FULLY-AUTOMATIC ESPRESSO COFFEE MACHINE

use and maintenance manual for the TECHNICIAN

ENGLISH

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use and maintenance manual for the TECHNICIAN

English

INTRODUTION

The manufacturer reserves the right to make product improvements. We guarantee that this manual respects the technological status at the time the machine is supplied.

We are open to any suggestions from technicians which may improve the product and the manual.

GENERAL WARNINGS

- Once the packaging has been removed make certain the appliance is in good condition; if you have any doubts, check the fault and contact the retailer or manufacturer directly.

- Packaging must not be left where children can reach it as it is a potential hazard source.

- The appliance must be installed in compliance with the safety standards in force in the country of use.

- This appliance is completely safe only when it is connected to an effective earthing system that complies with the safety standards. Make sure that the mains power is sufficient for the energy required for the machine.

- It is unadvisable to use extension leads or electrical adaptors for multiple sockets. If it is essential to use them, use only single adaptors or leads that comply with the current safety standards. Never exceed the capacity indicated on the adaptor or leads, or the maximum power indicated on the adaptor.

- This appliance should only be used for what it has been designed. Any other use is considered improper and consequently dangerous. The manufacturer cannot be held responsible for any damages caused due to an erroneous or irrational use. The technician must remind the user about the safety standards to ensure correct operation of the appliance.

- The use of an electrical appliance is subject to the safety standards.

- If the customer decides he is not going to use the appliance for a long time, he must disconnect the power cable from the mains and empty the water contained therein.

- To guarantee that the coffee-maker works properly and efficiently, it is essential to follow the manufacturer's instructions, carrying out periodical maintenance and a check of all the safety devices.

- Always make sure that hands, or other parts of the body, never come within the range of the coffee dispensing spouts or those of steam and hot water since these can scald.

- The repair technician must inform the retailer or manufacturer promptly of any problems when installing or using the appliance..

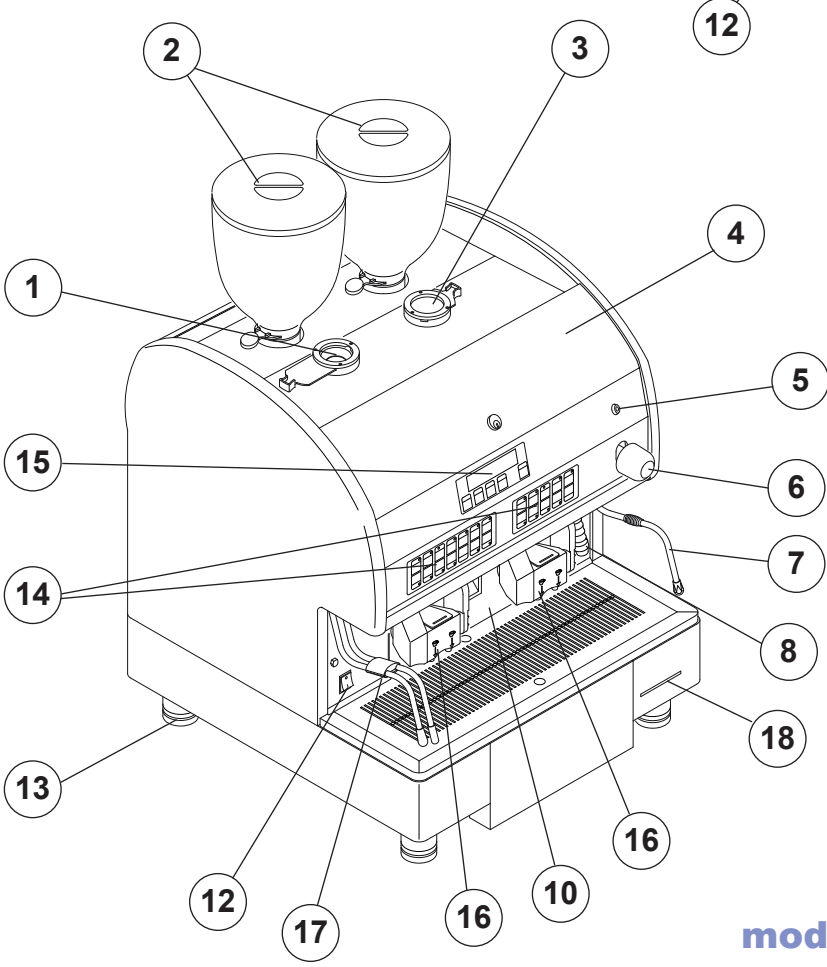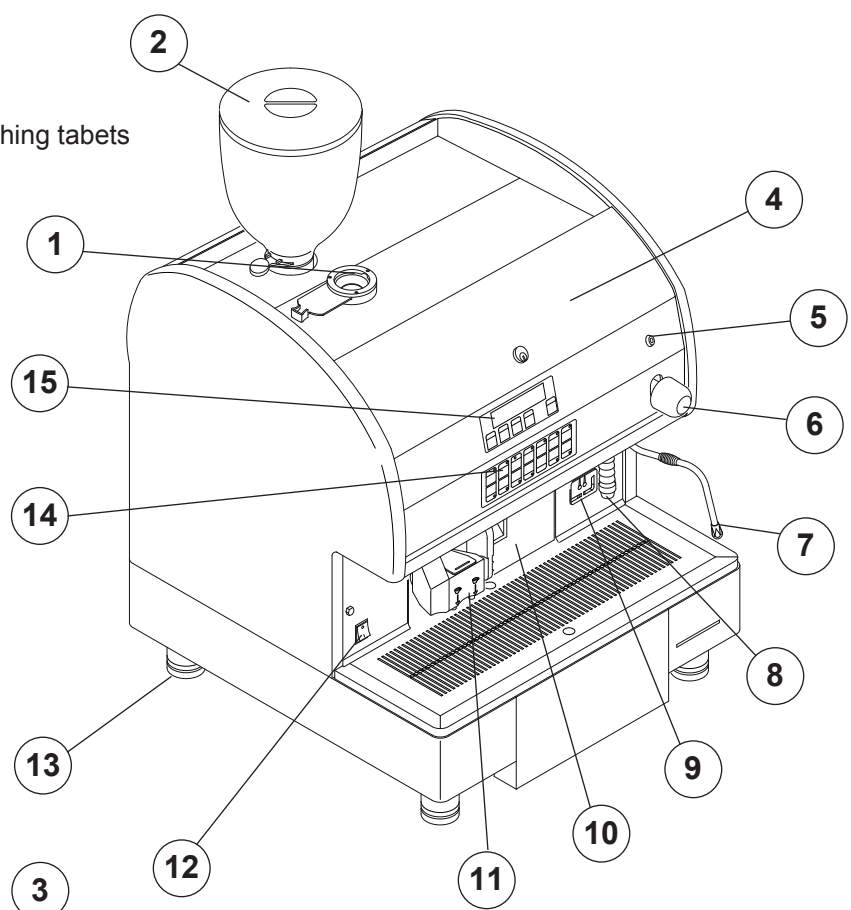- The coffee machine must be used at a temperature between 5°C and 40°C.

Summary

1. GENERAL DESCRIPTION

1. Opening for decaffeinated coffee/for washing tabets
2. Coffee grinder hopper
3. Opening for washing tabs
4. Inspection door
5. Programming key
6. Steam dispensing knob
7. Steam dispensing wand
8. Hot water dispensing spout

model **AK**

9. Pressure gauge
10. Coffee grouts box
11. Coffee spouts
12. Main switch for turning on machine
13. Feet
14. Function control touch pads
15. Display
16. Milk + coffee delivery spout.
17. Autosteamer nozzle
18. Smart Card reader

model **AKC**

2. TECHNICAL FEATURES

Width (L)	57 cm
Depth (P)	59 cm
Height (H)	83 cm
Weight	94 kg

Voltage	230/240/400 V
Total input	4000 W (18 A)
Boiler heating element power	2700 W (12 A)
Coffee grinder motor power	350 W x 2 (1,5 A)
Pump motor power	260 W (1,2 A)
Group heating element power	150 W x 2 (0,8 A)
Piston heating element power	10 W x 2 (24 V)
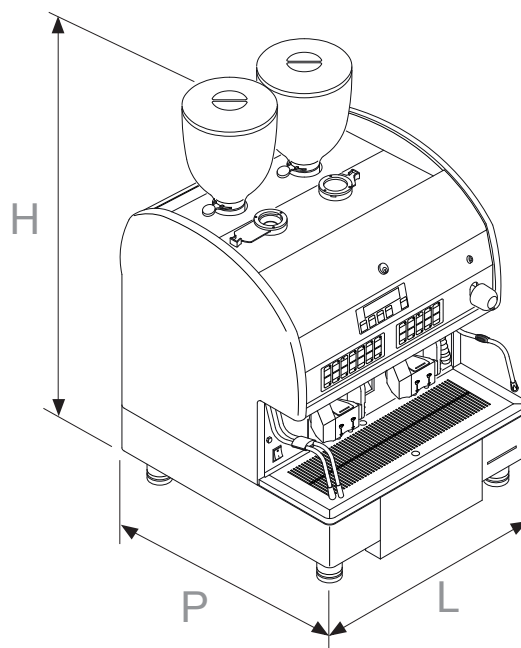
Boiler capacity	7 litres
Boiler working pressure	0,9 - 1,1 bar
Pressure of water supplied	0 - 5 bar
Pressure of dispensed coffee	8 - 9 bar
Safety valve calibration	2 bar

3. DESCRIPTION OF INTERNAL COMPONENTS

1. Left dispensing group
2. Left coffee-grinder
3. Right coffee-grinder
4. Right dispensing group
5. Volumetric doser
6. Pressure gauge
7. Motor pump
8. Drainage trough
9. Electronic card
10. Main switch
11. Boiler
12. Boiler heating element
13. Pressure switch
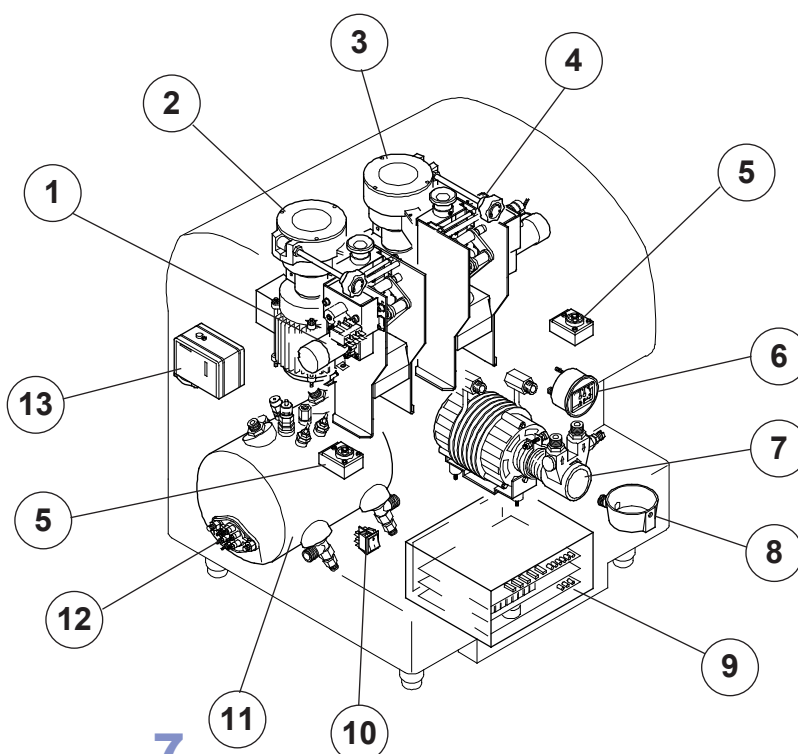
4.   INSTALLATION

4.1   Unpacking

For correct unpacking proceed as follows to unpack the machine correctly:

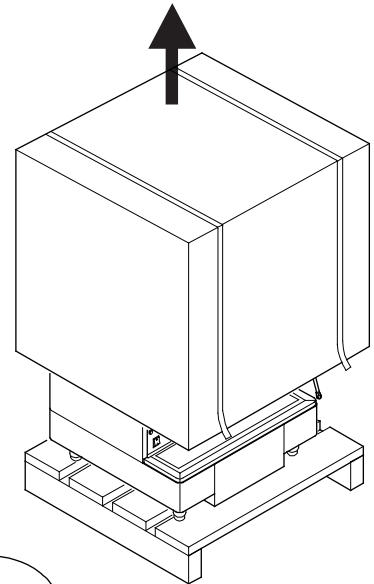1)   Cut the straps around the packaging.
2)   Pull the box off upwards.
3)   Position the machine on the worktop.

> ℹ️ *We recommend you keep the packaging until the guarantee period has expired.*

4.2   Preparation of the coffee-grinder

Fit the coffee hoppers in place on the two grinders.
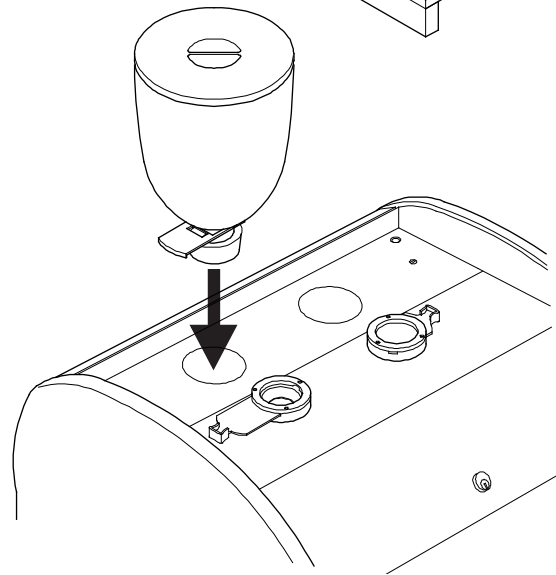
4.3   Positioning the machine

There has to be plenty of room for the appliance and for using it correctly.

Prepare the counter where the machine will be placed and make sure it can bear its weight.

It is important that all the terminals of the connections to the electricity and to the water mains are easy to reach and in the immediate vicinity of the machine.
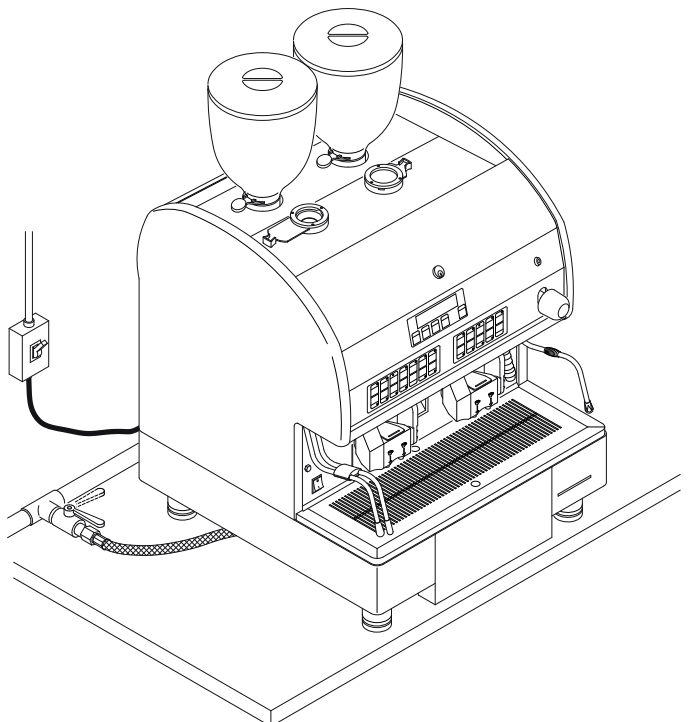
> ⚠️ *To work properly the machine has to stand on a perfectly level surface.*
> *Any corrections needed to level the machine can be done by adjusting the feet.*

5. CONNECTIONS and OPERATIONS

5.1 Hydraulic connection

The softener provided has been designed to function at a pressure ranging between 1 and 9 bar. It has to be filled with cold drinking water only.

When connecting the machine to the water mains, install a tap between the machine and the mains so as to be able to interrupt the supply of water to the appliance.

To prevent the water from freezing, install the softener in a room where the temperature is higher than 0°C.

Before connecting the pipes remove any rubber plugs from the softener tap couplings. To connect proceed as follows:

1) connect the water mains (**1**) to the softener inlet (**2**) using the flexible pipe provided;

2) before connecting the outlet of the softener to the machine, rinse the resins of the softener and check that the water, which originally may be yellowish, is once again clear;

3) connect the softener outlet (**3**) to the machine (**4**);

4) connect the machine drainage trough (**5**) to the drain (**6**) using the specific pipe provided, paying attention to avoid sharp bends or throttlings and keeping it slanted enough for the waste water to drain away;

5) the drain (**6**) has to connected to an inspectionable trap (**7**) that can be cleaned regularly to prevent the reflux of bad smells.
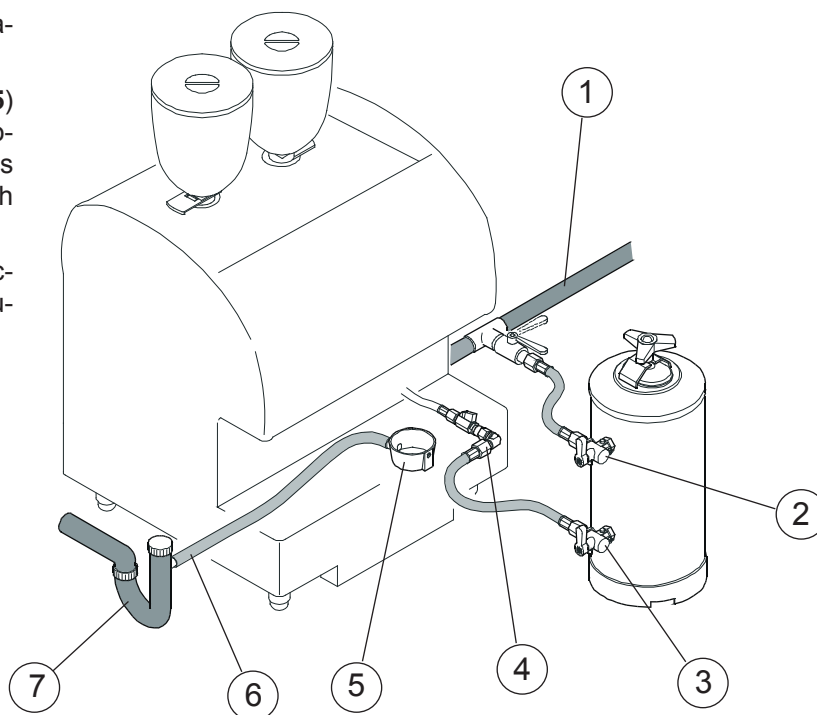

⚠️ *To prevent damage of the outer case, valves and taps, install the softener where it is protected against accidental knocks.*

5.2 Maintenance and cleaning

To make the service and cleaning operations easier, parts of the external casing are removable.

In particular from the front, the user has access to the inside of the machine by opening the doors that cover the group and push button panel.
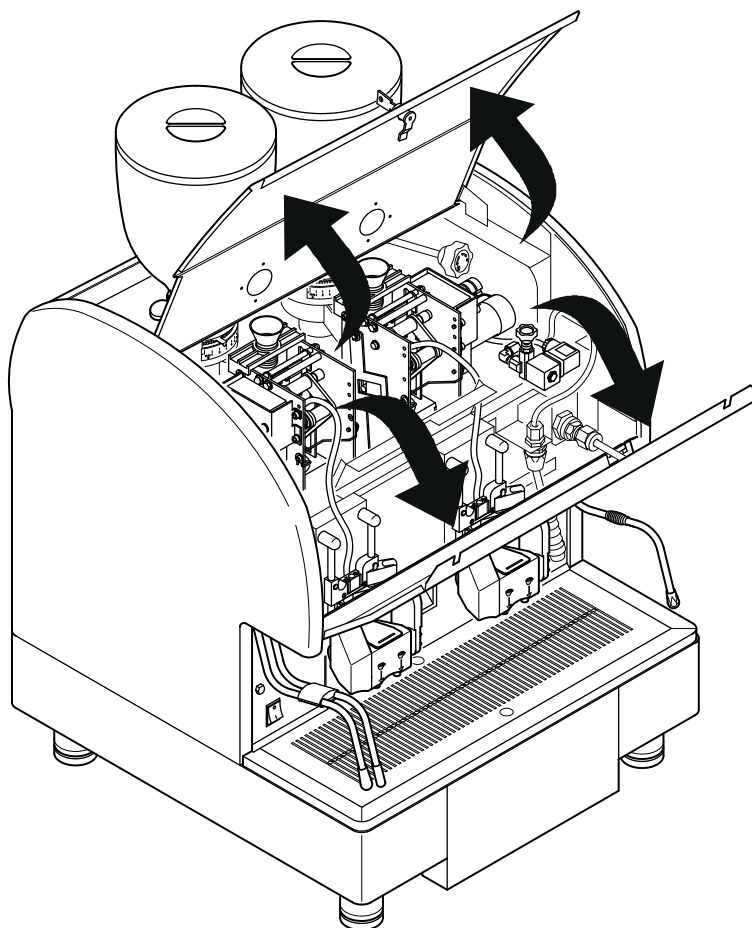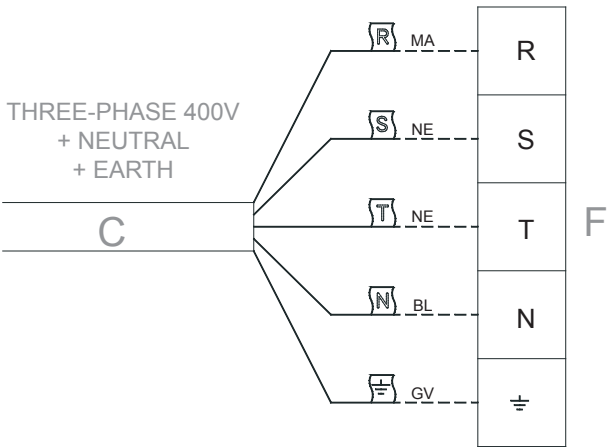
5.3 Electrical connections

- Connect the cable going from the machine to the electrical network;
- Install a circuit breaker (**1**).
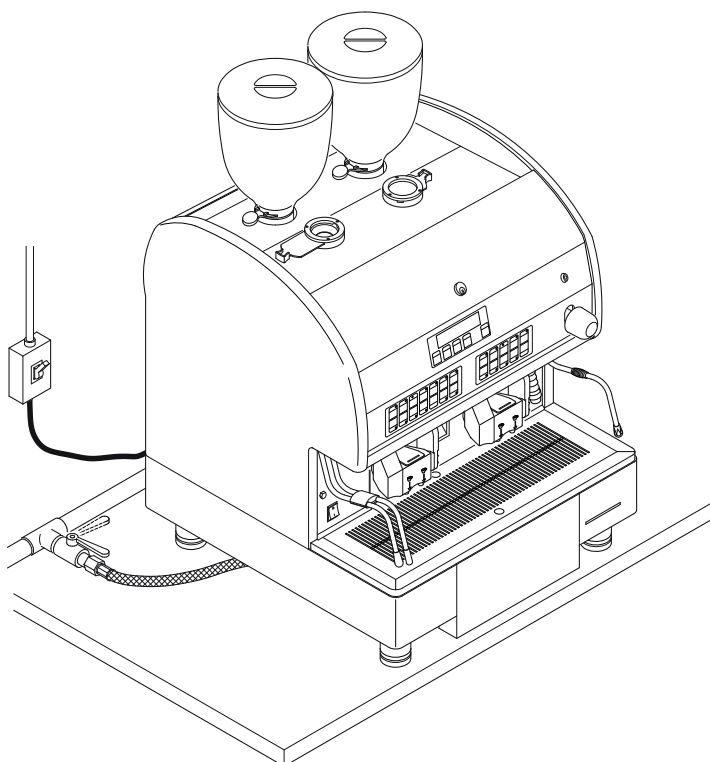
⚠ *Effect the electrical connections with the mains voltage disconnected.*

SINGLE-PHASE 230V
+ EARTH

C

R MA
S NE
T NE
N BL
GV

D

N F

THREE-PHASE 230V
+ EARTH

C

R MA
S NE
T NE
N BL
GV

R
S
T
F

THREE-PHASE 400V
+ NEUTRAL
+ EARTH

C

R MA
S NE
T NE
N BL
GV

R
S
T
N
F
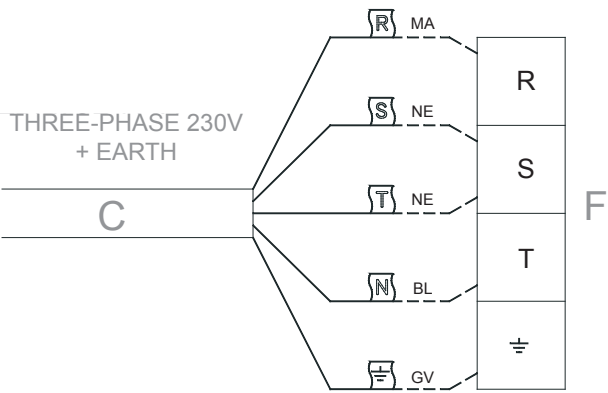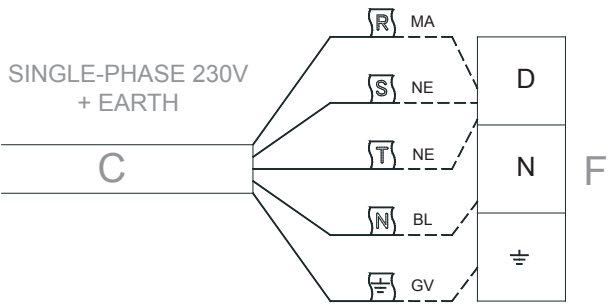
LEGEND

MA   Brown

Ne   Black

BL   Blue

GV   Yellow-Green

C   Machine cable

F   Electricity mains

R-S-T   Phase

D   Phase

N   Neutral

        Earth

5.4   Machine start-up

Once the machine has been correctly connected to the electrical mains, it is started by placing the bi-polar switch on the left side of the machine in position 1.
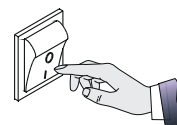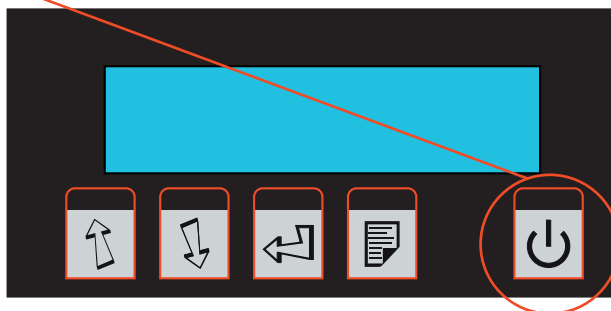
Once this is done, the display will illuminate, and the message "PRESS START" will appear.
In this situation the machine will not be activated, the boiler heating element, and the controls will not be enabled.
By pressing the key [⏻] on the right of the display push button panel, all machine functions will be activated.

