LAVAZZA

BLUE

BEST LAVAZZA ULTIMATE ESPRESSO

LB 2000
OFFICE COFFEE SERVICE

Maintenance manual for technical assistance

General contents

Maintenance manual for
technical assistance
LB 2000
OFFICE COFFEE SERVICE

Machine code: **80602**

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TECHNICAL ASSISTANCE

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General Information

1.1 Designated personnel

The tasks described in this manual may only be carried out by a qualified technician who has read this manual and, moreover, who:

- has the appropriate credentials to carry out repairs in the case of serious malfunction and who has read this manual and all the information relative to safety;
- is able to understand the entire contents of the manual and to correctly interpret the drawings and diagrams;
- has knowledge of the appropriate hygiene, workplace safety, technology and security precautions;
- has specific experience in the maintenance of automatic dispensing equipment;
- knows how to act in an emergency, where to find the safety equipment and knows how to use it correctly.

The use of the machine by personnel without these prerequisites is prohibited.

1.2 Structure of the manual

The technician must carefully read the information in this manual.

1.2.1 Scope and content

This manual can provide a qualified technician with all the information necessary for the maintenance of the machine OCS base.

Before any operation is carried out on the machine, the qualified technician must carefully read all the instructions contained in this publication.

If there is any doubt about the correct interpretation of the instructions, contact the manufacturer to obtain the necessary clarification.

The undertaking of any operation on the machine, without having read and understood the contents of this manual, is prohibited.

1.2.2 Users

The manual is designed for technicians qualified for the maintenance of the machine.

It is prohibited for any unqualified person to follow the operations described in this manual.

The manufacturer is not responsible for damage derived from the failure to follow this rule.

1.2.3 Preservation

In order to be able to guarantee the integrity and utility of this manual the following guidelines should be observed:

- employ this manual in such a way that it remains undamaged and whole;
- do not for any reason, remove, tear, or write over any part of the manual;
- keep the manual in an area protected from humidity and heat, in such a way that the quality and legibility of the publication are not compromised.

If this manual is damaged or lost, a new copy should be immediately requested from the manufacturer or authorised distributor of the machine.

1.2.4 Symbols used

Attention!
Indicates a danger, possibly lethal, for the technician. In this case maximum attention must be taken to act safely.

Caution!
Indicates a warning or directions about key functions or useful information. Give full attention to text containing this warning.

Prohibited!
The presence of this symbol indicates that the operations should be halted as they may cause danger for the user and persons in the vicinity.

2.1 Stop functions

- Read the entire manual carefully.
- Power connections should be made following the safety measures in the country of use.
- The electric socket connecting the machine, should:
  - conform to the type of plug installed on the machine;
  - comply with the data provided on the plate on the bottom of the apparatus;
  - be connected to an earthing device.
- The electric parts of the machine must not:
  - enter into contact with any type of liquid - danger of electric shock and/or fire;
  - be manipulated by humid or wet hands;
  - be tampered with.
- It is forbidden:
  - to use the machine near flammable substances and/or explosives and/or in an atmosphere with any risk of fire;
  - to use spare parts not advised by the manufacturer;
  - carry out any type of technical modification not covered in the normal procedures of diagnosis and repair;
  - immerse the machine in any type of liquid;
  - wash the automatic machine with a spray of water and/or petrol and/or solvents of any type;
  - repair the machine while under the influence of drugs, alcohol, psychopharmaceuticals etc;
  - repair the machine in an explosive environment or near high concentrations of dust or oily substances in suspension in the air;
  - to use the machine with other materials not suitable for the machine;
- Before carrying out any operation on the machine, ensure that the plug is disconnected from the current and that the machine has cooled.
- Maintenance operations on the machine should be carried out by a single person, if a second person must assist, this person should be advised of the potential hazards relevant to the operation underway.
- In the case of fire use a carbon dioxide extinguisher (CO_2). Do not use water or powder extinguishers.

Attention!
During the repair of this machine, all the normal safety standards should be observed to avoid accidents. Adopt all the measures necessary to avoid accidents.

2.1 Stop functions

To stop the machine, use the main switch.

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Transport and storage

3.1 Transport

During movement and transport, the machine must remain in a vertical position according to the directions on the packaging. Carry out lifting and positioning with care. Do not shake the machine.

Attention!

Ensure that nobody is in the vicinity when lifting and positioning of the load and, in difficult conditions, make appropriate personnel available to help with the placement.

3.2 Storage

The machine should be stored according to the following conditions:

- minimum temperature above 4°C.
- maximum temperature below 40°C.
- maximum humidity below 95%

The machine is packaged in cardboard and expanded polystyrene.

