motor Recuperador	Contactor Motor Recover	Contacteur moteur Recuperateur
CRC11,12,13	=	Contactor Calentamiento Calderin	Boiler Heating Contactor	Contacteur Chauffage Chaudière
CRS11,12,21,22	=	Contactor Calentamiento Secado 1,2	Drying 1, 2 Heating Contactor	Contacteur chauffage séchage 1,2
CRTA1,2	=	Contactor Calentamiento Aclarado	Rinse heating Contactor	Contacteur chauffage Rinçage
CRT11,12	=	Contactor Calentamiento Tanque 1	Tank 1 Heating Contactor	Contacteur Chauffage Cuve 1
CRT21,22	=	Contactor Calentamiento Tanque 2	Tank 2 Heating Contactor	Contacteur Chauffage Cuve 2
DS.ABR	=	Dosificador Abrillantador	Rinse doser	Doseur tensoactive
DS.DET	=	Dosificador Detergente	Detergent doser	Doseur détergent
F	=	Fusible	Fuse	Fusible
FMEV	=	Termico Motor Extractor	Steam Exhaust Motor Thermal Overload	Thermique Moteur Extraction vapeur
FML1,2	=	Termico Motor Bomba Lavado1,2	Wash 1,2 Pump Motor Thermal Overload	Thermique Moteur pompe lavage 1,2
FMS1,2	=	Termico Motor Secado 1,2	Drying Motor Thermal Overload	Thermique du Moteur Séchage
FMREC	=	Termico Motor Recuperador	Recover Motor Thermal Overload	Thermique du Moteur Recuperateur
H1	=	Lampara Indicador Marcha	Operation light	Voyant de fonctionnement
H2	=	Lampara Indicador Atorado	Stuck Indicator Lamp	Voyant Bloqués
IA	=	Interruptor Accionamiento Aclarado	Rinsing actuator Switch	Interrupteur d'actionneur de rinçage
IE1,2	=	Pulsador Parada de emergencia 1,2	Emergency 1,2 stop push button	Bouton-poussoir Arrêt d'urgence 1,2
IG	=	Interruptor general.	Power On	Interrupteur général
IGS	=	Interruptor General de seguridad.	Disconnect Switch	Interrupteur Général de sécurité
IL	=	Interruptor Accionamiento Lavado	Wash actuator Switch	Interrupteur d'actionneur de lavage
IM / IP	=	Pulsador Marcha / Parada	Start / Stop push button	Bouton de démarrage / arrêt
IPA	=	Interruptor Puerta Lavado	Washer Door Switch	Interrupteur de porte de lavage
IPPL	=	Interruptor Puerta PreLavado	Prewash Door Switch	Interrupteur de porte prélavage
IPT1,2	=	Interruptor Puerta Tanque 1,2	Tank 1,2 Door Switch	Interrupteur de porte cuve 1,2
IR	=	Interruptor Retroceso Desenganche	Reverse stuck Switch	Interrupteur marche arrière à la blocage
ISV	=	Interruptor Seguridad Enganchon	Overload stuck Switch	Interrupteur marche à la blocage
PRG	=	Control Electronico	Electronic Control	Contrôle électronique
KA1, 2	=	Rele Auxiliar Llenado y Aclarado 1, 2	Fill and Rinse 1, 2 Auxiliary Relay	Relais auxiliaire remplissage et rinçage 1, 2
KP	=	Rele de Puerta	Door Relay	Relais de porte
KTT1	=	Rele Auxiliar Termostato Tanque1	Auxiliary Relay Tank Thermostat1	Thermostat Relais auxiliaire cuve 1
K1	=	Rele Auxiliar Generador Agua Caliente	Auxiliary Relay Hot Water Generator	Générateur auxiliaire Relais eau chaude
MBA	=	Moto Bomba Aclarado	Pump Rinsing	Pompe Rinçage
MBL1,2	=	Moto Bomba Lavado1,2	Washed Pump 1,2	Pompe de lavage 1,2
MBP	=	Moto Bomba Llenado	Filling Pump	Pompe de remplissage
MBPL	=	Moto Bomba PreLavado	Prewash Pump	Pompe à prélavage
MEV	=	Motor Extractor de Vahos	Steam extractor motor	Moteur extracteur vapeur
MREC	=	Motor Recuperador	Motor Recovery	Moteur Récupérateur
MS1,2	=	Motor Secado 1,2	Drying motor 1,2	Moteur de séchage 1,2
MV	=	Motor Arrastre	Advance Motor	Moteur d'entraînement
PA	=	Presostato Aclarado	Rinsed tank Pressure Switch	Pressostat de rinçage
PPL	=	Presostato Prelavado	Prewash tank Pressure Switch	Pressostat de prélavage cuve
PT1	=	Presostato Tanque 1	Washed tank 1 Pressure Switch	Pressostat de lavage cuve 1
PT2	=	Presostato Tanque 2	Washed tank 2 Pressure Switch	Pressostat de lavage cuve 2
R,N	=	Puntos conexión 230V	230V connection points	Points de connexion 230V
RC11,12,13	=	Resistencia Calentamiento Calderin	Boiler Element Heating	Resistance Chauffage Chaudière
RS1, 2	=	Resistencia Calentamiento Secado 1, 2	Drying Element Heating	Resistance Chauffage séchage
RTA	=	Resistencia Calentamiento Aclarado	Rinse tank Element Heating	Resistance Chauffage rinçage
RT11,12	=	Resistencia Calentamiento Tanque 1	Washed Tank 1 Element Heating	Resistance Chauffage lavage cuve 1
RT2	=	Resistencia Calentamiento Tanque 2	Washed Tank 2 Element Heating	Resistance Chauffage lavage cuve 2
SF	=	Interruptor Fin recorrido	Safety end Switch	Interrupteur fin de coourse
TA	=	Termostato Aclarado	Rinse Thermostat	Thermostat de rinçage
TC11	=	Termostato Calderin Temperatura Max.	Boiler thermostat Max. temperature	Thermostat Température max. chaudière
TC12	=	Termostato Calderin Temperatura min.	Boiler thermostat min. temperature	Thermostat Température min. chaudière
TREC	=	Termostato Recuperador	Recovery Thermostat	Thermostat récupérateur
TRF	=	Transformador	Transformer	Transformateur
TSA	=	Termostato Seguridad Aclarado	Rinse Hi-limit Thermostat	Thermostat Limiteur rinçage
TS1,2	=	Termostato Secado 1, 2	Drying 1,2 Thermostat	Thermostat séchage 1, 2
TSC1	=	Termostato Seguridad Calderin 1	Boiler 1 Hi-limit Thermostat	Thermostat Limiteur Chaudière
TST1,2	=	Termostato Seguridad Tanque 1,2	Washed 1,2 Hi-limit Thermostat	Thermostat Limiteur lavage 1, 2
TT1,2	=	Termostato Tanque 1, 2	Washed 1,2 Thermostat	Thermostat lavage 1, 2
VA	=	Electrovalvula Llenado y Aclarado	Filling and Rinse Solenoid Valve	Electrovanne Remplissage et rinçage
VEV	=	Electrovalvula Extractor de Vahos	Steam extractor Solenoid Valve	Electrovanne extracteur vapeur
VF	=	Variador de Frecuencia	Variable frequency drive	Variateur de fréquence
VL1,2	=	Electrovalvula Llenado Tanque 1, 2	Filling Tank 1, 2 Solenoid Valve	Electrovanne de remplissage 1, 2
VG	=	Electrovalvula General Recuperador	Recovery Solenoid Valve main	Electrovanne général Recuperateur
VREC	=	Electrovalvula Recuperador	Recovery Solenoid Valve	Electrovanne Recuperateur
ZA	=	Alarma Enganchon	Buzzer alarm stuck	Alarme buzzer blocage
	=			
COLOR	=	COLORES	COLOUR	COULEURS
BLK, bk, n	=	Negro	Black	Noir
BLU, bl, a	=	Azul	Blue	Bleu
BRN, bn, m	=	Marrón	Brown	Marron
GRN, gn, ve	=	Verde	Green	Vert
GRY, gy, g	=	Gris	Grey	Gris
ORG, or, na	=	Naranja	Orange	Orange
PNK, pk, rs	=	Rosa	Pink	Rose
PRP, pr, vl	=	Violeta	Purple	Violet
RED, rd, r	=	Rojo	Red	Rouge
WHT, wh, b	=	Blanco	White	Blanc
YEL, yw, am	=	Amarillo	Yellow	Jaune
YELGRN, am/ve	=	Amarillo/verde	Yellow / green	Jaune / vert
			L 37	12168021

The digit for the “unit (XX?)” identifies the control type in the machine

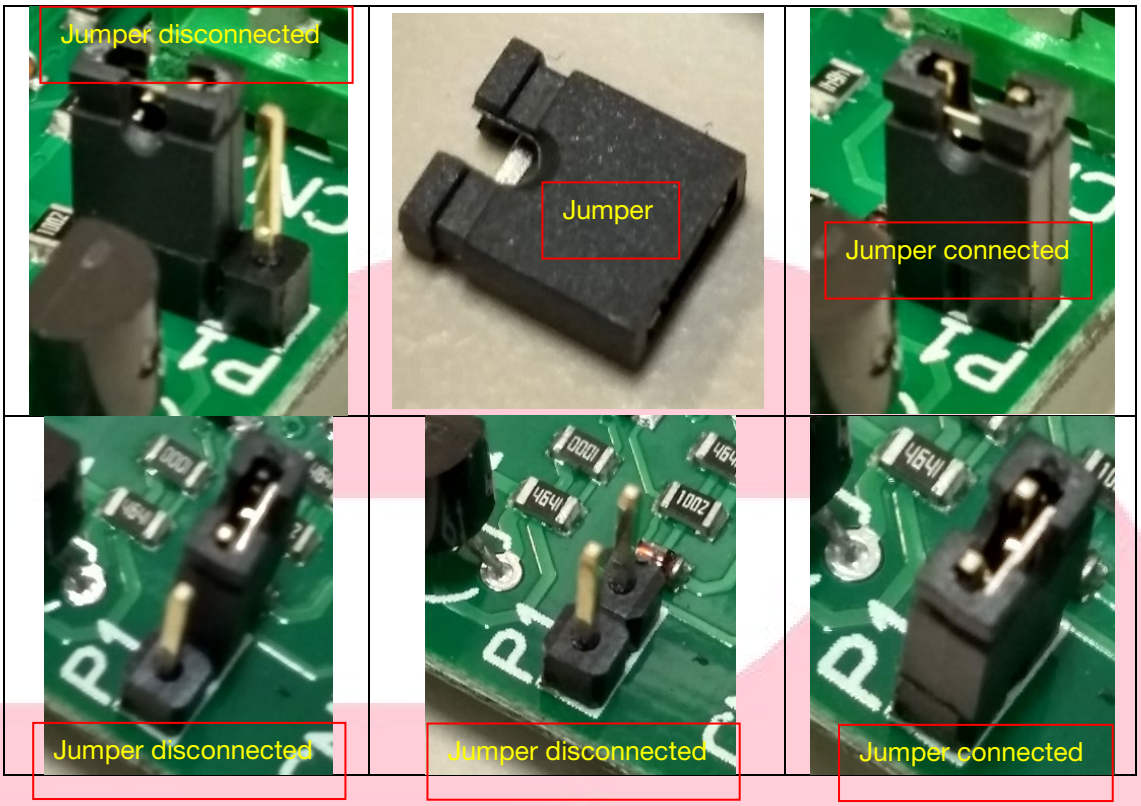
- CO-XX0 – Basic model.
- CO-XX2 – Model with display and membrane.
- COP-XX4 – Model with display, membrane and rinse pump.

MODELS XX2 and XX4 (Software: CO/COP W)

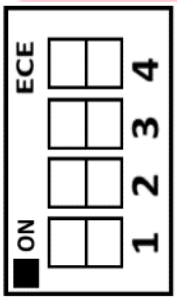
12008750 (12185533+box) _Control Card 230V AC 50/60Hz 5rel UL (CO-112, CO-172, COP-174 and COP-174 W)



P1 alwa
connec

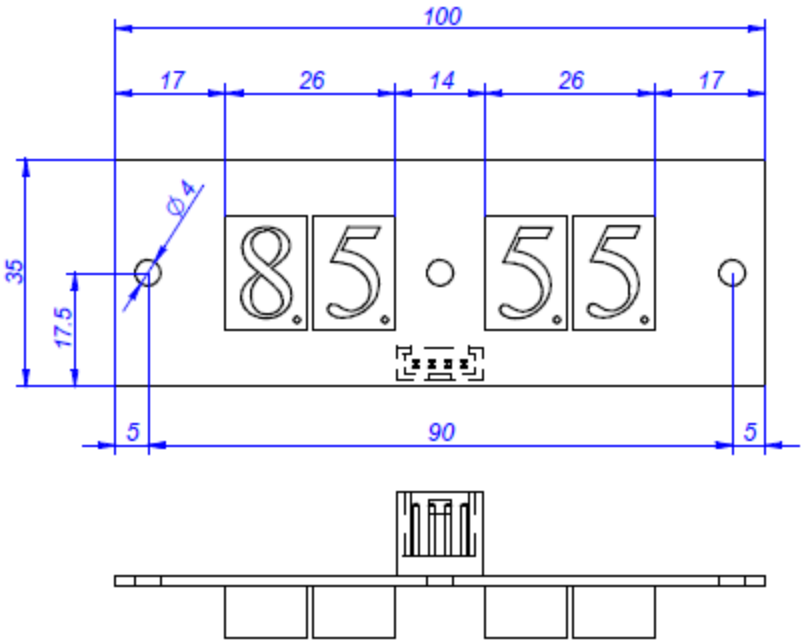


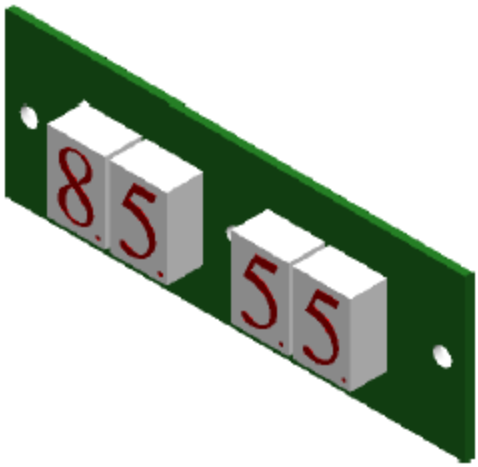
P1: with Jumper (door safety switch not active, not all outputs are disconnected if door is open)
P2: with Jumper, Soft Start active
P3: Out of use

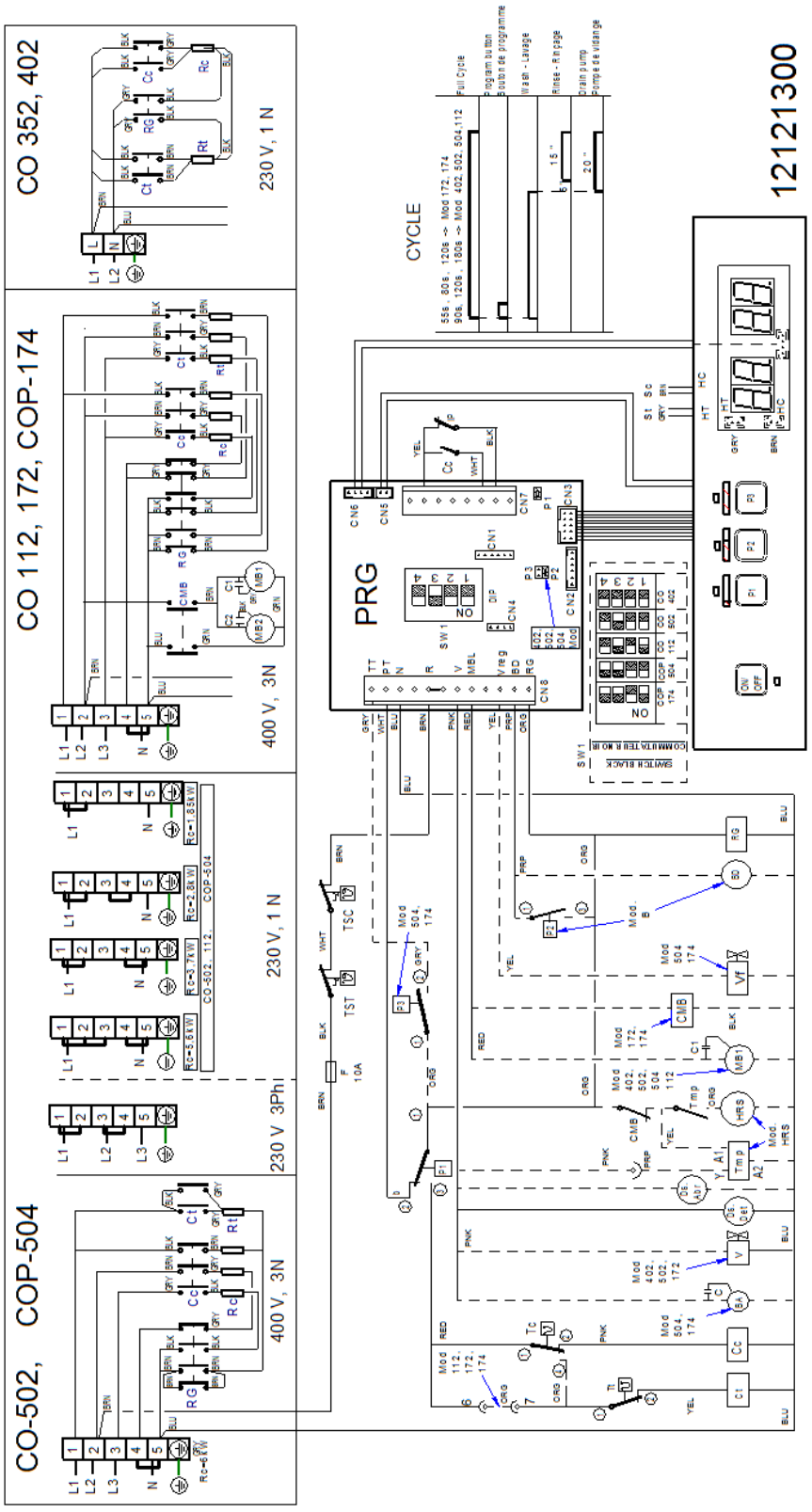
5 RELAY CARD 12008750		
	DIP1 → Door	DIP1=0 → Glass washer / Front Loading I To begin a new wash cycle, select the required programme, the appliance is on stand-by meanwhile DIP1=1 → Hood type To start a new wash cycle, just open and close the door, and the last used programme is run
	DIP2 → Regeneration	DIP2=0 → Standard Appliance without descaler DIP2=1 → SOFT Models The appliance has descaler/regeneration
	DIP3 → Cycle Times	Together with DIP 1 Defines the cycle times See next page
	DIP4 → Rinse Pump	DIP4=0 → CO Model No rinse pump DIP4=1 → COP Model Has rinse pump