At start-up, after the boiler has been filled, the machine will show the message "PLEASE WAIT". This means that both groups have not reached the correct working temperature. Upon reaching this temperature, the machine will run a cycle for both groups and the will show the message "SELECT".

With groups completely cold, warm-up time is about 20 minutes.

Before making selections, for good product quality check boiler pressure via the gauge on the front of the machine (operating pressure 0.8 –1.2) bar)

To bring the machine up to operating capacity without waiting the required time for warm-up, proceed as follows:

Place the programming key in the ON position. Start the machine, first with the main switch, then by pressing ON. [⏻]

The machine will show the message on the display "PLEASE WAIT".

Press the ENTER [↵]   key . The machine will perform a dry run of the delivery groups, and then it will go to "SELECT".

The machine will be ready for operation, and the technician may perform all required operations.

*i*   *For good quality of delivered product, wait for proper heating of groups and of the water in the boiler (approx.25 minutes).*

5.5   Adjustment of the pump

Switch the machine on as explained in the user manual.

Effect several automatic washing cycles and check the correct working pressure on the gauge (8 - 9 bar).

If necessary, calibrate pressure by means of the by-pass adjustment screw (**1**) on the pump.
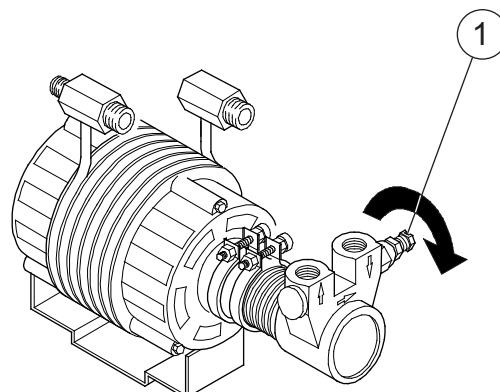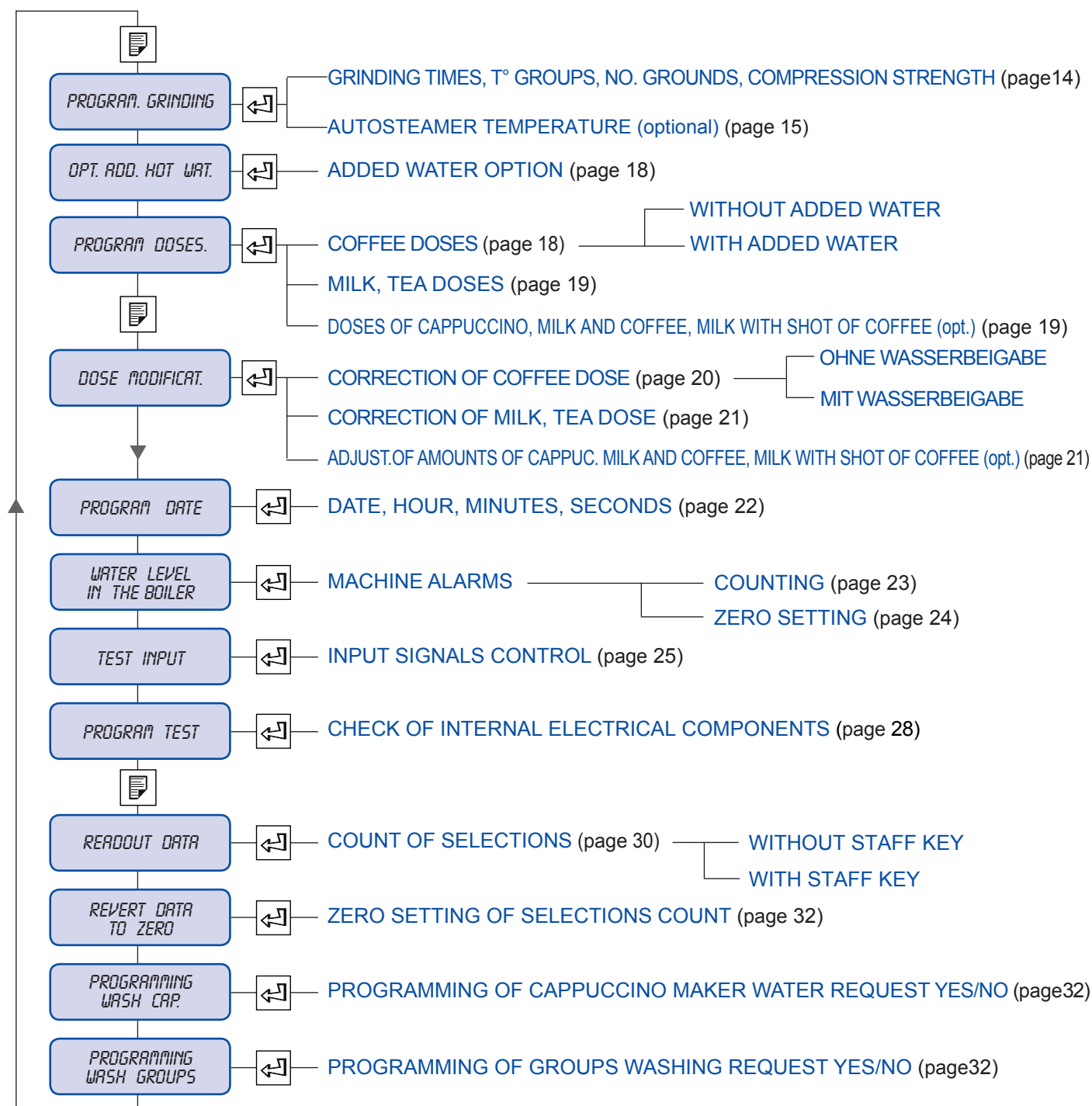
6. MACHINE PROGRAMMING

This chapter lists the instructions for modifying some machine parameters, such as group temperatures, grinding times, dose adjustment, and so on.

The procedures are also described for checking for defective components, for counting selections made, for setting wash requests, and so forth.

To access the programming menu, do the following:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.

- Once the letter P shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".

- Press the MODE key 📝 and it will be possible to scroll through all the various programming menus. Press the ENTER key ↵ and it will be possible to enter each sub-menu, and via the ARROW ⬆ ⬇ , keys, to modify the selected parameters.

PROGRAM. GRINDING
— GRINDING TIMES, T° GROUPS, NO. GROUNDS, COMPRESSION STRENGTH (page14)
— AUTOSTEAMER TEMPERATURE (optional) (page 15)

OPT. ADD. HOT WAT.
— ADDED WATER OPTION (page 18)

PROGRAM DOSES.
— COFFEE DOSES (page 18) — WITHOUT ADDED WATER / WITH ADDED WATER
— MILK, TEA DOSES (page 19)
— DOSES OF CAPPUCCINO, MILK AND COFFEE, MILK WITH SHOT OF COFFEE (opt.) (page 19)

DOSE MODIFICAT.
— CORRECTION OF COFFEE DOSE (page 20) — OHNE WASSERBEIGABE / MIT WASSERBEIGABE
— CORRECTION OF MILK, TEA DOSE (page 21)
— ADJUST.OF AMOUNTS OF CAPPUC. MILK AND COFFEE, MILK WITH SHOT OF COFFEE (opt.) (page 21)

PROGRAM DATE
— DATE, HOUR, MINUTES, SECONDS (page 22)

WATER LEVEL IN THE BOILER
— MACHINE ALARMS — COUNTING (page 23) / ZERO SETTING (page 24)

TEST INPUT
— INPUT SIGNALS CONTROL (page 25)

PROGRAM TEST
— CHECK OF INTERNAL ELECTRICAL COMPONENTS (page 28)

READOUT DATA
— COUNT OF SELECTIONS (page 30) — WITHOUT STAFF KEY / WITH STAFF KEY

REVERT DATA TO ZERO
— ZERO SETTING OF SELECTIONS COUNT (page 32)

PROGRAMMING WASH CAP.
— PROGRAMMING OF CAPPUCCINO MAKER WATER REQUEST YES/NO (page32)

PROGRAMMING WASH GROUPS
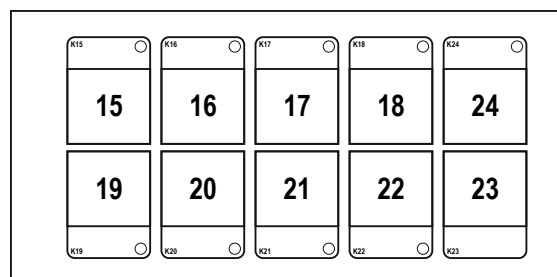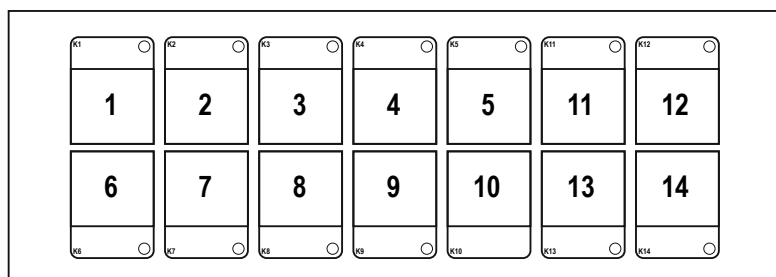— PROGRAMMING OF GROUPS WASHING REQUEST YES/NO (page32)

6.1   Programming of grinding times

Programming of grinding times is for the purpose of changing the amount of grams of coffee for each selection in which coffee is used.

This modification is performed by changing the grinding time for each coffee selection.

To modify grinding times, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the ENTER key ↵ , and the machine will show the time that has been set for each selection, in succession: key 1, key 2, key 3...key 24.

K1 1	K2 2	K3 3	K4 4	K5 5	K11 11	K12 12		K15 15	K16 16	K17 17	K18 18	K24 24
K6 6	K7 7	K8 8	K9 9	K10 10	K13 13	K14 14		K19 19	K20 20	K21 21	K22 22	K23 23

In this section, the machine will show only a list of keys to which a beverage has been matched that uses the coffee beans in the hopper.

For example, if key number 2 is matched with the MILK selection (see "Push button panel configuration", chap. 7.12) and hence coffee is not used, in grinding programming press the ENTER key ↵ and the machine will show the grinding time associated with key 1 before skipping directly to key 3 (provided this key is matched with a beverage with the aforementioned characteristics).

Use the ARROW keys ⇧ ⇩ to increase or decrease grinding time of each selection expressed in seconds or tenths of seconds.

GRINDING TIMES TABLE (sec.)		
	Single	**Double**
Medium-coarse grinding	**2,4**	**2,8**
Fine grinding.	**2,7**	**3,2**

ℹ️ *Grinding times may not always correspond to a constant weight, and may change depending on the type of coffee, the wear of the grinders or the diameter of grinding. Therefore the coffee grinder will grind a different dose (give or take a few grams).*

ℹ️ *To exit programming, repeatedly press the MODE key 📝 until the display show the message "SELECT".*

6.2   Programming of group temperatures

In this section it is possible to modify the temperature of each group. In fact, each group is heated by an internal heating element controlled by a temperature sensor. This operation may be necessary when the coffee delivered is not at a temperature which is satisfactory to the client.

To adjust the temperature, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Press and hold the MODE key [⧉] for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the ENTER key [⏎] until the display shows the message "PROG. GRINDING".
- Press the MODE key [⧉] until the display shows the message "PROG. GR. TEMPERATURE 1".
- To modify the temperature of group 1, press the ENTER key [⏎] again and the display will show the message "PROG. GR. 1 TEMPERATURE". Press the ENTER key [⏎] again, to adjust group 2.
- Once you have selected the group for which you want to change the temperature via the ARROW keys [↑][↓] , set the desired temperature.
- Standard operating temperature inclusive between 80°C and 92°C.

i   *To exit programming, repeatedly press the MODE key* [⧉] *until the display show the message "SELECT".*

6.3   Programming of Autosteamer temperature (if configured)

In this section it is possible to modify the temperature of the automatic steam (Autosteamer)
This programming option will be visible and modifiable only if the software has been configured for the use of this device (optional).

To set the temperature, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Once the letter P shows on the display, press and hold the MODE key [⧉] for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the ENTER key [⏎] the message appears "PROG. STEAM TEMPERATURE".
- Use the ARROW keys [↑][↓] to modify the temperature value.

Once the temperature is set, press the proper key. The machine will stop delivering steam once the beverage reaches the set temperature.

i   *The actual temperature of the beverage heated by the automatic steam system may differ by a few degrees depending on the amount of product heated.*

6.4   Programming grounds no.

This programming operation allows you to change the maximum number of coffee grounds tabs that can be discarded into the grounds drawer. Once this number has been reached, the machine will inform the operator to empty the grounds drawer via the procedure shown in the user's manual of the machine.

To modify this value, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Once the letter P shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the ENTER key ↵ until the display show the message "PROG. GROUNDS".
- Use the ARROW keys ⬆ ⬇ to modify the maximum amount of grounds that can be discarded into the drawer.

If the machine uses direct grounds discharge (without drawer), and the user does not wish to be informed that the drawer is full, the aforementioned value will need to be set to 0. In this case the machine will never signal the need to empty the grounds drawer.

i   *To exit programming, repeatedly press the MODE key 📝 until the display show the message "SELECT".*

6.5   Programming piston compression

This menu lets you modify the pressure that the upper piston uses to press the coffee during the pressure phase that precedes delivery.

By increasing the value shown in this section of the display, the machine will compress the coffee with greater force. On the contrary, decreasing this value decreases the compression force on the coffee.

The machine identifies four categories of beverage for which it is possible to modify the force of compression:

Single dose group 1	"PROG. COMP. S GR.1"
Double dose group 1	"PROG. COMP. D GR.1"
Single dose group 2	"PROG. COMP. S GR.2"
Doppia dose gruppo 2	"PROG. COMP. D GR.2"

To modify this value, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Once the letter "P" shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the ENTER key ↵ until the display show the message "PROG. COMPRESSION S GR. 1".
- Press the ENTER key ↵ to select one of the four categories of beverage.
- Use the ARROW keys ⬆ ⬇ to modify the compression value of the piston (min 80 max 110) for each of the categories.

The milk and coffee, cappuccino and milk with a shot of coffee selections are to be considered as part of the group 1 single dose coffee categories if made with the left-hand keypad, group 2 single dose coffee if made with the right-hand keypad.

i   *To exit programming, repeatedly press the MODE key 📝 until the display show the message "SELECT".*

6.6   Loading/saving data on Smart Card

The machine is standard equipped with a Smart Card reader.
This makes it possible to save all data programmed by the user in a card with a microchip. This data can subsequently be re-loaded in the same machine or in another of the same model.
To do this, proceed as follows:

1.   Saving data on Smart Card

- Insert the provided Smart Card with the CMA logo facing up.
- Turn the programming key clockwise. The display will show the letter "P".
- Hold down the MODE key   📝   until the display show the message "PROG. GRINDING".
- Press the ENTER key   ↵   until the display shows the message "UPLOAD TO SMART CARD".
- Hold down the ENTER key   ↵   (the display will show the message "UPLOADING") until the display shows the message "UPLOAD TO SMART CARD".
- At this point, all data set on the machine (doses, temperature, grinding times, key configuration, etc.) will be saved in the memory cell of the Smart Card.

i   *To exit programming, repeatedly press the MODE key   📝   until the display show the message "SELECT".*

2.   Download of data from Smart Card

- Insert the provided Smart Card with the CMA logo facing up.
- Turn the programming key clockwise. The display will show the letter "P".
- Hold down the MODE key   📝   until the display show the message "PROG. GRINDING".
- Press the ENTER key   ↵   until the display shows the message "DOWNLOAD FROM SMART CARD".
- Hold down the ENTER key   ↵   (the display will show the message "DOWNLOADING") until the display shows the message "DOWNLOAD FROM SMART CARD".
- At this point, all data previously saved on the Smart Card in question will be loaded into the internal memory of the machine, which will be fully configured with the data downloaded from the Smart Card (group temperatures, doses, key configurations and so on).

i   *To exit programming, repeatedly press the MODE key   📝   until the display show the message "SELECT".*

6.7 Added water option

The added water option makes it possible choose to which coffee selections a certain programmable amount of hot water will be added.

This option is available in the medium single and double selections, and single and double long (American coffee) selections of both groups.

To activate this option, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter P, to indicate that the machine can be programmed.
- Once the letter P shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the ENTER key ↵ .The display will show the message "ADDED WATER OPTION".
- Press the ENTER key ↵ to select one of the categories where this option can be activated. Then use the ARROW keys ⬆ ⬇ to activate it (S) or de-activate it (N).

ℹ *To exit programming, repeatedly press the MODE key 📝 until the display show the message "SELECT".*

6.8 Programming doses

This function makes it possible to program the amount of product in the cup of the selections delivered by the machine (coffee, milk, tea, cappuccino and so forth).

Programming must be carried out on all enabled keys, even if the same beverage (coffee, cappuccino, etc.) has been assigned to more than one key (see "Push button panel configuration" chap.7.12).

To modify the dose of the selection, follow this procedure:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Once the letter P shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the MODE key 📝 until the display shows the message "PROG. DOSES"
- Depending on the type of beverage selected, refer to one of the points mentioned below.

1. COFFEE SELECTIONS PROGRAMMING (with no added water)

- Press the key of the desired selection to activate the grinding and delivery cycle.
- Once the desired dose of coffee has been reached, press the same key again to stop programming.
- Re-programming is possible at any time by repeating the procedure described above.

ℹ *During programming, if the programming of the coffee dose is stopped using the STOP key 🛑 , the machine will not memorize the dose that has just been memorized but instead will retain in memory the last dose previously memorized.*

2. COFFEE SELECTIONS PROGRAMMING (with added water)

Press the key of the desired selection to activate the grinding and delivery cycle.

Once the desired amount of coffee is reached, press the same key again and the machine will stop delivering coffee and it will automatically start delivering water. Once the desired amount of water is reached, press the selection key again to stop delivery.

In this way the machine will have memorized both the amount of coffee and the amount of hot water (added water).

Re-programming is possible at any time by repeating the procedure described above.

3. PROGRAMMING COFFEE AND MILK / CAPPUCCINO SELECTIONS

By pressing the key for the desired selection, the phase of milk suction and heating by the cappuccino maker will be started. Once the desired dose of milk is reached, press the same key again. The machine will stop milk delivery, and it will memorize the time required for the suction of that amount. It will also activate the coffee grinding and delivery cycle. Once the desired dose of coffee is reached, press the same key again. The machine will stop delivery of coffee and it will memorize the amount reached.

4.   PROGRAMMING OF MILK DOSES AND FOAMED MILK

By pressing the key for the desired selection, the phase of milk suction and heating by the cappuccino maker will be started. Once the desired dose of milk is reached, press the same key again. The machine will stop milk delivery, and it will memorize the time required for the suction of that amount.

5.   PROGRAMMING DOSES OF HOT WATER

Pressing the hot water selection key will activate the solenoid valve for tea delivery. Once the desired dose is reached, press the same key again.
The machine will stop delivery and it will memorize the time required for delivery. The dose can be re-defined at any time.

i *By changing the amount of cold water mixed with the hot water, the amount of water delivered changes as well. Before programming it is therefore advisable to determine the correct temperature of the hot water.*

6- STEAM TIME PROGRAMMING (optional)

By pressing the steam key (if present), machine will activate the solenoid valve, and steam delivery will begin.
By pressing the same key again, the machine will stop delivery and it will memorize the time required for delivery.
The operation can be repeated at any time.

7.   PROGRAMMING DOSES OF MILK WITH A SHOT OF COFFEE (LCL)

a) Cold milk with shot of coffee
Press the key for the selection of cold milk with a shot of coffee. The display will show the message "PROG. MILK WITH SHOT OF COFFEE F.".
Cold milk delivery will begin.
Once the desired dose has been reached, press the same key again. The machine will stop delivery of cold milk, memorize the time required for delivery and will automatically start delivery of hot foamed milk. Upon completing the dose of hot foamed milk, press the same key again, and the machine will stop and memorize delivery. The coffee cycle will start automatically. Once the desired dose of coffee is reached, press the same key again. The machine will stop coffee delivery and programming of cold milk with a shot of coffee will be complete.
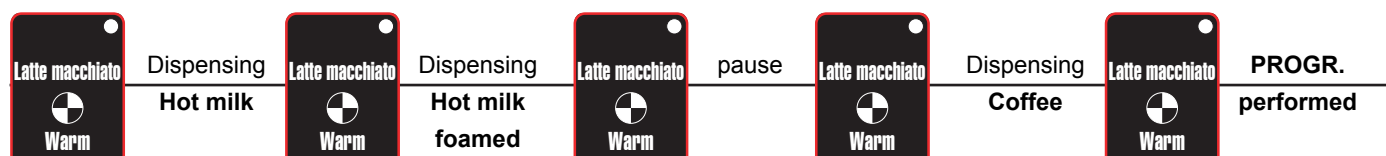Programming can be repeated at any time by following the procedure indicated above.

| Latte macchiato Cool | Dispensing **Cold Milk** | Latte macchiato Cool | Dispensing **Hot milk foamed** | Latte macchiato Cool | Dispensing **Coffee** | Latte macchiato Cool | **Progr. performed** |

b) Hot milk with a shot of coffee

Press the key for the selection of hot milk with a shot of coffee. The display will show the message "PROG. MILK WITH SHOT OF COFFEE C." and delivery will begin of non-foamed hot milk.

Once the desired dose is reached, press the same key. Delivery of non-foamed milk will stop, the machine will memorize the time required and delivery of hot foamed milk will start automatically. Once the desired dose is reached, press the key referred to above. A pause will be activated.

Once the desired pause time has elapsed, press the same key again and coffee delivery will start. Once the desired amount of coffee is reached, press the same key again to stop delivery and memorize the dose.

Programming can be repeated at any time by following the procedure indicated above.

Latte macchiato Warm	Dispensing Hot milk	Latte macchiato Warm	Dispensing Hot milk foamed	Latte macchiato Warm	pause	Latte macchiato Warm	Dispensing Coffee	Latte macchiato Warm	PROGR. performed

⚠️ *All decaf doses will automatically assume the value of the corresponding non-decaf dose, and will not be programmable separately.*
E.g. 1 ESPRESSO DECAF GR1 will have the same dose as 1 ESPRESSO GR.1 .
By modifying the dose of the espresso gr.1 you will also automatically modify the dose of espresso decaf gr.1 in the same way.

6.9   Adjustment of doses

In this section of programming it is possible to modify the previously established dose, without re-programming, but modifying the amount of water used by the machine for each coffee selection or modifying the time memorized by the machine for each delivery of milk, hot water, etc.

To modify dose parameters, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Once the letter "P" shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING."
- Press the MODE key 📝 until the display shows the message "DOSE ADJUSTMENT"
- Press the key assigned to the selection for which you want to adjust or modify the dose.

If the selection is a coffee without added water, proceed as follows:

- Press the key for the selection of which you wish to modify the dose. The display will show the volume of water in c.c. calculated by the volumetric dosing device for that particular selection. E.g. "C. DOSE 1 ESPRESSO GR1 CC NNN".
- Use the ARROW keys ⇧ ⇩ to modify the amount of water used for the specific selection.
- To memorize the modified dose, press ENTER ↵ .

If the selection is a coffee with added water, proceed as follows:

- Press the key for the selection of which you wish to modify the dose. The display will show the volume of water in c.c. calculated by the volumetric dosing device for that particular selection. E.g. "C. DOSE 1 ESPRESSO GR1 CC NNN".
- Use the ARROW keys ⬆ ⬇ to modify the amount of water used for that specific selection.
- To memorize the modified dose of coffee, press ENTER ↵ . Once the new dose of dose of coffee is confirmed, the display will show the amount of water used for the dose of added water.
- Use the ARROW keys ⬆ ⬇ to modify the dose. To confirm the newly set dose, press ENTER ↵ .

If the selection to be modified is a milk or hot water selection, proceed as follows:

- Press the key for the selection whose dose you want to modify. The display will show delivery time expressed in seconds and tenths of a second.
- Use the ARROW keys ⬆ ⬇ to modify the delivery time shown on the display.
- To confirm the newly set time press the ENTER key ↵ .

If the selection is coffee with milk or cappuccino, proceed as follows:

- Press the key for the selection of which you wish to modify the dose. The display will show the volume of water in c.c. calculated by the volumetric dosing device for that particular selection.
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ , and the machine will memorize the previously set new value. It will show the time on the display, in seconds and tenths of seconds, for milk display.
- Use the ARROW keys ⬆ ⬇ to modify this time as necessary.To confirm the modification press ENTER ↵ .

If the selection is cold milk with a shot of coffee, proceed as follows:

- Press the key for the selection whose dose you want to modify. The display will show delivery time for the cold milk expressed in seconds and tenths of a second. "MOD. DOSE MILK F".
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ to confirm and to go automatically to modification of the amount of water calculated by the dosing device in cc for the dose of coffee "M. DOSE COFFEE NN".
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ to confirm and to go automatically to control of the dose of hot foamed milk expressed in seconds and tenths of a second "M. DOSE MILK F".
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ to confirm.

If the selection is hot milk with a shot of coffee, proceed as follows:

- Press the key for the selection whose dose you want to modify. The display will show delivery time for the hot foamed milk (first delivery) expressed in seconds and tenths of a second. "MOD. DOSE MILK C".
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ to confirm and to go automatically to modification of the pause between two deliveries of hot milk, expressed in seconds and tenths of one second "MOD. PAUSE".
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ to confirm and to go automatically to the modification of the delivery time of hot foamed milk (2nd delivery).
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ to confirm and to go automatically to modification of the amount of water calculated by the dosing device in cc for the dose of coffee "M. DOSE coffee NN".
- Use the ARROW keys ⬆ ⬇ to modify this value as desired
- Press the ENTER key ↵ to confirm.

6.10 Programming date

In this section it is possible to update and modify the date in the machine (year, month, day and time).
To modify one of the date parameters, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.

- Once the letter "P" shows on the display, press and hold the MODE key [📝] for about five seconds until the display shows the message "PROGRAMME GRINDING".