Attention!

Given the total weight of the package, it is prohibited to stack more than three machines.

The machine should be stored, in its original packaging, in a dry and clean place.

3.3 Accessories included

Manual: instructions for machine use.

Water hardness test: rapid test to determine the hardness of the water used to make the beverages, this test used in order to set the value of the water hardness on the machine.

Keys to access water tank: in order to inhibit access to non-authorised personnel.

3.4 Assembly- positioning

Attention!
It is prohibited to set up the machine outside or in an environment where water spray or steam is present.

The presence of magnetic fields near the machine will generate disturbances, possibly causing malfunctions in the electronic controls of the machine.

With temperatures approaching 0°C there is the risk of freezing internal parts of the machine which contain water. Do not use the machine under these conditions.

For the correct function of the apparatus the following advice is given:

- environmental temperature: 10°C ÷ 40°C ;
- maximum humidity: 90% ;
- the area must be ready for the installation of the machine;
- the place where the machine is installed is flat; solid and still; the surface must not have an inclination of more than 2°;
- the area should be sufficiently illuminated, ventilated, hygienic and equipped with a readily available power point.

Attention!
Sufficient space must be allowed to access the machine and the plug, to allow the user to move freely and to be able to immediately leave the area in an emergency.

3.5 Disposal of packaging

Upon opening the package it is recommended to divide the materials used for packing by type and to dispose of these according to the standards of the country of use.

We advise saving the package for possible movement or transport.

3.6 Electrical connections

Attention!
This procedure should only be carried out by a specialised technician or by the manager.

This machine is designed to function with a single-phase voltage, detailed on the identification plate.

Before inserting the plug into the mains, ensure that the main switch is positioned at "0".
The electric connection of the machine is the responsibility of the manager.

The machine should be connected to the mains by the plug on the electric cable, taking into consideration:
- the laws and technical standards in the place of installation;
- the data on the technical information plate found on the side of the machine.

Attention!
The power point should be easily accessible, so that the machine may be easily disconnected from the electricity, when necessary.

Attention!
It is prohibited:
- **to use extension cords of any type;**
- **to replace the original plug;**
- **to use adaptors.**

4.1 Disposal of the machine

4 Disposal of the machine

Disposal of machine components, should be carried
out with respect for the environment, avoiding pollution of the soil, water and air.

Local legislation should be taken into consideration.

To make the machine unusable, remove the power cord.

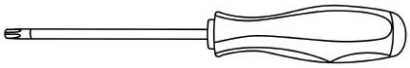
Dispose of the machine at an appropriate collection centre.

Attention!

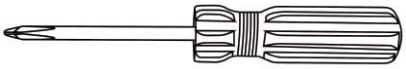
The battery in the electronic card should be removed from the equipment prior to disposal.

Batteries should be disposed of in a safe manner.

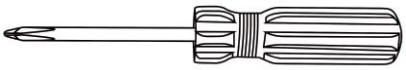
In order to maintain the apparatus the following tools should be available:



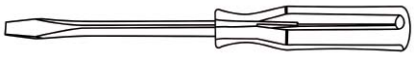
1 Screwdriver Torx T10



2 Philips-head screwdriver PH1

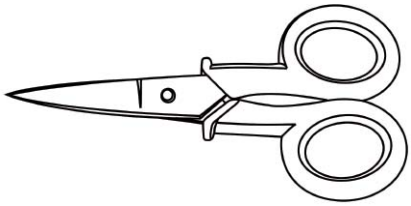


3 Philips-head screwdriver PH2

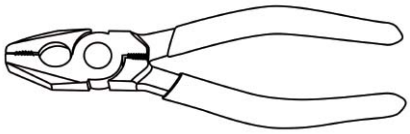


4 Screwdriver 0.8 x 4 x 80

5 Spanner 10 mm

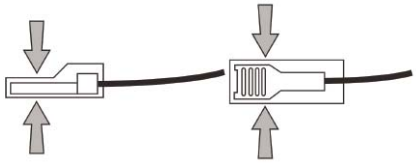


6 Scissors with insulation



7 Standard pliers

Attention!
All the mechanical connections and cables use antislip safety fastons.
If there is a faston cover squeeze the plastic as indicated in the figure and pull.