	CYCLE TIMES WASH:		P1	P2	P3	P4
FRONT OPENING	DIP1=1	DIP3=0	90	120	180	600
	DIP1=1	DIP3=1	55	75	120	600

13.1.4. VIEWER 12024028 (CO-502 and COP-504)





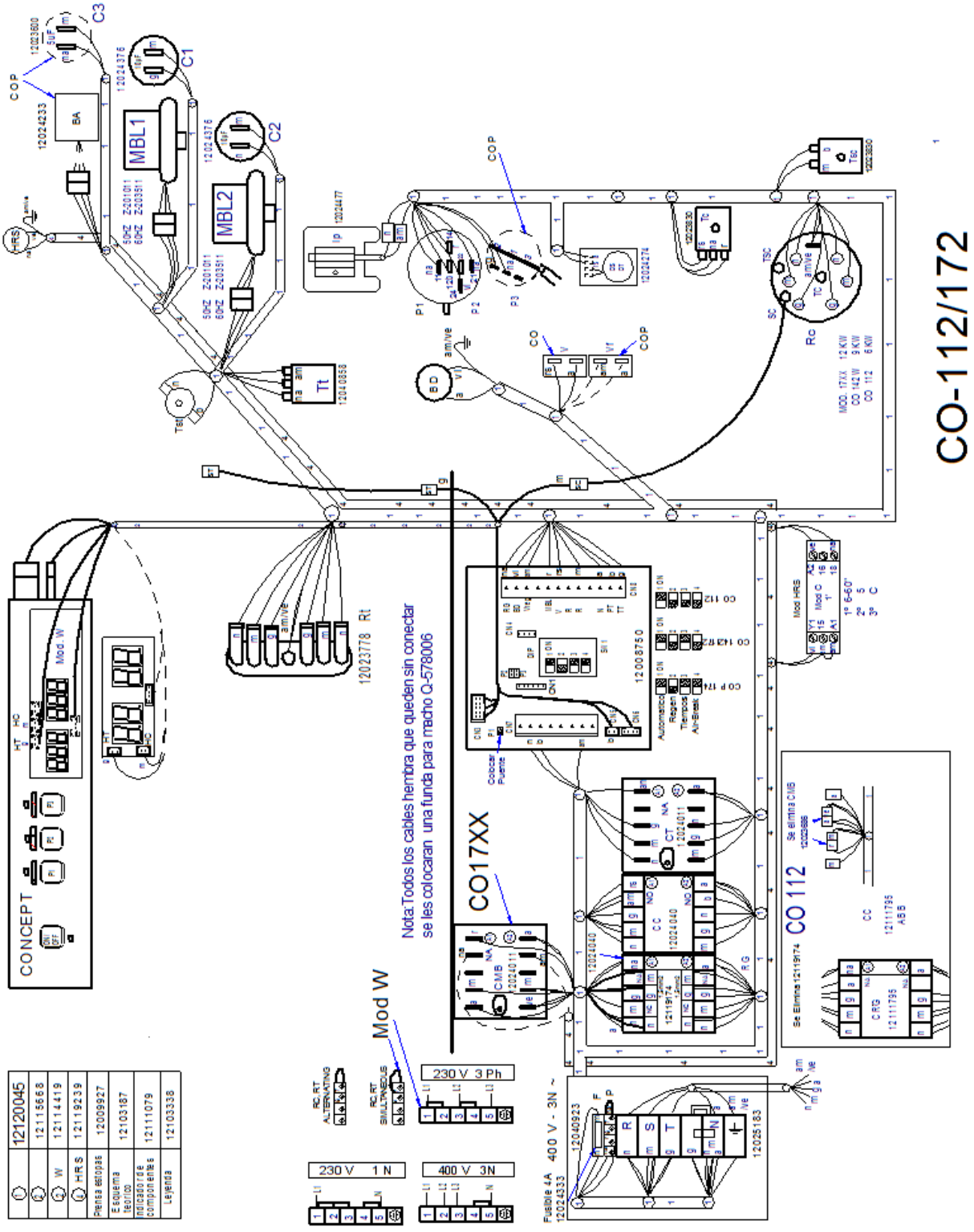

CO 352, 402
230 V, 1 N
CO 112, 172, COP-174
400 V, 3N
230 V, 1 N
230 V 3Phi
CO-502, COP-504
400 V, 3N
PRG
CYCLE
12121300

LEYENDA APERTURA FRONTAL Y CAPOTA

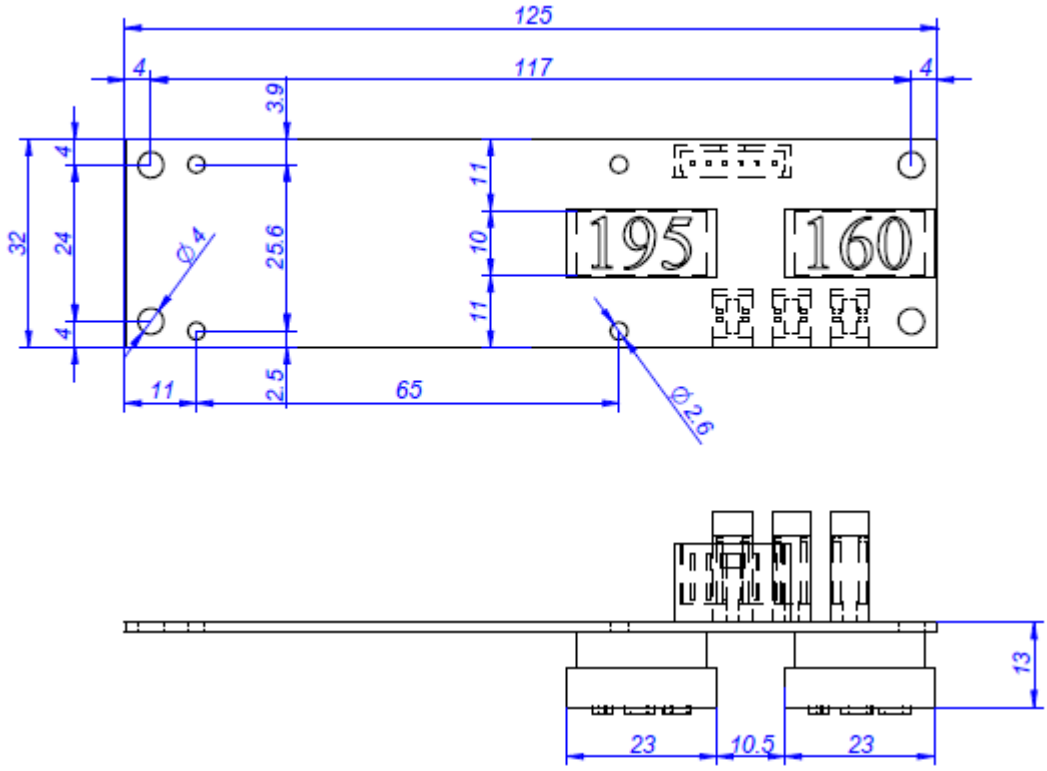
	ESPAÑOL	ENGLISH	FRANÇAIS	DEUTSCH	ITALIANO	中文
Ⓐ Ⓟ	Puntos de conexion con R	Conecction point with R	Points de conexion R	Anschlußpunkte mit R	Punti di collegamento con R	带R接触点
BA	Bomba Aclarado	Rinse pump				
BD	Bomba desagüe	Drain pump	Pompe de vidange	Abflußpumpe	Pompa scarico	排水泵
C1, C2, C3	Condensador	Condenser	Condensateur	Kondensator	Condensatore	电容
CMB	Contactor bomba lavado	Wash pump contactor	Contacteur pompe lavage	Türrelais	Contattore pompa lavaggio	清洗泵接触器
Cc	Contactor calentamiento calderin	Boiler heating contactor	Contacteur chauf. surchauffeur	Kontaktschütz Waschpumpe	Contattore riscaldamento boiler	升温箱加热接触器
Ct	Contactor calentamiento tanque	Tank heating contactor	Contacteur chaufage cuve	Kontaktschütz Boilerheizung	Contattore riscaldamento serbatoio	水箱加热接触器
CP	Rele puerta	Door relay	Relais porte	Kontaktschütz Heizung Tank	Rele porta	门继电器
Ds.	Dosificador	Detergent doser	Dosseur	Dosierer Spülmittel	Dosatore detersivo	清洗剂药液泵
E.B	Electrobomba de presion	Electric pressure pump	Electropompe de pression	Elektro-Drucksteigungspumpe	Electropompa pressione	电子压力泵
IG	Interruptor general	Main switch	Interrupteur general	Hauptschalter	Interruttore generale	主开关
IP	Micro puerta	Door microswitch	Micro porte	Mikroschalter Tür	Micro porta	门磁开关
H1	Piloto de encendido	Operation light	Voyant funcionement	Betriebsanzeigelampe	Spia accensione	运行指示灯
H2	Piloto marcha	Start light	Voyant demarrage	Startanzeigelampe	Spia avvio	开始指示灯
H3	Piloto maquina preparada	Light machine ready	Voyant machine prêt	Betriebsbereitschaftsanzeigelampe	Pilota macchina preparata	加热完成 指示灯
HSal	Piloto falta de Sal	Light Lack of Salt				
MB1, MB2	Bomba lavado	Wash pump	Pompe lavage	Waschpumpe	Pompa lavaggio	清洗泵
M	Motor programador	Motor programmer	Moteur du programmateur	Motor Programmiervorrichtung	Motore programmatore	程序电机
M Av. R	Motor program. avance rapido	Motor program. rapid advance	Moteur du progr.avance rapide	Motor Programmiervorrich. Betrieb	Motore programmatore avanzamento rapido	程序电机. 高速高级
M1	Micro programador marcha	Micro programmer on	Micro du programm. de marche	Motor Programmiervorrich. Waschen	Micro programma. di funzionamento	微程序 开
M2	Micro programador lavado	Micro programmer wash	Micro du programm. de lavage	Motor Programmiervorrich. Spülen	Micro programmatore di lavaggio	微程序 清洗
M3	Micro programador aclarado	Micro programmer rinse	Micro du programm. de rinçage	Motor Programmiervorrich. Vorlauf	Micro programmatore di risciacquo	微程序 喷淋
M4, M5	Micro programador avance	Micro programmer advance	Micro du programm. avance	Motor Programmiervorrich. schneller Vorlauf	Micro programmatore avanzamento	微程序 高级
P1, P3	Presostato	Pressure switch	Pressostat	Druckwächter	Pressostato	压力开关
P2	Presostato limitador	Hi-limit pressure switch	Pressostat de securité	Begrenzer Druckwächter	Pressostato limitatore	高水位限制 压力开关
R	Rele de Generador de A.C.	Generator relay	Relais du Generateur	Relais Generator	Rele Generatore	热水供应器继电器
RG	Rele General	Main Relay		Stromversorgungsanschluß Gener.		
Ⓛ1 Ⓛ2 Ⓛ3 Ⓝ	Alimentac. Generador A.C.	Water heater feeding	Alimentation generateur		Alimentazione generatore	热水供应器电源线
RC	Resistencia calderin	Boiler heating element	Resistance surchauffeur	Heizwiderstand Boiler	Resistenza boiler	升温箱加热管
RT	Resistencia tanque	Tank heater	Resistance cuve	Heizwiderstand Tank	Resistenza serbatoio	水箱加热管
Tt	Termostato tanque	Tank thermostat	Thermostat de cuve	Thermostat Tank	Termostato serbatoio	水箱温控器
TC	Termostato calderin	Boiler thermostat	Thermostat surchauffeur	Thermostat kessel	Termostato boiler	升温箱温控器
Tst	Limitador tanque	Tank limiter	Limitateur de cuve	Begrenzer Tank	Limitatore serbatoio	水箱安全温控器
TSC	Limitador calderin	Boiler Hi-limit	Limiteur surchauffeur	Begrenzer Boiler	Limitatore boiler	升温箱安全温控器
TSTP	Termostato termo-stop	Termo-stop Thermostat	Thermostat Termo-stop	Thermostat Termo-stop	Termostato Termo-stop	温度停止温控器
V	Electrovalvula llenado y aclarado	Fill and rinse valve	Electrovan. remplissage rinçage	Elektroventil Füllen und Spülen	Elettroval. riempimento e risciacquo	电磁阀
Vf	Electrovalvula Aclarado Frio	Cold Water rinse valve				
VR1, VR2, VR3, BR	Electrovalvula Descalcificacion	Soft Water valve				
VE,	Ventilador cuadro electrico	Switchboard fan	Ventilateur tableau electrique	Schalttafelventilator	Ventilatore quadro elettrico	风机
HRS	Sistema recuperacion energia	Heat Recovery System				

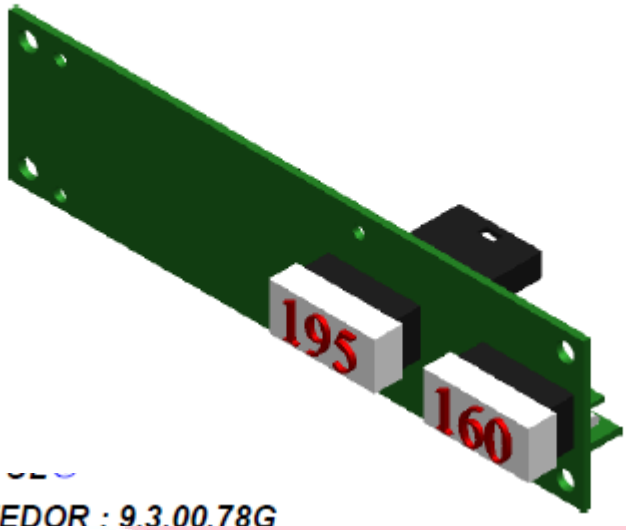
COLOR	COLORES	COLOUR	COULEURS	FARBEN	COLORE	颜色
a = BLU =	Azul	Blue	Bleu	Blau	Blu	蓝
am = YEL =	Amarillo	Yellow	Jaune	Gelb	Giallo	黄
am/ve = YEL/GRN	Amarillo/verde	Yellow / green	Jaune / vert	Gelb/grün	Giallo/verde	黄/绿
b = WHT =	Blanco	White	Blanc	Weiß	Bianco	白
g = GRY =	Gris	Grey	Gris	Grau	Grigio	灰
m = BRN =	Marrón	Brown	Marron	Braun	Marrone	棕
n = BLK =	Negro	Black	Noir	Schwarz	Nero	黑
na = ORG =	Naranja	Orange	Orange	Orange	Arancio	橙
r = RED =	Rojo	Red	Rouge	Rot	Rosso	红
rs = PNK =	Rosa	Pink	Rose	Rosa	Roseo	粉
ve = GRN =	Verde	Green	Vert	Grün	Verde	绿
vi = PRP =	Violeta	Purple	Violet	Violett	Viola	紫

12103338

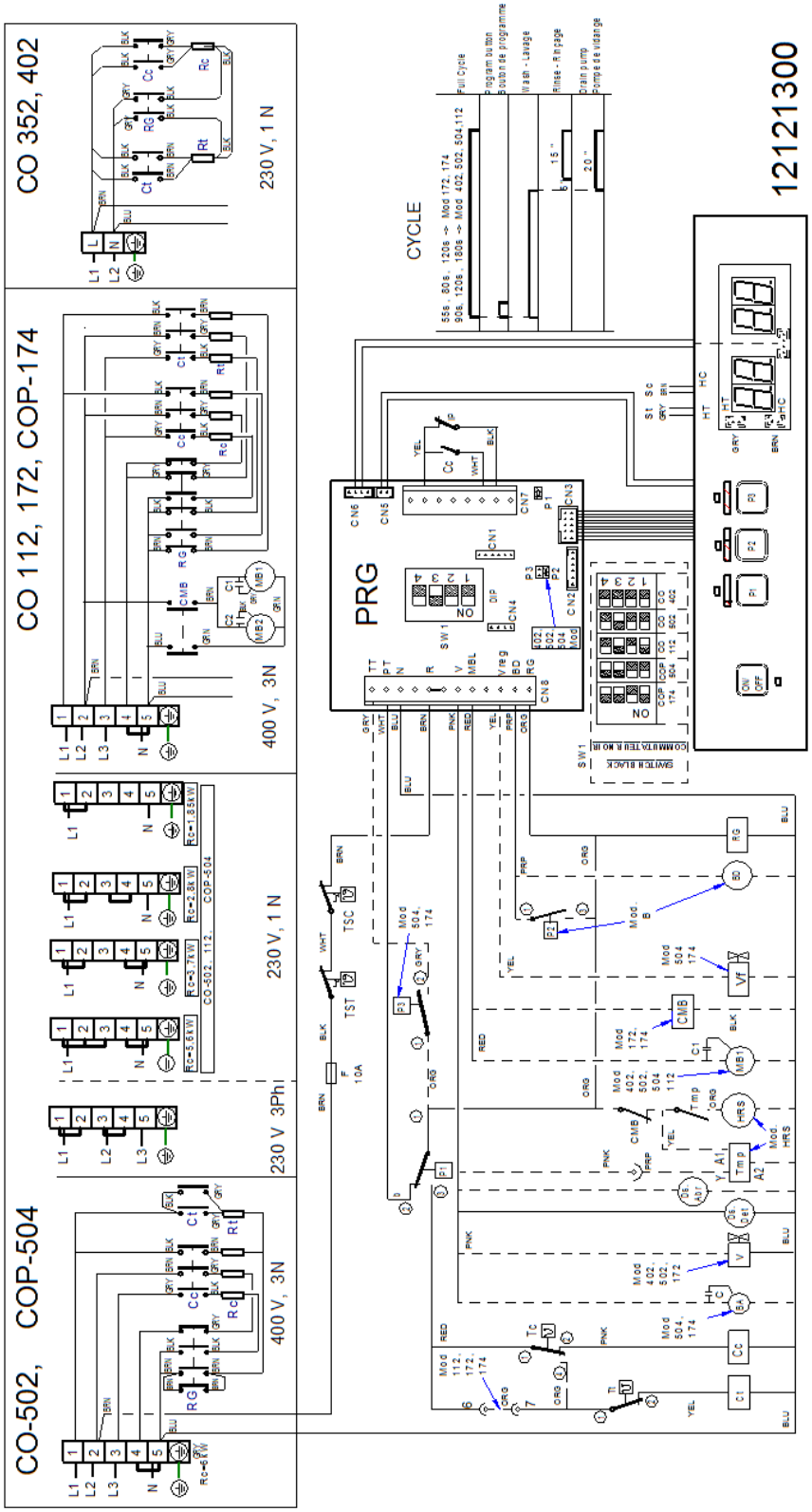

CO-112/172
CONCEPT
Mod W
CO17XX
CO 112
Nota:Todos los cables hembra que queden sin conectar se les colocaran una funda para macho Q-578006
230 V 3 Ph
230 V 1 N
400 V 3N
400 V - 3N ~
C1
C2
C3
MBL1
MBL2
BA
BD
Tt
Rc
Rt
COP
12120045
12115668
12114419
12119239
12009927
12103187
12111079
12103338