- Press the MODE key [📝] until the display shows the message "DATE PROGRAMMING"

- Press the ENTER key [↵] to select the parameter to be modified and use the ARROW keys [↑] [↓] to modify the parameters.

i   *To exit programming, repeatedly press the MODE key [📝] until the display show the message "SELECT".*

```
1   PROGRAM  DATE
      YEAR  XX

    [↑][↓] + [↵]

2   PROGRAM  DATE
      MONTH  XX

3   PROGRAM  DATE
      DAY  XX

4   PROGRAM  DATE
      WEEKDAY  XXXXXXXX

    [↑][↓] + [↵]

5   PROGRAM  DATE
      HOURS  XX

6   PROGRAM  DATE
      MINUTES  XX

7   PROGRAM  DATE
      SECONDS  XX

    [↑][↓] + [↵]
```
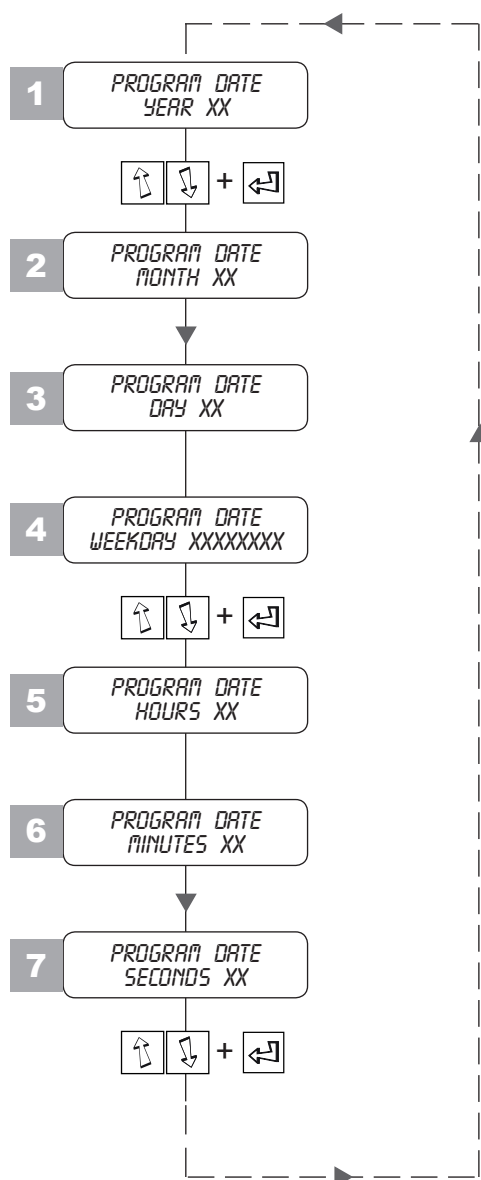
6.11 Alarm signals

In this section it is possible to check all signals that the machine provides in the event of a malfunction.

The machine will record every single alarm in a register (group motor blocked, group overheat, coffee missing alarm, etc.). This register can be consulted and reset as necessary.

To check every single item, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.

- Once the letter "P" shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".

- Press the MODE key 📝 until the display shows the message "LEVEL OF WATER IN BOILER".

- Press the ENTER key ⏎ to display every single malfunction message provided by the machine. The value shown on the display represents the number of times that event has occurred since the last reset.

- To reset the count of every single event, press and hold down the ARROW key ⬇ until the display shows "TOT . 0000".

1 WATER LEVEL IN THE BOILER NN	**10** GRINDING GR 1 NOT CORRECT NN
⏎	⏎
2 MINIMUM LEVEL IN THE BOILER NN	**11** PISTON MOTOR GR.2 BLOCKED NN
3 BOILER SENSOR NOT ACTIVE NN	**12** NOT COFFEE GROUP 2 NN
4 PISTON MOTOR GR.1 BLOCKED NN	**13** VOLUM DOSER GR.2 DOES NOT COUNT NN
5 NOT COFFEE GROUP 1 NN	**14** INSUFFICIENT GR 2 COMPRESSION NN
⏎	**15** OVER TEMPERATURE GROUP 2 NN
6 VOLUM DOSER GR.1 DOES NOT COUNT NN	**16** MICRO COMPRESSION GR.2 NN
7 NSUFFICIENT GR 1 COMPRESSION NN	**17** GRINDING GR 2 NOT CORRECT NN
8 OVER TEMPERATURE GROUP 1 NN	⏎
9 MICRO COMPRESSION GR.1 NN	
⏎	

i *To exit programming, repeatedly press the MODE key* 📝 *until the display show the message "SELECT".*

control machine alarms

| 1 | ⏎ | Display of the *NN* number of alarms due to maximum boiler filling time being exceeded.
Press ENTER to go to the next check. | WATER LEVEL
IN THE BOILER NN |

| 2 | ⏎ | Display of the *NN* number of alarms due to minimum level of water in the boiler.
Press ENTER to go to the next check. | MINIMUM LEVEL
IN THE BOILER NN |

| 3 | ⏎ | Display of the *NN* number of alarms due to the boiler sensor not working.
Press ENTER to go to the next check. | BOILER SENSOR
NOT ACTIVE NN |

| 4 | ⏎ | Display of the *NN* number of alarms due to blockage of the group 1 piston.
Press ENTER to go to the next check. | PISTON MOTOR GR.1
BLOCKED   NN |

| 5 | ⏎ | Display of the *NN* number of alarms due to the lack of coffee in group 1.
Press ENTER to go to the next check. | NOT COFFEE
GROUP 1   NN |

| 6 | ⏎ | Display of the *NN* number of alarms due to the volumetric counter of group 1 not working.
Press ENTER to go to the next check. | VOLUM DOSER GR.1
DOES NOT COUNT   NN |

| 7 | ⏎ | Display of the *NN* number of alarms due to insufficient compression of group 1.
Press ENTER to go to the next check. | INSUFFICIENT GR 1
COMPRESSION   NN |

| 8 | ⏎ | Display of the *NN* number of alarms due to overtemperature of group 1.
Press ENTER to go to the next check. | OVER TEMPERATURE
GROUP 1   NN |

| 9 | ⏎ | Display of the *NN* number of alarms due to the group 1 compression microswitch.
Press ENTER to go to the next check. | MICRO
COMPRESSION GR.1 NN |

| 10 | ⏎ | Display of the *NN* number of alarms due to non-conforming grinding of group 1.
Press ENTER to go to the next check. | GRINDING GR 1
NOT CORRECT   NN |

| from 11 to 17 | ⏎ | To check group 2 alarms, proceed in the same way as described above. | .... GR 2
.... NN |

zero setting of the alarms

While each alarm is displayed it is possible to revert to zero the relative number by keeping the ⬇ ARROW key pressed for at least 5 seconds until the message is displayed (example)

WATER LEVEL
IN THE BOILER
TOT. 0000

6.12 Input test

In this section it is possible to check the operation of all input signals of the machine such as push button panel keys, microswitches, probes, and so forth.

To carry out this check proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.

- Once the letter P shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".

- Press the MODE key 📝 until the display shows the message "INPUT TEST".

- Consult the key and follow the instructions below to check the various input signals.

push button panel
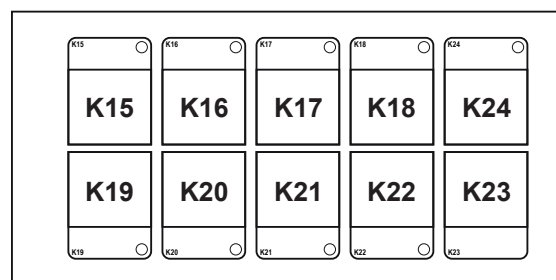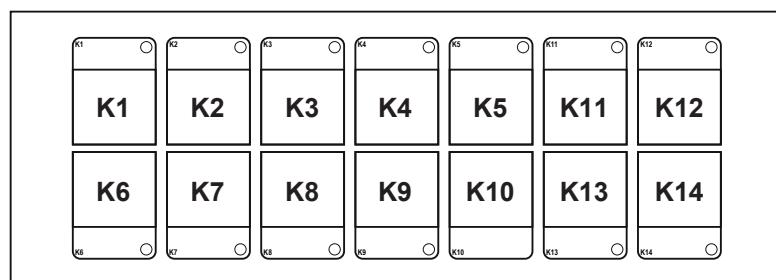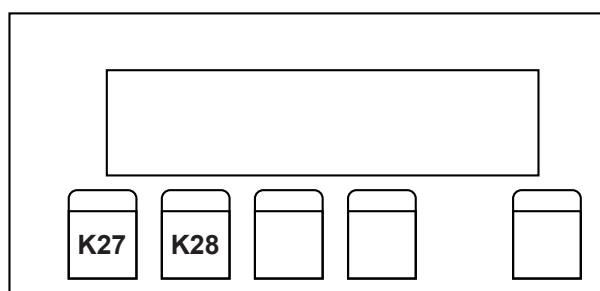
K25	Auxiliary
K26	Auxiliary
K29	Micro 1 GR1
K30	Micro 2 GR1
K31	Micro 3 GR1
K32	Micro 1 GR2
K33	Micro 2 GR2
K34	Micro 3 GR2
K35	Grounds drawer micro
K36	Top door micro
K37	Programming key
K38	Water level probe
K39	Minimum level sensor
K40	The waiter's key (A-D-H-L-N-Q-S-U)
K41	The waiter's key (B-L-Q-T-V)
K42	The waiter's key (E-H-K-L-R-S-T-U)
K43	The waiter's key (M-N-P-Q-R-S-T-U)

only version with keys (K40–K43)

INPUT test

1	TEST INPUT K 1 0 ---> 1
2	TEST INPUT K 2 0 ---> 1
3	TEST INPUT K 3 0 ---> 1
4	TEST INPUT K 4 0 ---> 1
5	TEST INPUT K 5 0 ---> 1
6	TEST INPUT K 6 0 ---> 1
7	TEST INPUT K 7 0 ---> 1
8	TEST INPUT K 8 0 ---> 1
9	TEST INPUT K 9 0 ---> 1
10	TEST INPUT K 10 0 ---> 1
11	TEST INPUT K 11 0 ---> 1
12	TEST INPUT K 12 0 ---> 1
13	TEST INPUT K 13 0 ---> 1
14	TEST INPUT K 14 0 ---> 1
15	TEST INPUT K 15 0 ---> 1

16	TEST INPUT K 16 0 ---> 1
17	TEST INPUT K 17 0 ---> 1
18	TEST INPUT K 18 0 ---> 1
19	TEST INPUT K 19 0 ---> 1
20	TEST INPUT K 20 0 ---> 1
21	TEST INPUT K 21 0 ---> 1
22	TEST INPUT K 22 0 ---> 1
23	TEST INPUT K 23 0 ---> 1
24	TEST INPUT K 24 0 ---> 1
25	TEST INPUT K 25 0 ---> 1
26	TEST INPUT K 26 0 ---> 1
27	TEST INPUT K 27 1 ---> 0
28	TEST INPUT K 28 0 ---> 1
29	TEST INPUT K 29 0 ---> 1

30	TEST INPUT K 30 1 ---> 0
31	TEST INPUT K 31 0 ---> 1
32	TEST INPUT K 32 0 ---> 1
33	TEST INPUT K 33 1 ---> 0
34	TEST INPUT K 34 1 ---> 0
35	TEST INPUT K 35 1 ---> 0
36	TEST INPUT K 36 1 ---> 0
37	TEST INPUT K 37 1 ---> 0
38	TEST INPUT K 38 1 ---> 0
39	TEST INPUT K 39 1 ---> 0
40	TEST INPUT K 40 0 ---> 1
41	TEST INPUT K 41 0 ---> 1
42	TEST INPUT K 42 0 ---> 1
43	TEST INPUT K 43 0 ---> 1

INPUT test

push button panel control
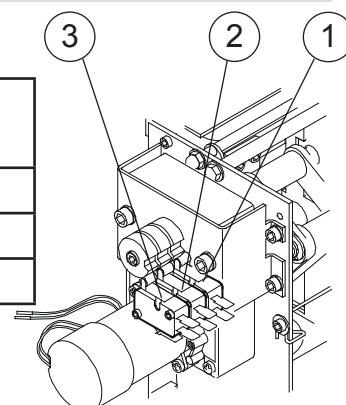
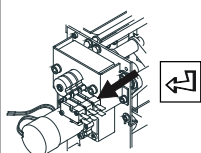| from 1 to 26 | | Keep the selection key pressed (for example 1 ESPRESSO coffee). The test is OK if what is shown on the display goes from 0 to 1. K .. indicates the push button code (see drawings on page 25. Press ENTER to go to the next check. | TEST INPUT K1 0 ---> 1 |

group microswitches control

MIKRO	GR.1	GR.2
1	K27	K30
2	K28	K31
3	K29	K32

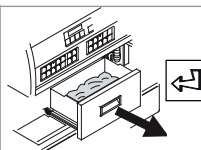| from 27 to 32 | Disconnect the microswitch wire (for example of microswitch 1) and connect it to the central contact of the microswitch. The test is OK if what is shown on the display goes from 0 to 1 or 1 to 0 depending on the position of the micro. Press ENTER to go to the next check | TEST INPUT K 27 0 ---> 1 |

grounds drawer control

| 33 | Open the coffee grounds drawer. The test is OK if the on the display appears:
 - 1 with grounds drawer closed
 - 0 with grounds drawer open
 Press ENTER to go to the next check. | TEST INPUT K 33 1 ---> 0 |

ispection door control
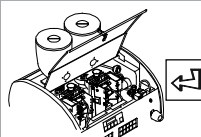
| 34 | The test is OK if the display shows:
 - 1 with door closed
 - 0 with door open
 Press ENTER to go to the next check. | TEST INPUT K 34 1 ---> 0 |

boiler sensors control
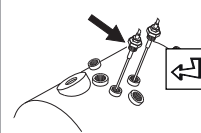
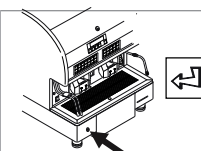| from 36 to 37 | Disconnect either the wire of the water level sensor or of the minimum level sensor. The test is positive if the following is displayed:
 - 1 wire connected to the sensor
 - 0 with wire disconnected from the sensor
 Press ENTER to go to the next check. | TEST INPUT K 36 0 ---> 1 |

keys control

| from 40 to 43 | Put the key in its lock. The test is OK if the on the display appears:
 - 1 whit waiters key inserted
 - 0 whit waiters key disconnected
 Press ENTER to go to the next check. | TEST INPUT K 40 0 ---> 1 |

6.13 Actuator test
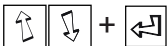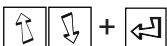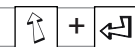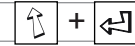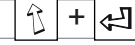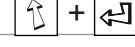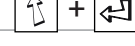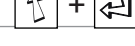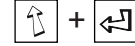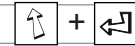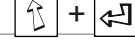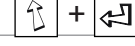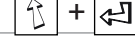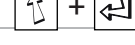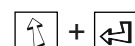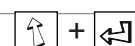
In this section it is possible to check the electrical operation of all components (utilities) of the machine (grinder motor, group motor, solenoid valves, etc).

To carry out this check proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.

- Once the letter P shows on the display, press and hold the MODE key 📝 for about five seconds until the display shows the message "PROGRAMME GRINDING".

- Press the MODE key 📝 until the display shows the message "ACTUATOR TEST".

- Press the ENTER key ⏎ to select the component to be tested, and use the ARROW keys ⬆ ⬇ to activate that component. (see explanatory table below).

⬆ ⬇ + ⏎

| 1 | PROGRAM TEST
MOTOR GROUP 1 |

⬆ ⬇ + ⏎

| 2 | PROGRAM TEST
MOTOR GROUP 2 |

⬆ + ⏎

3	PROGRAM TEST GRINDER GR. 1
4	PROGRAM TEST GRINDER GR. 2
5	PROGRAM TEST MOTORPUMP
6	PROGRAM TEST RELAY S.V. GR. 1
7	PROGRAM TEST RELAY S.V. GR. 2
8	PROGRAM TEST REL. SOL. V. BOILER
9	PROGRAM TEST REL. SOL. V. STEAM
10	PROGRAM TEST HEATER GROUP 1
11	TPROGRAM TEST HEATER GROUP 2

⬆ + ⏎

12	PROGRAM TEST RELAY SOL. V. TEA
13	PROGRAM TEST S. V. ADD. H2O GR. 1
14	PROGRAM TEST S. V. ADD. H2O GR. 2
15	PROGRAM TEST S. V. 1 CAPP. GR. 1

⬆ + ⏎

| 16 | PROGRAM TEST
S. V. 2 CAPP. GR. 1 |
| 17 | PROGRAM TEST
S. V. 3 CAPP. GR. 1 |

version with 1 Capp.

18	PROGRAM TEST S. V. 1 CAPP. GR. 2
19	PROGRAM TEST S. V. 2 CAPP. GR. 2
20	PROGRAM TEST S. V. 3 CAPP. GR. 2

version with 2 Capp.

21	PROGRAM TEST POMPA PER
22	PROGRAM TEST RAUX
23	PROGRAM TEST BUZZER

ℹ️ *To exit programming, repeatedly press the MODE key 📝 until the display show the message "SELECT".*

1	[↑] [↓] + [↵]	Group 1 motor functionality test. By pressing the ARROW keys verify if the motor is working properly. Press ENTER to go to the next check.	PROGRAM TEST MOTOR GROUP 1
2	[↑] [↓] + [↵]	Group 2 motor functionality test. By pressing the ARROW keys verify if the motor is working properly. Press ENTER to go to the next check.	PROGRAM TEST MOTOR GROUP 2
3	[↑] + [↵]	Functionality test of group 1 grinder.	PROGRAM TEST GRINDER GR. 1
4	[↑] + [↵]	Functionality test of group 2 grinder.	PROGRAM TEST GRINDER GR. 2
5	[↑] + [↵]	Functionality test of the motor pump.	PROGRAM TEST MOTORPUMP
6	[↑] + [↵]	Functionality test of the relay and solenoid valve of group 1.	PROGRAM TEST RELAY S.V. GR. 1
7	[↑] + [↵]	Functionality test of the relay and solenoid valve of group 2.	PROGRAM TEST RELAY S.V. GR. 2
8	[↑] + [↵]	Functionality test of the boiler solenoid valve.	PROGRAM TEST REL. SOL. V. BOILER
9	[↑] + [↵]	Functionality test of the steam solenoid valve.	PROGRAM TEST REL. SOL. S.V. STEAM
10 11	[↑] + [↵]	Functionality test of the heating element of groups 1 and 2: by pressing the [↑] arrow key, check that the DL1 LED for group 1 and the DL2 LED for group 2 switch off (see the DRIVER board on page 69)	PROGRAM TEST HEATER GROUP 1
12	[↑] + [↵]	Functionality test of the tea relay and solenoid valve.	PROGRAM TEST RELAY SOL. V. TEA
13	[↑] + [↵]	Functionality test of the added water gr. 1 relay and solenoid valve.	PROGRAM TEST S. V. ADD. H2O GR. 1
14	[↑] + [↵]	Functionality test of the added water gr. 2 relay and solenoid valve.	PROGRAM TEST S. V. ADD. H2O GR. 2
15	[↑] + [↵]	Functionality test of the cappuccino maker gr. 1 solenoid valve 1.	PROGRAM TEST S. V. 1 CAPP. GR. 1
16	[↑] + [↵]	Functionality test of the cappuccino maker gr.1 solenoid valve 2.	PROGRAM TEST S. V. 2 CAPP. GR. 1
17	[↑] + [↵]	Functionality test of the cappuccino maker gr. 1 solenoid valve 3.	PROGRAM TEST S. V. 3 CAPP. GR. 1
18 - 19 - 20		USA version - Repeat tests 15 - 16 - 17 for the cappuccino maker 2	
21	[↑] + [↵]	Functionality test of milk suction pump (optional). See instructions on attached leaflet (if any).	PROGRAM TEST POMPA PER
22	[↑] + [↵]	Functionality test of the auxiliary output.	PROGRAM TEST RAUX
23	[↑] + [↵]	Functionality test of the alarm buzzer.	PROGRAM TEST BUZZER

6.14 Data reading

In this section it is possible to check the number of deliveries provided by the machine (no. of espressos gr1, no. of teas, no. of cappuccinos, no. of washing performed, etc.).

The method of reading the selections made differs depending on whether the machine is configured of use without staff key (standard) or with staff key (optional).

CONFIGURATION WITHOUT STAFF KEY (standard).

To access data reading proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Once the letter "P" shows on the display, press and hold the MODE key ⊞ for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the MODE key ⊞ until the display shows the message "DATA READING".
- Press the key for the desired selection, and the machine will show the number of cycles performed (number of times that selection has been activated).
- Press all doses, and it will be possible to check the number of cycles run since the last reset.

> *i*   *The machine does not provide the total number of deliveries made, neither for each individual group nor for both*
> *To reset the data, see the next chapter ("Resetting data").*

CONFIGURATION WITH STAFF KEY (optional).

If the machine has been configured for the use of staff keys (see "Configuration of staff keys" chap.7.2) the machine will be supplied with a set of fifteen keys.

The first thirteen, identified by the letters **A-B-D-E-H-K-L-M-N-P-Q-R-S** (simple staff keys), can read only the cycles run by the same key (e.g. when key **A** is inserted it is possible to read only those cycles performed by key **A**).

The fourteenth key, identified by the letter **T**, can read its own cycles and all those performed by the simple staff keys.

It can also reset the counts of each key.

The fifteenth key identified by the letter **U**, can read the cycles performed by all other keys, including key **T**. It can reset all cycles for each single key, or delete the cycles performed by all keys and prepare coffee without being counted.

To access data reading proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.
- Once the letter "P" shows on the display, press and hold the MODE key ⊞ for about five seconds until the display shows the message "PROGRAMME GRINDING".
- Press the MODE key ⊞ until the display shows the message "DATA READING".
- If a simple staff key is inserted, by pressing each single selection it is possible to verify the number recorded for that selection (it will not be possible to reset the count).

- If key **T** is inserted, the list of simple staff keys that can be selected will be displayed by pressing the ENTER key ⏎ .
- Once the desired key has been selected, by pressing the single selections the display will show the number of cycles performed for that specific selection.
- To reset the count, press and hold the ARROW key ⬇ , until the display shows the message "TOT. 0000". In this manner all cycles counted by this key are reset to zero.

All selections for that key will be deleted. It is possible to repeat the operations shown above for all simple staff keys and for key **T**.

If key **U** is inserted, the list of simple staff keys that can be selected will be displayed by pressing the ENTER key ⏎ .
Once the desired key has been selected, by pressing the single selections the display will show the number of cycles performed for that specific selection.

Press and hold the ARROW key ⬇ until the display shows the message "TOT. 0000". All cycles counted by this key are reset to zero.

All selections for that key will be deleted. It is possible to repeat the operations shown above for all simple staff keys and for key **T**.

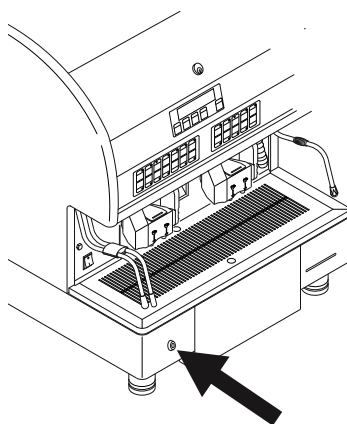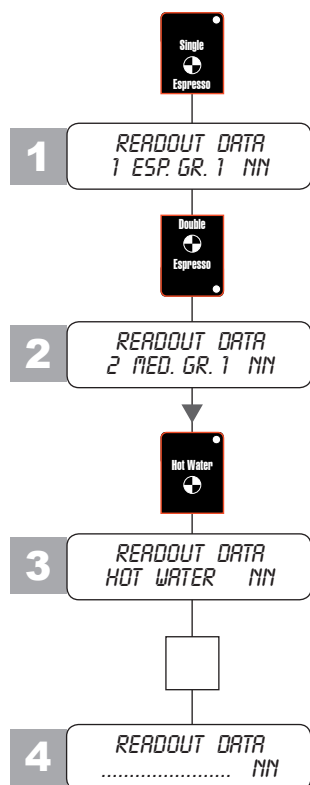### Total deletion (only with key U)

- Scroll the list of staff keys, and at the end pres the ENTER key ⏎ . The message "TOTAL" will be shown.

- Press and hold the ARROW key ⬇ in this manner it will be possible to reset all staff keys in a single stroke.

i   *Key **U** does not record selections made.*

DATA READING

without keys
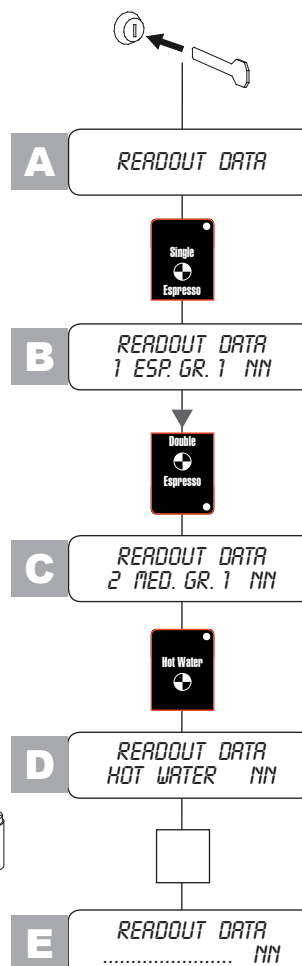
1 READOUT DATA
   1 ESP. GR. 1   NN

2 READOUT DATA
   2 MED. GR. 1   NN

3 READOUT DATA
   HOT WATER   NN

4 READOUT DATA
   ....   NN

with keys   (optional)

A READOUT DATA

B READOUT DATA
   1 ESP. GR. 1   NN

C READOUT DATA
   2 MED. GR. 1   NN

D READOUT DATA
   HOT WATER   NN

E READOUT DATA
   ....   NN

i   *To exit programming, repeatedly press the MODE key 📄 until the display show the message "SELECT".*

6.15 Resetting data (only in standard configuration without staff keys)

This option makes it possible to reset all cycles performed and recorded by the machine.

To reset cycles, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.

- Once the letter P shows on the display, press and hold the MODE key [📝] for about five seconds until the display shows the message "PROGRAMME GRINDING".

- Press the MODE key [📝] until the display shows the message DATA RESETTING

- Press and hold the ARROW key [⬇] until the display shows the message"TOT. 0000".

- At this point all previously recorded cycles must be cancelled.

> *i* *To exit programming, repeatedly press the MODE key [📝] until the display show the message "SELECT".*

6.16 Programming wash requests

In this section it is possible programme requests for periodic washing. The machine will show on the display a message such as "WASH GR.1".