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Disassembly of the machine

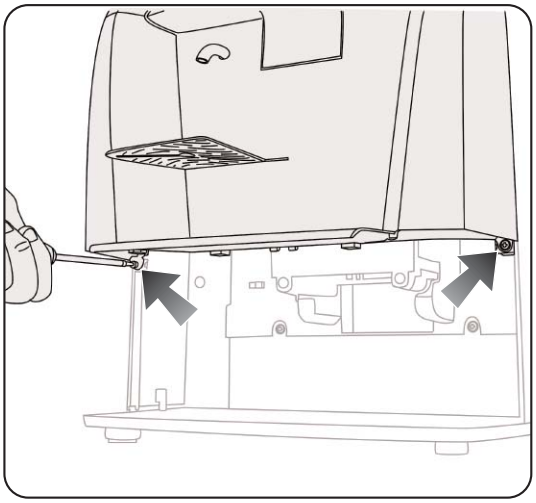
6 Machine disassembly

This chapter describes the correct procedure to follow to access the parts installed in the machine in order
to check and possibly replace them.

Attention!
Before beginning any procedures carefully read the directions in the Safety Measures.

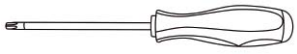
6.1 Disassembly of the body

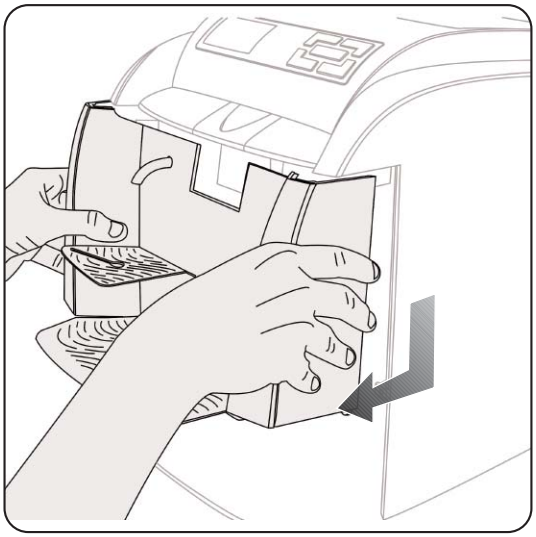
Remove the drip collection tank; collect and dispose of any used capsules; empty out any remaining liquid.



Using an appropriate screwdriver undo the screws that secure the front panel to the body of the machine.

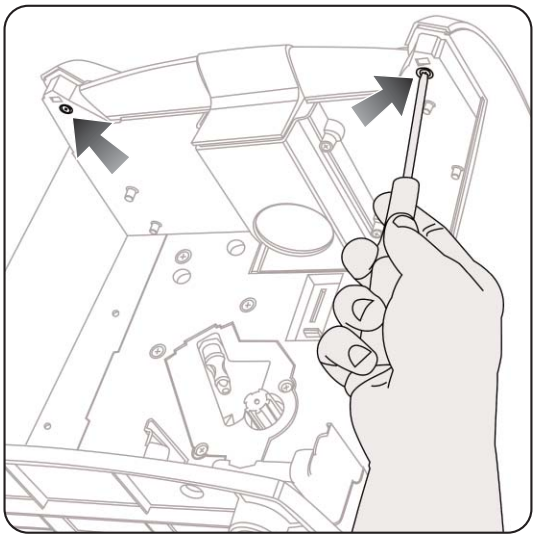
Note: the screws can be removed with a normal Torx safety screwdriver.



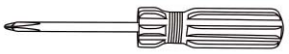


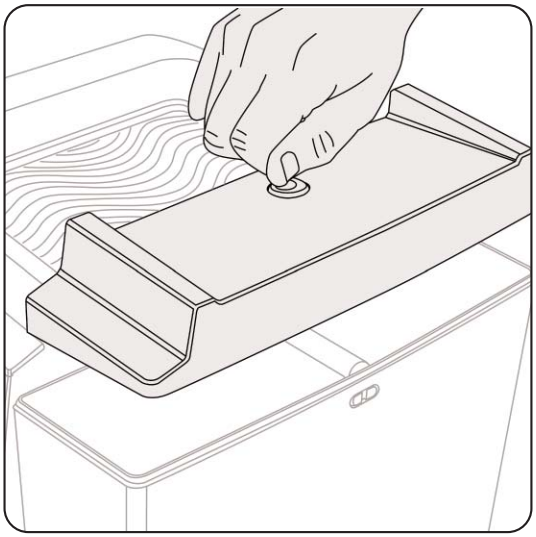
Attention!
This operation should be carried out carefully, the panel may be damaged if it is removed in an incorrect fashion.

Grasp the front panel as demonstrated in the figure and remove it by pulling first lightly downwards and then outwards.