13.1.5. VIEWER 12010417 (CO-502 W and COP-504 W)





DIGO PROVEEDOR : 9.3.00.78G


CO 352, 402
230 V, 1 N
CO 112, 172, COP-174
400 V, 3N
230 V, 1 N
230 V 3Phi
CO-502, COP-504
400 V, 3N
CYCLE
PRG
12121300

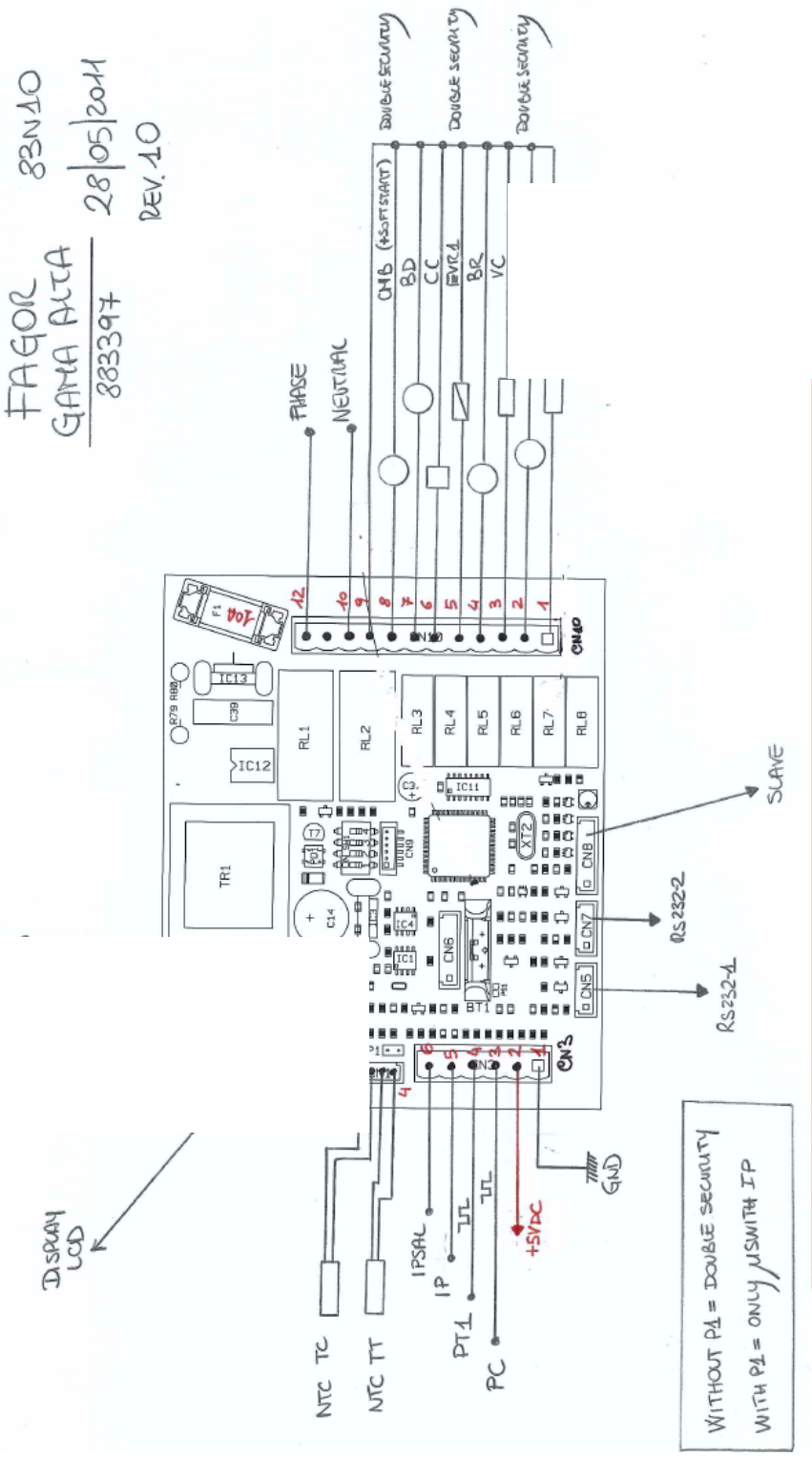
LEYENDA APERTURA FRONTAL Y CAPOTA

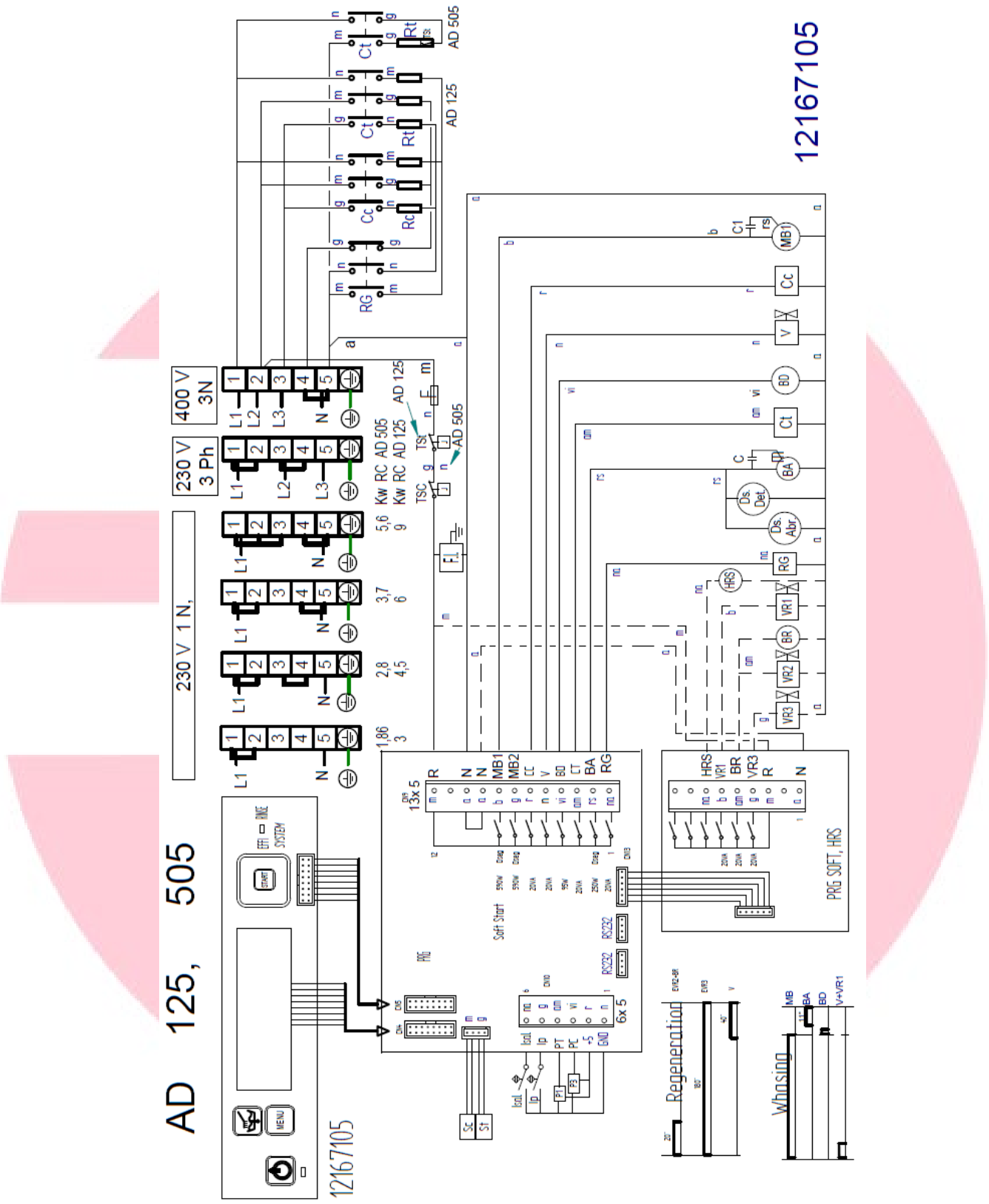
	ESPAÑOL	ENGLISH	FRANÇAIS	DEUTSCH	ITALIANO	中文
Ⓐ Ⓡ	Puntos de conexion con R	Conecction point with R	Points de conexion R	Anschlußpunkte mit R	Punti di collegamento con R	带R接触点
BA	Bomba Aclarado	Rinse pump				
BD	Bomba desagüe	Drain pump	Pompe de vidange	Abflußpumpe	Pompa scarico	排水泵
C1, C2, C3	Condensador	Condenser	Condensateur	Kondensator	Condensatore	电容
CMB	Contactor bomba lavado	Wash pump contactor	Contacteur pompe lavage	Türrelais	Contattore pompa lavaggio	清洗泵接触器
Cc	Contactor calentamiento calderin	Boiler heating contactor	Contacteur chauf. surchauffeur	Kontaktschütz Waschpumpe	Contattore riscaldamento boiler	升温箱加热接触器
Ct	Contactor calentamiento tanque	Tank heating contactor	Contacteur chaufage cuve	Kontaktschütz Boilerheizung	Contattore riscaldamento serbatoio	水箱加热接触器
CP	Rele puerta	Door relay	Relais porte	Kontaktschütz Heizung Tank	Rele porta	门继电器
Ds.	Dosificador	Detergent doser	Dosseur	Dosierer Spülmittel	Dosatore detersivo	清洗剂药液泵
E.B	Electrobomba de presion	Electric pressure pump	Electropompe de pression	Elektro-Drucksteigungspumpe	Electropompa pressione	电子压力泵
IG	Interruptor general	Main switch	Interrupteur general	Hauptschalter	Interruttore generale	主开关
IP	Micro puerta	Door microswitch	Micro porte	Mikroschalter Tür	Micro porta	门磁开关
H1	Piloto de encendido	Operation light	Voyant funcionement	Betriebsanzeigelampe	Spia accensione	运行指示灯
H2	Piloto marcha	Start light	Voyant demarrage	Startanzeigelampe	Spia avvio	开始指示灯
H3	Piloto maquina preparada	Light machine ready	Voyant machine prêt	Betriebsbereitschaftsanzeigelampe	Pilota macchina preparata	加热完成 指示灯
HSal	Piloto falta de Sal	Light Lack of Salt				
MB1, MB2	Bomba lavado	Wash pump	Pompe lavage	Waschpumpe	Pompa lavaggio	清洗泵
M	Motor programador	Motor programmer	Moteur du programmateur	Motor Programmiervorrichtung	Motore programmatore	程序电机
M Av. R	Motor program. avance rapido	Motor program. rapid advance	Moteur du progr.avance rapide	Motor Programmiervorrich. Betrieb	Motore programmatore avanzamento rapido	程序电机 高速高级
M1	Micro programador marcha	Micro programmer on	Micro du programm. de marche	Motor Programmiervorrich. Waschen	Micro programma. di funzionamento	微程序 开
M2	Micro programador lavado	Micro programmer wash	Micro du programm. de lavage	Motor Programmiervorrich. Spülen	Micro programmatore di lavaggio	微程序 清洗
M3	Micro programador aclarado	Micro programmer rinse	Micro du programm. de rinçage	Motor Programmiervorrich. Vorlauf	Micro programmatore di risciacquo	微程序 喷淋
M4, M5	Micro programador avance	Micro programmer advance	Micro du programm. avance	Motor Programmiervorrich. schneller Vorlauf	Micro programmatore avanzamento	微程序 高级
P1, P3	Presostato	Pressure switch	Pressostat	Druckwächter	Pressostato	压力开关
P2	Presostato limitador	Hi-limit pressure switch	Pressostat de securité	Begrenzer Druckwächter	Pressostato limitatore	高水位限制 压力开关
R	Rele de Generador de A.C.	Generator relay	Relais du Generateur	Relais Generator	Rele Generatore	热水供应器继电器
RG	Rele General	Main Relay		Stromversorgungsanschluß Gener.		
Ⓛ1 Ⓛ2 Ⓛ3 Ⓝ	Alimentac. Generador A.C.	Water heater feeding	Alimentation generateur		Alimentazione generatore	热水供应器电源线
RC	Resistencia calderin	Boiler heating element	Resistance surchauffeur	Heizwiderstand Boiler	Resistenza boiler	升温箱加热管
RT	Resistencia tanque	Tank heater	Resistance cuve	Heizwiderstand Tank	Resistenza serbatoio	水箱加热管
Tt	Termostato tanque	Tank thermostat	Thermostat de cuve	Thermostat Tank	Termostato serbatoio	水箱温控器
TC	Termostato calderin	Boiler thermostat	Thermostat surchauffeur	Thermostat kessel	Termostato boiler	升温箱温控器
Tst	Limitador tanque	Tank limiter	Limitateur de cuve	Begrenzer Tank	Limitatore serbatoio	水箱安全温控器
TSC	Limitador calderin	Boiler Hi-limit	Limiteur surchauffeur	Begrenzer Boiler	Limitatore boiler	升温箱安全温控器
TSTP	Termostato termo-stop	Termo-stop Thermostat	Thermostat Termo-stop	Thermostat Termo-stop	Termostato Termo-stop	温度停止温控器
V	Electrovalvula llenado y aclarado	Fill and rinse valve	Electrovan. remplissage rinçage	Elektroventil Füllen und Spülen	Elettroval. riempimento e risciacquo	电磁阀
Vf	Electrovalvula Aclarado Frio	Cold Water rinse valve				
VR1, VR2, VR3, BR	Electrovalvula Descalcificacion	Soft Water valve				
VE,	Ventilador cuadro electrico	Switchboard fan	Ventilateur tableau electrique	Schalttafelventilator	Ventilatore quadro elettrico	风机
HRS	Sistema recuperacion energia	Heat Recovery System				

COLOR	COLORES	COLOUR	COULEURS	FARBEN	COLORE	颜色
a = BLU =	Azul	Blue	Bleu	Blau	Blu	蓝
am = YEL =	Amarillo	Yellow	Jaune	Gelb	Giallo	黄
am/ve = YEL/GRN	Amarillo/verde	Yellow / green	Jaune / vert	Gelb/grün	Giallo/verde	黄/绿
b = WHT =	Blanco	White	Blanc	Weiß	Bianco	白
g = GRY =	Gris	Grey	Gris	Grau	Grigio	灰
m = BRN =	Marrón	Brown	Marron	Braun	Marrone	棕
n = BLK =	Negro	Black	Noir	Schwarz	Nero	黑
na = ORG =	Naranja	Orange	Orange	Orange	Arancio	橙
r = RED =	Rojo	Red	Rouge	Rot	Rosso	红
rs = PNK =	Rosa	Pink	Rose	Rosa	Roseo	粉
ve = GRN =	Verde	Green	Vert	Grün	Verde	绿
vi = PRP =	Violeta	Purple	Violet	Violett	Viola	紫

12103338

13.1.6. ELECTRONIC CONTROL CARD 12048024 (AD-505)




AD 125, 505
12167105
400 V 3N
230 V 3 Ph
230 V 1 N,
AD 505
AD 125
Kw RC AD 505
Kw RC AD 125
5,6 9
3,7 6
2,8 4,5
1,86 3
Soft Start
PROG SOFT, HRS
Regeneration
Whasing

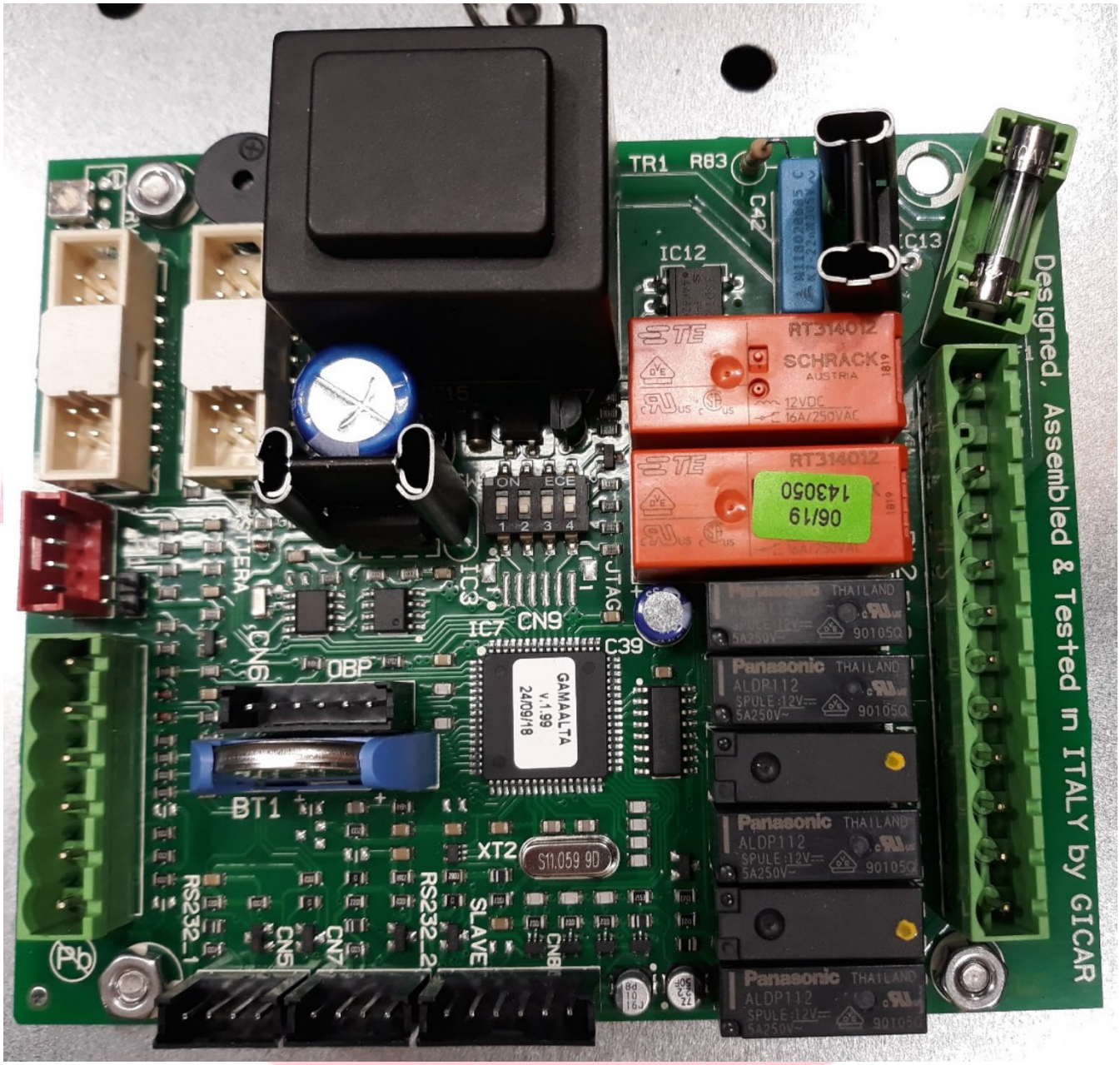
Simb / LENG		ESPAÑOL	ENGLISH	FRANÇAIS
A,B (CCO)	=	Puntos de conexión con K1	Connection points with K1	Points de connexion K1
C1,C2,C3,C4	=	Condensador electrico	Electric condenser	Condensateur électrique
CA	=	Rele Auxiliar de Aclarado	Rinse Auxiliary Relay	Relais auxiliaire rinçage
CMBL1,2	=	Contactor Bomba lavado 1,2	Wash 1,2 Pump Contactor	Contacteur pompe lavage 1,2
CMBPL	=	Contactor Bomba PreLavado	Prewash Pump Contactor	Contacteur Pompe prélavage
CMEV	=	Contactor Motor Extractor de Vahos	Steam Exhaust Motor Contactor	Contacteur Moteur Extraction vapeur
CMS	=	Contactor Motor Secado	Drying Motor Contactor	Contacteur moteur Séchage
CMREC	=	Contactor Motor Recuperador	Contactor Motor Recover	Contacteur moteur Recuperateur
CRC11,12,13	=	Contactor Calentamiento Calderin	Boiler Heating Contactor	Contacteur Chauffage Chaudière
CRS11,12,21,22	=	Contactor Calentamiento Secado 1,2	Drying 1, 2 Heating Contactor	Contacteur chauffage séchage 1,2
CRTA1,2	=	Contactor Calentamiento Aclarado	Rinse heating Contactor	Contacteur chauffage Rinçage
CRT11,12	=	Contactor Calentamiento Tanque 1	Tank 1 Heating Contactor	Contacteur Chauffage Cuve 1
CRT21,22	=	Contactor Calentamiento Tanque 2	Tank 2 Heating Contactor	Contacteur Chauffage Cuve 2
DS.ABR	=	Dosificador Abrillantador	Rinse doser	Doseur tensoactive
DS.DET	=	Dosificador Detergente	Detergent doser	Doseur détergent
F	=	Fusible	Fuse	Fusible
FMEV	=	Termico Motor Extractor	Steam Exhaust Motor Thermal Overload	Thermique Moteur Extraction vapeur
FML1,2	=	Termico Motor Bomba Lavado1,2	Wash 1,2 Pump Motor Thermal Overload	Thermique Moteur pompe lavage 1,2
FMS1,2	=	Termico Motor Secado 1,2	Drying Motor Thermal Overload	Thermique du Moteur Séchage
FMREC	=	Termico Motor Recuperador	Recover Motor Thermal Overload	Thermique du Moteur Recuperateur
H1	=	Lampara Indicador Marcha	Operation light	Voyant de fonctionnement
H2	=	Lampara Indicador Atorado	Stuck Indicator Lamp	Voyant Bloqués
IA	=	Interruptor Accionamiento Aclarado	Rinsing actuator Switch	Interrupteur d'actionneur de rinçage
IE1,2	=	Pulsador Parada de emergencia 1,2	Emergency 1,2 stop push button	Bouton-poussoir Arrêt d'urgence 1,2
IG	=	Interruptor general.	Power On	Interrupteur général
IGS	=	Interruptor General de seguridad.	Disconnect Switch	Interrupteur Général de sécurité
IL	=	Interruptor Accionamiento Lavado	Wash actuator Switch	Interrupteur d'actionneur de lavage
IM / IP	=	Pulsador Marcha / Parada	Start / Stop push button	Bouton de démarrage / arrêt
IPA	=	Interruptor Puerta Lavado	Washer Door Switch	Interrupteur de porte de lavage
IPPL	=	Interruptor Puerta PreLavado	Prewash Door Switch	Interrupteur de porte prélavage
IPT1,2	=	Interruptor Puerta Tanque 1,2	Tank 1.2 Door Switch	Interrupteur de porte cuve 1.2
IR	=	Interruptor Retroceso Desenganche	Reverse stuck Switch	Interrupteur marche arrière à la blocage
ISV	=	Interruptor Seguridad Enganchon	Overload stuck Switch	Interrupteur marche à la blocage
PRG	=	Control Electronico	Electronic Control	Contrôle électronique
KA1, 2	=	Rele Auxiliar Llenado y Aclarado 1, 2	Fill and Rinse 1, 2 Auxiliary Relay	Relais auxiliaire remplissage et rinçage 1, 2
KP	=	Rele de Puerta	Door Relay	Relais de porte
KTT1	=	Rele Auxiliar Termostato Tanque1	Auxiliary Relay Tank Thermostat1	Thermostat Relais auxiliaire cuve 1
K1	=	Rele Auxiliar Generador Agua Caliente	Auxiliary Relay Hot Water Generator	Générateur auxiliaire Relais eau chaude
MBA	=	Moto Bomba Aclarado	Pump Rinsing	Pompe Rinçage
MBL1,2	=	Moto Bomba Lavado1,2	Washed Pump 1,2	Pompe de lavage 1,2
MBP	=	Moto Bomba Llenado	Filling Pump	Pompe de remplissage
MBPL	=	Moto Bomba PreLavado	Prewash Pump	Pompe à prélavage
MEV	=	Motor Extractor de Vahos	Steam extractor motor	Moteur extracteur vapeur
MREC	=	Motor Recuperador	Motor Recovery	Moteur Récupérateur
MS1,2	=	Motor Secado 1,2	Drying motor 1,2	Moteur de séchage 1,2
MV	=	Motor Arrastre	Advance Motor	Moteur d'entraînement
PA	=	Presostato Aclarado	Rinsed tank Pressure Switch	Pressostat de rinçage
PPL	=	Presostato Prelavado	Prewash tank Pressure Switch	Pressostat de prélavage cuve
PT1	=	Presostato Tanque 1	Washed tank 1 Pressure Switch	Pressostat de lavage cuve 1
PT2	=	Presostato Tanque 2	Washed tank 2 Pressure Switch	Pressostat de lavage cuve 2
R,N	=	Puntos conexión 230V	230V connection points	Points de connexion 230V
RC11,12,13	=	Resistencia Calentamiento Calderin	Boiler Element Heating	Resistance Chauffage Chaudière
RS1, 2	=	Resistencia Calentamiento Secado 1, 2	Drying Element Heating	Resistance Chauffage séchage
RTA	=	Resistencia Calentamiento Aclarado	Rinse tank Element Heating	Resistance Chauffage rinçage
RT11,12	=	Resistencia Calentamiento Tanque 1	Washed Tank 1 Element Heating	Resistance Chauffage lavage cuve 1
RT2	=	Resistencia Calentamiento Tanque 2	Washed Tank 2 Element Heating	Resistance Chauffage lavage cuve 2
SF	=	Interruptor Fin recorrido	Safety end Switch	Interrupteur fin de course
TA	=	Termostato Aclarado	Rinse Thermostat	Thermostat de rinçage
TC11	=	Termostato Calderin Temperatura Max.	Boiler thermostat Max. temperature	Thermostat Température max. chaudière
TC12	=	Termostato Calderin Temperatura min.	Boiler thermostat min. temperature	Thermostat Température min. chaudière
TREC	=	Termostato Recuperador	Recovery Thermostat	Thermostat récupérateur
TRF	=	Transformador	Transformer	Transformateur
TSA	=	Termostato Seguridad Aclarado	Rinse Hi-limit Thermostat	Thermostat Limiteur rinçage
TS1,2	=	Termostato Secado 1, 2	Drying 1,2 Thermostat	Thermostat séchage 1, 2
TSC1	=	Termostato Seguridad Calderin 1	Boiler 1 Hi-limit Thermostat	Thermostat Limiteur Chaudière
TST1,2	=	Termostato Seguridad Tanque 1,2	Washed 1,2 Hi-limit Thermostat	Thermostat Limiteur lavage 1, 2
TT1,2	=	Termostato Tanque 1, 2	Washed 1,2 Thermostat	Thermostat lavage 1, 2
VA	=	Electrovalvula Llenado y Aclarado	Filling and Rinse Solenoid Valve	Electrovanne Remplissage et rinçage
VEV	=	Electrovalvula Extractor de Vahos	Steam extractor Solenoid Valve	Electrovanne extracteur vapeur
VF	=	Variador de Frecuencia	Variable frequency drive	Variateur de fréquence
VL1,2	=	Electrovalvula Llenado Tanque 1, 2	Filling Tank 1, 2 Solenoid Valve	Electrovanne de remplissage 1, 2
VG	=	Electrovalvula General Recuperador	Recovery Solenoid Valve main	Electrovanne général Recuperateur
VREC	=	Electrovalvula Recuperador	Recovery Solenoid Valve	Electrovanne Recuperateur
ZA	=	Alarma Enganchon	Buzzer alarm stuck	Alarme buzzer blocage
	=			
COLOR	=	COLORES	COLOUR	COULEURS
BLK, bk, n	=	Negro	Black	Noir
BLU, bl, a	=	Azul	Blue	Bleu
BRN, bn, m	=	Marrón	Brown	Marron
GRN, gn, ve	=	Verde	Green	Vert
GRY, gy, g	=	Gris	Grey	Gris
ORG, or, na	=	Naranja	Orange	Orange
PNK, pk, rs	=	Rosa	Pink	Rose
PRP, pr, vi	=	Violeta	Purple	Violet
RED, rd, r	=	Rojo	Red	Rouge
WHT, wh, b	=	Blanco	White	Blanc
YEL, yw, am	=	Amarillo	Yellow	Jaune
YELGRN, am/ve	=	Amarillo/verde	Yellow / green	Jaune / vert
			L 37	12168021

The digit for the "unit (XX?)" identifies the control type in the machine.