There are three types of wash request:

1.   Cappuccino maker wash request.
The set time is counted from the last selection made using milk.
At the end of the set time for cappuccino washing request, the machine will signal this request on the display. All selections that use milk will be locked until washing is performed. All other selections may still be used.
After a selection is made using milk, if a wash cycle is run (prior to when the set time elapses), and other milk selections are not made, the machine will no longer require any washing.
For this type of request the minimum interval is 30 minutes, and the recommended reset time is one hour and thirty minutes.

2- Group wash request.
This request is programmable for each group at intervals of a minimum of one hour and a maximum of 24 hours.
By setting a time between one and 24 hours for the group wash request, the machine will start counting the time from the moment this option is activated.
When this time interval has elapsed, even if wash cycles have been run, the machine will show this request on the display until the wash cycle has been performed.
All machine keys remain active even during this indication.

3 - Machine start-up wash request.
When this request is activated, each time the machine is started again after a shutdown of not less than five minutes, it will show on the display a wash request for group 1 or group 2. The signal will stay on until wash cycles are activated for both groups.

> ⚠ *When several wash requests are activated (cappuccino maker wash, group wash, start-up wash) these requests may overlap, making it necessary to perform several consecutive wash cycles.*

To activate and modify the wash requests, proceed as follows:

- Turn the programming key clockwise. This key is located on the right of the control panel. The display will show the letter "P", to indicate that the machine can be programmed.

- Once the letter "P" shows on the display, press and hold the MODE key 📋 for about five seconds until the display shows the message PROGRAMME GRINDING

- Press the MODE key 📋 until the display shows the message "PROGRAM. CAPPUCCINO MAKER WASHING".

- Use the ARROW keys ⬆ ⬇ to activate (S) or de-activate (N) this request.

- If activated, when the MODE key 📋 is pressed the display will show the programming time for this washing which can be modified using the ARROW keys ⬆ ⬇ .

- Press the MODE key 📋 again and the message will appear that says"PROG. GROUP 1 WASHING". This request can be activated via the ARROW keys ⬆ ⬇ .

- Press the MODE key 📋 again and the message will appear that says"PROG. GROUP 2 WASHING ". This request can be activated via the ARROW keys ⬆ ⬇ .

- Press the MODE key 📋 again and the message will appear that says"PROG. START-UP WASHING ". This request can be activated or de-activated via the ARROW keys ⬆ ⬇ .

i *To exit programming, repeatedly press the MODE key 📋 until the display show the message "SELECT".*

7. MACHINE CONFIGURATION

7.1 Preparation of configuration mode

The fully automatic espresso coffee machine is supplied ready for installation with a factory-set configuration (language, key configuration, etc.). If this configuration is not the best suited to customer needs, it can be varied as follows:

- Turn the machine off.

- Turn the programming key located on the right of the machine front panel to the ON position.

- Remove the front base, remove the cover of the control unit protection box and carefully move microswitch 1 upwards. It is located on the left side of the upper card (CPU).

- Replace the cover of the control unit protection box and turn on the machine.

- Once working temperature has been reached, the display will show the "C". Machine configuration is now possible.

- Press the MODE key to view the various configuration phases.
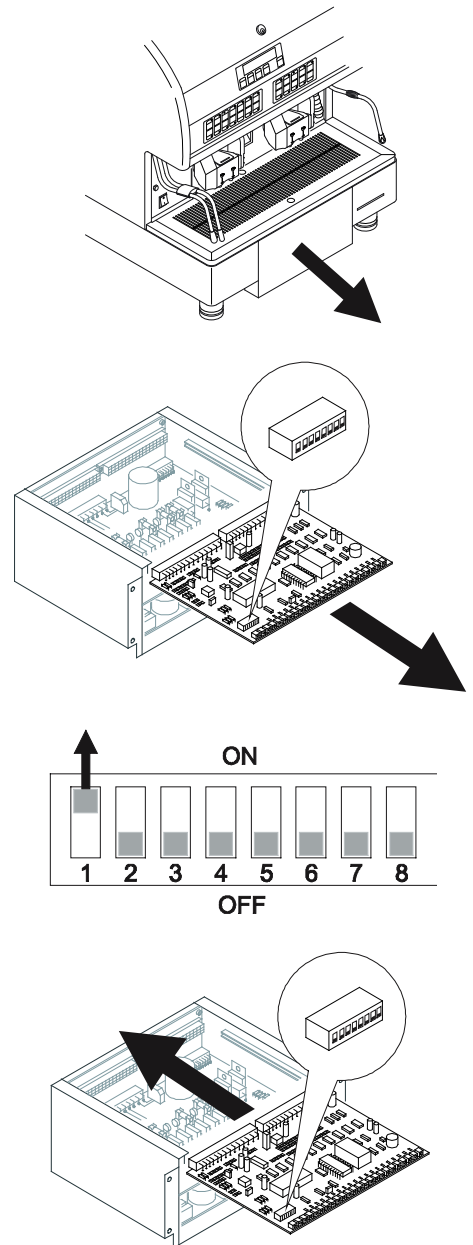
7.2 Configuration of staff keys

When this option is activated, the machine is enable for delivery only if one of the fifteen keys provided with the optional staff key lock has been inserted in the slot in the left-hand base of the machine. The machine will record all selections made with each single key, which will have the possibility of checking the number of selections made by it.

Keys **T** and **U** will be able to check the number of selections made by all the others and to reset the counts as necessary.

To do this, proceed as follows:

- In configuration mode, press the MODE key until the display shows the message "CONFIGURATION OF STAFF KEY".

- Use the ARROW keys to activate (S) or de-activate (N) the staff key option

⚠️ *If activated, this option will make it possible to make selections only with one of the fifteen keys inserted.*

7.3   Configuration of coin slot

When this option is activated, the machine is set up for coin slot operation (see attached manual).

7.4   Configuration of cappuccino maker

This option makes it possible to de-activate all selections that use milk, thus including the cappuccino maker. When this item is activated, all keys assigned to selections that use the cappuccino maker will be locked.

To activate this function, proceed as follows:

- In configuration mode, press the MODE key $\boxed{\equiv}$ until the display shows the message "CAPPUCCINO MAKER CONFIGURATION".
- Use the ARROW keys $\boxed{\Uparrow}\boxed{\Downarrow}$ to activate (S) or de-activate (N) use of the cappuccino maker.
- To confirm the new configuration, press the ENTER key $\boxed{\hookleftarrow}$ and the MODE key $\boxed{\equiv}$ for a few seconds until the display shows the message "SELECT".

7.5   Configuration of language

This option lets you select the language that the machine will use to show information on the display by selecting from a preset list.
Available languages include: *Italian*, *English*, *French*, *German*, *Austrian and Spanish*.

To select the language used by the machine, proceed as follows:

- In configuration mode, press the MODE key $\boxed{\equiv}$ until the display shows the message "CONFIGURATION OF LANGUAGE".
- Use the ARROW keys $\boxed{\Uparrow}\boxed{\Downarrow}$ to select the desired language.
- To confirm the new selection, press the ENTER key $\boxed{\hookleftarrow}$ and the MODE key $\boxed{\equiv}$ simultaneously for a few seconds until the display shows the message "SELECT".

7.6   Activation / De-activation of group 1

- In configuration mode, press the MODE key $\boxed{\equiv}$ until the display shows the message "CONFIGURATION GR.1 Y/N".
- Use the ARROW keys $\boxed{\Uparrow}\boxed{\Downarrow}$ to activate (S) or de-activate group 1 of the machine, (left-hand group).
- If the group is de-activated, the machine will not control any function of that group, and no selections for that group will be usable.

7.7   Activation / De-activation of group 2

- In configuration mode, press the MODE key $\boxed{\equiv}$ until the display shows the message "CONFIGURATION GR.2 Y/N".
- Use the ARROW keys $\boxed{\Uparrow}\boxed{\Downarrow}$ to activate (S) or de-activate group 2 of the machine, (right-hand group).
- If the group is de-activated, the machine will not control any function of that group, and no selections for that group will be usable.

7.8 Configuration of double cycle gr.1

Double cycle activation makes it possible to deliver a coffee beverage in two consecutive automatic cycles. When the desired key is pressed, the machine will perform two complete cycles.

This option can be activated only for the DOUBLE LONG selections of each group.

- In configuration mode, press the MODE key [⬚] until the display shows the message "CONFIGURATION OF DOUBLE CYCLE GR .1".
- Use the ARROW keys [⬚][⬚] to activate (S) or de-activate (N) this option.

7.9 Configuration of double cycle gr.2

- In configuration mode, press the MODE key [⬚] until the display shows the message "CONFIGURATION OF DOUBLE CYCLE GR .2".
- Use the ARROW keys [⬚][⬚] to activate (S) or de-activate (N) this option.

7.10 Configuration of PRESET DEFAULT

When this activation is activated, it is possible to reset the machine software back to the original factory settings. This operation may be necessary when the machine software has some sort of problem that prevents proper execution of the operations it controls.

To carry out this reset, proceed as follows:

- In configuration mode, press the MODE key [⬚] until the display shows the message "DEFAULT VALUES".
- Use the ARROW keys [⬚][⬚] to activate this option.
- To confirm the new configuration, press the ENTER key [⬚] and the MODE key [⬚] for a few seconds until the display shows the message "SELECT".

> *i* *It is advisable to use the function for loading data from the Smartcard (see **chap.6.6**), to restore the original working configuration instead of resetting the machine.*

7.11 Configuration of technical service

In this section it is possible to set a request for a call for technical service for the machine.
When a number of cycles is set (e.g. 10000, 20000, etc.), upon reaching that value the machine will continue to work but it will inform the user of the need to call technical service for maintenance.

To activate this option, proceed as follows:

- In configuration mode, press the MODE key [⬚] until the display shows the message "CONFIGURATION OF TECHNICAL SERVICE".
- Use the ARROW keys [⬚][⬚] to activate (S) or de-activate (N) this option.
- If activated, use the ARROW keys [⬚][⬚] to set the total number of cycles after which technical service is to be requested.
- At this point, when the ENTER key [⬚] is pressed again, it will be possible to view the number of cycles run by group 1 or group 2 from the time when the technical service request was activated.

7.12 Push button panel configuration

Automatic machines with software version 3.23 or greater have the possibility to configure each single key of the push button panels on the front of the machine.
It will therefore be possible to define an arbitrary number of selections from a preset list included in the software.

To do this, proceed as follows:

- In configuration mode, press the MODE key 📝 until the display shows the message "CONFIGURATION OF KEYS".

- Press the key for which you wish to change the previously assigned beverage (e.g. **K1**). The display will show the name of the beverage currently assigned to that key (e.g. "1 ESPRESSO GR.1").

- Press the ARROW keys ⬆ ⬇ , and it will be possible to review an index of selections that can be matched to the key that has just been pressed.

- Once the desired beverage has been selected, press the ENTER key ↵ to confirm the modification.

- From this moment, the new beverage will be assigned to the previously pressed button.

- It is possible to modify the beverage assigned to any key any number of times, with the exception of the STOP key 🛑 .

- If the item "BYPASSED" is chosen from the list of selections, the key in question will be de-activated and therefore will not be usable.

- It is also possible the name of a beverage to several different keys, thus obtaining several selections which are the same on the same push button panel.

- To confirm and exit the configuration section, press the ENTER key ↵ and the MODE key 📝 until the display shows the message "SELECT".
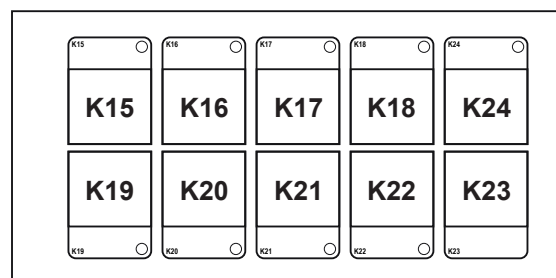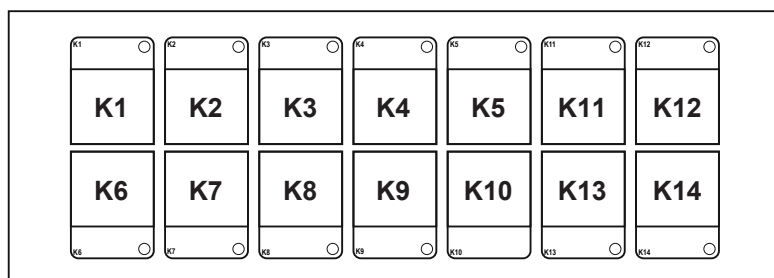
List of beverages that can be assigned to keys.

- Bypassed
- 1 Espresso
- 1 Medium
- 1 Long
- Continuous
- Decaffeinated
- 2 Espressos
- 2 Medium
- 2 Long
- Wash

- Tea
- Coffee with milk
- Milk
- Cappuccino
- Steam
- Autosteamer
- Foamed milk
- Cold milk with shot of coffee
- Hot milk with a shot of coffee
- Cold milk

- Single Espresso
- Double Espresso
- Short cappuccino
- Long cappuccino
- Short coffee with milk
- Long coffee with milk
- American
- Timed decaffeinated
- White coffee

⚠️ *The selections indicated above refer to machines that use software version 3.36-522-ee22. Previous or subsequent versions may include a different beverage list .*

7.13 Configuration of RS 232 (connection to external device)

By activating this option, the machine will be enabled for connection to an external electronic device, such as a computer or cash register. The machine may work in **debit-credit** mode (the cash register records beverages prepared by the machine) or **credit-debit** (the machine only provides selections authorized by the cash register).

To configure the machine for operation for operation in conjunction with an external device, proceed as follows:

- In configuration mode, press the MODE key [📋] until the display shows the message "CONFIGURATION RS232". Use the ARROW keys [⇧] [⇩] to activate (S) or de-activate (N) this option.

- If the option RS232 is activated by pressing the MODE key [📋] , the machine, via the ARROW keys [⇧] [⇩] , can be configured to operate in   **credit-debit** mode. In this case the machine will show the message "CREDIT DEBIT S". Or it can work in **debit-credit** mode. In this case the machine will display the message "DEBIT CREDIT N".

- If the machine has been configured in **credit-debit**, via the ARROW keys [⇧] [⇩] it will be possible to select the settings of the communications parameters of the serial port:
- COM 1200,E,8,1.
- COM 1200,E,8,1.

⚠ *If in the machine the option RS232 is activated, it will work only if connected to an external device. Therefore it cannot operate independently.*

7.14 Configuration of degrees centigrade or Fahrenheit

In this section it is possible to configure the machine so that it shows temperatures in Centigrade or Fahrenheit.

To modify the scale used, proceed as follows:

- In configuration mode, press the MODE key [📋] until the display shows the message "DEGREES CENTIGRADE" or the message "DEGREES FAHRENHEIT".

- Use the ARROW keys [⇧] [⇩] to enable the machine for the use of the centigrade(°C) or Fahrenheit (°F) scale.

- To confirm the new configuration, press the ENTER key [⏎] and the MODE key [📋] for a few seconds until the display shows the message "SELECT".

7.15 Configuration for lack of coffee in decaffeinated

In this section it is possible to de-activate, only for decaf selections, the check that the machine carries out to verify lack of coffee during the pressing phase.

This option may at times be necessary since, using a 7-gram dose of ground coffee, to be poured to the appropriate funnel, part of this dose may not reach the group chamber. This would cause frequent indications by the machine concerning lack of coffee.

To prevent this, and to have the machine provide decaf doses even in small amounts, follow this procedure:

- In configuration mode, press the MODE key [⧉] until the display shows the message "CONFIG. LACK OF COFFEE D.C. Y/N".

- Use the ARROW keys [⇧][⇩] to activate (S) or de-activate (N) this option.

- When this option is activated, the machine, only in decaf selections, will not check the presence of coffee in the group chamber, and will therefore in any case carry out the selected dose.

- When this option is de-activated, the machine, prior to making the selection, will check the presence of coffee. If the amount is not sufficient, it will not carry out the selection.

- To confirm the new configuration, press the ENTER key [↵] and the MODE key [⧉] for a few seconds until the display shows the message "SELECT".

7.16 Configuration of washing

In this section it is possible to set one of three different procedures to activate washing by the user. In all three cases the wash cycle will remain the same; only the procedure for its activation will change.

The three categories of wash cycle activation are:

1 **Wash type 1**: When this type of activation is selected, to run a wash cycle just press the WASH button twice for the desired group, with the programming key in either the ON or OFF position(standard washing accessible to all).
2 **Wash type 2**: When this type of activation is selected, to run a wash cycle press the WASH button and while holding it down press the STOP key [🛑] . Press the WASH key again (concealed washing accessible only by those who are familiar with the procedure).
3 **Wash type 3**: When this type of activation is selected, to run a wash cycle press the WASH button twice for the desired group The cycle will be activated only if the programming key is in the ON position (wash cycle reserved to those who possess the programming key).

To select one of these three types of wash activations, proceed as follows:

- In configuration mode, press the MODE key [⧉] until the display shows the message "WASHING (1) / (2) / (3)".

- Use the ARROW keys [⇧][⇩] to select one of the three activations.

- To confirm the new configuration, press the ENTER key [↵] and the MODE key [⧉] for a few seconds until the display shows the message "SELECT".

8. MACHINE COMPONENTS

8.1 Boiler

The boiler, made of copper plate, housed the heat exchangers and the electric heating element (**1**). The heating element heats the water in the boiler.

Water to make coffee is taken from the heat exchanger, while hot water is taken from the boiler. Steam is taken from the upper part of the boiler.
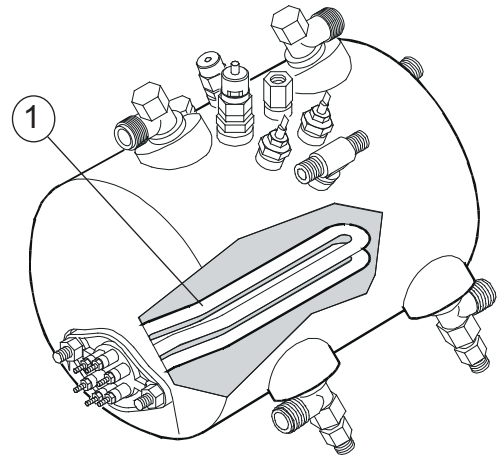
8.2 Heat exchanger

The heat exchangers (**2**) (60 mm diameter capacity 445 ml) can heat the water up to the ideal temperature to make a perfect espresso.

The function of the heat exchanger is the exchange of thermal energy between the water inside the exchanger it self and the water inside the boiler.

This component cannot be replaced.
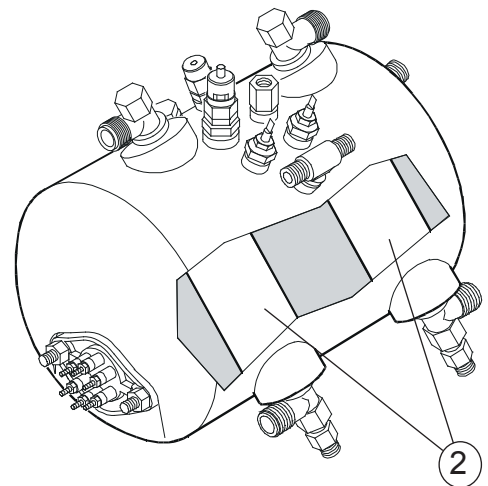
8.3 Automatic Water Refill

The AWR system (automatic water refill) is for the control of the boiler level. It consists of:

- a working level probe blue connector (**3**);
- a minimum safety level probe red connector (**2**);
- an electronic level regulator in the electronic control unit;
- a hydraulic circuit with a solenoid valve (**1**) controlled by the control unit.

The level probes act as a pole in the low voltage electrical circuit. When the level of the water falls, the circuit interrupts itself and the electronic control unit sends an impulse to the AWR solenoid valve (**1**) and to the motor pump which starts the automatic refill with water, while keeping the level in the boiler constant.
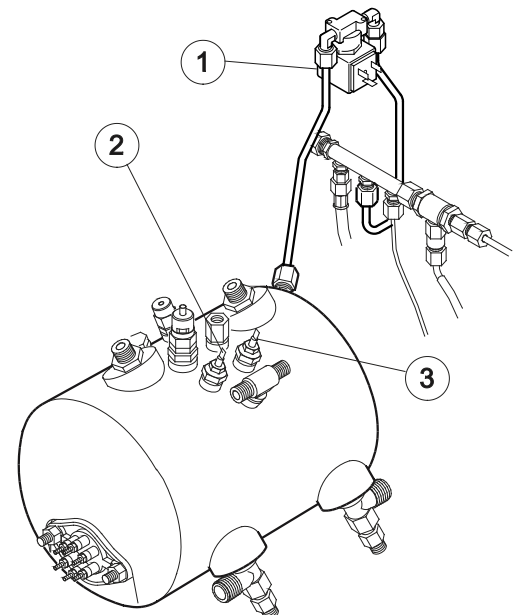
8.4 Volumetric doser

The volumetric doser (**5**) measures the quantity of water sent to the unit to make espresso coffee.

It is composed of a rotor with magnet (**6**) and a Hall-effect head (**7**).The rotor generates a magnetic impulse which is sent to the electronic control unit.

This impulse is sensed by the control unit and stored during dose programming.

Each flash of the LED (**4**) on the volumetric doser indicates that the doser is working properly (flow of 0.32 cc of water).
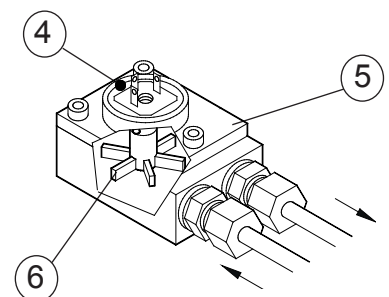
8.5   Dispensing unit

The dispensing unit is the "heart" of the coffee-machine. It has a piston that presses the coffee for infusion and a movable arm acting as stopper. The piston and the stopper are controlled by a D.C. motor.

The mechanical wear of some components alters the operating conditions of the inside parts, modifying the machine's original defaults (see group adjustment in Chap. 11).

To keep the machine 100% efficient, carry out checks and maintenance periodically .

We recommend replacing the following components after every **50,000* cycles**:

     1 Silicon brush
     2 Upper piston OR gasket
     3 Mesh filter
     5 Bottom shower plate
     6 Teflon connecting tubes
     7 Silicon connection pipe

After **20,000* cycles**   (or 3 months' use) we recommend checking and changing, if necessary, the following components :

     4 Lower seal OR gasket
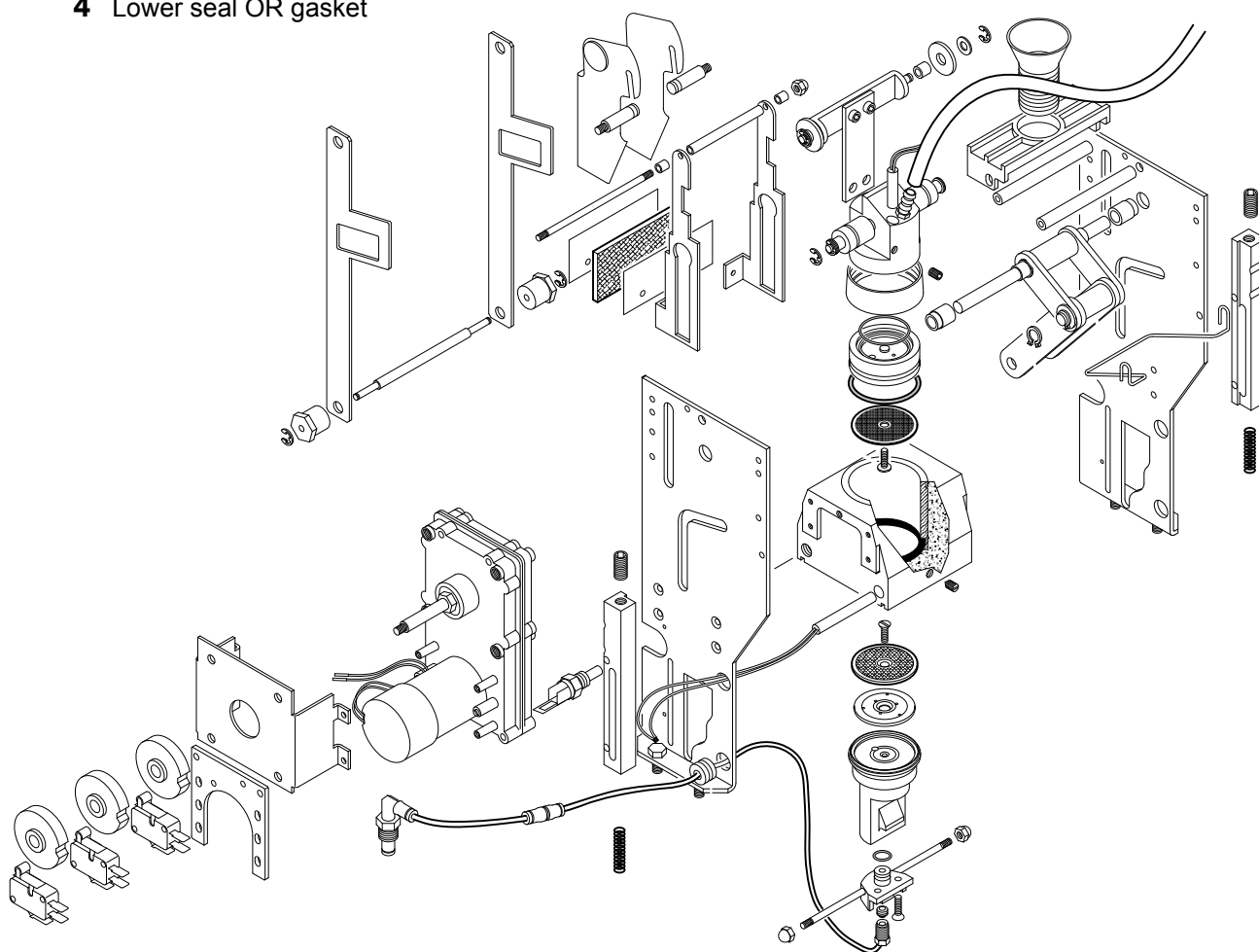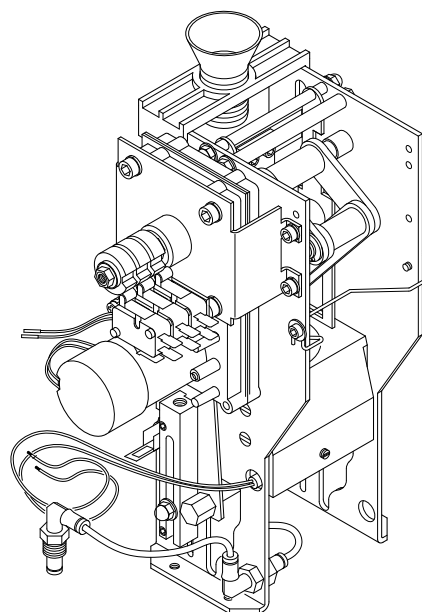
(*) The data indicated for replacement of the components are to be meant as the maximum values that can be reached and depend on the regularity of service and cleaning as specified in Chap.12.