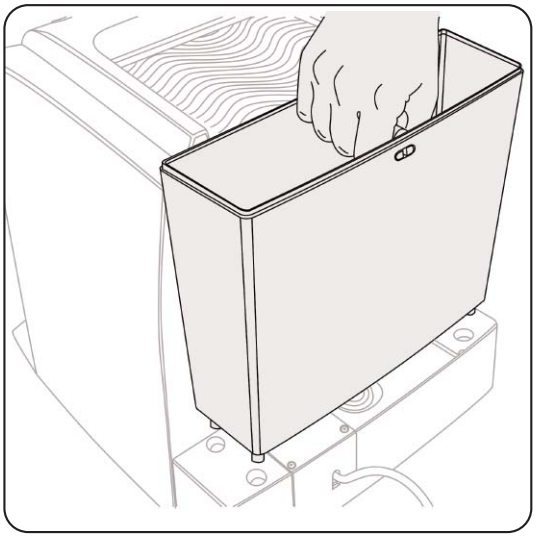


Undo the 2 screws which hold the cover of the upper plate of the machine.

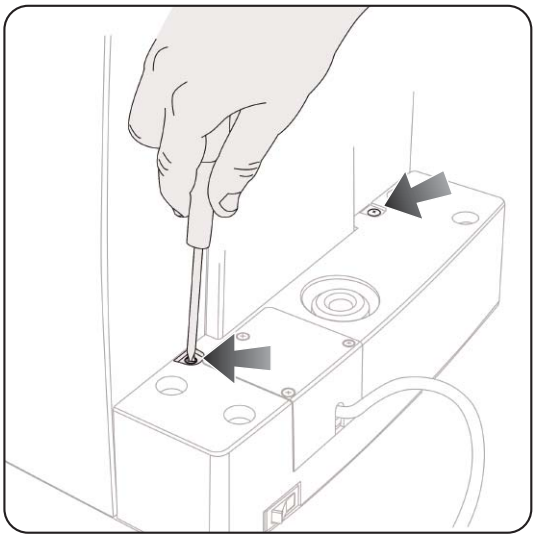




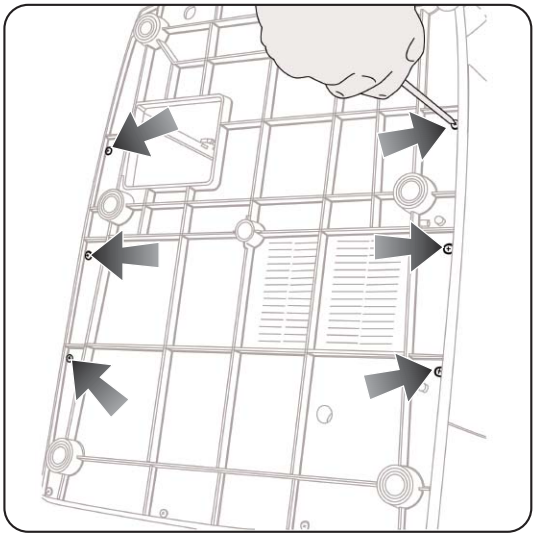
With the spanner remove the cover of the water tank.



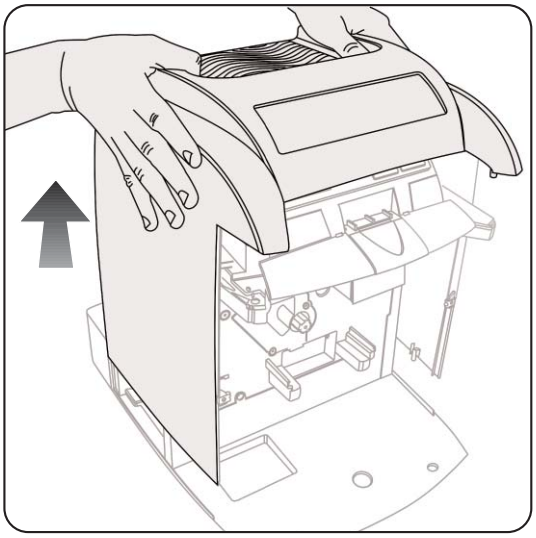
Remove the water tank by lifting it by its handles.