- AD-XX5 – Fully electronic model with rinse pump and air break

ADVANCE AD MODELS (Software: AD)

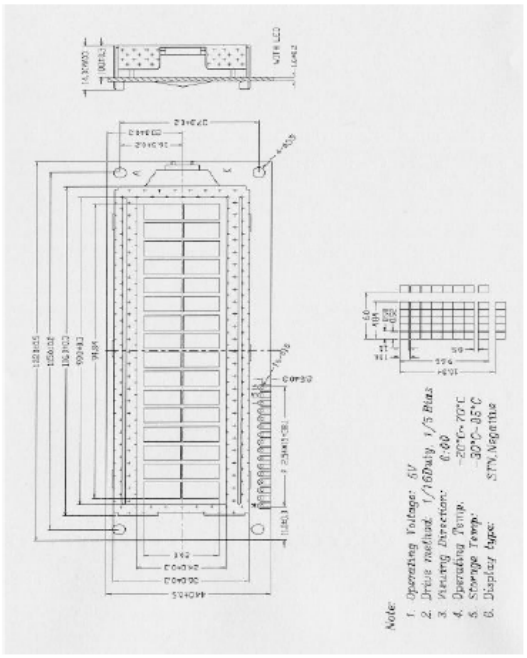
12189024 = 12189023 + box _Control Card 230V AC 50/60Hz 8rel UL (AD-505)

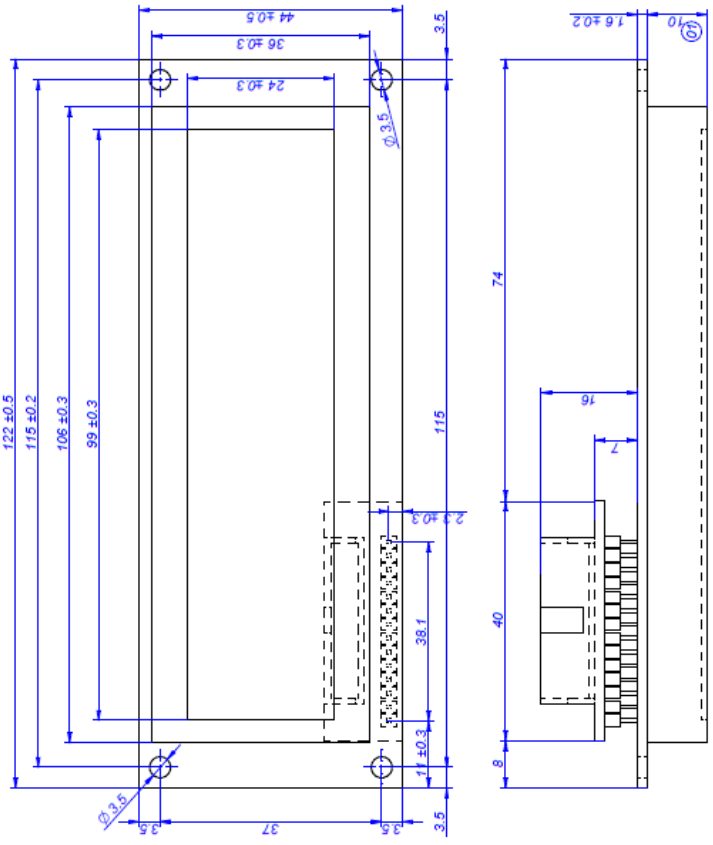


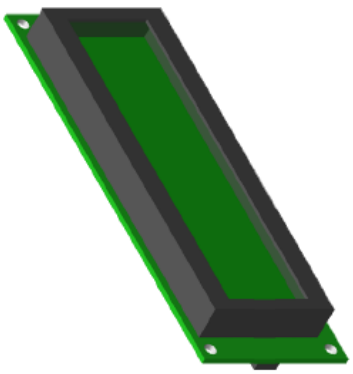
13.1.7. VIEWER 12048027 (AD-505)

Color de fondo: AZUL CLARO
Color letra: AZUL OSCURO

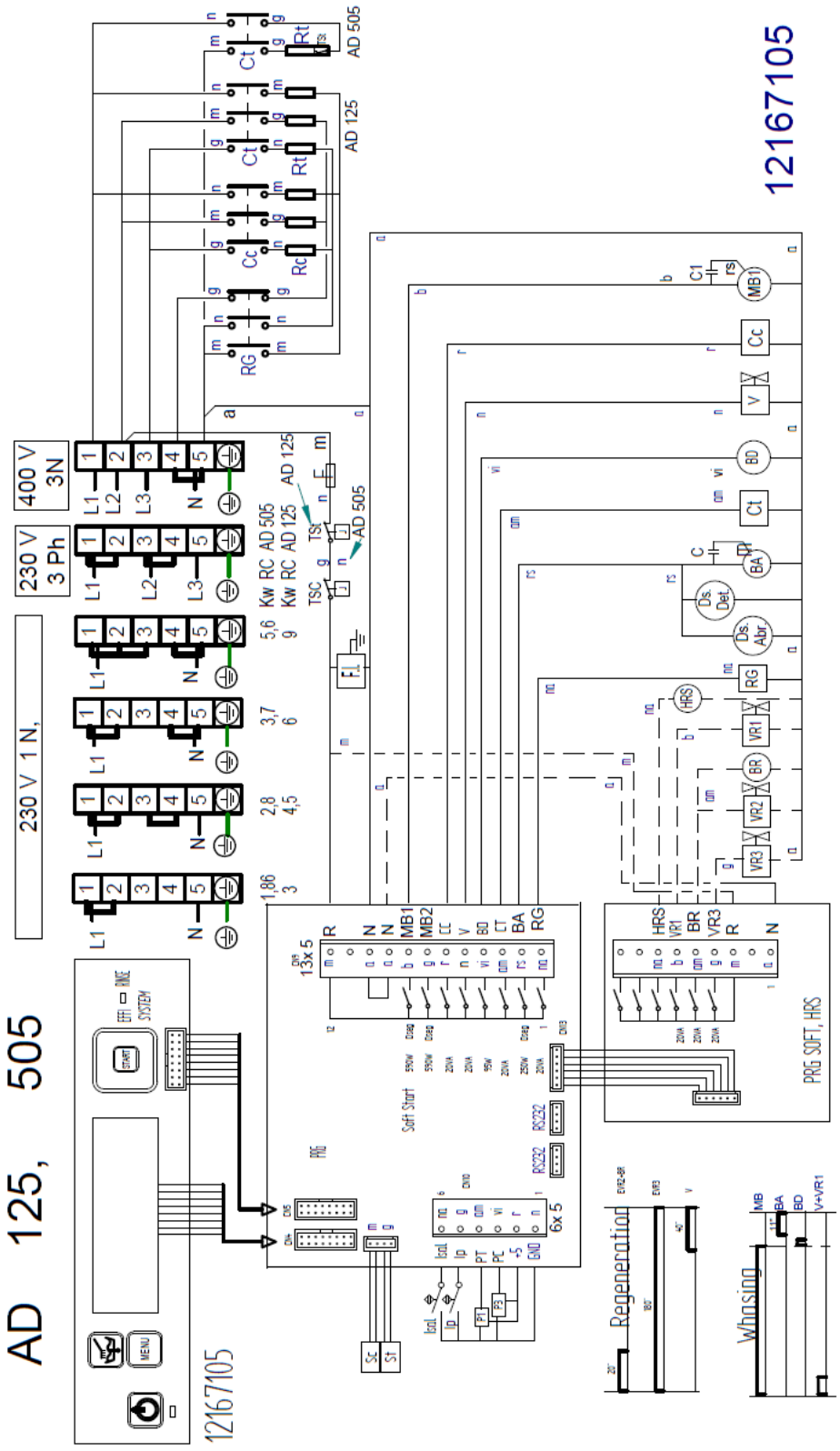
Plano del proveedor





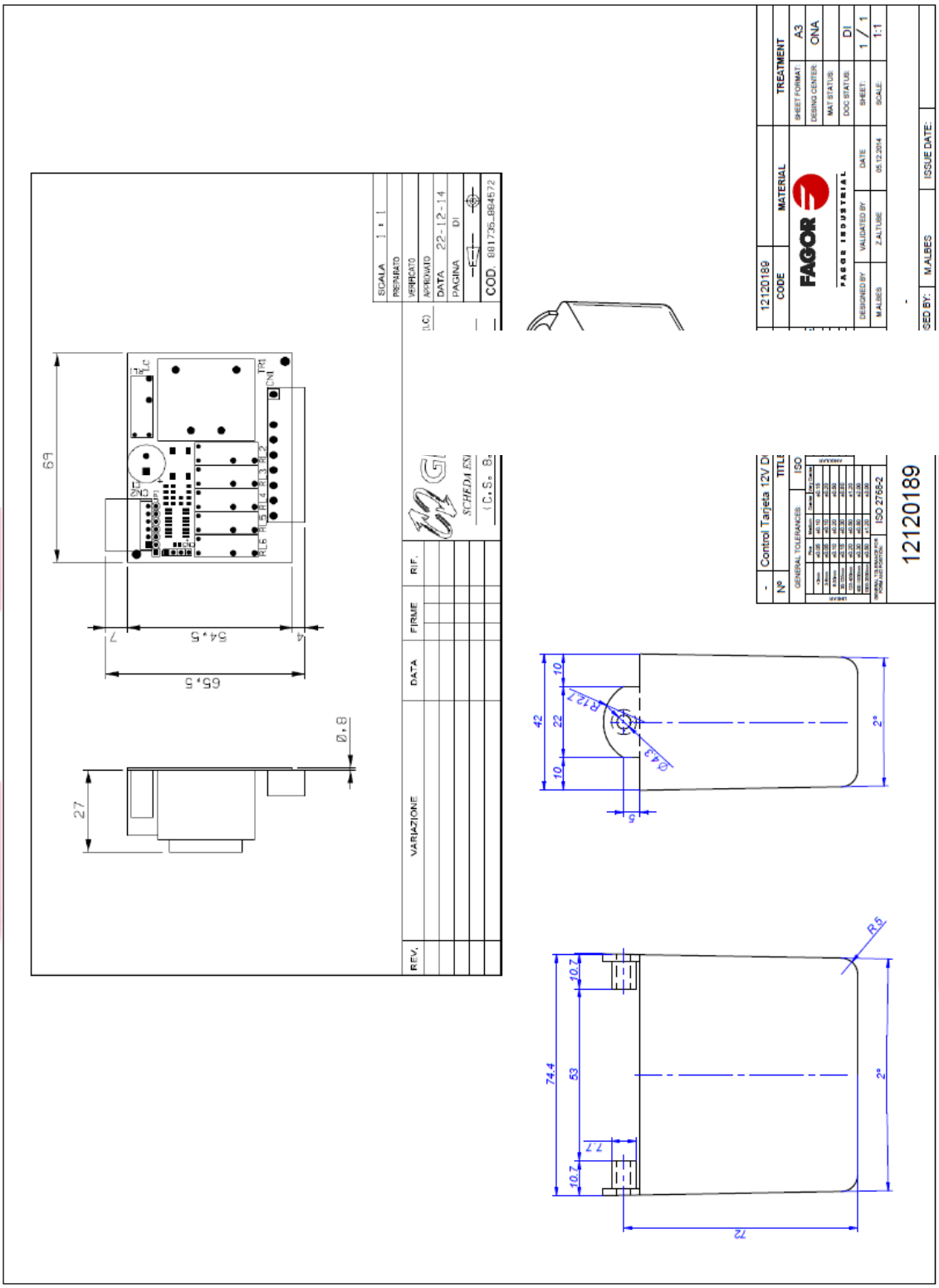


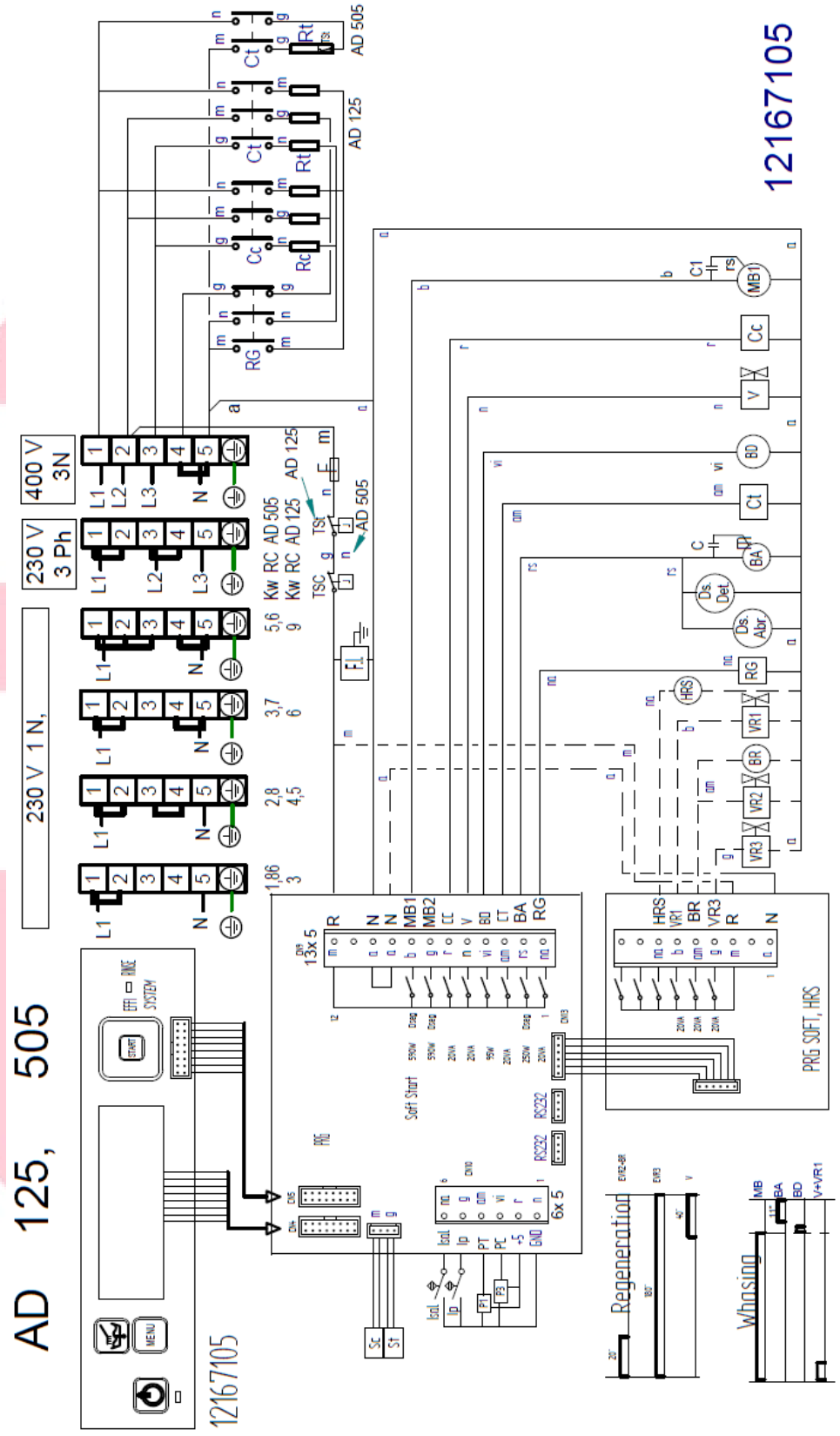
-	Visualizador 12V DIC 32dig AF UL	-	12048027			TREATMENT	
Nº	TITLE	QTY	CODE	MATERIAL		SHEET FORMAT:	A3
GENERAL TOLERANCES	ISO 2768-1	Very Coarse		FAGOR		DESING CENTER:	ONA
				FAGOR INDUSTRIAL		MAT STATUS:	30
						DOC STATUS:	DI
	ISO 2768-2	LAVAVAJILLAS		DESIGNED BY	DATE	SHEET:	1 / 1
				MALBES	03.11.2014	SCALE:	
	12048027	NO	01	LJ100704 CORREGIR COTA			
		SI		PROPOSED BY:	MALBES	ISSUE DATE:	20141103


AD 125, 505
12167105
400 V 3N
230 V 3 Ph
230 V 1 N,
AD 505
AD 125
Kw RC AD 505
Kw RC AD 125
5,6
9
3,7
6
2,8
4,5
1,86
3
13x5
6x5
Soft Start
RS232
PRG SOFT, HRS
Regeneration
Whasing
MB
BA
BD
V+VR1