8.6 Maintenance of groups

The delivery group is the main mechanical component of the machine. It requires regular maintenance. This maintenance requires the group to be removed.

To replace the delivery groups, proceed as follows:
1. Open the upper cover.
2. Disconnect the electrical plug located in the outer part of the group.
3. Disconnect the water delivery tube at the rapid connection.
4. Disconnect the silicon tube connected to the output of the group head.
5. Open the grounds drawer, and use a 10 mm spanner to loosen the four bolts that hold the group to the machine frame.
6. Remove the disconnected group from the top of the machine.

When removing one or both groups, it is not necessary to shut down the machine, bleed the pressure in the boiler or shut off the incoming water.

In this way, in a machine with two groups, while one group has been removed for replacement or repair, the other can continue to provide available services

The push button panel for the removed group will automatically be disabled when the electrical plug of the group is disconnected (point 2).
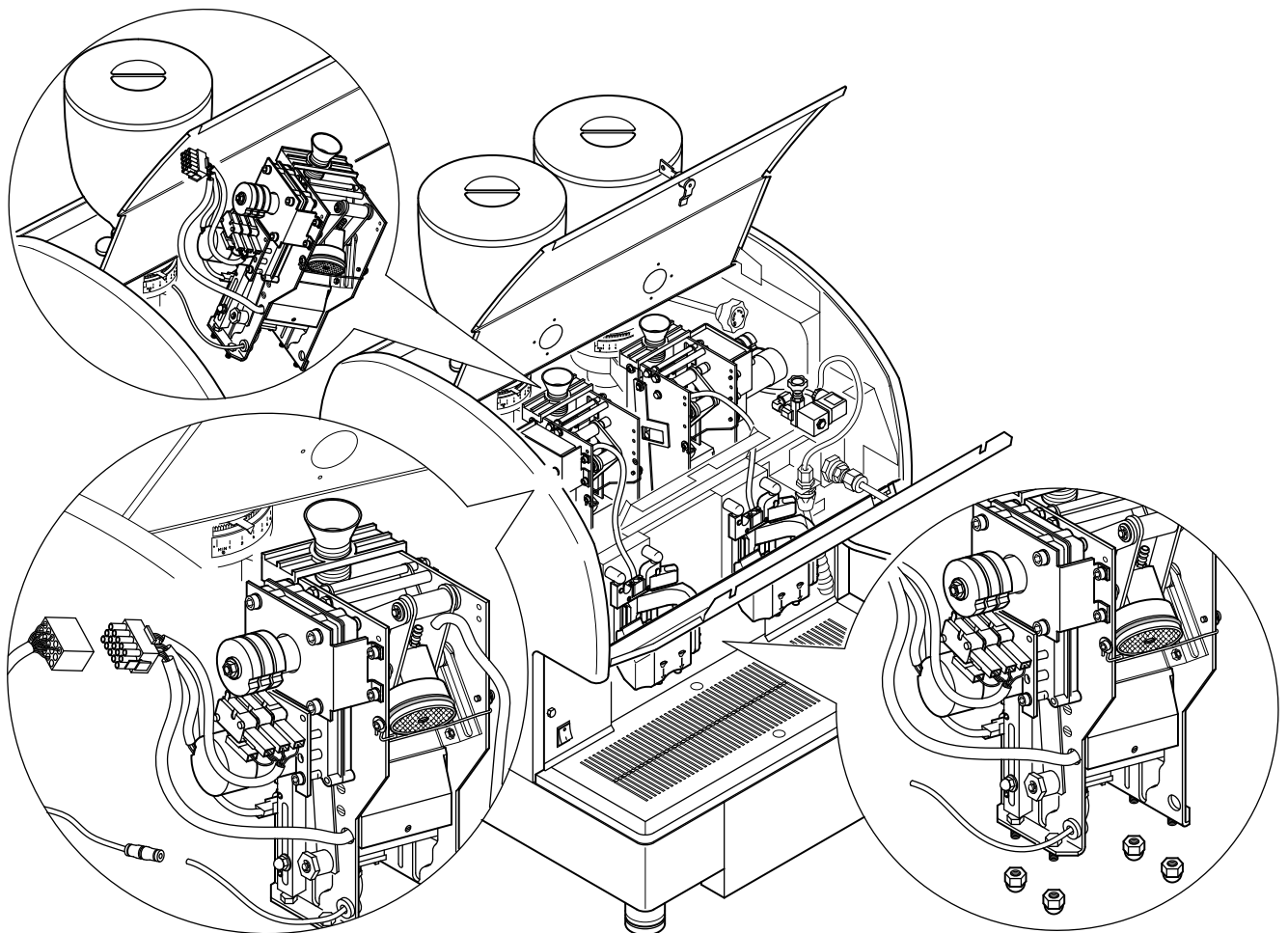
1. O.R. replacement upper piston:

- Remove the group from the machine following the instructions on page 42.
- Loosen the screws that hold the upper brush.
- Use a small screwdriver or a pointed tool to lever out the o-ring.
- Once removed, carefully clean the housing of the o-ring of coffee residue, using the provided brushes dipped in hot water.
- Insert a new o-ring in its place. Put the upper brush back in place against the piston head and fasten the screws to it.
- Before positioning the group back in the machine, that the o-ring that has just been replaced is seated perfectly in place (see figure).

YES   **NO**
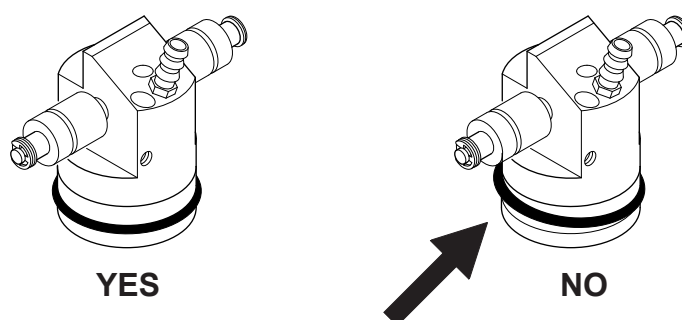
2. Replacement of lower o-ring seal

- Remove the group from the machine following the instructions on page 42.
- Loosen the screws (**A**).
- Disconnect the lower piston (**B**) from the activation block (**C**).
- Push the piston until it comes out of the upper part of the infusion chamber (see figure).
- Use a small screwdriver or a pointed tool to lever out the o-ring.
- Once removed, carefully clean the housing of the o-ring of coffee residue, using the provided brushes dipped in hot water.
- Place back in the proper place a new o-ring, code (12620001)
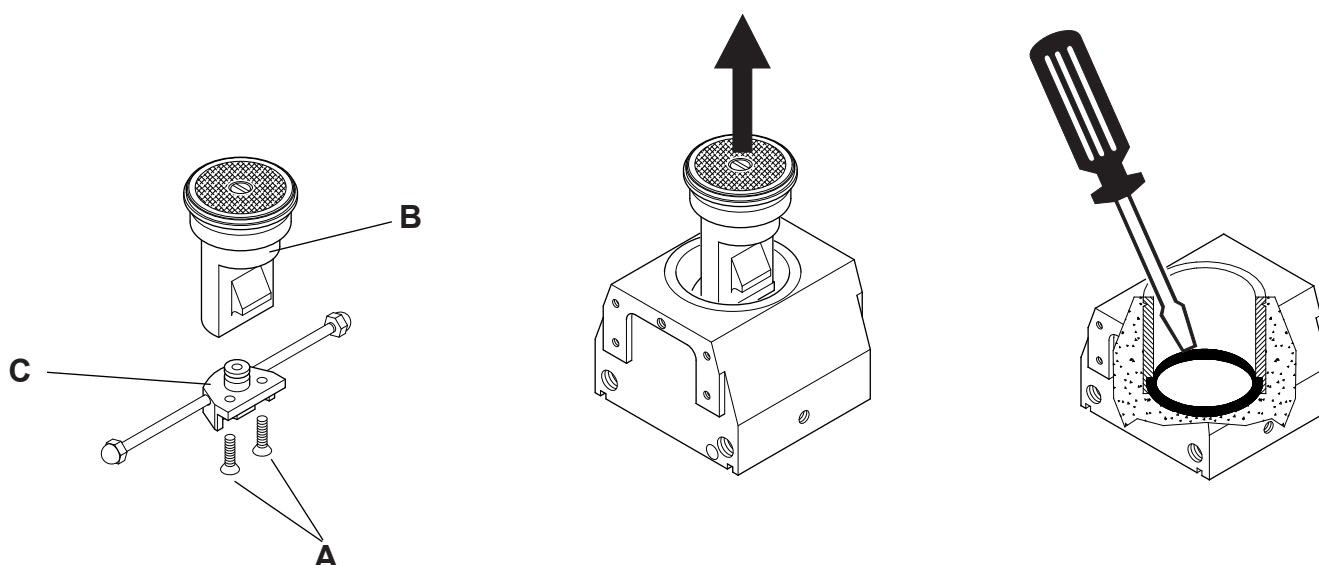
3. Replacement of 230 V heating element (blue wires).

- Remove the group from the machine following the instructions on page 42.
- Loosen the anchoring screw (**1**) without removing it. It is located on the front side of the group chamber. Extract the cartridge heating element from the chamber.
- Insert a new cartridge heating element in the appropriate place and secure by tightening the anchoring screws. Do not tighten excessively.
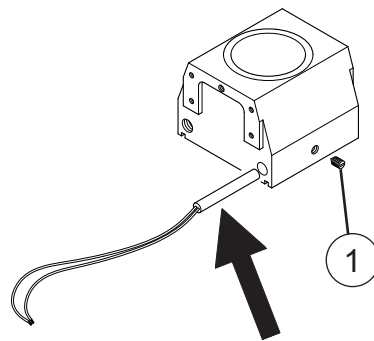
4. Replacement of 24 V heating element (brown wires).

- Remove the group from the machine following the instructions on page 42.
- Loosen the anchoring screw (**2**) without removing it. It is located on the front part of the group head. Extract the cartridge heating element.
- Insert a new cartridge heating element in the appropriate place and secure by tightening the anchoring screws. Do not tighten excessively.
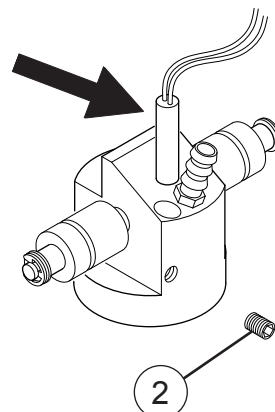
5. Motor replacement

- Remove the group from the machine following the instructions on page 42.
- Unscrew the nut that holds the cams (**A**).
- Loosen the two screws of each cam (**B**) and remove the cams.
- With a 4 mm Allen wrench, loosen the four screws (**C**) that hold the group motor support.
- Use a 5 mm Allen wrench to loosen the four screws (**D**) that hold the reduction gear and the support.
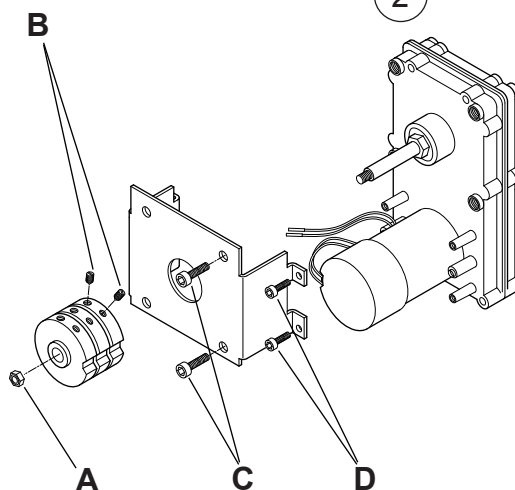
During maintenance of the group, it is advisable to clean carefully in order to remove all coffee residues from the moving mechanical parts of the group.
These residues, in the long run, may degrade mechanical operation of the group, eventually leading to malfunction signals from the machine.
All mechanical parts of the group must be cleaned with warm water except for the electrical part of the motor, which must be dealt with only using brushes and dry cloths.
After cleaning, it is recommended to grease some parts of the delivery group, especially points where mechanical movement causes the most friction.
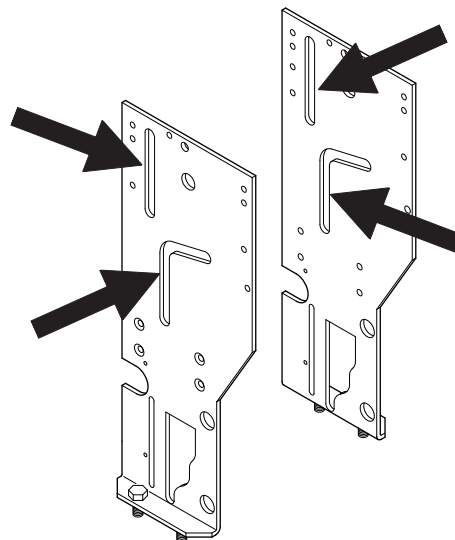
8.7 Pressure control (pressure switch)

It is used to turn the heating elements on or off according to the pressure reached inside the boiler. Pressure regulation can vary from a minimum of 0.5 bar to a maximum of 1.4 bar.

⚠️ *Contacts inside the machine are subject to oxidation. We recommend cleaning them regularly with an antioxidant spray.*
Calibrate the pressure switch while the machine is working, regulating pressure with the relative screw on the component (1).
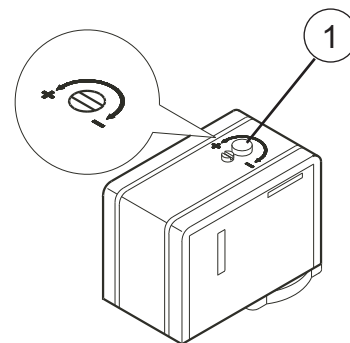
8.8 Anti-flooding device

By means of the cover on the pressure modulating valve, any water that comes out of the valve for any reason is collected and sent to the drainage through a pipe.
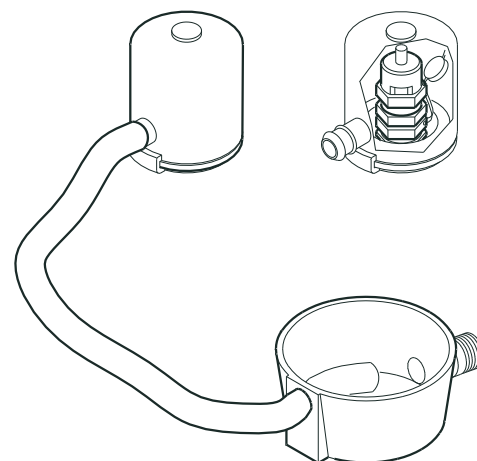
8.9 Valve unit

Valves are devices that guarantee safety and correct working of the machine.

Pressure limiting valve (safety valve)

The pressure limiting valve guarantees that the pressure inside the boiler does not exceed **2 bar**.

Discharge if the pressostat fails, the valve capacity is such as to discharge all exceeding pressure from the boiler.
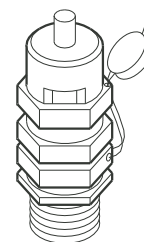
Anti eddy valve

It consists of an expansion valve and an anti-eddy valve.

• expansion valve: the cold water which the pump sends to the exchangers while coffee is being dispensed warms up. The heat causes the increase in the volume of the water. The valve limits the maximum pressure inside the circuit by opening and letting a few drops of water out, stabilising pressure at 12 bar.

• anti eddy valve: its function is to prevent water from flowing back from the exchangers to the hydraulic circuit.
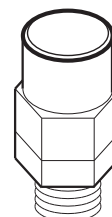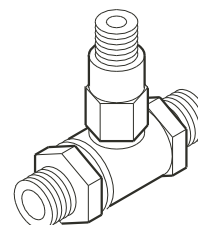
Antidepression valve

The function of the antidepression valve is to prevent the return of liquids to the boiler through the steam nozzle. It also eliminates the cold air from inside the boiler when the machine is warming up.

8.10 Pump system

This component has to feed the machine by raising water pressure to **8-9 bar** for dispensing coffee and filling up the boiler automatically.
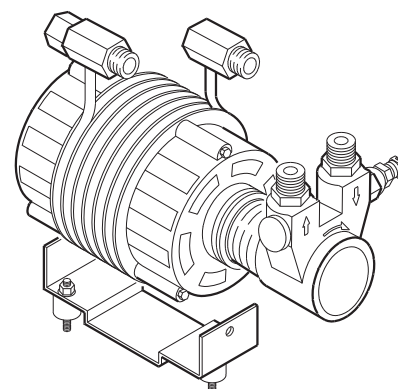
8.11 Cappuccino-maker
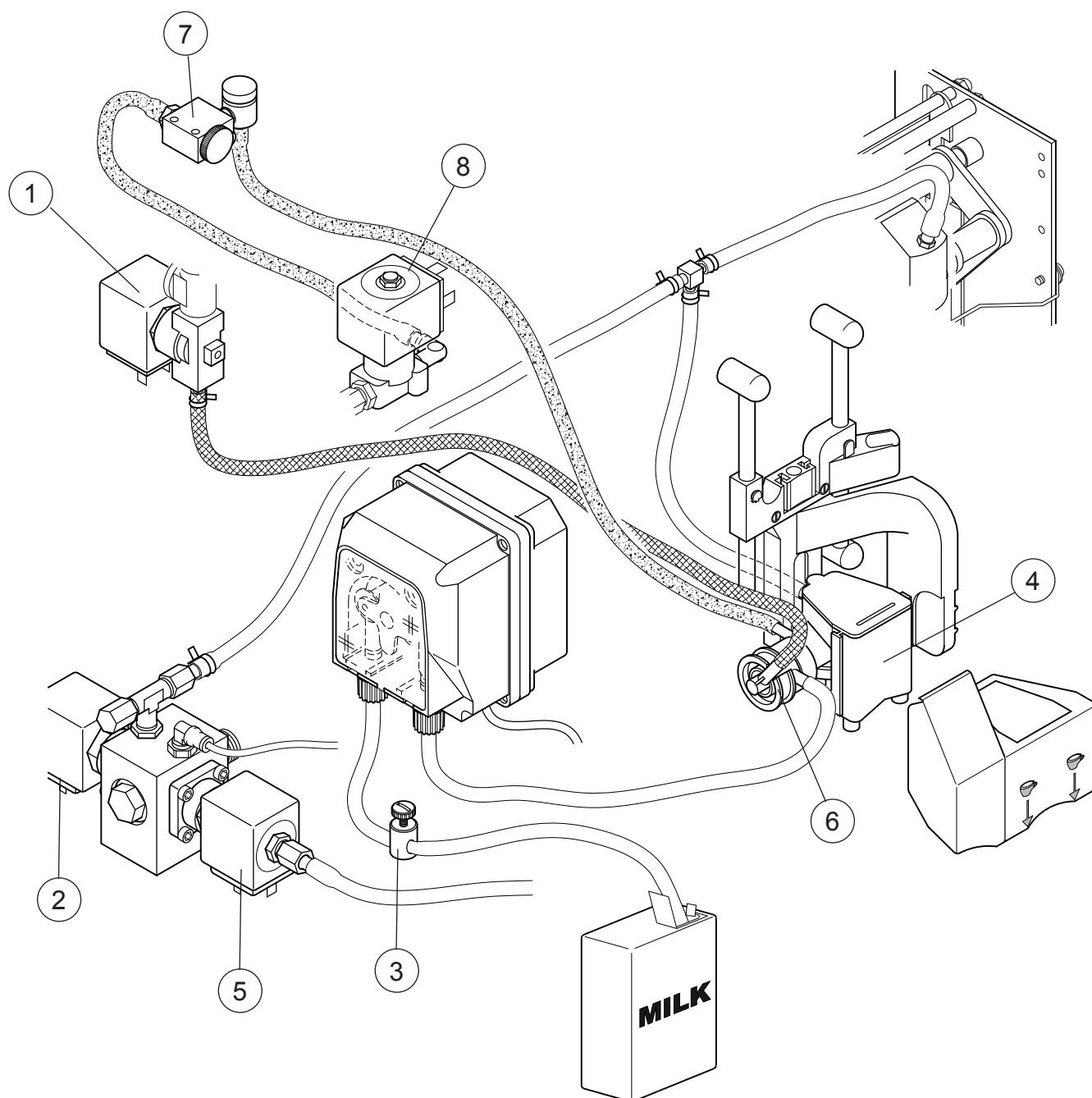
1 - Steam solenoid valve EV1 (milk suction - Venturi effect).
2 - Added water solenoid valve.
3 - Milk flow reducer in suction (reduces or increases the flow of milk and thus increases or reduces the temperature)
4 - Coffee dispensing spout.
5 - Group solenoid valve.
6 - Cappuccino maker.
7 - Air regulator (adjusts foaming of milk in cappuccino).
8 - Air solenoid valve EV2 (for cappuccino).

9. ELECTRONIC SYSTEM

The electronic system consists of the following electronic cards:

- **POWER** Hardware card
- **DRIVER** Hardware card
- **CPU** Software logic
- **MOTHER BOARD** Hardware card
- **DISPLAY CARD**
- **SMART CARD**
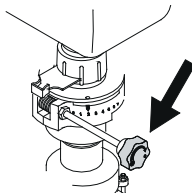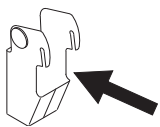
In addition, it has:
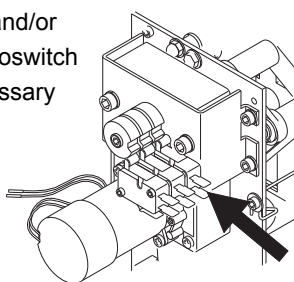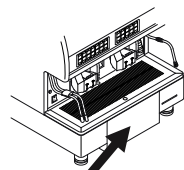
- Push button panel and display
- Actuator relays
- LEDs
- Microswitches
- Level probes

DISPLAY-PLATINE

MOTHER BOARD

CPU

SMART CARD

DRIVER

POWER
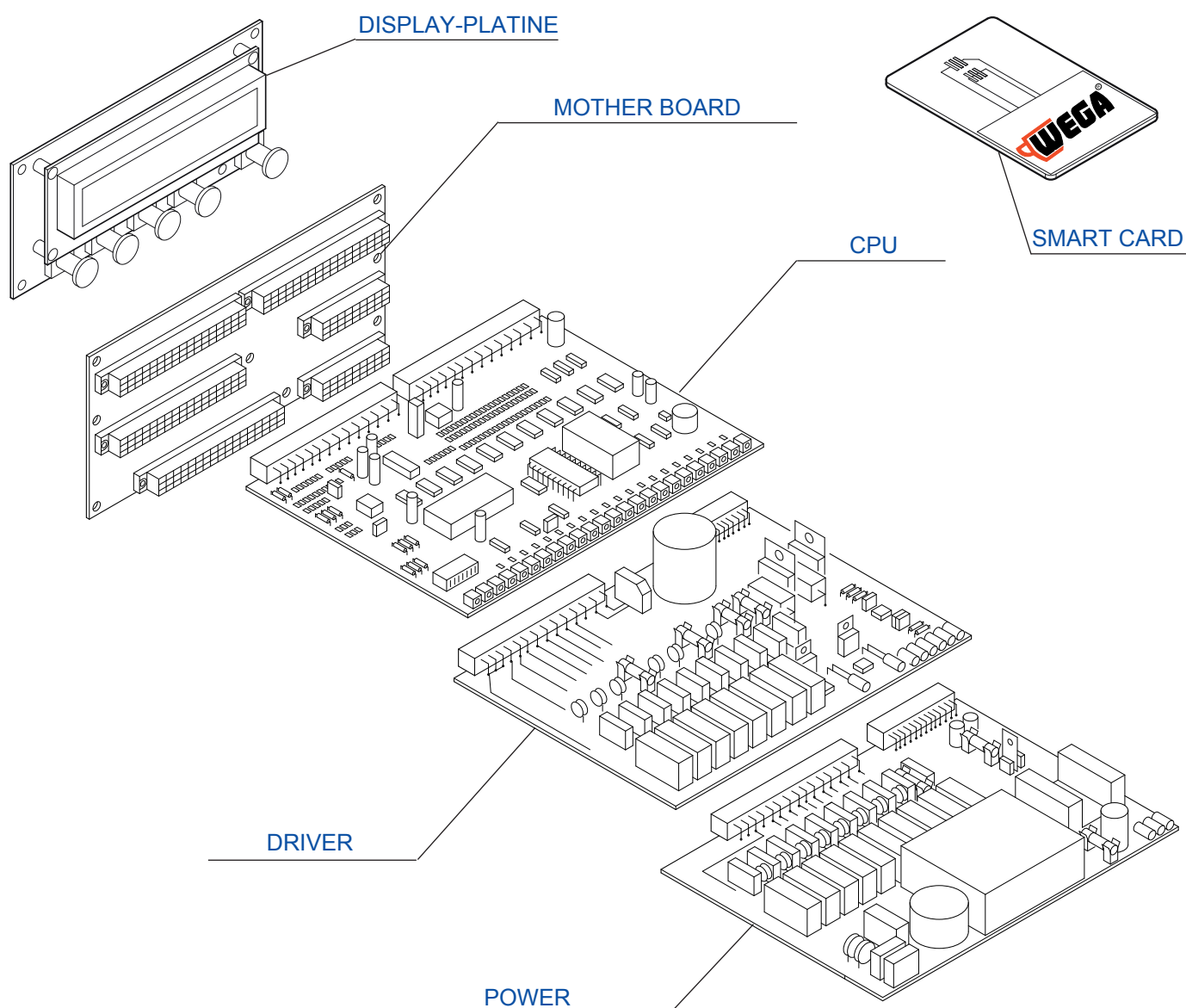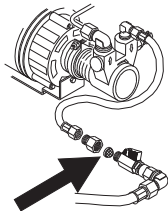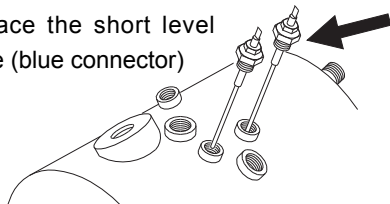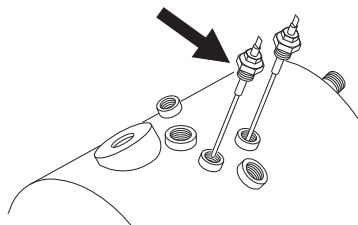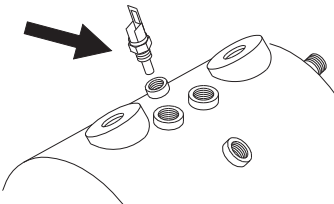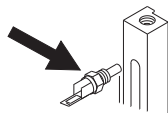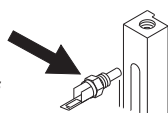
10. TROUBLESHOOTING