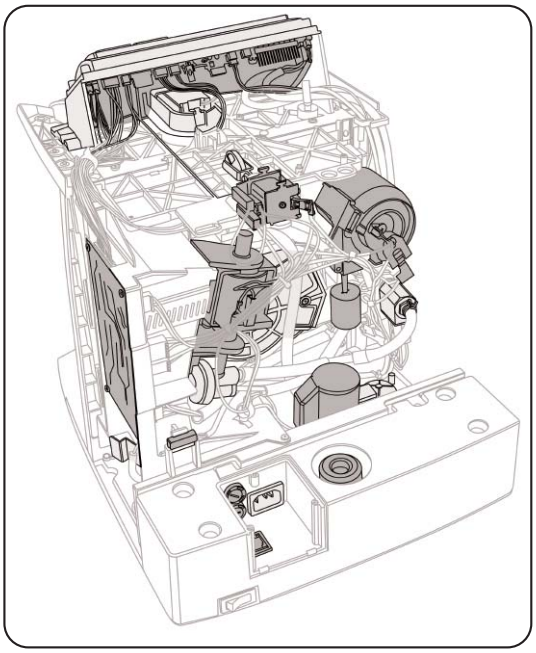
Undo the rear screws which hold the cover.



Undo the 6 screws that secure the cover to the base of the machine.



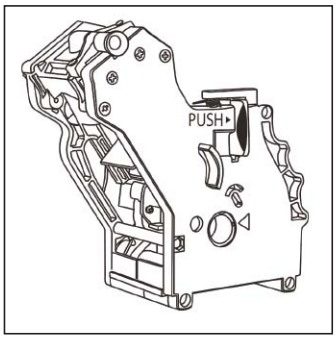
Rest the machine on its base.
Gently pull the cover with a little tug as shown in the figure.

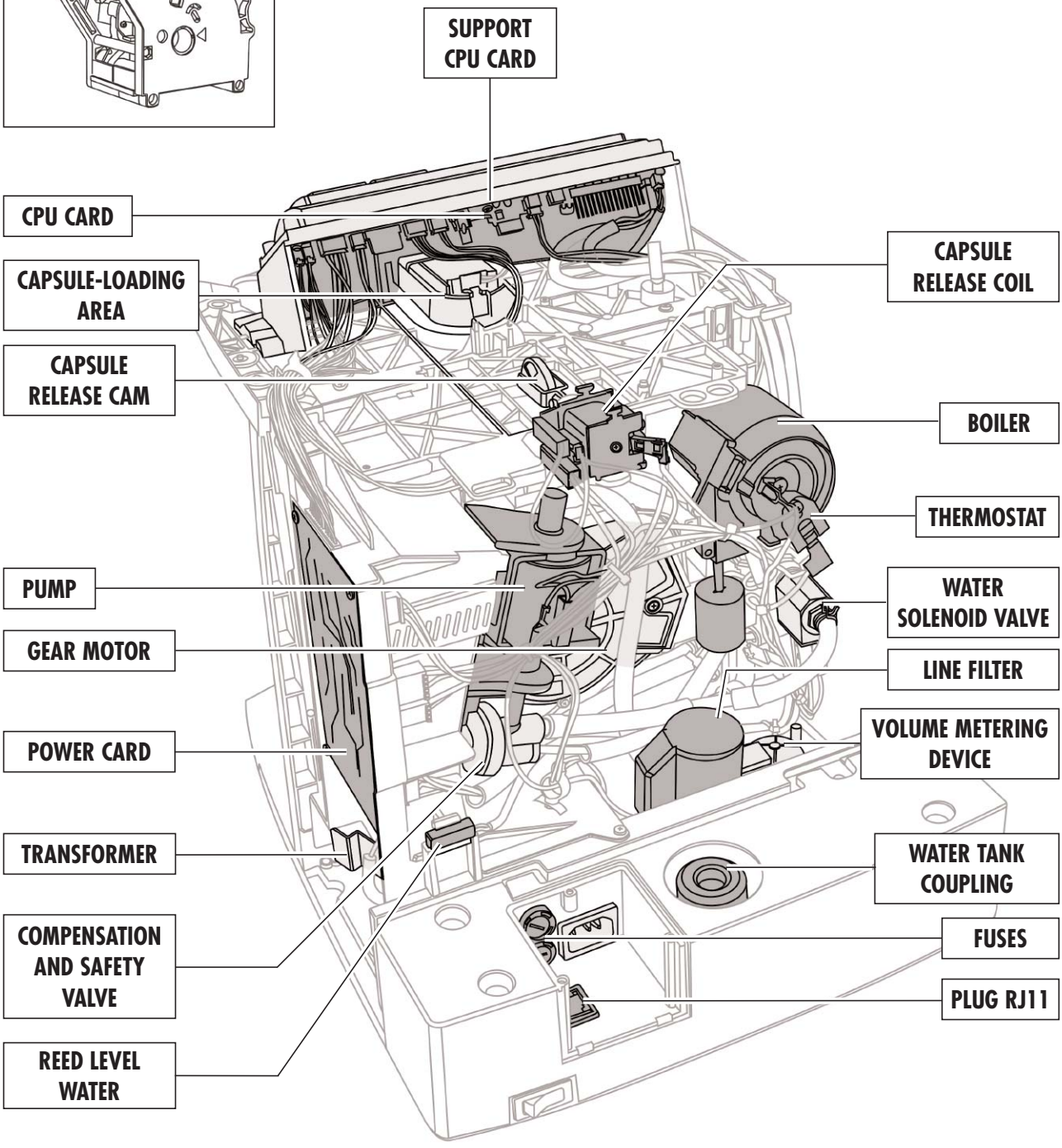


Now the operation of the internal components of the machine can be checked.