Simb / LENG		ESPAÑOL	ENGLISH	FRANÇAIS
A,B (CCO)	=	Puntos de conexión con K1	Connection points with K1	Points de connexion K1
C1,C2,C3,C4	=	Condensador electrico	Electric condenser	Condensateur électrique
CA	=	Rele Auxiliar de Aclarado	Rinse Auxiliary Relay	Relais auxiliaire rinçage
CMBL1,2	=	Contactor Bomba lavado 1,2	Wash 1,2 Pump Contactor	Contacteur pompe lavage 1,2
CMBPL	=	Contactor Bomba PreLavado	Prewash Pump Contactor	Contacteur Pompe prélavage
CMEV	=	Contactor Motor Extractor de Vahos	Steam Exhaust Motor Contactor	Contacteur Moteur Extraction vapeur
CMS	=	Contactor Motor Secado	Drying Motor Contactor	Contacteur moteur Séchage
CMREC	=	Contactor Motor Recuperador	Contactor Motor Recover	Contacteur moteur Recuperateur
CRC11,12,13	=	Contactor Calentamiento Calderin	Boiler Heating Contactor	Contacteur Chauffage Chaudière
CRS11,12,21,22	=	Contactor Calentamiento Secado 1,2	Drying 1, 2 Heating Contactor	Contacteur chauffage séchage 1,2
CRTA1,2	=	Contactor Calentamiento Aclarado	Rinse heating Contactor	Contacteur chauffage Rinçage
CRT11,12	=	Contactor Calentamiento Tanque 1	Tank 1 Heating Contactor	Contacteur Chauffage Cuve 1
CRT21,22	=	Contactor Calentamiento Tanque 2	Tank 2 Heating Contactor	Contacteur Chauffage Cuve 2
DS.ABR	=	Dosificador Abrillantador	Rinse doser	Doseur tensoactive
DS.DET	=	Dosificador Detergente	Detergent doser	Doseur détergent
F	=	Fusible	Fuse	Fusible
FMEV	=	Termico Motor Extractor	Steam Exhaust Motor Thermal Overload	Thermique Moteur Extraction vapeur
FML1,2	=	Termico Motor Bomba Lavado1,2	Wash 1,2 Pump Motor Thermal Overload	Thermique Moteur pompe lavage 1,2
FMS1,2	=	Termico Motor Secado 1,2	Drying Motor Thermal Overload	Thermique du Moteur Séchage
FMREC	=	Termico Motor Recuperador	Recover Motor Thermal Overload	Thermique du Moteur Recuperateur
H1	=	Lampara Indicador Marcha	Operation light	Voyant de fonctionnement
H2	=	Lampara Indicador Atorado	Stuck Indicator Lamp	Voyant Bloqués
IA	=	Interruptor Accionamiento Aclarado	Rinsing actuator Switch	Interrupteur d'actionneur de rinçage
IE1,2	=	Pulsador Parada de emergencia 1,2	Emergency 1,2 stop push button	Bouton-poussoir Arrêt d'urgence 1,2
IG	=	Interruptor general.	Power On	Interrupteur général
IGS	=	Interruptor General de seguridad.	Disconnect Switch	Interrupteur Général de sécurité
IL	=	Interruptor Accionamiento Lavado	Wash actuator Switch	Interrupteur d'actionneur de lavage
IM / IP	=	Pulsador Marcha / Parada	Start / Stop push button	Bouton de démarrage / arrêt
IPA	=	Interruptor Puerta Lavado	Washer Door Switch	Interrupteur de porte de lavage
IPPL	=	Interruptor Puerta PreLavado	Prewash Door Switch	Interrupteur de porte prélavage
IPT1,2	=	Interruptor Puerta Tanque 1,2	Tank 1,2 Door Switch	Interrupteur de porte cuve 1,2
IR	=	Interruptor Retroceso Desenganche	Reverse stuck Switch	Interrupteur marche arrière à la biocage
ISV	=	Interruptor Seguridad Enganchon	Overload stuck Switch	Interrupteur marche à la biocage
PRG	=	Control Electronico	Electronic Control	Contrôle électronique
KA1, 2	=	Rele Auxiliar Llenado y Aclarado 1, 2	Fill and Rinse 1, 2 Auxiliary Relay	Relais auxiliaire remplissage et rinçage 1, 2
KP	=	Rele de Puerta	Door Relay	Relais de porte
KTT1	=	Rele Auxiliar Termostato Tanque1	Auxiliary Relay Tank Thermostat1	Thermostat Relais auxiliaire cuve 1
K1	=	Rele Auxiliar Generador Agua Caliente	Auxiliary Relay Hot Water Generator	Générateur auxiliaire Relais eau chaude
MBA	=	Moto Bomba Aclarado	Pump Rinsing	Pompe Rinçage
MBL1,2	=	Moto Bomba Lavado1,2	Washed Pump 1,2	Pompe de lavage 1,2
MBP	=	Moto Bomba Llenado	Filling Pump	Pompe de remplissage
MBPL	=	Moto Bomba PreLavado	Prewash Pump	Pompe à prélavage
MEV	=	Motor Extractor de Vahos	Steam extractor motor	Moteur extracteur vapeur
MREC	=	Motor Recuperador	Motor Recovery	Moteur Récupérateur
MS1,2	=	Motor Secado 1,2	Drying motor 1,2	Moteur de séchage 1,2
MV	=	Motor Arrastre	Advance Motor	Moteur d'entraînement
PA	=	Presostato Aclarado	Rinsed tank Pressure Switch	Pressostat de rinçage
PPL	=	Presostato Prelavado	Prewash tank Pressure Switch	Pressostat de prélavage cuve
PT1	=	Presostato Tanque 1	Washed tank 1 Pressure Switch	Pressostat de lavage cuve 1
PT2	=	Presostato Tanque 2	Washed tank 2 Pressure Switch	Pressostat de lavage cuve 2
R,N	=	Puntos conexión 230V	230V connection points	Points de connexion 230V
RC11,12,13	=	Resistencia Calentamiento Calderin	Boiler Element Heating	Resistance Chauffage Chaudière
RS1, 2	=	Resistencia Calentamiento Secado 1, 2	Drying Element Heating	Resistance Chauffage séchage
RTA	=	Resistencia Calentamiento Aclarado	Rinse tank Element Heating	Resistance Chauffage rinçage
RT11,12	=	Resistencia Calentamiento Tanque 1	Washed Tank 1 Element Heating	Resistance Chauffage lavage cuve 1
RT2	=	Resistencia Calentamiento Tanque 2	Washed Tank 2 Element Heating	Resistance Chauffage lavage cuve 2
SF	=	Interruptor Fin recorrido	Safety end Switch	Interrupteur fin de coourse
TA	=	Termostato Aclarado	Rinse Thermostat	Thermostat de rinçage
TC11	=	Termostato Calderin Temperatura Max.	Boiler thermostat Max. temperature	Thermostat Température max. chaudière
TC12	=	Termostato Calderin Temperatura min.	Boiler thermostat min. temperature	Thermostat Température min. chaudière
TREC	=	Termostato Recuperador	Recovery Thermostat	Thermostat récupérateur
TRF	=	Transformador	Transformer	Transformateur
TSA	=	Termostato Seguridad Aclarado	Rinse Hi-limit Thermostat	Thermostat Limiteur rinçage
TS1,2	=	Termostato Secado 1, 2	Drying 1,2 Thermostat	Thermostat séchage 1, 2
TSC1	=	Termostato Seguridad Calderin 1	Boiler 1 Hi-limit Thermostat	Thermostat Limiteur Chaudière
TST1,2	=	Termostato Seguridad Tanque 1,2	Washed 1,2 Hi-limit Thermostat	Thermostat Limiteur lavage 1, 2
TT1,2	=	Termostato Tanque 1, 2	Washed 1,2 Thermostat	Thermostat lavage 1, 2
VA	=	Electrovalvula Llenado y Aclarado	Filling and Rinse Solenoid Valve	Electrovanne Remplissage et rinçage
VEV	=	Electrovalvula Extractor de Vahos	Steam extractor Solenoid Valve	Electrovanne extracteur vapeur
VF	=	Variador de Frecuencia	Variable frequency drive	Variateur de fréquence
VL1,2	=	Electrovalvula Llenado Tanque 1, 2	Filling Tank 1, 2 Solenoid Valve	Electrovanne de remplissage 1, 2
VG	=	Electrovalvula General Recuperador	Recovery Solenoid Valve main	Electrovanne général Recuperateur
VREC	=	Electrovalvula Recuperador	Recovery Solenoid Valve	Electrovanne Recuperateur
ZA	=	Alarma Enganchon	Buzzer alarm stuck	Alarme buzzer blocage
	=			
COLOR	=	COLORES	COLOUR	COULEURS
BLK, bk, n	=	Negro	Black	Noir
BLU, bl, a	=	Azul	Blue	Bleu
BRN, bn, m	=	Marrón	Brown	Marron
GRN, gn, ve	=	Verde	Green	Vert
GRY, gy, g	=	Gris	Grey	Gris
ORG, or, na	=	Naranja	Orange	Orange
PNK, pk, rs	=	Rosa	Pink	Rose
PRP, pr, vi	=	Violeta	Purple	Violet
RED, rd, r	=	Rojo	Red	Rouge
WHT, wh, b	=	Blanco	White	Blanc
YEL, yw, am	=	Amarillo	Yellow	Jaune
YELGRN, am/ve	=	Amarillo/verde	Yellow / green	Jaune / vert
			L 37	12168021

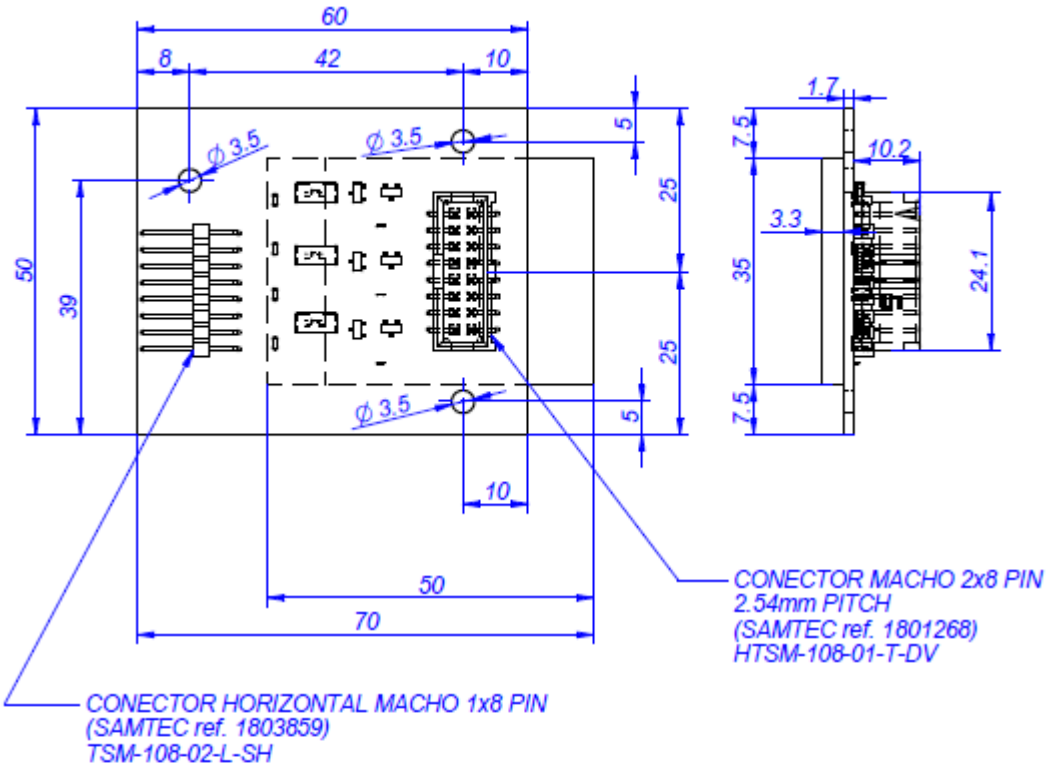
13.1.8. ELECTRONIC REGENERATION CARD 12120189 (AD-505)

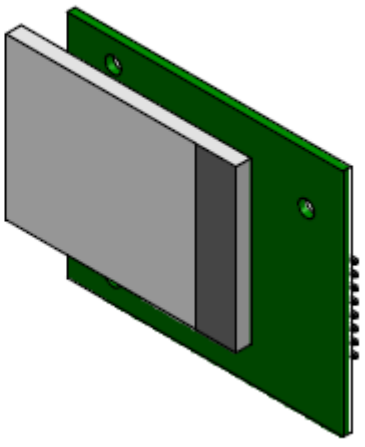



AD 125, 505
12167105
400 V 3N
230 V 3 Ph
230 V 1 N,
AD 505
AD 125
Kw RC AD 505
Kw RC AD 125
5,6
9
3,7
6
2,8
4,5
1,86
3
Ct
Rt
Cc
Rc
RG
TSt
TSC
F.1
C1
MB1
V
BD
C
BA
Ds. Det
Ds. Abr
HRS
VR1
BR
VR2
VR3
MB2
PRG SOFT, HRS
Soft Start
RX232
6x 5
13x 5
Sc
St
Regeneration
Whasing
MENU
START

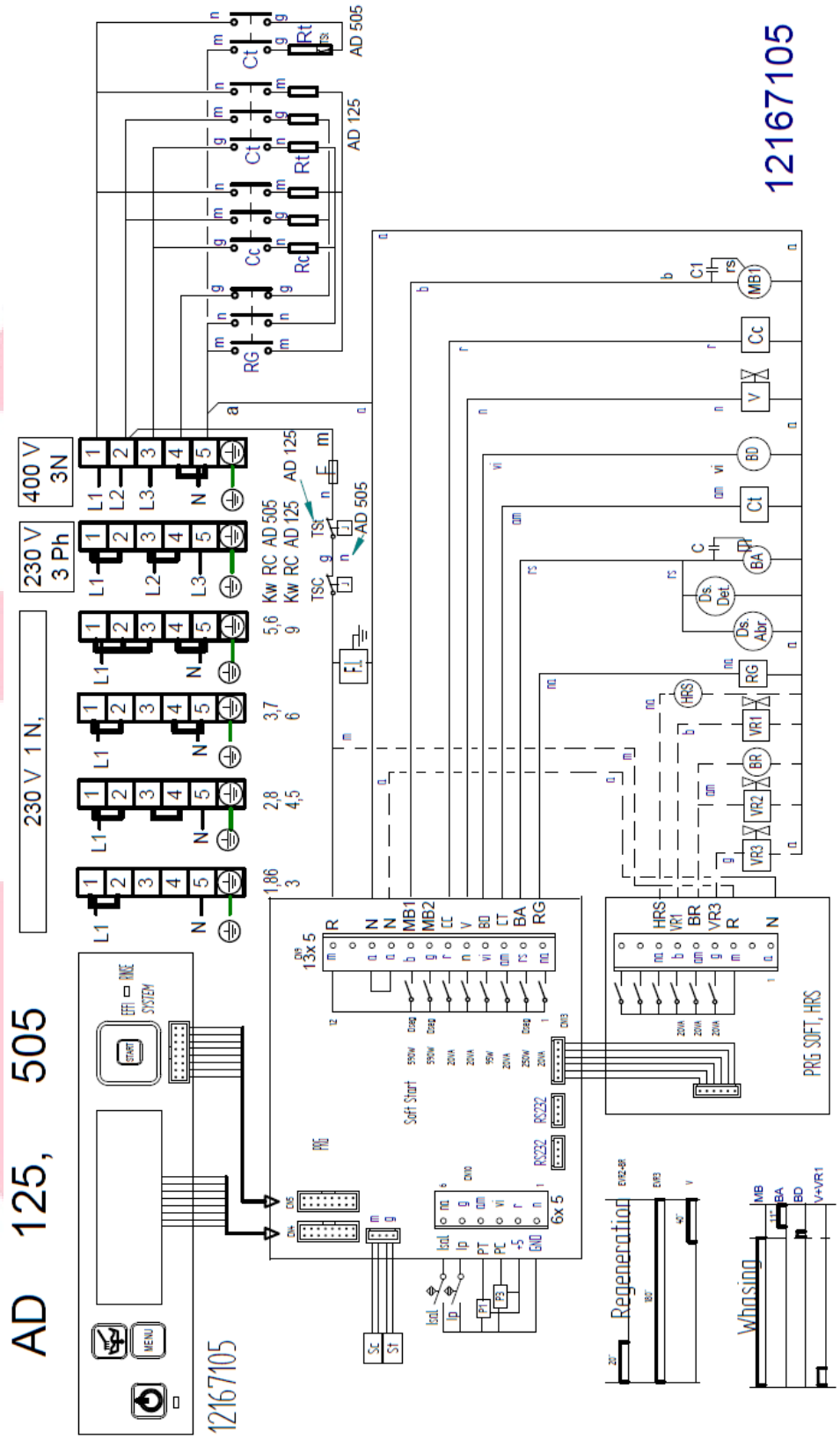
Simb / LENG		ESPAÑOL	ENGLISH	FRANÇAIS
A,B (CCO)	=	Puntos de conexión con K1	Connection points with K1	Points de connexion K1
C1,C2,C3,C4	=	Condensador electrico	Electric condenser	Condensateur électrique
CA	=	Rele Auxiliar de Aclarado	Rinse Auxiliary Relay	Relais auxiliaire rinçage
CMBL1,2	=	Contactor Bomba lavado 1,2	Wash 1,2 Pump Contactor	Contacteur pompe lavage 1,2
CMBPL	=	Contactor Bomba PreLavado	Prewash Pump Contactor	Contacteur Pompe prélavage
CMEV	=	Contactor Motor Extractor de Vahos	Steam Exhaust Motor Contactor	Contacteur Moteur Extraction vapeur
CMS	=	Contactor Motor Secado	Drying Motor Contactor	Contacteur moteur Séchage
CMREC	=	Contactor Motor Recuperador	Contactor Motor Recover	Contacteur moteur Recuperateur
CRC11,12,13	=	Contactor Calentamiento Calderin	Boiler Heating Contactor	Contacteur Chauffage Chaudière
CRS11,12,21,22	=	Contactor Calentamiento Secado 1,2	Drying 1, 2 Heating Contactor	Contacteur chauffage séchage 1,2
CRTA1,2	=	Contactor Calentamiento Aclarado	Rinse heating Contactor	Contacteur chauffage Rinçage
CRT11,12	=	Contactor Calentamiento Tanque 1	Tank 1 Heating Contactor	Contacteur Chauffage Cuve 1
CRT21,22	=	Contactor Calentamiento Tanque 2	Tank 2 Heating Contactor	Contacteur Chauffage Cuve 2
DS.ABR	=	Dosificador Abrillantador	Rinse doser	Doseur tensoactive
DS.DET	=	Dosificador Detergente	Detergent doser	Doseur détergent
F	=	Fusible	Fuse	Fusible
FMEV	=	Termico Motor Extractor	Steam Exhaust Motor Thermal Overload	Thermique Moteur Extraction vapeur
FML1,2	=	Termico Motor Bomba Lavado1,2	Wash 1,2 Pump Motor Thermal Overload	Thermique Moteur pompe lavage 1,2
FMS1,2	=	Termico Motor Secado 1,2	Drying Motor Thermal Overload	Thermique du Moteur Séchage
FMREC	=	Termico Motor Recuperador	Recover Motor Thermal Overload	Thermique du Moteur Recuperateur
H1	=	Lampara Indicador Marcha	Operation light	Voyant de fonctionnement
H2	=	Lampara Indicador Atorado	Stuck Indicator Lamp	Voyant Bloqués
IA	=	Interruptor Accionamiento Aclarado	Rinsing actuator Switch	Interrupteur d'actionneur de rinçage
IE1,2	=	Pulsador Parada de emergencia 1,2	Emergency 1,2 stop push button	Bouton-poussoir Arrêt d'urgence 1,2
IG	=	Interruptor general.	Power On	Interrupteur général
IGS	=	Interruptor General de seguridad.	Disconnect Switch	Interrupteur Général de sécurité
IL	=	Interruptor Accionamiento Lavado	Wash actuator Switch	Interrupteur d'actionneur de lavage
IM / IP	=	Pulsador Marcha / Parada	Start / Stop push button	Bouton de démarrage / arrêt
IPA	=	Interruptor Puerta Lavado	Washer Door Switch	Interrupteur de porte de lavage
IPPL	=	Interruptor Puerta PreLavado	Prewash Door Switch	Interrupteur de porte prélavage
IPT1,2	=	Interruptor Puerta Tanque 1,2	Tank 1,2 Door Switch	Interrupteur de porte cuve 1,2
IR	=	Interruptor Retroceso Desenganche	Reverse stuck Switch	Interrupteur marche arrière à la blocage
ISV	=	Interruptor Seguridad Enganchon	Overload stuck Switch	Interrupteur marche à la blocage
PRG	=	Control Electronico	Electronic Control	Contrôle électronique
KA1, 2	=	Rele Auxiliar Llenado y Aclarado 1, 2	Fill and Rinse 1, 2 Auxiliary Relay	Relais auxiliaire remplissage et rinçage 1, 2
KP	=	Rele de Puerta	Door Relay	Relais de porte
KTT1	=	Rele Auxiliar Termostato Tanque1	Auxiliary Relay Tank Thermostat1	Thermostat Relais auxiliaire cuve 1
K1	=	Rele Auxiliar Generador Agua Caliente	Auxiliary Relay Hot Water Generator	Générateur auxiliaire Relais eau chaude
MBA	=	Moto Bomba Aclarado	Pump Rinsing	Pompe Rinçage
MBL1,2	=	Moto Bomba Lavado1,2	Washed Pump 1,2	Pompe de lavage 1,2
MBP	=	Moto Bomba Llenado	Filling Pump	Pompe de remplissage
MBPL	=	Moto Bomba PreLavado	Prewash Pump	Pompe à prélavage
MEV	=	Motor Extractor de Vahos	Steam extractor motor	Moteur extracteur vapeur
MREC	=	Motor Recuperador	Motor Recovery	Moteur Récupérateur
MS1,2	=	Motor Secado 1,2	Drying motor 1,2	Moteur de séchage 1,2
MV	=	Motor Arrastre	Advance Motor	Moteur d'entraînement
PA	=	Presostato Aclarado	Rinsed tank Pressure Switch	Pressostat de rinçage
PPL	=	Presostato Prelavado	Prewash tank Pressure Switch	Pressostat de prélavage cuve
PT1	=	Presostato Tanque 1	Washed tank 1 Pressure Switch	Pressostat de lavage cuve 1
PT2	=	Presostato Tanque 2	Washed tank 2 Pressure Switch	Pressostat de lavage cuve 2
R,N	=	Puntos conexión 230V	230V connection points	Points de connexion 230V
RC11,12,13	=	Resistencia Calentamiento Calderin	Boiler Element Heating	Resistance Chauffage Chaudière
RS1, 2	=	Resistencia Calentamiento Secado 1, 2	Drying Element Heating	Resistance Chauffage séchage
RTA	=	Resistencia Calentamiento Aclarado	Rinse tank Element Heating	Resistance Chauffage rinçage
RT11,12	=	Resistencia Calentamiento Tanque 1	Washed Tank 1 Element Heating	Resistance Chauffage lavage cuve 1
RT2	=	Resistencia Calentamiento Tanque 2	Washed Tank 2 Element Heating	Resistance Chauffage lavage cuve 2
SF	=	Interruptor Fin recorrido	Safety end Switch	Interrupteur fin de coourse
TA	=	Termostato Aclarado	Rinse Thermostat	Thermostat de rinçage
TC11	=	Termostato Calderin Temperatura Max.	Boiler thermostat Max. temperature	Thermostat Température max. chaudière
TC12	=	Termostato Calderin Temperatura min.	Boiler thermostat min. temperature	Thermostat Température min. chaudière
TREC	=	Termostato Recuperador	Recovery Thermostat	Thermostat récupérateur
TRF	=	Transformador	Transformer	Transformateur
TSA	=	Termostato Seguridad Aclarado	Rinse Hi-limit Thermostat	Thermostat Limiteur rinçage
TS1,2	=	Termostato Secado 1, 2	Drying 1,2 Thermostat	Thermostat séchage 1, 2
TSC1	=	Termostato Seguridad Calderin 1	Boiler 1 Hi-limit Thermostat	Thermostat Limiteur Chaudière
TSTI,2	=	Termostato Seguridad Tanque 1,2	Washed 1,2 Hi-limit Thermostat	Thermostat Limiteur lavage 1, 2
TT1,2	=	Termostato Tanque 1, 2	Washed 1,2 Thermostat	Thermostat lavage 1, 2
VA	=	Electrovalvula Llenado y Aclarado	Filling and Rinse Solenoid Valve	Electrovanne Remplissage et rinçage
VEV	=	Electrovalvula Extractor de Vahos	Steam extractor Solenoid Valve	Electrovanne extracteur vapeur
VF	=	Variador de Frecuencia	Variable frequency drive	Variateur de fréquence
VLT,2	=	Electrovalvula Llenado Tanque 1, 2	Filling Tank 1, 2 Solenoid Valve	Electrovanne de remplissage 1, 2
VG	=	Electrovalvula General Recuperador	Recovery Solenoid Valve main	Electrovanne général Recuperateur
VREC	=	Electrovalvula Recuperador	Recovery Solenoid Valve	Electrovanne Recuperateur
ZA	=	Alarma Enganchon	Buzzer alarm stuck	Alarme buzzer blocage
	=			
COLOR	=	COLORES	COLOUR	COULEURS
BLK, bk, n	=	Negro	Black	Noir
BLU, bl, a	=	Azul	Blue	Bleu
BRN, bn, m	=	Marrón	Brown	Marron
GRN, gn, ve	=	Verde	Green	Vert
GRY, gy, g	=	Gris	Grey	Gris
ORG, or, na	=	Naranja	Orange	Orange
PNK, pk, rs	=	Rosa	Pink	Rose
PRP, pr, vi	=	Violeta	Purple	Violet
RED, rd, r	=	Rojo	Red	Rouge
WHT, wh, b	=	Blanco	White	Blanc
YEL, yw, am	=	Amarillo	Yellow	Jaune
YELGRN, am/ve	=	Amarillo/verde	Yellow / green	Jaune / vert
			L 37	12168021