10.1 Indications on the display

display	cause	remedy
		- Press the key
GRINDING GR 1 - 2 NOT CORRECT	**1.** Groud too coarse	**1.** Use the relative knob on the coffee grinder to make ground finer
	2. Coffee residue around upper piston head	**2.** Using the provided brush, eliminate the coffee residues around the (see page 61)
	3. Cam no.2 calibrated incorrectly	**3.** Enter programming in "Actuator Test" (see page 28) and check correct cam calibration (see Chap. 11)
		0. Press the
	1. There is no coffee in the coffee hopper	**1.** Refill hopper with coffee beans
	2. Valve on the grinder is closed	**2.** Open the valve on the coffee grinder hopper
	3. The coffee chuteis positioned incorrectly or clogged or mechanically jammed	**3.** Check correct position of the chute. Remove the coffee chute and remove all oily residues with hot water or replace the coffee chute
NO COFFEE GR 1 - 2	**4.** The piston is stuck in the top position either because there is a lot of dirt or because the return spring is faulty	**4.** Remove the unit, remove the piston, clean and change the faulty parts (springs, gaskets, pipes).
	5. Cam no. 1 set incorrectly (the piston is not released by the drive block)	**5.** Check correct setting of cam no. 1 (see Chap. 11)
	6. Cam no. 3 set incorrectly (the electronic system receives the limit switch signal much too early)	**6.** Check correct setting of cam no. 3 (see Chap.11)
	7. The grinder does not work (grind)	**7.** Check the F4 and F7 fuses on the DRIVER card. Verify proper electrical connection of the grinder motor

display	cause	remedy
PISTON MOTOR GR 1- 2 BLOCKED	**1.** Microswitch no. 1 is either faulty or disconnected	**1.** Reconnect and/or change microswitch no.1 if necessary
	2. Incorrect setting of cam no. 1	**2.** Check correct setting of cam no. 1 (see Chap.11)
	3. Foreign body inside the dispensing unit	**3.** Remove the foreign body
	4. Coffee residues around the piston head	**4.** Remove the coffee from around the piston using the brushes supplied
INSUFFICIENT GR 1 - 2 COMPRESSION		**-** Press the key
		- Switch the machine off and then on
	1. The motor transformer protection fuse (24V) has blown	**1.** Replace the fuse
	2. The motor power supply (24V) connection has been cut off	**2.** - Verify the perfect fitting of the power supply cables (Red and Black) inside the socket and on the motor connections - See if the brushes inside the motor are worn - Verify that connector P10 is connected properly on the back of the mother board as well as all its cables
	3. Transformer failure or cables disconnected on the primary or secondary circuits	**3.** Check that the green pilot light under the boiler cover is on. Green pilot light ON: - transformer and connections OK Green pilot light OFF: - transformer broken (replace) - connections interrupted (restore)
	4. The dispensing unit driver is broken	**4.** Replace the DRIVER board
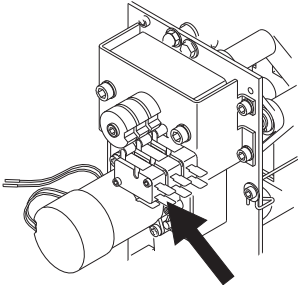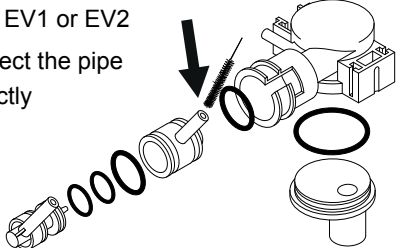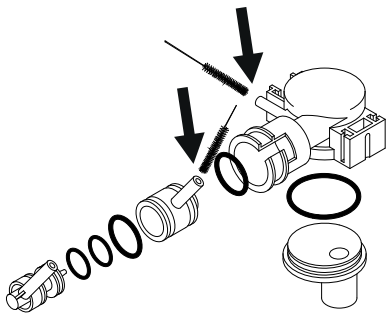
display	cause	remedy
WATER LEVEL IN THE BOILER	**1.** Softner taps closed or the mains water taps are closed	**1.** Open all taps upstream from the machine
	2. Pump filter clogged	**2.** Change the pump filter
	3. Presence of lime deposits in the boiler filling tube	**3.** Remove the tube and clean it or replace it
	4. Loading solenoid valve filter clogged	**4.** Change the solenoid valve filter
	5. Loading solenoid valve faulty or the connection is interrupted	**5.** Restore connection and/or change the loading solenoid valve if necessary
		6. Press the ☐ key
MINIMUM LEVEL IN THE BOILER	**1.** Boiler level probe may have touched to earth of the boiler	**1.** Replace the short level probe (blue connector)
	2. Boiler level safety probe disconnected	**2.** Reconnect and/or replace the long safety probe if necessary (red connector)
	3. Maximum level probe shorted out	**3.** Check probe connection
BOILER SENSOR NOT ACTIVE	**1.** Boiler temperature sensor is either faulty or the connection is interrupted	**1.** Restore connection and/or change the temperature sensor if necessary
		2. Press the ☐ key
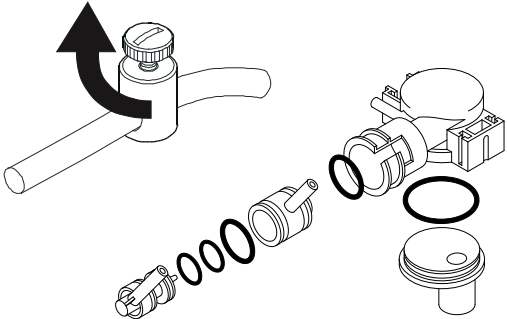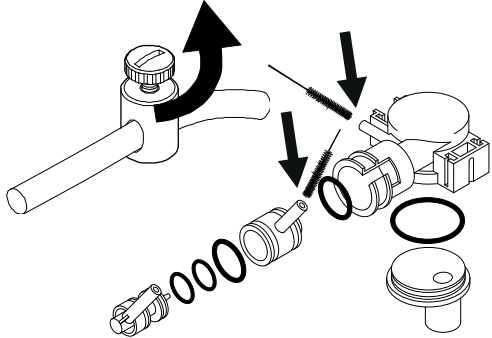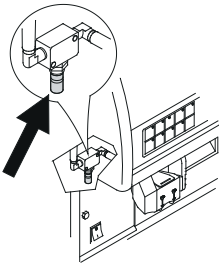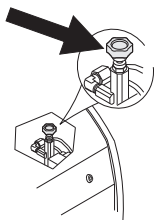
display	cause	remedy
VOLUM DOSER GR1 - 2 DOES NOT COUNT	**1.** Coffee ground too fine	**1.** Increase coarseness with the ring nut
	2. Water flow obstructed somewhere along the hydraulic circuit (volumetric dosing device, gicleur group)	**2.** Enter the "Actuator Test" in machine programming and find where the blockage is (group solenoid valve or motor pump). Eliminate blockage either by cleaning or changing the part.
	3. Flowmeter is broken or unproperly connected (the LED on the flowmeter fails to flash during dispensing)	**3.** Position the connector correctly on the flowmeter and verify the state of the connecting cables. If necessary replace the flowmeter.
OVERTEMPERATURE	**1.** Temperature probe failure	**1.** Replace the temperature probe
	2. Short circuit of probe connection cables	**2.** Check proper connection of probe
	3. Faulty relay on the driver board	**3.** Replace the driver board
	4. Wrong temperature setting	**4.** Reset the temperature
SENSOR GROUP 1 - 2	**1.** Group temperature sensor is either faulty or the connection is interrupted	**1.** Restore connection and/or change the temperature sensor if necessary
		2. Press the [⧉] key

10.2 Failures and functional problems

problem	cause	remedy
ERRATIC COFFEE DOSES IN THE CUPS	1. SCNR valve (expansion and check valve) or its components (spring, seal, etc.) are malfunctioning 2. Limescale or impurities inside the SCNR valve 3. SCNR valve drainage pressure incorrect 4. Air inside the heat exchangers 5. Flowmeter broken or disconnected	1. Replace the SCNR valve 2. Open the valve and clean all components 3. Set drainage pressure at about 12 bar by turning the adjustment screw 4. Run a few washing cycles 5. Restore the electrical connections, changing the flowmeter if necessary
THE MACHINE DOES NOT TURN ON	1. Main switch is on **OFF** position 2. The red botton on display is not pulshed 3. Mains connection are not correctly made	1. Check the main switch 2. Start the machine as described in the user manual 3. Check connection to the electricity mains
NO STEAM IS COMING OUT OF THE STEAM WAND	1. Faulty heating element 2. Pressure switch contacts rusted 3. The steam wand spray is clogged	1. Replace the heating element 2. Clean the contacts of the pressure switch or change it 3. Clean spray's spout of the steam wand spray
A MIXTURE OF STEAM AND WATER IS COMING OUT OF THE STEAM WAND	1. Boiler water level is too high because the boiler level probe is wrongly positioned or there is limescale on it 2. Leakage from boiler filling solenoid valve	1. Check the position of the level probe and change it if necessary 2. Clean and replace the filling solenoid valve
WATER IS LEAKING FROM THE MACHINE	1. Drain clogged 2. Drainpipe broken or has come away 3. Water leaking from fittings or from the pipes of the internal hydraulic circuit	1. Check the drainage system 2. Check the drainpipe 3. Restore watertightness by changing the pipe, gasket or fitting
WATER IS LEAKING FROM THE TOP OF THE DISPENSING GROUP	1. Top piston seals deteriorated 2. Silicon pipe faulty	1. Replace the top piston seals 2. Replace the silicon pipe

problem	cause	remedy
WATER IS LEAKING FROM THE BOTTOM OF THE DISPENSING GROUP	1. Bottom piston seals deteriorated 2. Fitting and/or pipe deteriorated	1. Replace the bottom piston seals 2. Replace the fitting and/or pipe
WATER IS LEAKING FROM THE INTERNAL PUMP	1. No mechanical seal of the shaft or O-ring 2. Fittings have loosened 3. The hexagon al screw of the regulability valve or of the filter has come loose 4. The O-ring of the bypass valve has deteriorated	1. Check the pump 2. Tighten the fittings 3. Tighten the fittings 4. Change the O-ring taking care to and recalibrate the pump
THE PUMP IS MAKING A LOT OF NOISE	1. Pump and motor not aligned 2. The gasket or the O-ring of the limiter valve or of the filter has deteriorated 3. The joint or the coupling screw or the V clamp has come loose 4. Obstruction, even partial, of the pump inlet (filter clogged) 5. The hexagon nut of either the limiting valve or of the filter has come loose	1. Realign pump and motor 2. Change the pump 3. Align and tighten 4. Clean or change the inlet filter 5. Tighten the hexagon nut
THE PUMP IS WORKING BELOW ITS NOMINAL CAPACITY	1. Pump inlet is clogged, even only partially 2. Bypass valve calibration does not conform 3. Pump damaged inside due to penetration of abrasive materials 4. Motor revs are low	1. Clean or change the filter 2. Recalibrate the bypass valve 3. Change the pump 4. Check supply voltage or change the motor
THE MOTOR PUMP STOPS SUDDENLY OR THE THERMAL PROTECTION TRIGGERS DUE TO AN OVERLOAD OF THE BOILER	1. The pump jams, due to limescale and mineral deposits inside 2. Pump and motor are not aligned 3. The motor is faulty 4. Wrong motor supply voltage	1. Change the pump 2. Align pump and motor 3. Change the motor 4. Check correct supply voltage of the motor
THE GAUGE SHOWS A NON-CONFORMING PRESSURE	1. The gauge is faulty 2. The pressure switch is incorrectly calibrated	1. Change the gauge 2. Recalibrate the pressure switch

problem	cause	remedy
THE GAUGE SHOWS A NOT COMPLYING PUMP PRESSURE	1. The gauge is faulty 2. The motor pump is incorrectly calibrated	1. Change the gauge 2. Recalibrate the motor pump
THE DISPLAY FAILS TO SIGNAL THERE IS NO COFFEE	1. Microswitch no. 3 faulty or disconnection	1. Restore connection, changing the microswitch if necessary
THE CAPPUCCINO MAKER DOES NOT SUCK UP MILK	1. No steam (pressure zero) 2. Milk injector clogged 3. Internal parts of cappuccino-maker clogged 4. Milk suction pipe clogged 5. Injector O-rings worn out 6. Solenoid valve EV1 or EV2 not connected 7. Silicon pipe has come become detached	1. Wait for the machine to get back up to pressure 2. Clean the milk injector 3. Clean the cappuccino-maker parts 4. Clean the milk suction pipe 5. Replace the O-rings 6. Connect solenoid valve EV1 or EV2 7. Connect the pipe correctly
MILK IS BEING DISPENSED IRREGULARLY	1. Cappuccino-maker clogged 2. The cappuccino-maker O-rings have worn out 3. Milk regulator is closed too much	1. Clean the cappuccino-maker with the special brush 2. Replace the O-rings 3. Open the temperature regulator

problem	cause	remedy
THE MILK IS TOO COLD	1. The injector is not properly in place 2. No steam 3. Milk suction regulator is open too much	1. Place the injector correctly 2. Wait for correct operating pressure 3. Close the milk suction regulator
THE MILK IS TOO HOT	1. The cappuccino-maker through-hole is clogged 2. Milk suction regulator is closed too much	1. Clean the hole with the relative brush 2. Open the milk suction regulator
THERE ARE BUBBLES ON THE MILK FROTH	1. The air regulator is open too much 2. The air suction pipe is disconnected	1. Calibrate the air regulator correctly 2. Restore connection via the pipe
WATER FOR TEA IS EITHER TOO COLD OR TOO HOT	1. Tea water temperature is not set correctly	1. Set tea water temperature appropriately with the relative knob.

11. ADJUSTMENT of the DISPENSING GROUP

11.1 Positioning of the cams

a. Switch the machine OFF and then ON again

b. Turn the programmation key

c. Press the MODE key several times until TEST ATTUATORI is displayed

PHASE 1

Press the piston (**A**) descent key [⬇] until it reaches inside the cylinder (**B**) with the supporting arm (**C**) completely straight;
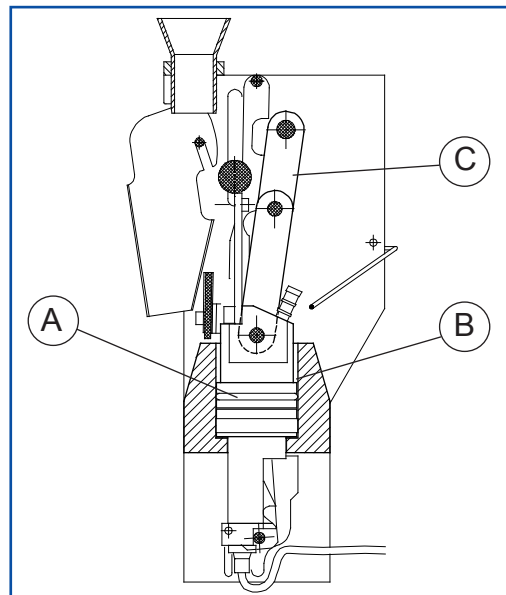
PHASE 2

Position **cam no.3** so that the microswitch lever (**D**) is in the top position;
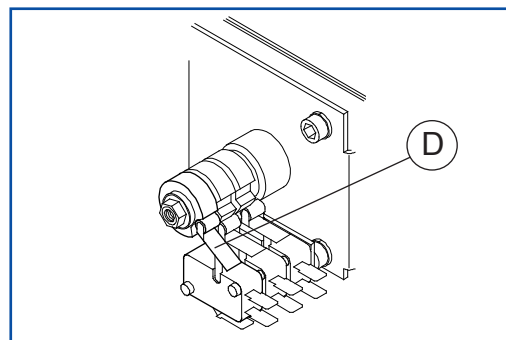
PHASE 3

Press the piston (**A**) ascent key [⬆] until it has come fully out of the cylinder (**B**); the bottom piston (**E**) is thus released and can then move down (you can hear the usual metallic noise as it does);
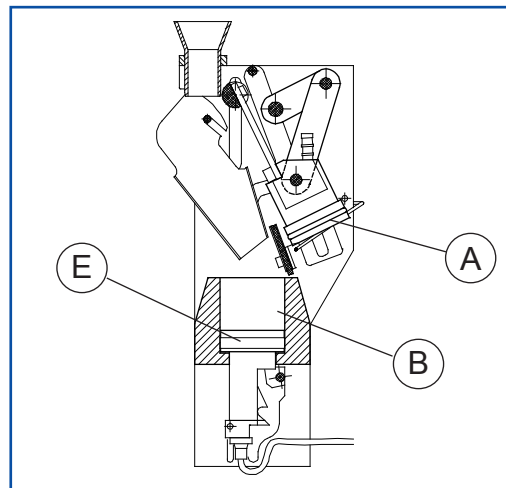
PHASE 4

Position **cam no.1** so that the microswitch lever (**E**) is in the top position;

ADJUSTMENT the DISPENSING GROUP - chap.11
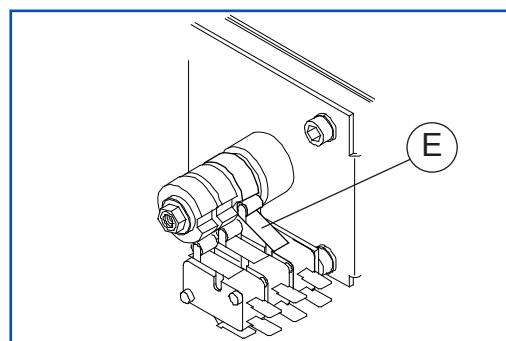
PHASE 5

Remove the coffee grounds drawar (**F**);
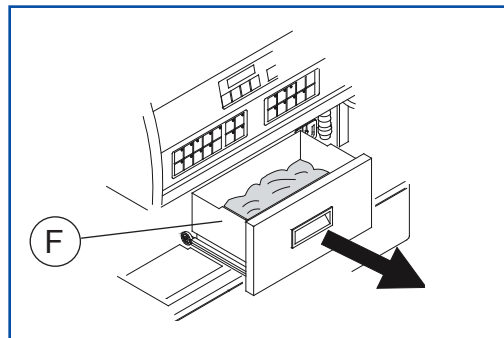
PHASE 6

Press the piston (**A**) descent key [↓] until the piston bar (**G**) **is 3 mm under** the group bottom tooth (**H**)
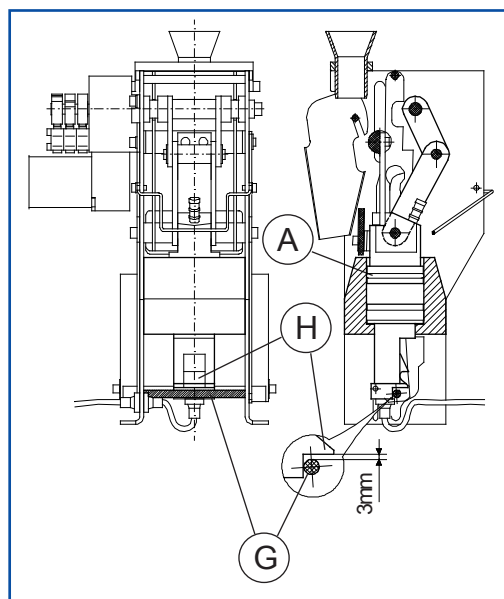
PHASE 7

Position **cam no.2** so that the microswitch lever (**L**) is in the top position.
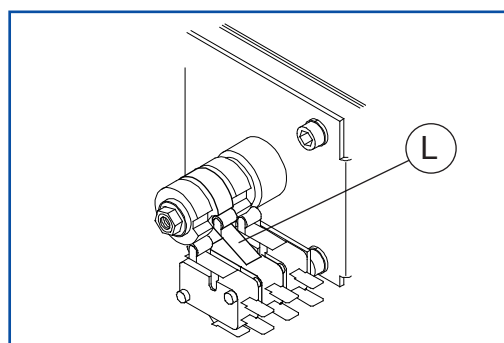
⚠️ *Once the cams have been positioned, check calibrations as described in the next paragraph.*

11.2 Adjustment control

CAM No.1 control

PHASE 1

Press the piston descent key [↓] until it has reached the lowest position allowed.
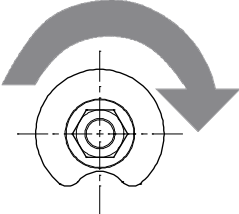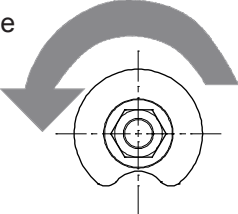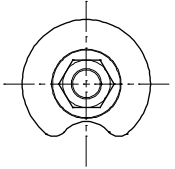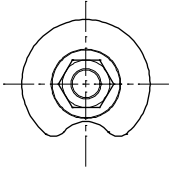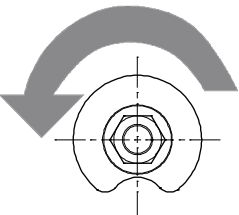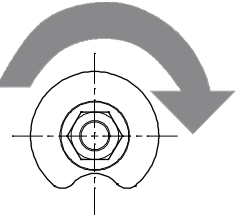
PHASE 2

Keep the ascent key [↑] pressed until the piston (**A**) stops automatically;

PHASE 3

Proceed according to the following steps:

adjustment situation	*operations on GR. 1*	*operations on GR. 2*
INCORRECT ADJUSTMENT The piston stops before the metallic thump of the descending piston is heard.	Turn cam 1 clockwise	Turn cam 1 anticlockwise
CORRECT ADJUSTMENT The piston stops after the metallic thump of the descending piston is heard. The motor is not forcing.	Check tightness of the screws with the 2.5 mm "L" Allen key	Check tightness of the screws with the 2.5 mm "L" Allen key
INCORRECT ADJUSTMENT The piston stops after the metallic thump of the descending piston is heard. The motor is forcing and/or the machine gives the "Piston group blocked" alarm.	Turn cam 1 anticlockwise	Turn cam 1 clockwise

i   *If the adjustment is not correct, proceed as indicated in the chart and repeat phases 1 and 2.*

checking CAM No. 2
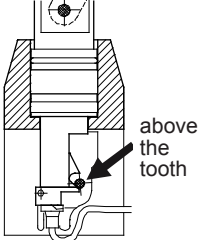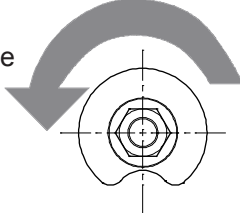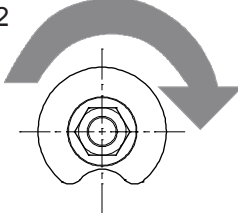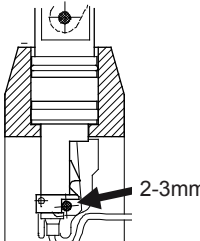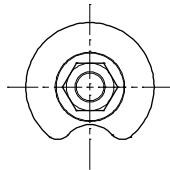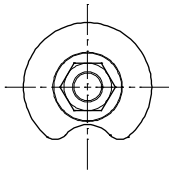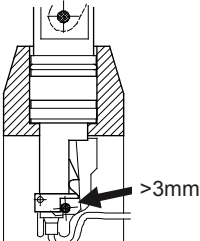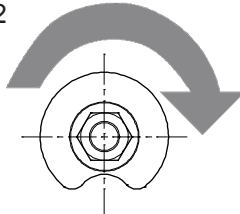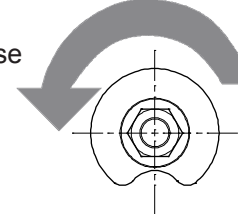
PHASE 1

After checking of cam no.1, keep the piston descent key (**A**) ⬇ pressed until it stops by itself;
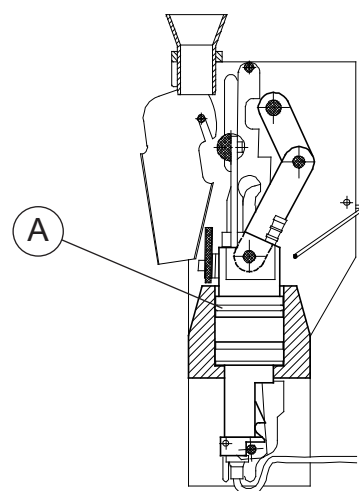
PHASE 2

Proceed according to the following steps:

adjustment situation	*operations on GR. 1*	*operations on GR. 2*
INCORRECT ADJUSTMENT The piston bar stops above the bottom tooth. above the tooth	Turn cam 2 anticlockwise	Turn cam 2 clockwise
CORRECT ADJUSTMENT The piston bar stops less than about 2-3 mm the tooth away from it. 2-3mm	Check tightness of the screws with the 2.5 mm "L" allen key	Check tightness of the screws with the 2.5 mm "L" allen key
INCORRECT ADJUSTMENT The piston bar stops more than 3 mm under the tooth. >3mm	Turn cam 2 clockwise	Turn cam 2 anticlockwise

i *If the adjustment is not correct, proceed as indicated in the table and repeat phases 1 and 2.*

checking CAM No. 3

PHASE 1

After checking cam no. 2, press the piston ascent key (**A**) ⬆ until the piston stops by itself;

PHASE 2

Keep the descent key pressed ⬇ until the piston stops by itself (**A**);
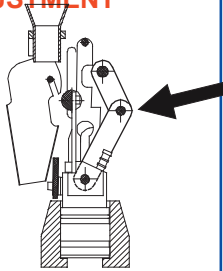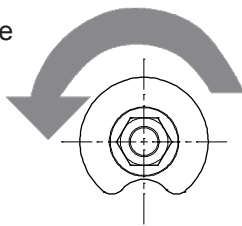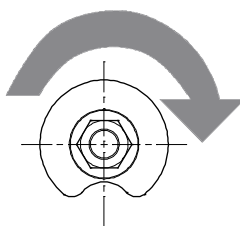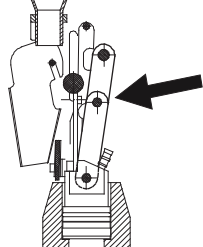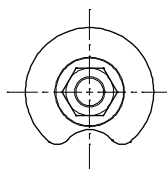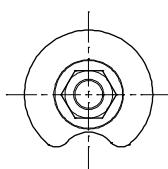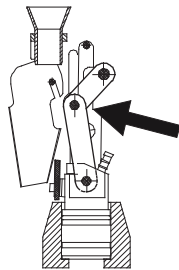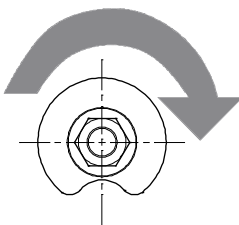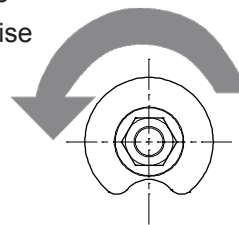
PHASE 3

Press the descent key again ⬇ until the piston stops by itself (**A**);

PHASE 4

Proceed according to the following steps:

adjustment situation	operations on GR. 1	operations on GR. 2
INCORRECT ADJUSTMENT The group stops before the supporting arm is perfectly straight.	Turn cam 3 anticlockwise	Turn cam 3 clockwise
CORRECT ADJUSTMENT Supporting arm is perfectly straight.	Check tightness of the screws with the 2.5 mm "L" allen key	Check tightness of the screws with the 2.5 mm "L" allen key
INCORRECT ADJUSTMENT The group stops out, goes beyond the perfectly straight supporting arm position	Turn cam 3 clockwise	Turn cam 3 anticlockwise

i *If the adjustment is not correct, proceed as indicated in the chart and repeat phases 1 and 2.*

i *Once you have finished checking the adjustments of each group, press the ascent key ⬆ until the group's idle position is reached. Press the mode key 📝 several times to exit the machine programming phase*

12. CLEANING
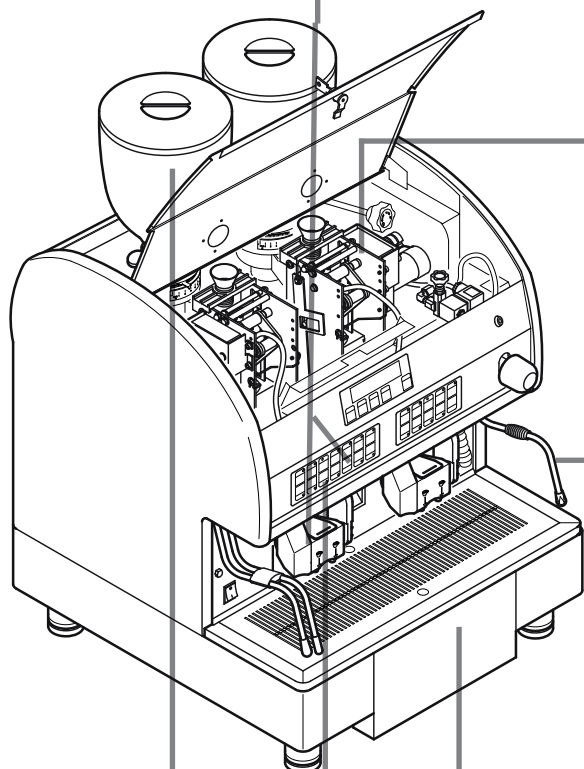
Each day
Wash the cappuccino maker as follow:
- dip the milk suction tube in a container with milk and soap
- select the milk button
- repeat this operation several times
- repeat the operation using water only.