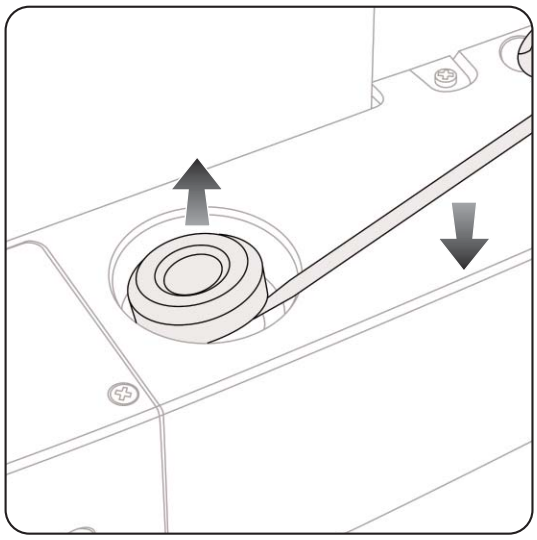
Attention!
The machine now has no shielding , in the machine there are electrical components and components which generate heat. Beware when operating under these conditions.

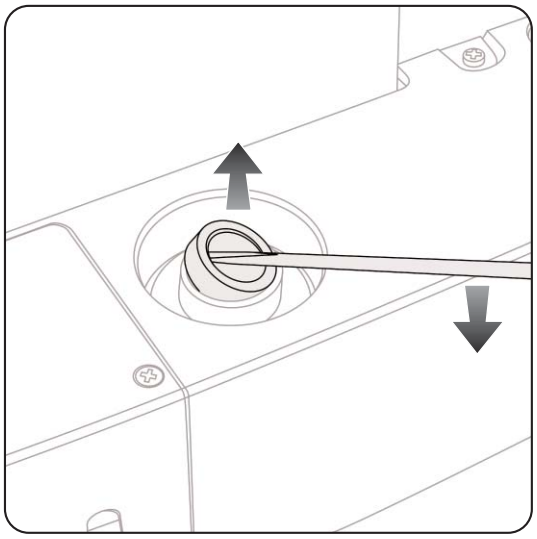
List of the machine components





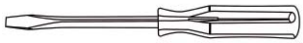
6.2 Disassembly of the GACO rubber gasket





Preparation: follow the procedure described in paragraph 6.1.

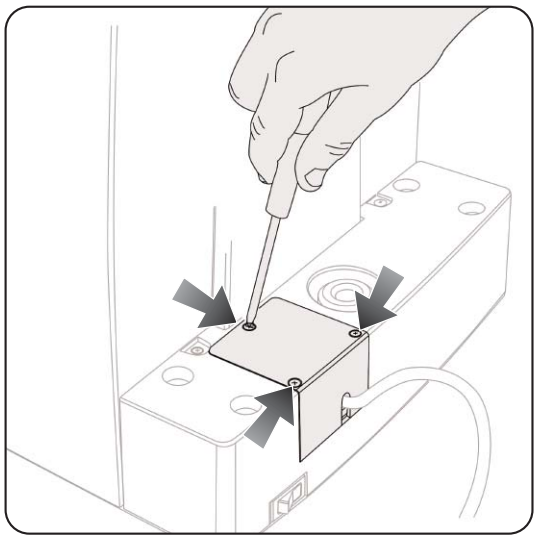
Using a screwdriver, remove the cover of the rubber gasket.



Remove the rubber gasket with a screwdriver.

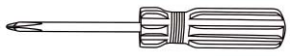
After having inserted a new rubber gasket , reposition the cover manually and press firmly.