13.1.9. BACKLIGHT 12097036 (AD-505)



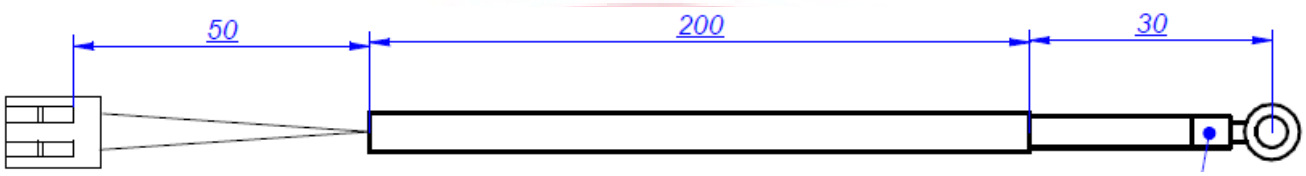


BACKLIGHT 3 COLORES

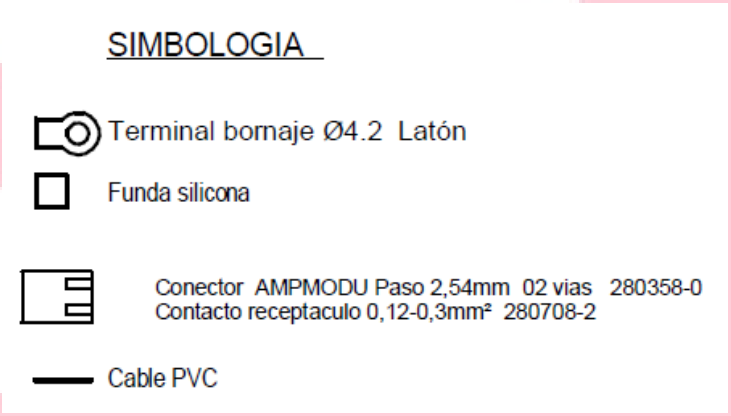

12167105
AD 125, 505
400 V 3N
230 V 3 Ph
230 V 1 N,
AD 505
AD 125
Kw RC AD 505
Kw RC AD 125
5,6 9
3,7 6
2,8 4,5
1,86 3
PRG SOFT, HRS
Regeneration
Whasing
12167105

Simb / LENG		ESPAÑOL	ENGLISH	FRANÇAIS
A,B (CCO)	=	Puntos de conexión con K1	Connection points with K1	Points de connexion K1
C1,C2,C3,C4	=	Condensador electrico	Electric condenser	Condensateur électrique
CA	=	Rele Auxiliar de Aclarado	Rinse Auxiliary Relay	Relais auxiliaire rinçage
CMBL1,2	=	Contactor Bomba lavado 1,2	Wash 1,2 Pump Contactor	Contacteur pompe lavage 1.2
CMBPL	=	Contactor Bomba PreLavado	Prewash Pump Contactor	Contacteur Pompe prélavage
CMEV	=	Contactor Motor Extractor de Vahos	Steam Exhaust Motor Contactor	Contacteur Moteur Extraction vapeur
CMS	=	Contactor Motor Secado	Drying Motor Contactor	Contacteur moteur Séchage
CMREC	=	Contactor Motor Recuperador	Contactor Motor Recover	Contacteur moteur Recuperateur
CRC11,12,13	=	Contactor Calentamiento Calderin	Boiler Heating Contactor	Contacteur Chauffage Chaudière
CRS11,12,21,22	=	Contactor Calentamiento Secado 1,2	Drying 1, 2 Heating Contactor	Contacteur chauffage séchage 1.2
CRTA1,2	=	Contactor Calentamiento Aclarado	Rinse heating Contactor	Contacteur chauffage Rinçage
CRT11,12	=	Contactor Calentamiento Tanque 1	Tank 1 Heating Contactor	Contacteur Chauffage Cuve 1
CRT21,22	=	Contactor Calentamiento Tanque 2	Tank 2 Heating Contactor	Contacteur Chauffage Cuve 2
DS.ABR	=	Dosificador Abrillantador	Rinse doser	Doseur tensoactive
DS.DET	=	Dosificador Detergente	Detergent doser	Doseur détergent
F	=	Fusible	Fuse	Fusible
FMEV	=	Termico Motor Extractor	Steam Exhaust Motor Thermal Overload	Thermique Moteur Extraction vapeur
FML1,2	=	Termico Motor Bomba Lavado1,2	Wash 1,2 Pump Motor Thermal Overload	Thermique Moteur pompe lavage 1.2
FMS1,2	=	Termico Motor Secado 1,2	Drying Motor Thermal Overload	Thermique du Moteur Séchage
FMREC	=	Termico Motor Recuperador	Recover Motor Thermal Overload	Thermique du Moteur Recuperateur
H1	=	Lampara Indicador Marcha	Operation light	Voyant de fonctionnement
H2	=	Lampara Indicador Atorado	Stuck Indicator Lamp	Voyant Bloqués
IA	=	Interruptor Accionamiento Aclarado	Rinsing actuator Switch	Interrupteur d'actionneur de rinçage
IE1,2	=	Pulsador Parada de emergencia 1,2	Emergency 1,2 stop push button	Bouton-poussoir Arrêt d'urgence 1,2
IG	=	Interruptor general.	Power On	Interrupteur général
IGS	=	Interruptor General de seguridad.	Disconnect Switch	Interrupteur Général de sécurité
IL	=	Interruptor Accionamiento Lavado	Wash actuator Switch	Interrupteur d'actionneur de lavage
IM / IP	=	Pulsador Marcha / Parada	Start / Stop push button	Bouton de démarrage / arrêt
IPA	=	Interruptor Puerta Lavado	Washer Door Switch	Interrupteur de porte de lavage
IPPL	=	Interruptor Puerta PreLavado	Prewash Door Switch	Interrupteur de porte prélavage
IPT1,2	=	Interruptor Puerta Tanque 1,2	Tank 1,2 Door Switch	Interrupteur de porte cuve 1,2
IR	=	Interruptor Retroceso Desenganche	Reverse stuck Switch	Interrupteur marche arrière à la blocage
ISV	=	Interruptor Seguridad Enganchon	Overload stuck Switch	Interrupteur marche à la blocage
PRG	=	Control Electronico	Electronic Control	Contrôle électronique
KA1, 2	=	Rele Auxiliar Llenado y Aclarado 1, 2	Fill and Rinse 1, 2 Auxiliary Relay	Relais auxiliaire remplissage et rinçage 1, 2
KP	=	Rele de Puerta	Door Relay	Relais de porte
KTT1	=	Rele Auxiliar Termostato Tanque1	Auxiliary Relay Tank Thermostat1	Thermostat Relais auxiliaire cuve 1
K1	=	Rele Auxiliar Generador Agua Caliente	Auxiliary Relay Hot Water Generator	Générateur auxiliaire Relais eau chaude
MBA	=	Moto Bomba Aclarado	Pump Rinsing	Pompe Rinçage
MBL1,2	=	Moto Bomba Lavado1,2	Washed Pump 1,2	Pompe de lavage 1,2
MBP	=	Moto Bomba Llenado	Filling Pump	Pompe de remplissage
MBPL	=	Moto Bomba PreLavado	Prewash Pump	Pompe à prélavage
MEV	=	Motor Extractor de Vahos	Steam extractor motor	Moteur extracteur vapeur
MREC	=	Motor Recuperador	Motor Recovery	Moteur Récupérateur
MS1,2	=	Motor Secado 1,2	Drying motor 1,2	Moteur de séchage 1,2
MV	=	Motor Arrastre	Advance Motor	Moteur d'entraînement
PA	=	Presostato Aclarado	Rinsed tank Pressure Switch	Pressostat de rinçage
PPL	=	Presostato Prelavado	Prewash tank Pressure Switch	Pressostat de prélavage cuve
PT1	=	Presostato Tanque 1	Washed tank 1 Pressure Switch	Pressostat de lavage cuve 1
PT2	=	Presostato Tanque 2	Washed tank 2 Pressure Switch	Pressostat de lavage cuve 2
R,N	=	Puntos conexión 230V	230V connection points	Points de connexion 230V
RC11,12,13	=	Resistencia Calentamiento Calderin	Boiler Element Heating	Resistance Chauffage Chaudière
RS1, 2	=	Resistencia Calentamiento Secado 1, 2	Drying Element Heating	Resistance Chauffage séchage
RTA	=	Resistencia Calentamiento Aclarado	Rinse tank Element Heating	Resistance Chauffage rinçage
RT11,12	=	Resistencia Calentamiento Tanque 1	Washed Tank 1 Element Heating	Resistance Chauffage lavage cuve 1
RT2	=	Resistencia Calentamiento Tanque 2	Washed Tank 2 Element Heating	Resistance Chauffage lavage cuve 2
SF	=	Interruptor Fin recorrido	Safety end Switch	Interrupteur fin de coourse
TA	=	Termostato Aclarado	Rinse Thermostat	Thermostat de rinçage
TC11	=	Termostato Calderin Temperatura Max.	Boiler thermostat Max. temperature	Thermostat Température max. chaudière
TC12	=	Termostato Calderin Temperatura min.	Boiler thermostat min. temperature	Thermostat Température min. chaudière
TREC	=	Termostato Recuperador	Recovery Thermostat	Thermostat récupérateur
TRF	=	Transformador	Transformer	Transformateur
TSA	=	Termostato Seguridad Aclarado	Rinse Hi-limit Thermostat	Thermostat Limiteur rinçage
TS1,2	=	Termostato Secado 1, 2	Drying 1,2 Thermostat	Thermostat séchage 1, 2
TSC1	=	Termostato Seguridad Calderin 1	Boiler 1 Hi-limit Thermostat	Thermostat Limiteur Chaudière
TST1,2	=	Termostato Seguridad Tanque 1,2	Washed 1,2 Hi-limit Thermostat	Thermostat Limiteur lavage 1, 2
TT1,2	=	Termostato Tanque 1, 2	Washed 1,2 Thermostat	Thermostat lavage 1, 2
VA	=	Electrovalvula Llenado y Aclarado	Filling and Rinse Solenoid Valve	Electrovanne Remplissage et rinçage
VEV	=	Electrovalvula Extractor de Vahos	Steam extractor Solenoid Valve	Electrovanne extracteur vapeur
VF	=	Variador de Frecuencia	Variable frequency drive	Variateur de fréquence
VL1,2	=	Electrovalvula Llenado Tanque 1, 2	Filling Tank 1, 2 Solenoid Valve	Electrovanne de remplissage 1, 2
VG	=	Electrovalvula General Recuperador	Recovery Solenoid Valve main	Electrovanne général Recuperateur
VREC	=	Electrovalvula Recuperador	Recovery Solenoid Valve	Electrovanne Recuperateur
ZA	=	Alarma Enganchon	Buzzer alarm stuck	Alarme buzzer blocage
	=			
COLOR	=	COLORES	COLOUR	COULEURS
BLK, bk, n	=	Negro	Black	Noir
BLU, bl, a	=	Azul	Blue	Bleu
BRN, bn, m	=	Marrón	Brown	Marron
GRN, gn, ve	=	Verde	Green	Vert
GRY, gy, g	=	Gris	Grey	Gris
ORG, or, na	=	Naranja	Orange	Orange
PNK, pk, rs	=	Rosa	Pink	Rose
PRP, pr, vl	=	Violeta	Purple	Violet
RED, rd, r	=	Rojo	Red	Rouge
WHT, wh, b	=	Blanco	White	Blanc
YEL, yw, am	=	Amarillo	Yellow	Jaune
YELGRN, am/ve	=	Amarillo/verde	Yellow / green	Jaune / vert
			L 37	12168021

13.2. TEMPERATURE PROBE 12025036 (CO-502, CO-502 W, COP-144, COP-504 W and AD-505)



20 °C = 48 kH

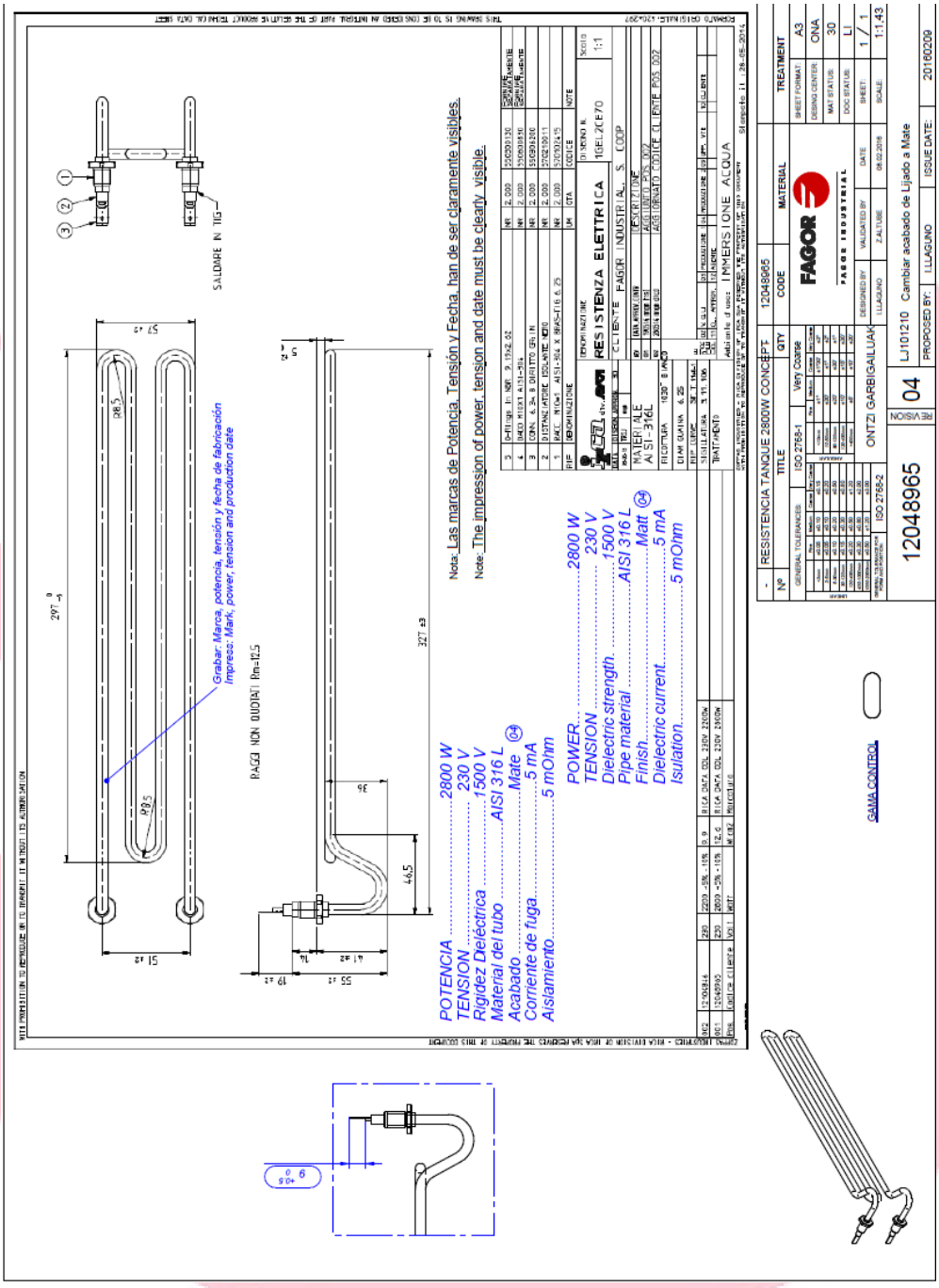


To check the probe, it is necessary to measure the resistance between the two terminals. At an ambient temperature of 20 °C this should be approximately 48 kH.