Hot Milk
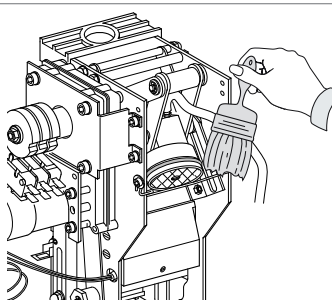
Each day
Open the top door of the coffee-machine and clean with the special brush all the accessible surfaces.
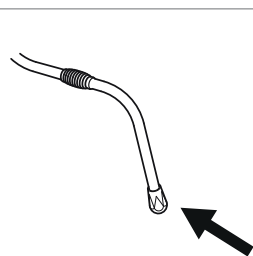
Each day
Clean the steam arm with a damp cloth.
Use a thin needle to unclog any holes.

Each day
Clean the coffee grounds drawer with the special brush.

Washing Cycle

Often
Carry out the washing cycle each time the machine needs it.
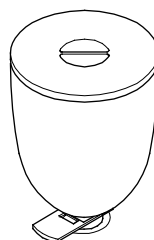
Each day
Clean the inside and outside of the coffee grinder hopper with a damp cloth.

WIRING AND HYDRAULIC DIAGRAMS

13 WIRING DIAGRAMS

13.1 POWER DIAGRAM
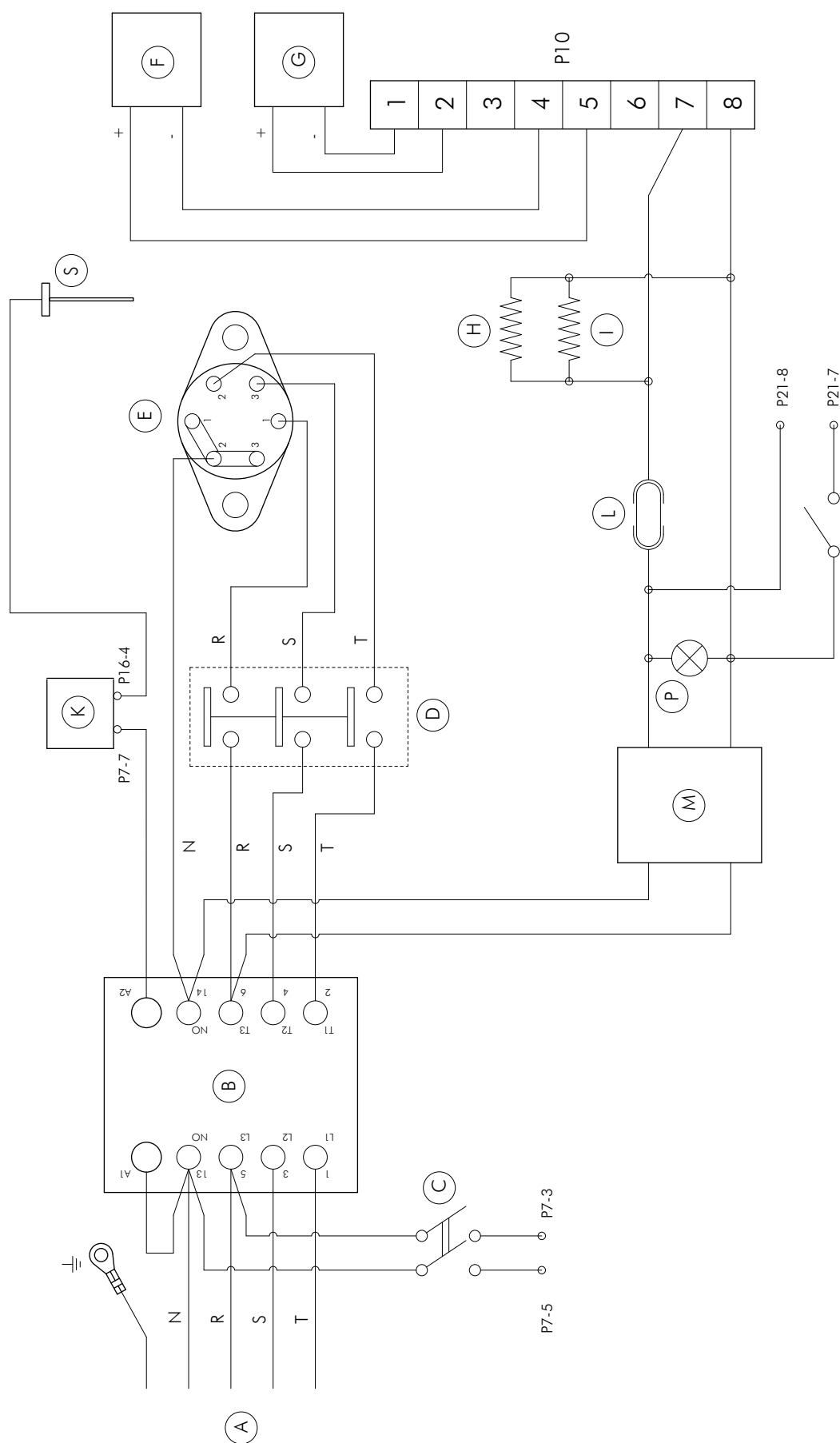
A - Power supply cable
B - Contactor
C - Main switch
D - Pressure switch
E - Boiler heating element
F - Motor group 2
G - Motor group 1
K - Electronic cards

H - Piston heating element group 2
I - Piston heating element group 1
L - F 6.3A fuse
M - 24V transformer
P - Indicator light
R - Fuse indicator light
S - Minimum level probe (red connector)

13.2 HIGH VOLTAGE diagram
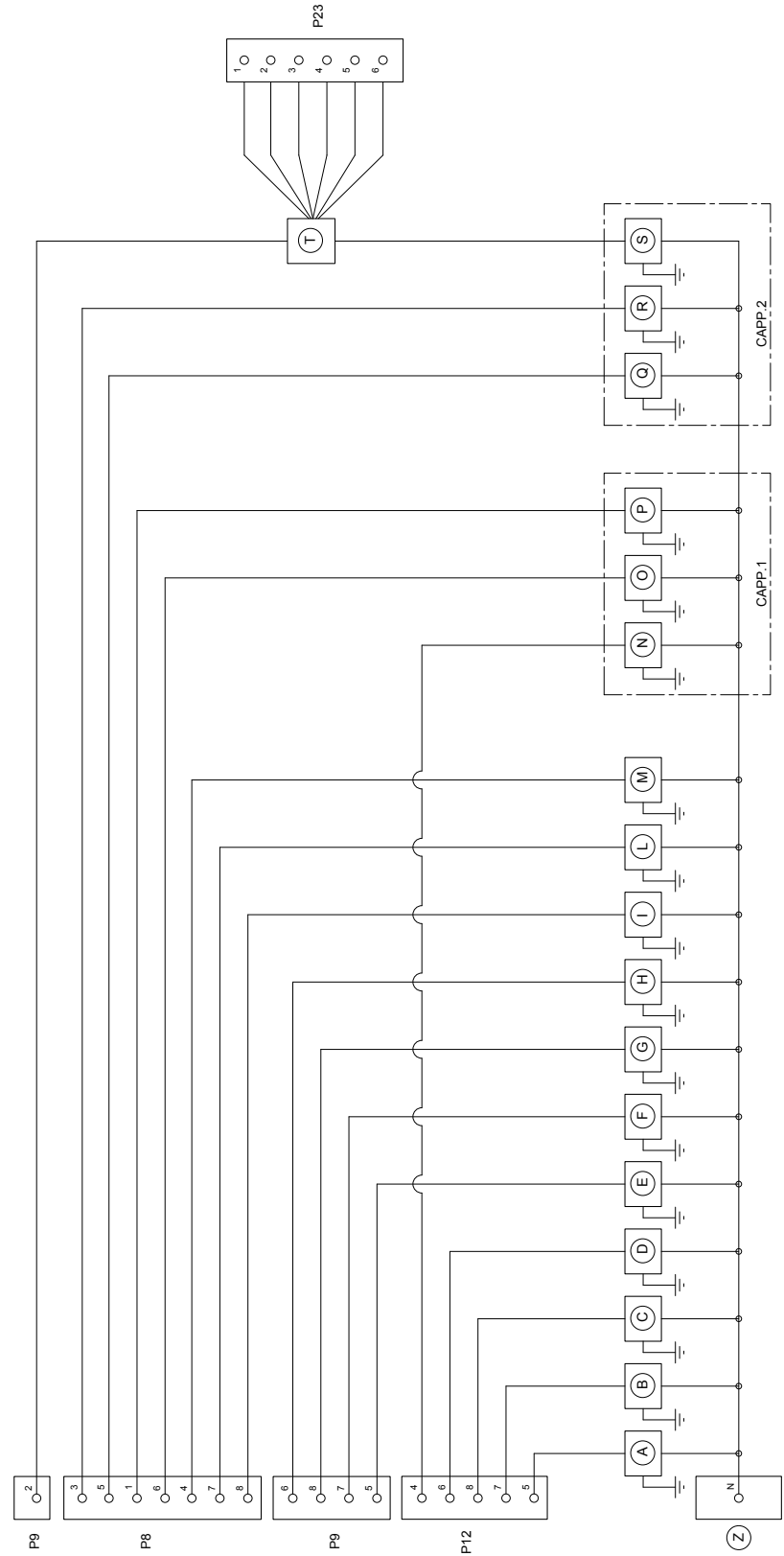
A - Solenoid valve group 1
B - Solenoid valve added water group 1
C - Heating element group 1
D - Grinder group 1
E - Solenoid valve group 2
F - Solenoid valve added water group 2
G - Heating element group 2
H - Grinder group 2
I - Pump
L - Tea
M - Boiler solenoid valve

N - SV 1 cappuccino maker 1 (Steam)
O - SV 2 cappuccino maker 1 (Air)
P - Cappuccino maker pump 1

Q - SV 1 cappuccino maker 2 (Steam)
R - SV 1 cappuccino maker 2 (Air)
S - Cappuccino maker pump 2

Z - Contactor

13.3 LOW VOLTAGE diagram
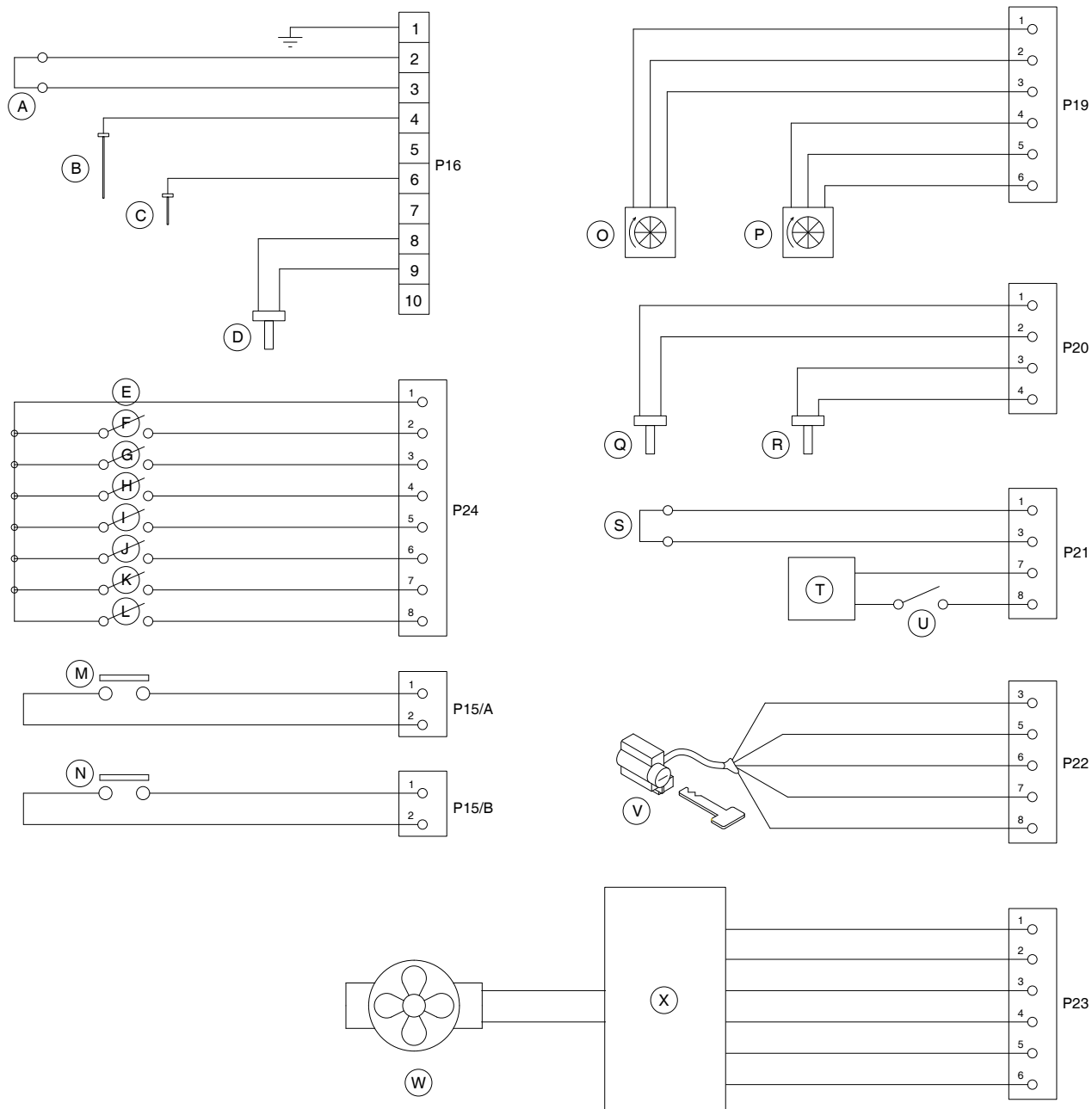
A   - Cappuccino milk sensor set group 1
B   - Minimum level sensor (red)
C   - Level sensor (blue)
D   - Boiler temperature sensor
E   - Common micro
F   - Grounds drawer micro
G   - Micro 2 group 1 (infusion)
H   - Micro 3 group 1 (limit switch)
I   - Micro 3 group 2 (limit switch)
J   - Micro 1 group 1 (idle)
K   - Micro 1 group 2 (idle)
L   - Micro 2 group 2 (infusion)

M - Steam button
N   - Water button
O   - Volumetric dosing device group 1
P   - Volumetric dosing device group 2
Q   - Temperature sensor group 1
R   - Temperature sensor group 2
S   - Cappuccino milk sensor set group 2
T   - 24Vac transformer
U   - Door micro
V   - Waiter key lock
W - Cappuccino maker pump no. 2
X   - Relay

13.4 CPU card - 2003 version

GIEMME   02.52.0084   REV-4

DL1	(G)	Reserve	DL20	(G)	SV steam	EPROM	Machine software
DL2	(R)	Pump	DL21	(G)	SV3 cappucc. gr.1	DALLAS	Programm. doses memory
DL3	(G)	SV boiler filling	DL22	(R)	Grounds drawer		
DL4	(G)	SV gr.1	DL23	(R)	Program. key	PT1	Contrast adjustment
DL5	(G)	SV added water gr.2	DL24	(V)	Micro 3 FG gr.1		(only with display card rev.2)
DL6	(G)	SV1 cappucc. gr.1	DL25	(V)	Micro 2 compr. gr.1		
DL7	(G)	SV gr.2	DL26	(V)	Micro 1 idle gr.1	SW1	Configuration enable
DL8	(G)	SV Tea	DL27	(V)	Micro 3 FG gr.2		
DL9	(G)	SV1 cappucc. gr.2	DL28	(V)	Micro 2 compr. gr.2	JP2	Pump+level function on
DL10	(R)	Heating gr.1	DL29	(V)	Micro 1 idle gr.2		
DL11	(R)	Contactor	DL30	(V)	Motor gr.1+	JP3	Pump+tea function on
DL12	(R)	Heating gr.2	DL31	(V)	Motor gr.2+		
DL13	(R)	Grinder 1	DL32	(R)	Motor gr.1-	JP4	Door micro control enable
DL14	(R)	Grinder 2	DL33	(R)	Motor gr.2-		(A-B: door micro enabled)
DL15	(G)	SV3 cappucc. gr.2	DL34	(R)	Door safety		(B-C: door micro disabled)
DL16	(G)	Reserve	DL35	(R)	Vol. doser gr.2		
DL17	(G)	SV1 cappucc. gr.2	DL36	(R)	Vol. doser gr.1		
DL18	(G)	SV added water gr.1	DL37	(R)	Reset		
DL19	(G)	SV2 cappucc. gr.1					

G	Yellow
R	Red
V	Green

13.5 CPU card - Version 2005

GIEMME 02.52.0084   REV-5

DALLAS

EPROM
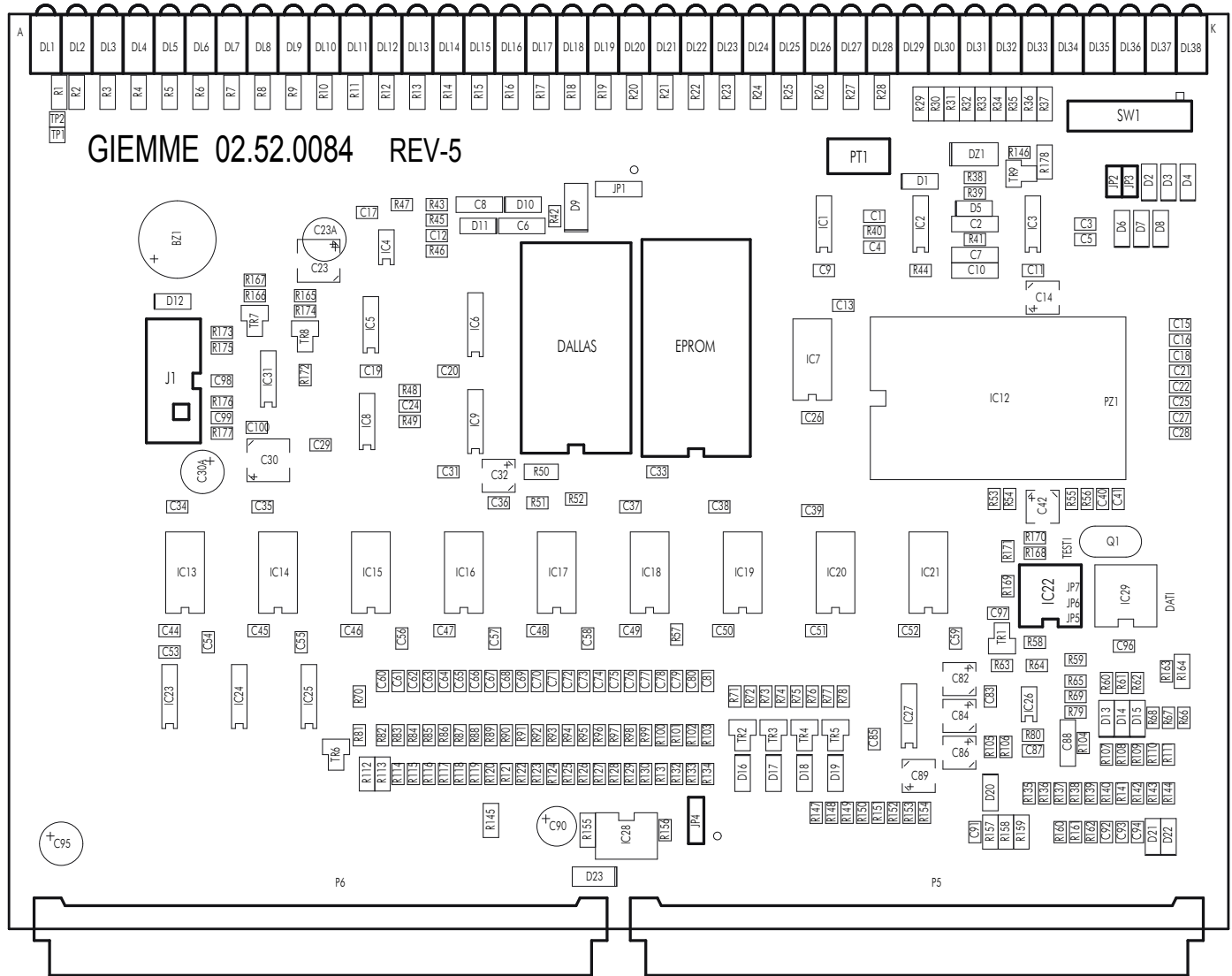
DL1	(G)	Reserve
DL2	(R)	Pump
DL3	(G)	SV boiler filling
DL4	(G)	SV gr.1
DL5	(G)	SV added water gr.2
DL6	(G)	SV1 cappucc. gr.1
DL7	(G)	SV gr.2
DL8	(G)	SV Tea
DL9	(G)	SV1 cappucc. gr.2
DL10	(R)	Heating gr.1
DL11	(R)	Contactor
DL12	(R)	Heating gr.2
DL13	(R)	Grinder 1
DL14	(R)	Grinder 2
DL15	(G)	SV3 cappucc. gr.2
DL16	(G)	Reserve
DL17	(G)	SV1 cappucc. gr.2
DL18	(G)	SV added water gr.1
DL19	(G)	SV2 cappucc. gr.1

DL20	(G)	SV steam
DL21	(G)	SV3 cappucc. gr.1
DL22	(R)	Grounds drawer
DL23	(R)	Program. key
DL24	(V)	Micro 3 FG gr.1
DL25	(V)	Micro 2 compr. gr.1
DL26	(V)	Micro 1 idle gr.1
DL27	(V)	Micro 3 FG gr.2
DL28	(V)	Micro 2 compr. gr.2
DL29	(V)	Micro 1 idle gr.2
DL30	(V)	Motor gr.1+
DL31	(V)	Motor gr.2+
DL32	(R)	Motor gr.1-
DL33	(R)	Motor gr.2-
DL34	(R)	Door safety
DL35	(R)	Vol. doser gr.2
DL36	(R)	Vol. doser gr.1
DL37	(R)	Reset

EPROM	Machine software
DALLAS	Programm. doses memory
PT1	Contrast adjustment (only with display card rev.2)
SW1	Configuration enable
JP2	Pump+level function on
JP3	Pump+tea function on
JP4	Door micro control enable (A-B: door micro enabled) (B-C: door micro disabled)
J1	SmartCard connector reader
IC22	EPROM expansion