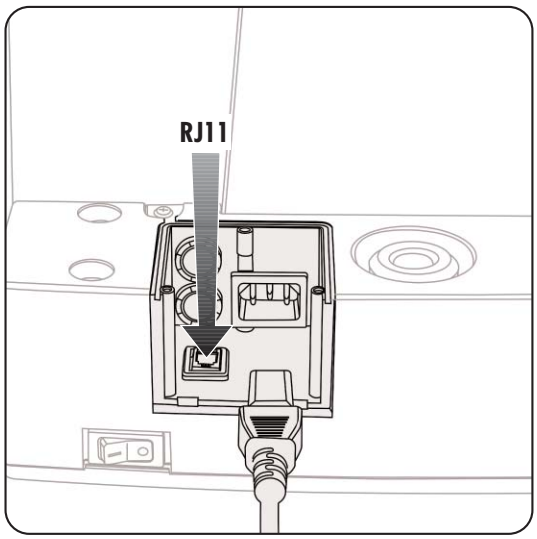
6.3 Replacement of electrical cord



Preparation: follow the procedure described in paragraph 6.1.

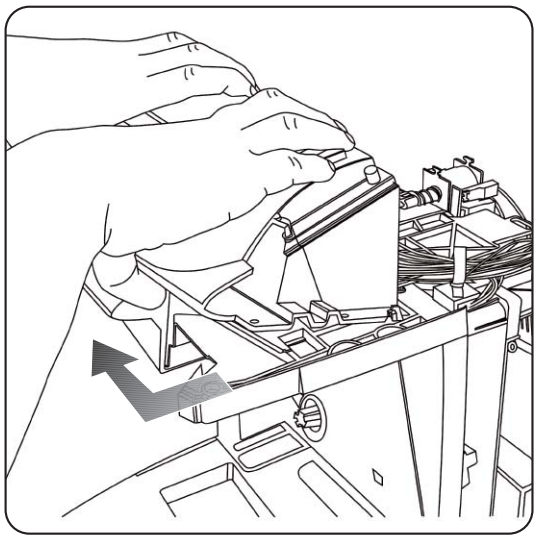
Undo the screws that secure the shield of the electrical cord space.





After the cover has been removed, the electrical cord can be removed and the fuses can be accessed.
In this area is the RJ11 plug to connect the machine to a data collection system (see ch.15).

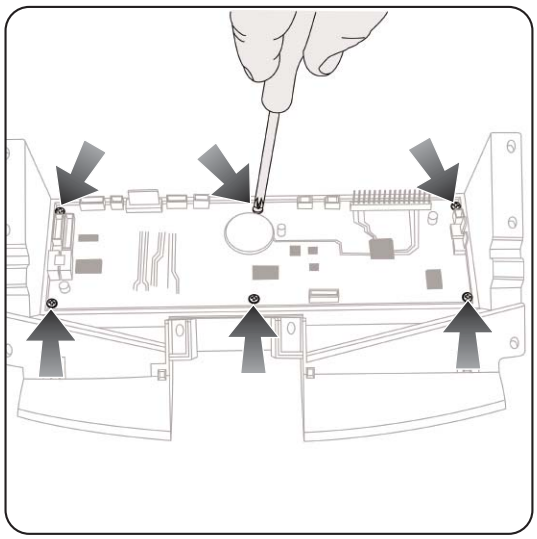
6.4 CPU card disassembly



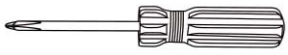
Preparation: follow the procedure described in paragraph 6.1.

Gently lift the upper panel that is resting on the upper plate.
With two hands, grasp the support; gently pulling outwards and lift gently.

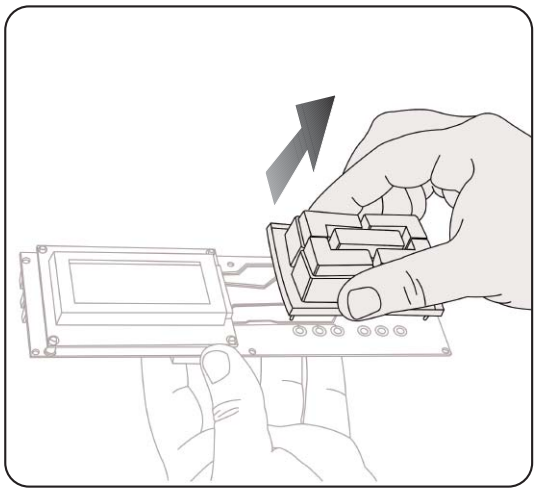
Turn over the support on the back part of the upper plate.



Now the connection of the CPU card can be checked or replaced by undoing the screws that secure the CPU card to the panel.