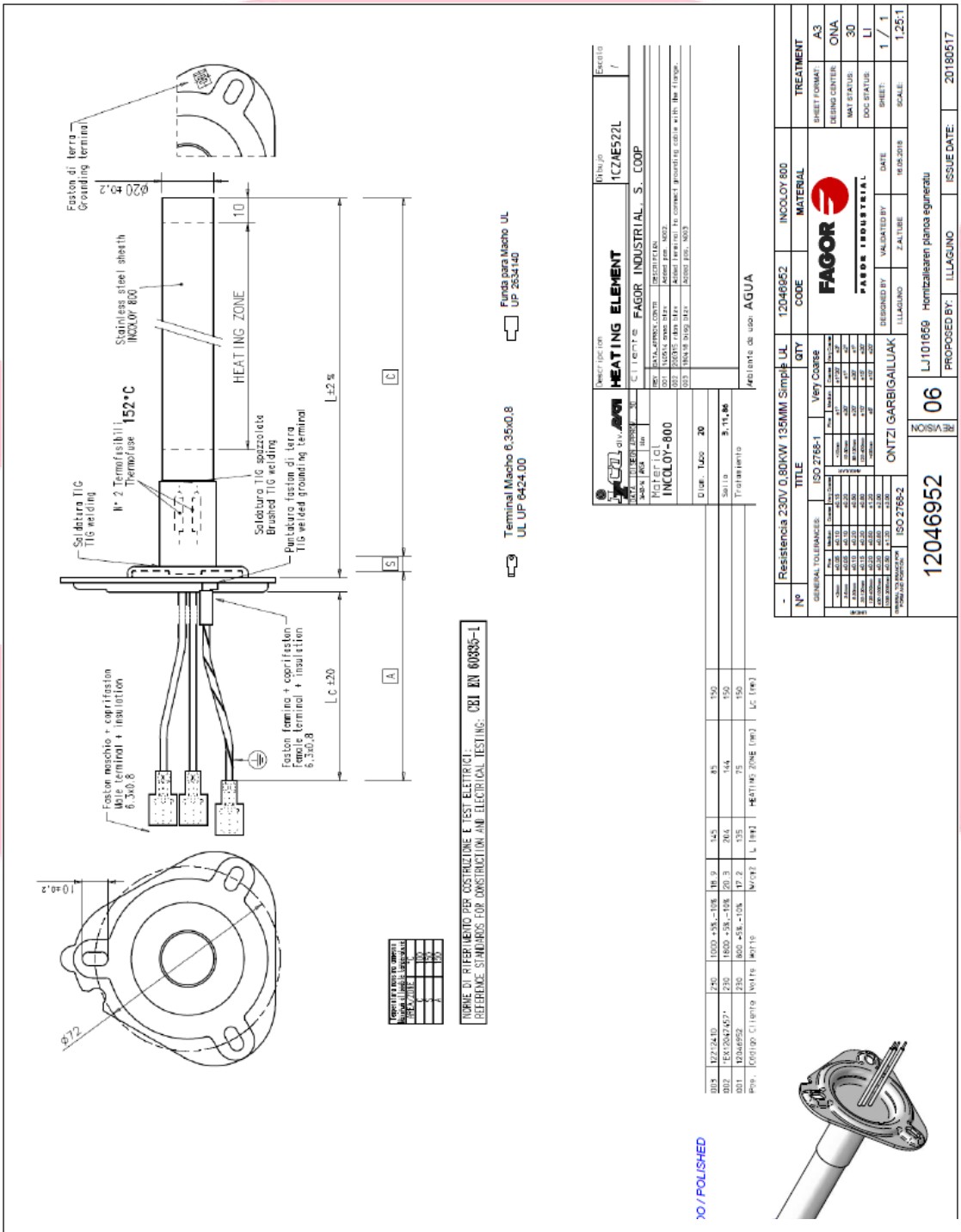
13.3. RESISTOR

	Tank	Boiler					
	12048965	12046952	12159451	12212410	12098745	12090551	12098741
	2.8 kW	0.8 kW	2.8 kW	1 kW	5.6 kW Boiler	5.6 kW Boiler	2.8 kW Boiler
CO-500	EVO 1.0		EVO 2.0				EVO 1.0 y 2.0
CO-501	EVO 1.0		EVO 2.0		EVO 1.0 y 2.0		
CO-502	EVO 1.0		EVO 2.0		EVO 1.0 y 2.0		
CO-502 W	EVO 1.0				EVO 1.0		
COP-503	EVO 1.0					EVO 1.0	
COP-504	EVO 1.0		EVO 2.0			EVO 1.0 y 2.0	
COP-504 W	EVO 1.0					EVO 1.0	
AD-505		EVO 1.0		EVO 2.0		EVO 1.0 y 2.0	

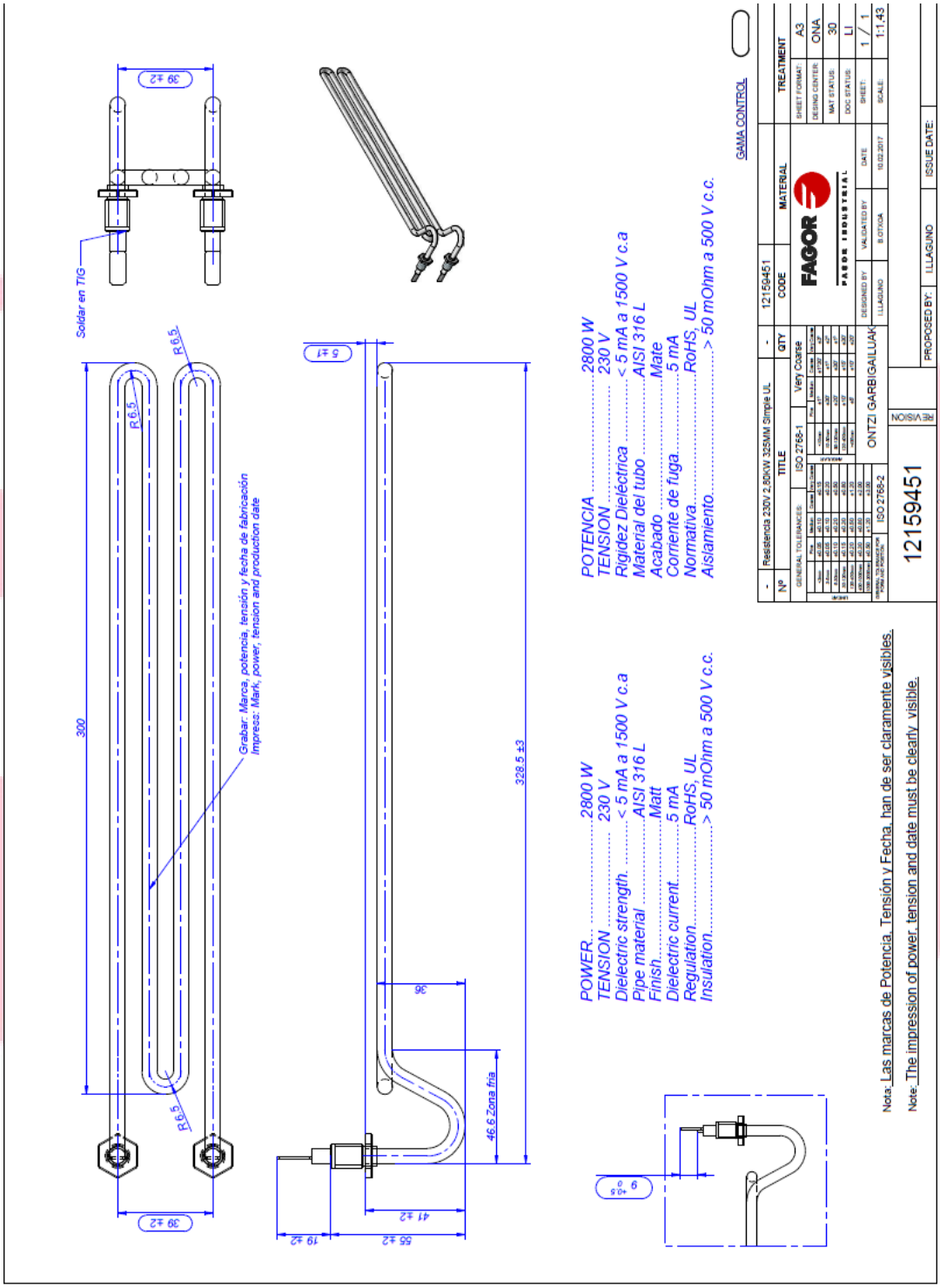
13.3.1. TANK RESISTANCE 230 V 2,8 kW 324 mm SIMPLE UL 12048965 (CO-500, CO-501, CO-502, CO-502 W, COP-503, COP-504 and COP-504 W))



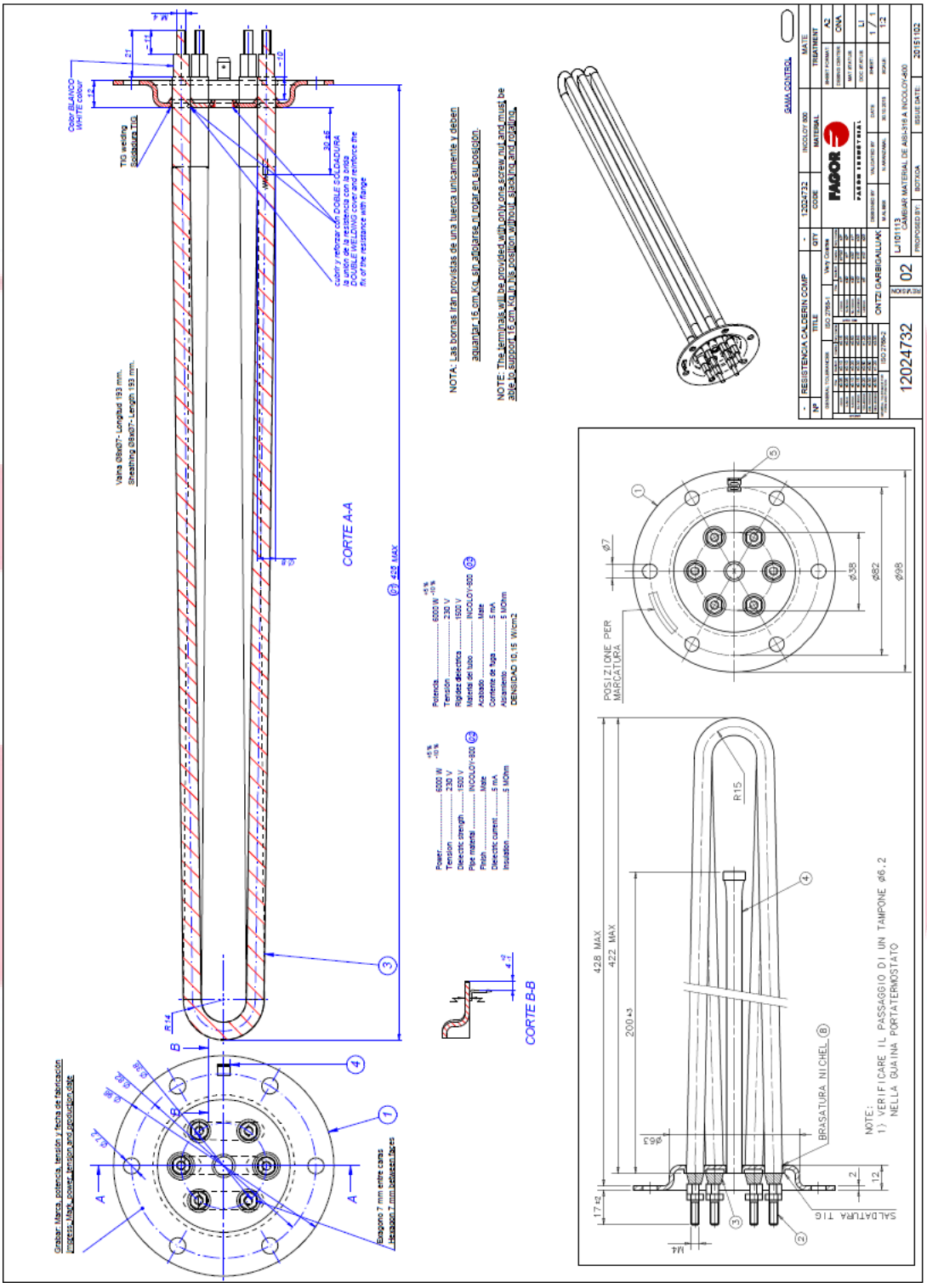
13.3.2. TANK RESISTANCE 230 V 0.8 kW 135 mm SIMPLE UL 12046952 (AD-505 EVO 1.0)



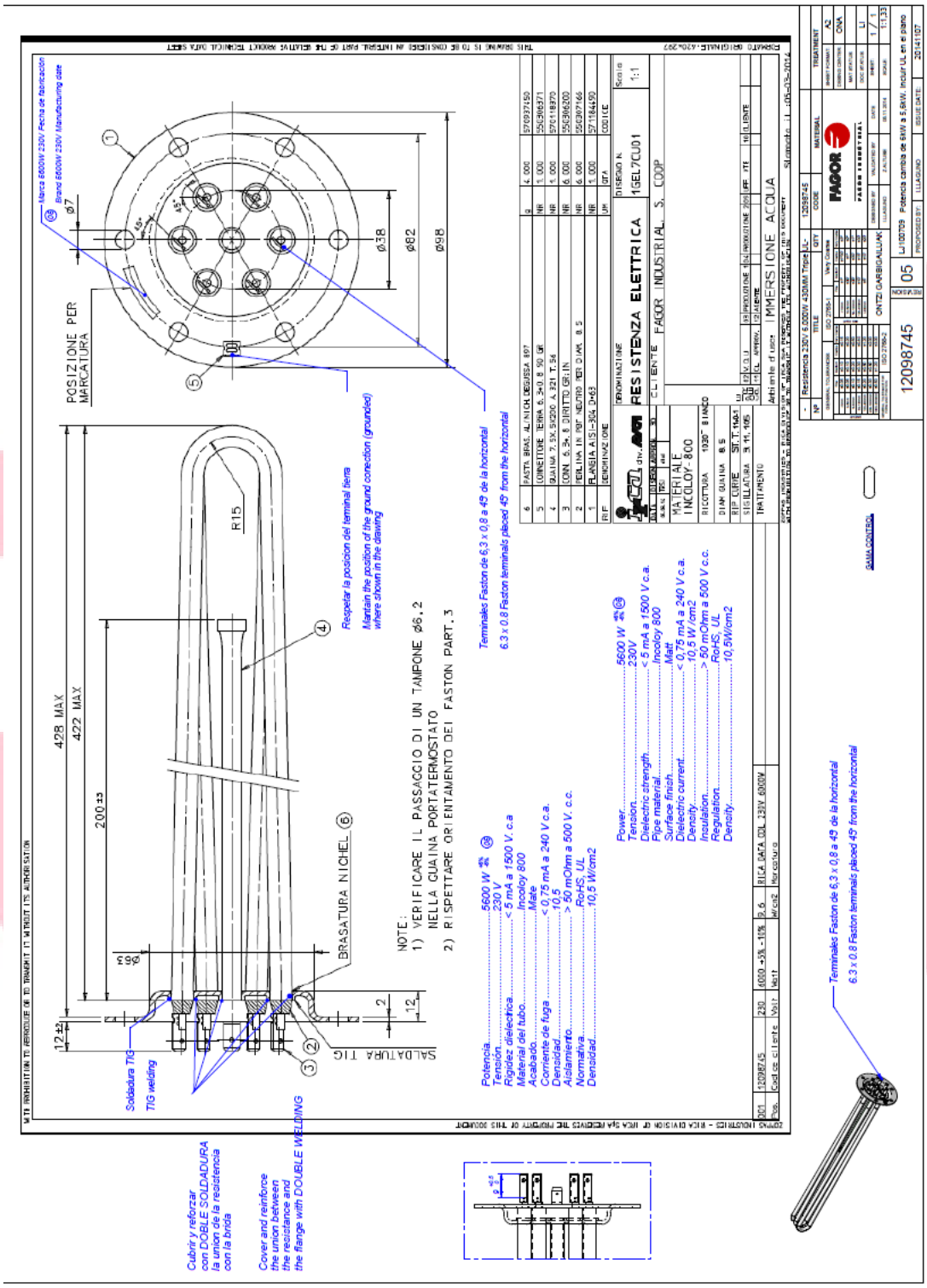
13.3.3. TANK RESISTANCE 230 V 2,8 kW 325 mm SIMPLE UL 12159451 (CO-500, CO-501, CO-502 and COP-504)



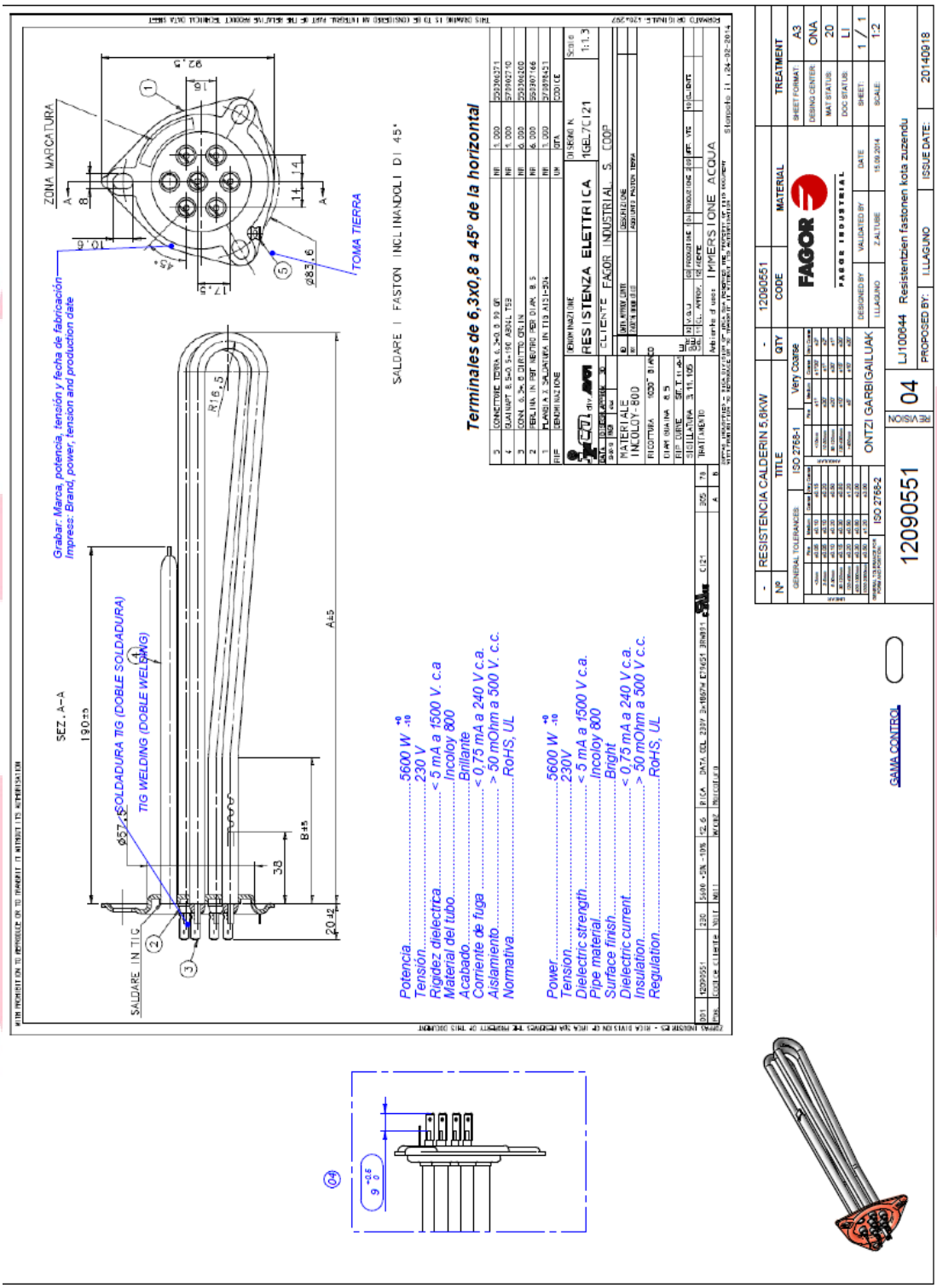
13.3.4. TANK RESISTANCE 230 V 1 kW 145 mm SIMPLE UL ROH 12212410 (AD-505 EVO 2.0)



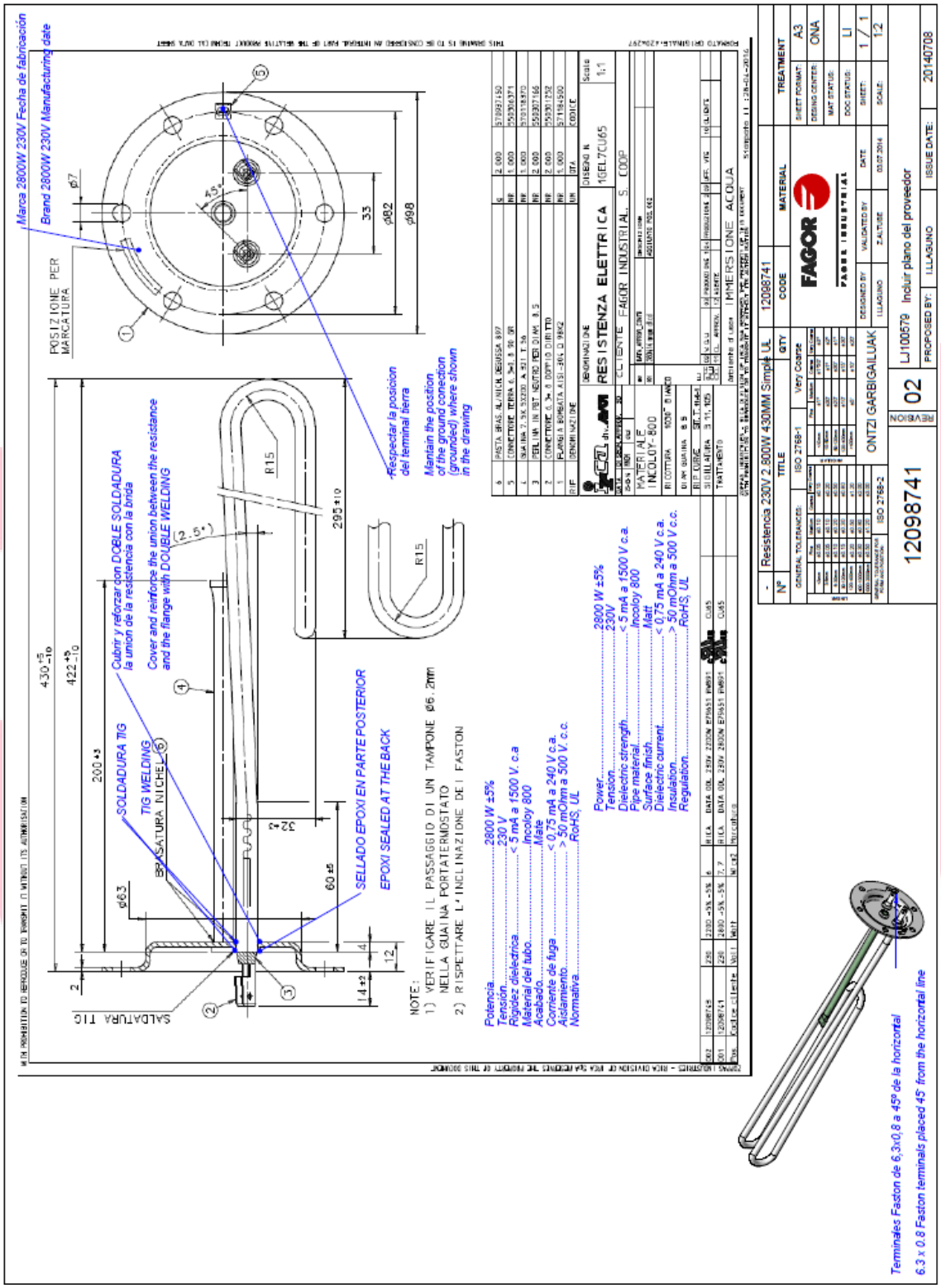
13.3.5. BOILER RESISTANCE 230 V 5,6 kW 430 mm TRIPLE UL 12098745 (CO-501, CO-502 and CO-502 W)