G	Yellow
R	Red
V	Green

13.6 DRIVER card - 2003 version
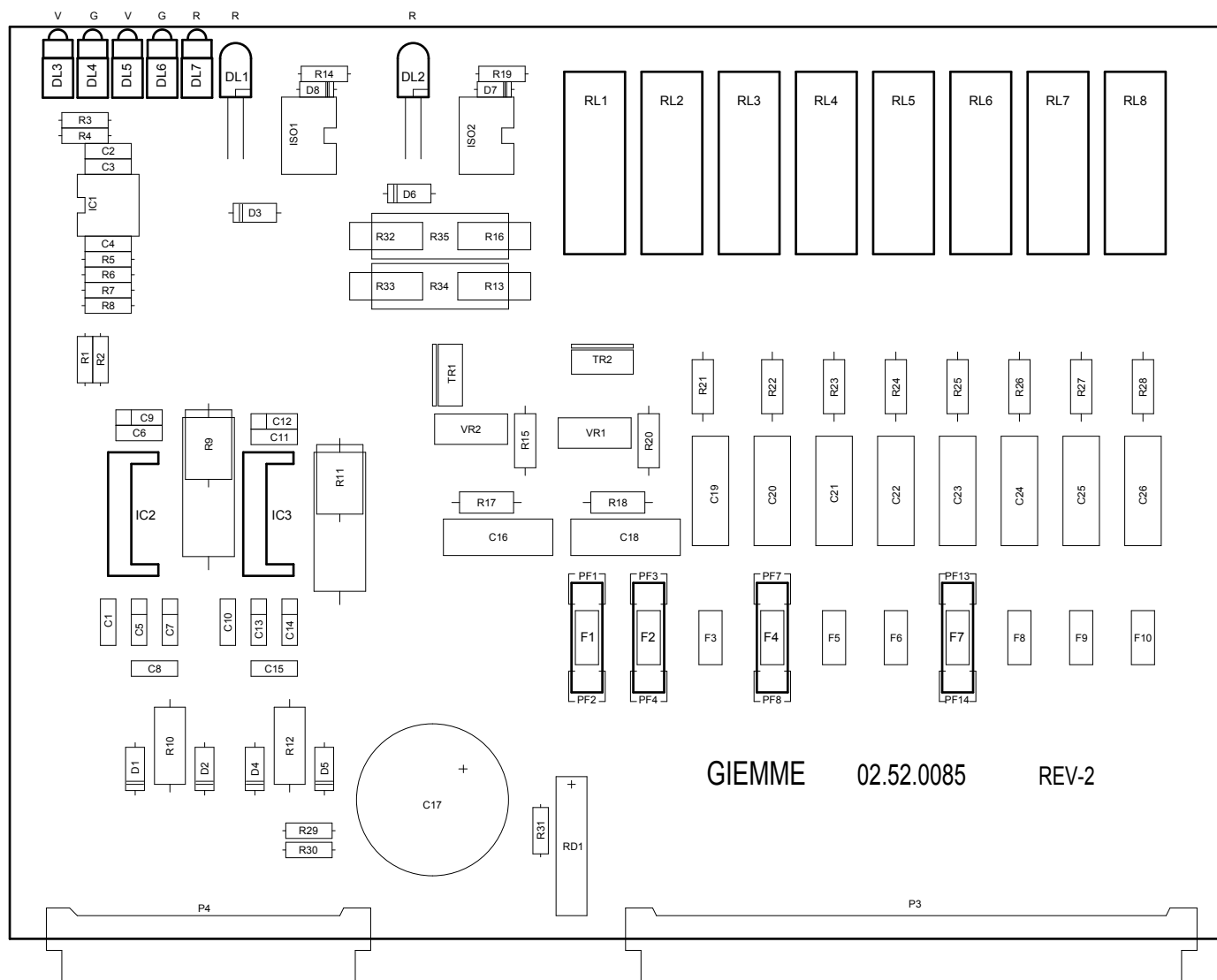
DL1   (R)   Resistance powered signal gr.2
DL2   (R)   Resistance powered signal gr.1
DL3   (V)   Movement signal gr.2
DL4   (G)   Movement signal gr.2
DL5   (V)   Movement signal gr.1
DL6   (G)   Movement signal gr.1
DL7   (R)   24V powered signal

F1   Resistance fuse gr.2 (F 2A)
F2   Resistance fuse gr.1 (F 2A)
F4   Grinder fuse gr.2 (F 10A)
F7   Grinder fuse gr.1 (F 10A)

RL1   SV relay added water gr.2
RL2   Grinder relay gr.2
RL3   Solenoid valve relay gr.2
RL4   SV relay added water gr.1
RL5   Grinder relay gr.1
RL6   Solenoid valve relay gr.1
RL7   Cappuccino solenoid valve relay
RL8   Washing relay gr.2

G	Yellow
R	Red
V	Green

IC2   Driver gr.1
IC3   Driver gr.2

13.7 POWER SUPPLY card - 2003 version
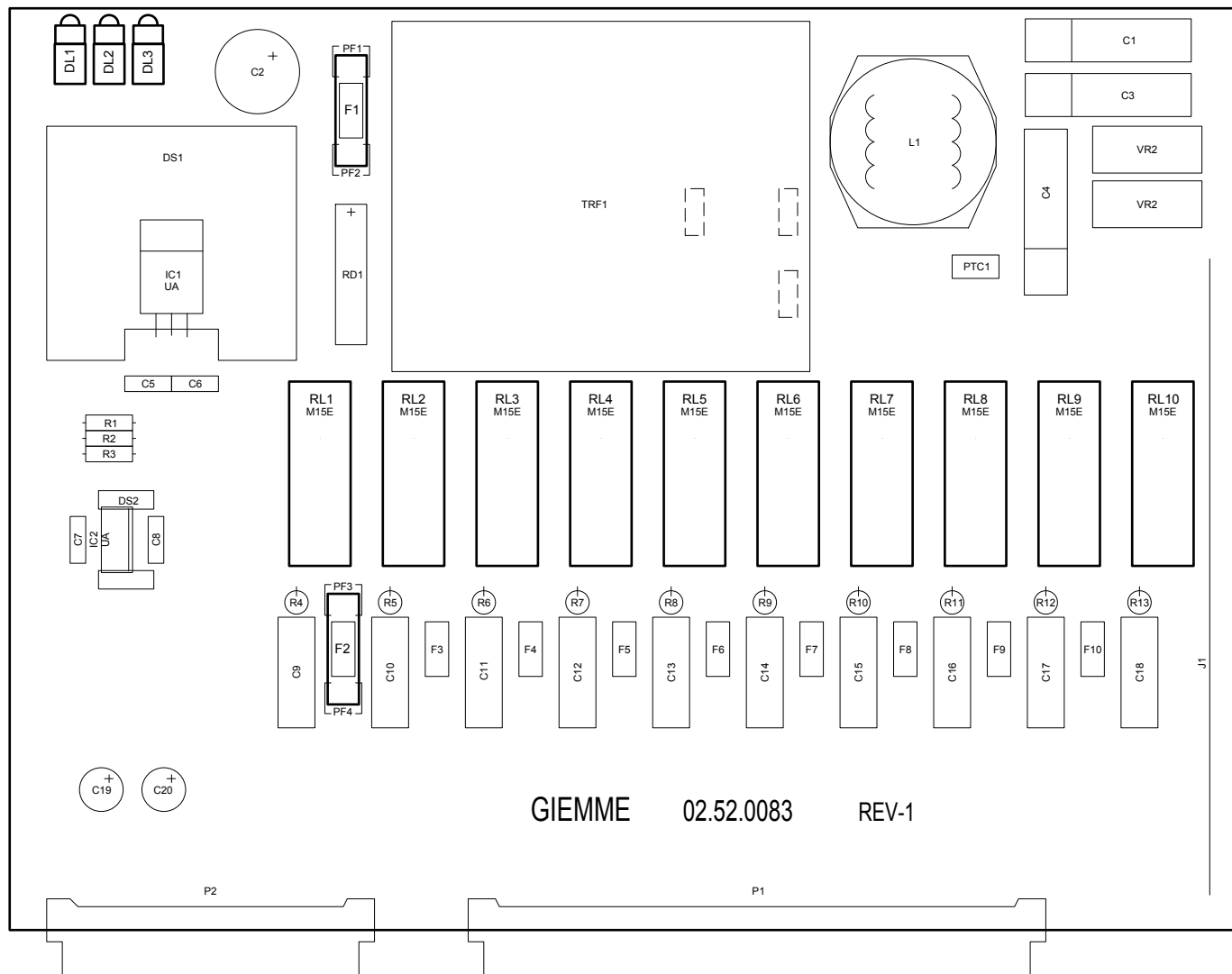
DL1   Card power supply
DL2   12V circuit
DL3   5V circuit

F1   Transformer fuse (F 500mA)
F2   Pump fuse (F 10A)

RL1   Pump relay
RL2   Tea SV relay
RL3   Token dispenser
RL4   EV1 cappuccino maker relay
RL5   Boiler refill relay
RL6   EV2 cappuccino maker relay
RL7   Washing relay gr.1
RL8   REV3 cappuccino maker relay
RL9   Steam relay
RL10   Main contactor relay

13.8 MOTHER BOARD connectors diagram- 2003 version

02.52.0086   REV 3

+VAL Jp1 +12V

P10
1
2
3
4
5
6
7
8

P27 P26
2 1   2 1

P11
Rs232

P14
7 5 3 1   8 6 4 2

P18

P25

P24
1 2 3 4 5 6 7 8

P8
10 9 8 7 6 5 4 3 2 1

P9
8 7 6 5 4 3 2 1

P7
8 7 6 5 4 3 2 1

P13
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

P23
1 2 3 4 5 6

P22
1 2 3 4 5 6 7 8

P17

P21
8 7 6 5 4 3 2 1

P12
8 7 6 5 4 3 2 1

Jp2

P16
10 9 8 7 6 5 4 3 2 1

P20
4 3 2 1

P19
6 5 4 3 2 1

P7
FrameGnd — 1
2
Neutral — 3
Neutral — 4
Phase — 5
Phase — 6
Contactor — 7
Automatic steam — 8

P8
LH Cap.Disch.-Sv3 — 1
RH Cap.disch.-Sv3 — 2
RH Cap.Air-Sv1 — 3
Boiler filling SV — 4
RH Cap. Steam Sv1 — 5
LH Cap.Air-Sv2 — 6
Tea — 7
Pump — 8
Phase — 9
Phase — 10

P9
Phase — 1
Phase — 2
3
Token distributor coil — 4
Milk suction pump
Sv devia./Sv.Gr2 — 5
Grinder/Mac2 — 6
Solenoid valve H2O add2 — 7
resistance gr2 — 8

P10
Mot.cc.Gr1 Mot1+ — 1
Mot1- — 2
3
Mot.cc.Gr2 Mot2+ — 4
Mot2- — 5
6
24VAC power supply — 7
Transformer — 8

P12
Phase — 1
Phase — 2
3
LH Cap.Steam-Sv1 — 4
Solenoid valve gr1 — 5
Grinder gr1 — 6
Solen. H2O add.gr.1 — 7
Resistance gr1 — 8

P16
Gnd — 1
LH cap.milk sensor — 2
Gnd — 3
minimum level sensor — 4
Gnd — 5
Level sensor — 6
Gnd — 7
Boiler sensor — 8
Boiler sensor — 9
Gnd — 10

P17
1 2
.
.
49
50
50-pole fiat connection push button panel and display

P19
+Val — 1
Counter volum. Gr1 Vent1 — 2
Gnd — 3
+Val — 4
Counter volum. Gr2 Vent2 — 5
Gnd — 6

P20
Temperature sensor Gr1 — 1
Temperature sensor Gr1 — 2
Temperature sensor Gr2 — 3
Temperature sensor Gr2 — 4

P21
Gnd — 1
2
RH cap.milk sensor — 3
4
5
6
24Vac — 7 T
24Vac — 8

P22
1
2
key lines comm. — 3
4
Keys waiter's 8-key line — 5
4-key line — 6
2-key line — 7
1-key line — 8

P24
Gnd — 1
grounds drawer micro — 2
Micro2 gr1 — 3
Micro3 gr1 — 4
Micro3 gr2 — 5
Micro1 gr1 — 6
Micro2 gr1 — 7
Micro2 gr2 — 8

P25
1 2
3 4
5 6
Token 1 7 8
9 10
Token 2 11 12

Jp1
Power supply jumper money identifier
1 2 3

MILK PUMP CONTROL INTERFACE

K1
5   7
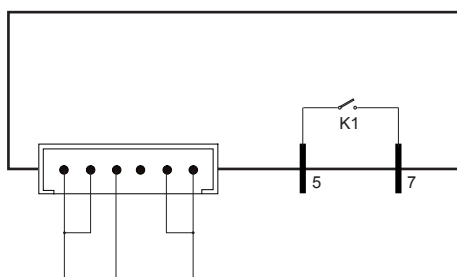
13.9 INTERFACE CONNECTION diagram

Functional Technical Specification 32 I/O relay

Thanks to the interface dosing can be connected to management systems that use for each key the corresponding output of a relay or of an open-collector transistor.

The I/O card utilises a relay contact.

All relays share the same connection on pins 37-38-39-40 of the output connector CN7.

On this latter, besides the counting outputs, there is the enabling for selections.

The "waiter key" must short circuit the signal of pin 33 with the ground of pin 35.

The signals on the relays have a duration of 500 mSec.

Installation procedure

1)   Connect the I/O card to the dosage with the dedicated serial transmission cable and the 12V power supply cable, following the enclosed diagram.

2)   Programme the coffee doses, inserting the programming key according to the known procedures.

3)   Take the programming key out and verify that selections are locked without the waiter's key inserted between pin 33 and pin 35.

   The lever switch on the I/O must <u>always be left in the I/O active position</u>

Output correspondence

Key corresponds to the output of a relay.

To better identify them, summarising tables follow giving the connector output with the corresponding selection push button.

Table of codes generated by DOS aut. 2 gr. 4 with "AUTOMA" file

DESCRIPTION	SIGNAL	RELAY	REF. CONNETT. I/O
Espresso GR.1	011 h	1	CN7-1
Medium GR.1	012 h	2	CN7-2
Long GR.1	013 h	3	CN7-3
2 Espressos GR.1	014 h	4	CN7-4
2 Medium GR.1	015 h	5	CN7-5
2 Long GR.1	016 h	6	CN7-6
Espresso GR.2	021 h	7	CN7-7
Medium GR.2	022 h	8	CN7-8
Long GR.2	023 h	9	CN7-9
2 Espressos GR.2	024 h	10	CN7-10
2 Medium GR.2	025 h	11	CN7-11
2 Long GR.2	026 h	12	CN7-12
Milk	031 h	13	CN7-13
Cappuccino	033 h	15	CN7-15
Latte	034 h	16	CN7-16
Tea	051 h	25	CN7-25
Washing (GR.1 - GR.2)	052 h	26	CN7-26
Decaff. espresso	035 h	17	CN7-17
Decaff. medium	036 h	18	CN7-18
Decaff. long	041 h	19	CN7-19
2 Decaff. espressos	042 h	20	CN7-20
2 Decaff. medium	043 h	21	CN7-21
2 Decaff. long	044 h	22	CN7-22
Decaff. cappuccino	045 h	23	CN7-23
Decaff. latte	046 h	24	CN7-24
			CN7-33 (*)
			CN7-35 (*)
			CN7-37 (**)
			CN7-38 (**)
			CN7-39 (**)
			CN7-40 (**)

(*) Activation I/O

(**) Common relay
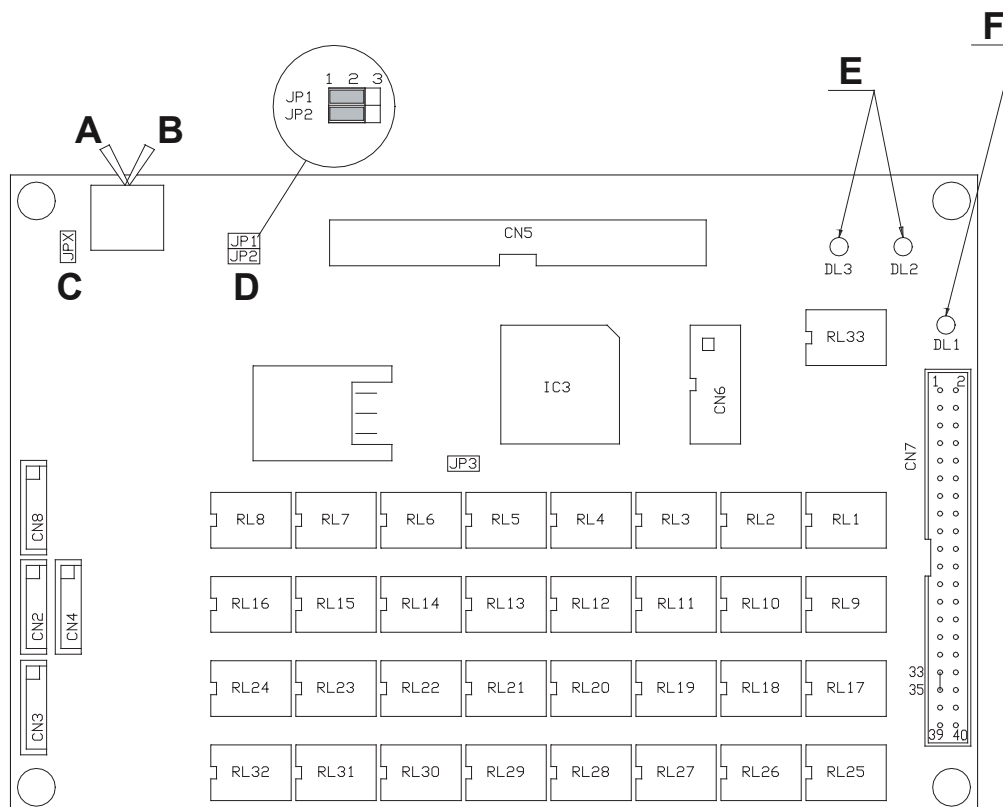
A	I/O active
B	I/O excluded
C	ON
D	ON
E	Serial communication LED
F	Power supply LED OK

PIN	RELAY	GROUP	DOSE
1	RL1	1	1 Espresso
2	RL2	1	1 Medium
3	RL3	1	1 Long
4	RL4	1	2 Espressos
5	RL5	1	2 Medium
6	RL6	1	2 Long
7	RL7	2	1 Espresso
8	RL8	2	1 Medium
9	RL9	2	1 Long
10	RL10	2	2 Espressos
11	RL11	2	2 Medium
12	RL12	2	2 Long
13	RL13		Milk
15	RL15		Cappuccino
16	RL16		Coffee Milk
25	RL25		Tea
26	RL26	1/2	Washing
17	RL17	1 dec	1 Espresso
18	RL18	1 dec	1 Medium
19	RL19	1 dec	1 Long
20	RL20	1 dec	2 Espressos
21	RL21	1 dec	2 Medium
22	RL22	1 dec	2 Long
23	RL23		Decaffein. Cappuccino
24	RL24		Decaffein. Coffee Milk
33			Activation I/O
35			Activation I/O
37			Relay common
38			Relay common
39			Relay common
40			Relay common

A	Connectors card
B	Power supply
C	Remove jumper JP2
D	Serial transmission cable cod. 22554002
E	Power cable cod. 22554003
F	I/O active
G	I/O excluded
H	ON
I	ON
L	Serial communication LED
M	Power supply LED OK
N	Black
P	To connect to the P21
R	Red
S	Interface I/O relay
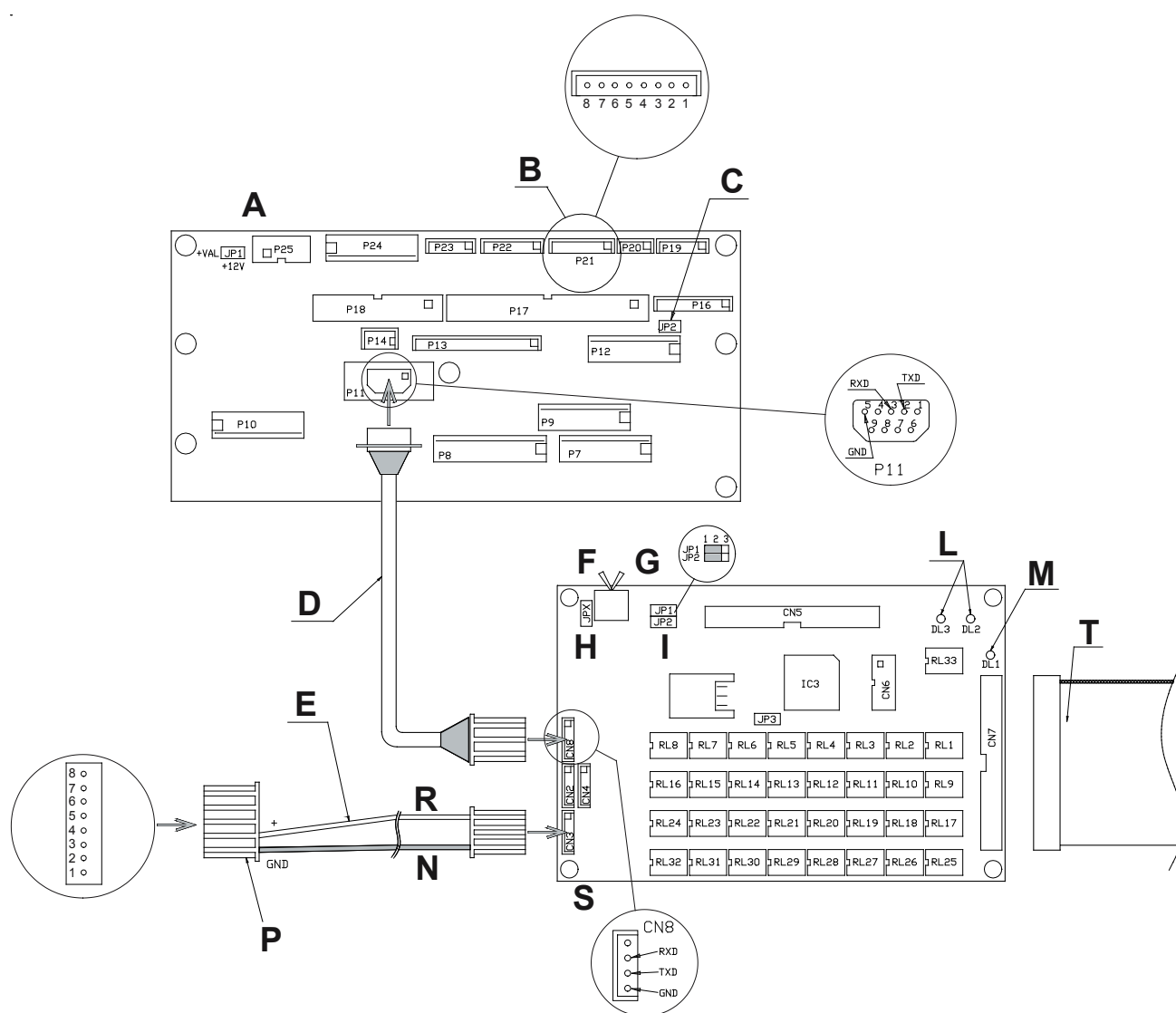
14. HYDRAULIC DIAGRAM
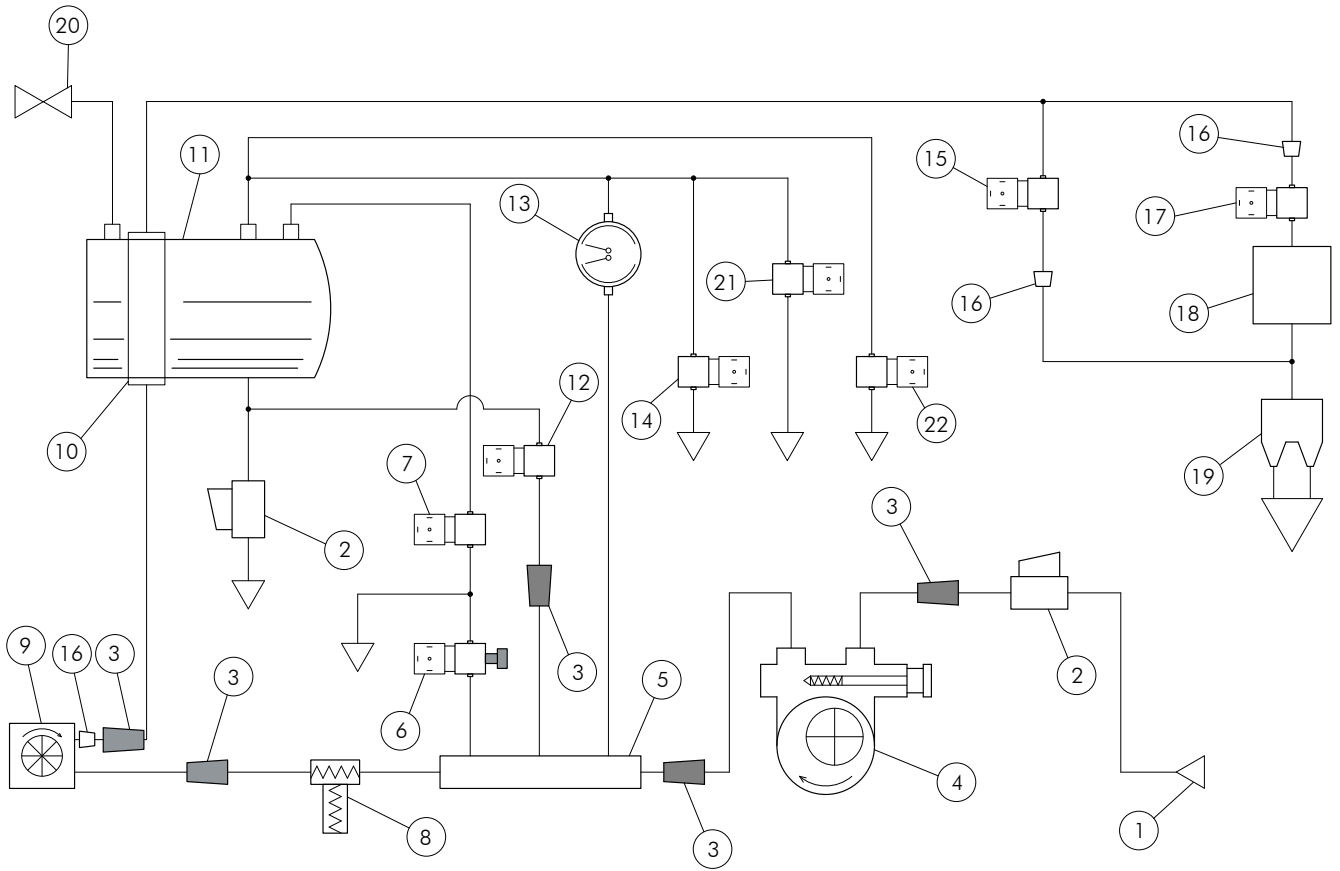
1 - Water inlet
2 - Tap
3 - Filter
4 - Pump
5 - Distributor
6 - Mixing solenoid valve
7 - Tea solenoid valve
8 - SCNR valve
9 - Volumetric doser
10 - Exchanger
11 - Boiler
12 - Boiler solenoid valve
13 - Gauge
14 - Steam solenoid valve
15 - Added water solenoid valve
16 - Jet
17 - Group solenoid valve
18 - Dispensing group
19 - Dispensing spout
20 - Steam cock / Steam solenoid valve
21 - Autosteamer solenoid valve
22 - Cappuccino maker no. 2 solenoid valve