13.3.6. BOILER RESISTANCE 230 V 5,6 kW 305 mm TRIPLE UL 12090551 (COP-503, COP-504, COP-504 W and AD-505)



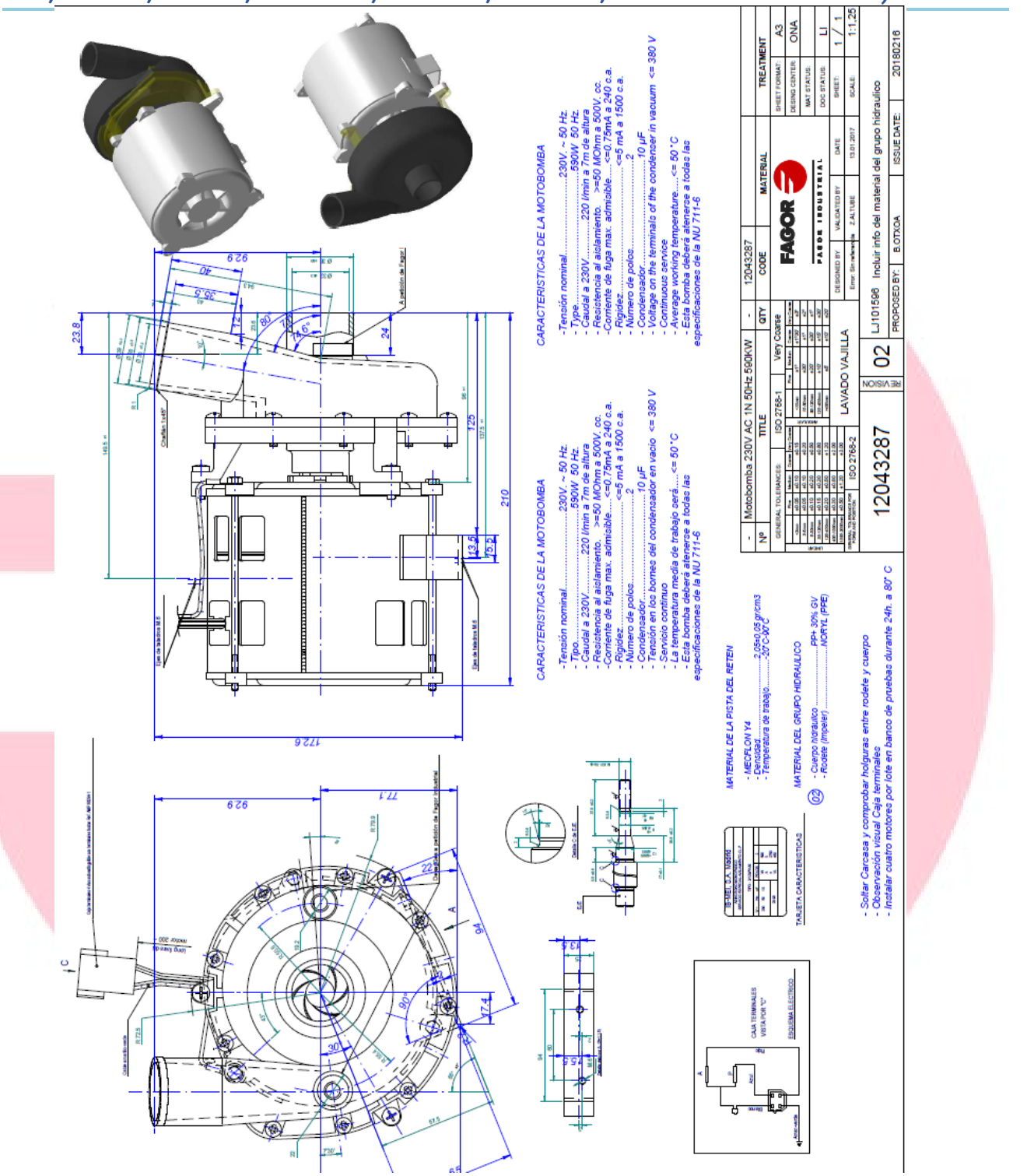
13.3.7. BOILER RESISTANCE 230 V 2,8 kW 430 mm SIMPLE UL 12098741 (CO-500)



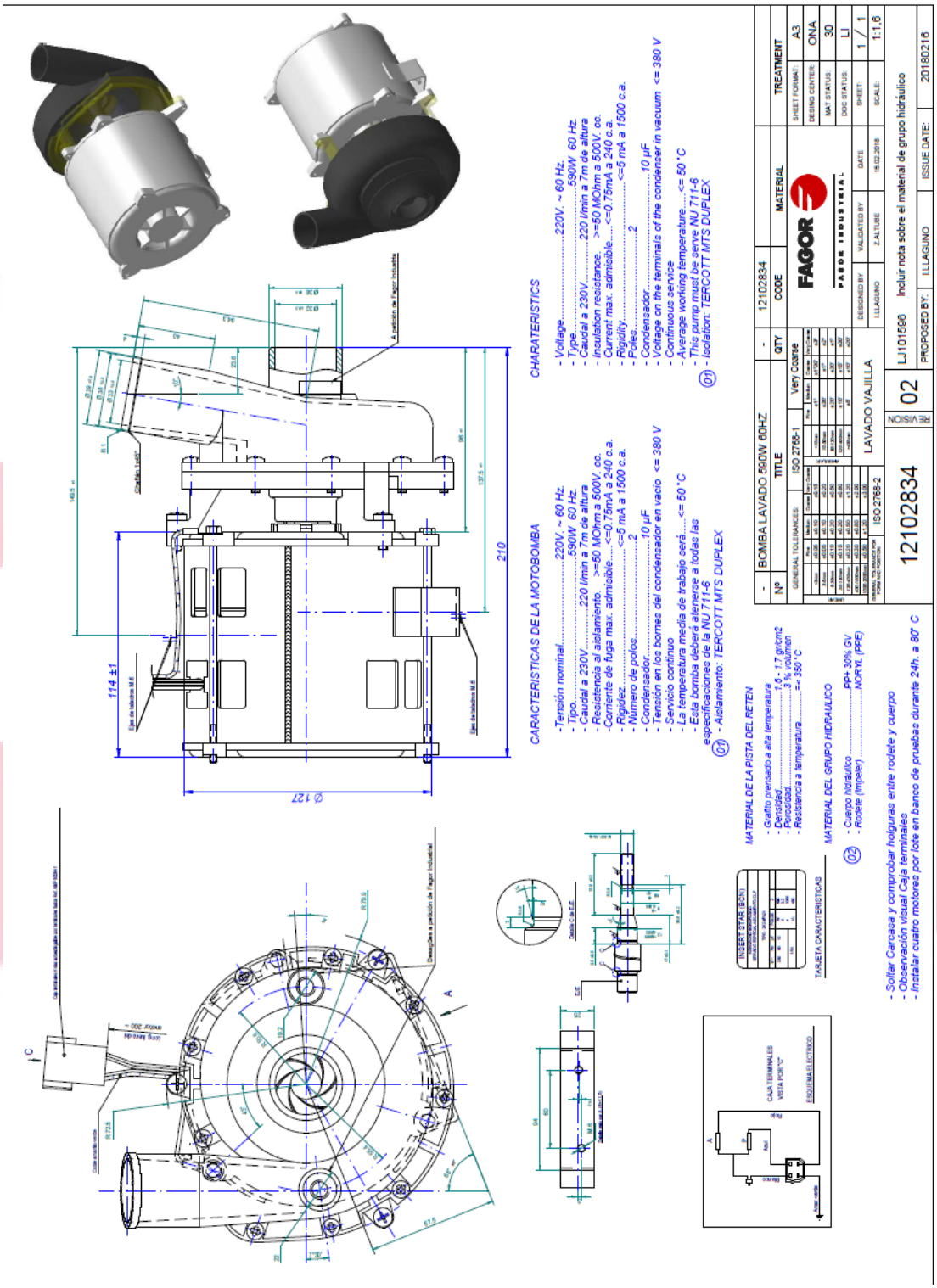
13.4. MOTOR PUMPS

	Wash		Pump		Drainage
	12043287	12102834	12024233	12187518	12094265
CO-500	X				X
CO-501	X				X
CO-502	X				X
CO-502 W		X	X		X
COP-503	X		X		X
COP-504	X		X	EVO 2.0	X
COP-504 W		X	X		X
AD-505	X		X	EVO 2.0	X

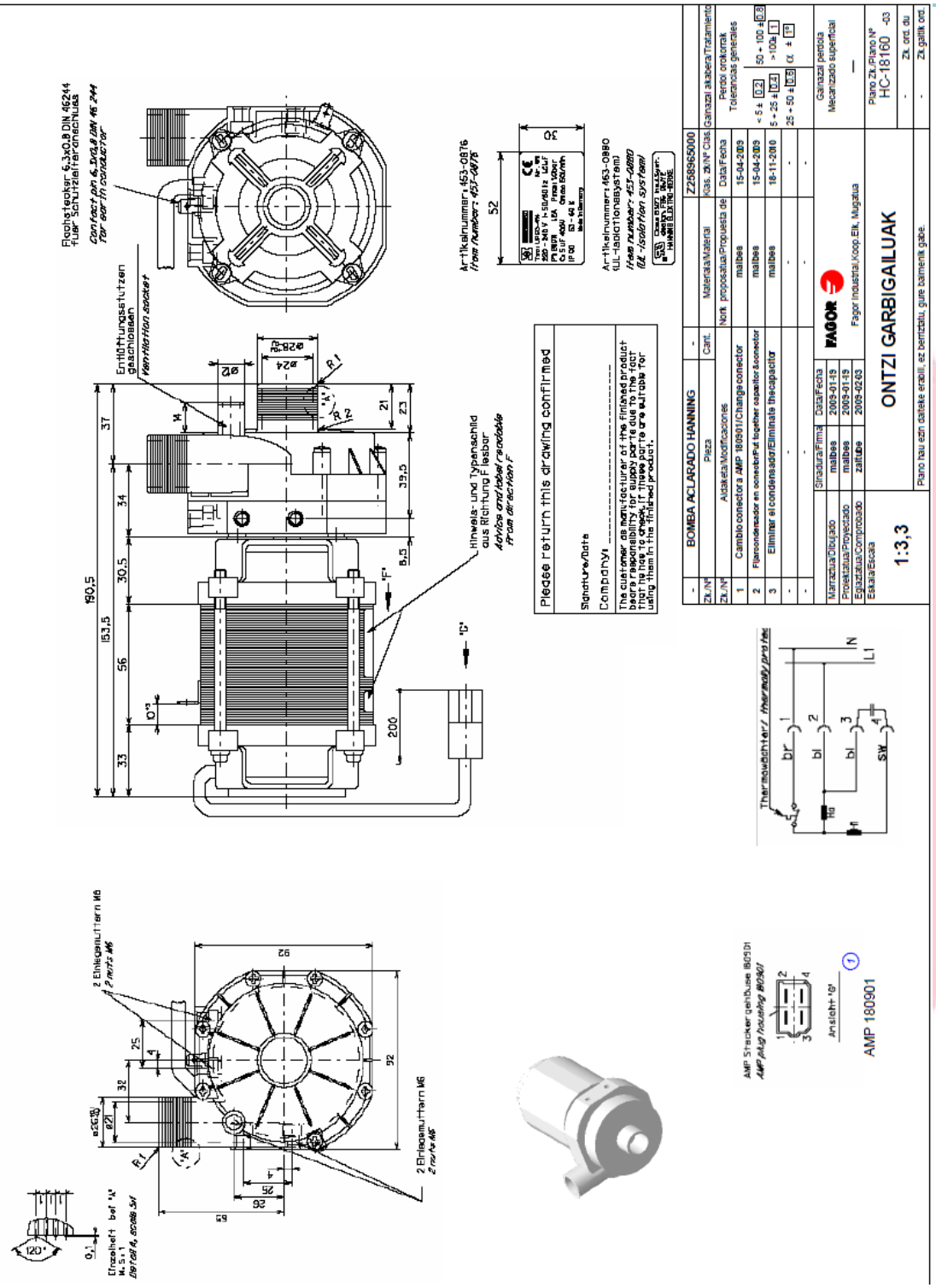
13.4.1. WASH MOTOR PUMP 230 V AC 1N 50 Hz 590 W 12043287 (EVO 1.0 only) (CO-500, CO-501, CO-502, CO-502 W, COP-503, COP-504, COP-504 W and AD-505)



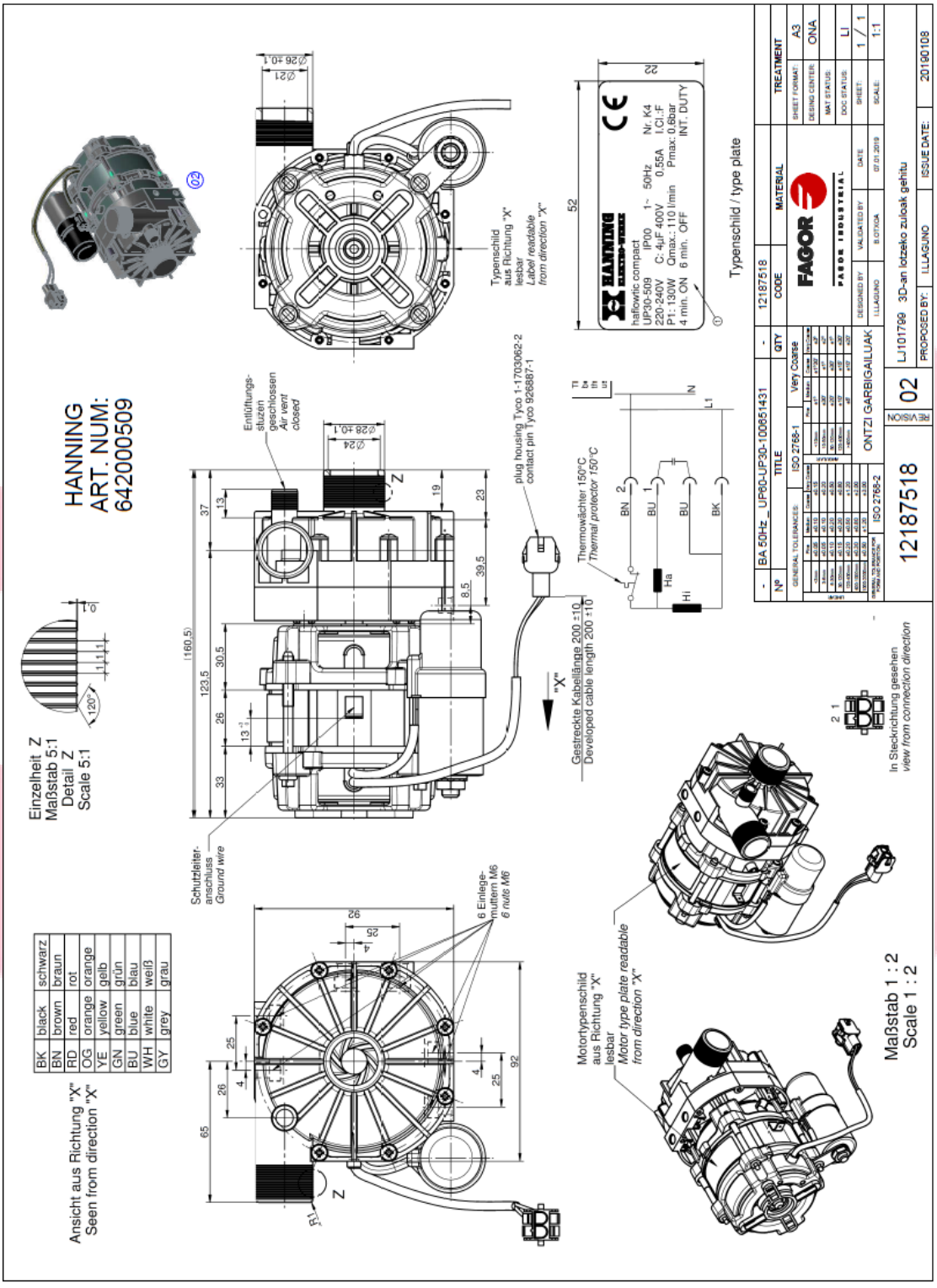
13.4.2. WASH MOTOR PUMP 220 V AC 1N 60 Hz 590 W12102834 (CO-502 W and COP-504 W)



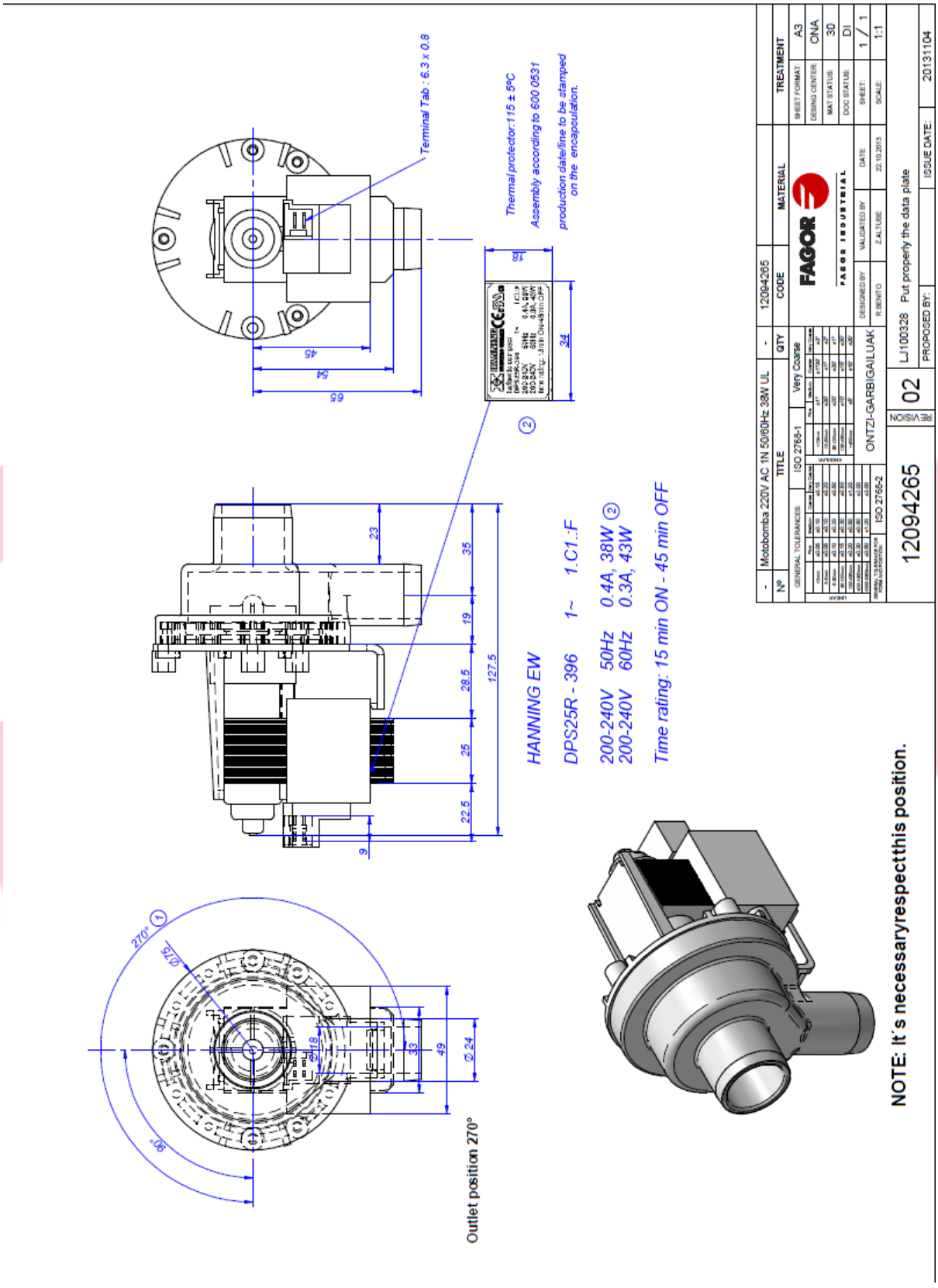
13.4.3. RINSE MOTOR PUMP 230 V AC 1N 50/60 Hz 12024233 (CO-502 W, COP-503, COP-504, COP-504 W and AD-505)



13.4.4. RINSE MOTOR PUMP 50 Hz UP60-UP30-100651431 12187518 (only EVO 2.0) (COP-504 and AD-505)



13.4.5. DRAINAGE MOTOR PUMP 220 V AC 50/60 Hz 37 kW 12094265 (CO-500, CO-501, CO-502, CO-502 W, COP-503, COP-504, COP-504 W and AD-505)



FAGOR INDUSTRIAL S. COOP.
Santxolopetegi auzoa, 22
20560 Oñati, Gipuzkoa (Spain)
T. (+34) 943 71 80 30
info@fagorindustrial.com

www.fagorindustrial.com

Service Manual