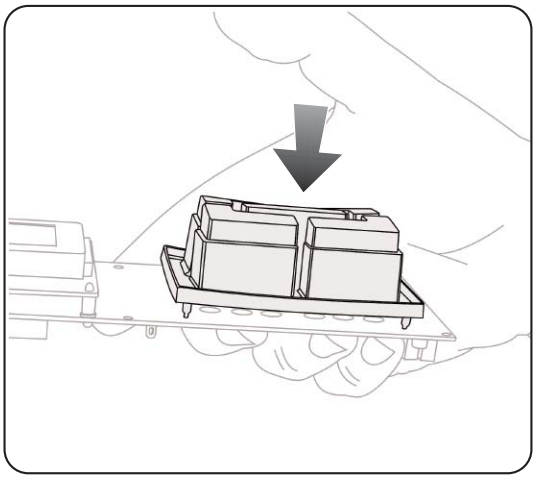
6.4.1 Replacing the silicone keyboard



Preparation: follow the procedure described in paragraph 6.4.

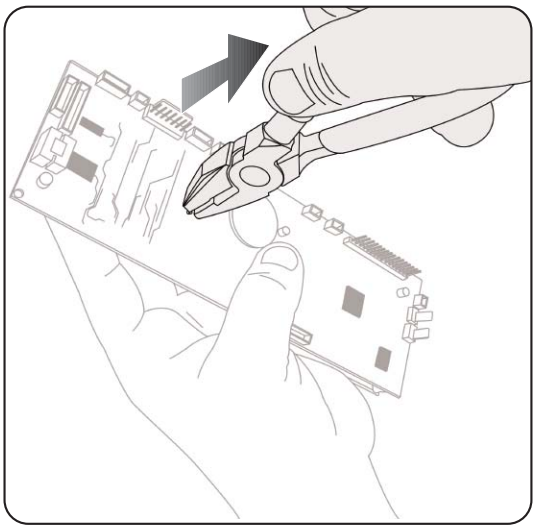
After having removed the card from the support the silicone keyboard can be accessed.

To remove the keyboard grasp firmly and pull.



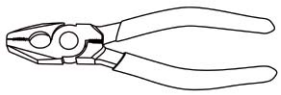
Correctly reposition the new keyboard on the card by pushing the rubber pins on the keyboard into the holes on the card.

Attention!
Do not cut or damage the rubber pins of the keyboard, if the pins are too small, insertion into the keyboard of the card will be difficult.



Keeping the keyboard in contact with the card, pull the pins of the keyboard with pliers.

Ensure that the keyboard is correctly positioned on the card.



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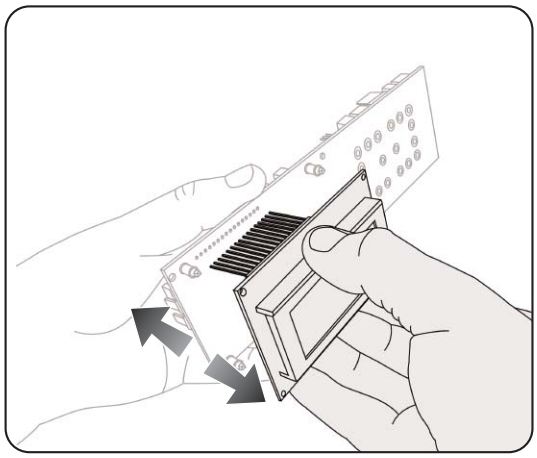
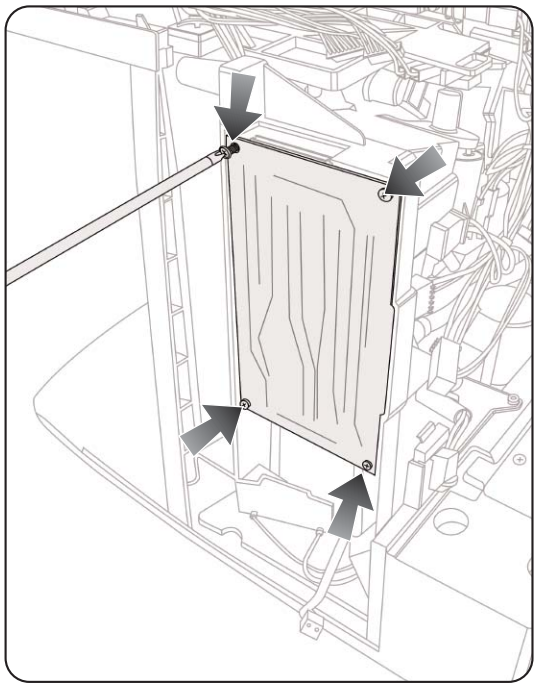


6.4.2 Replacement of the display

Preparation: follow the procedure described in paragraph 6.5.

Remove the display of the electronic card.

Insert the new display taking care not to damage the cannections.



6.5 Disassembly of the POWER card

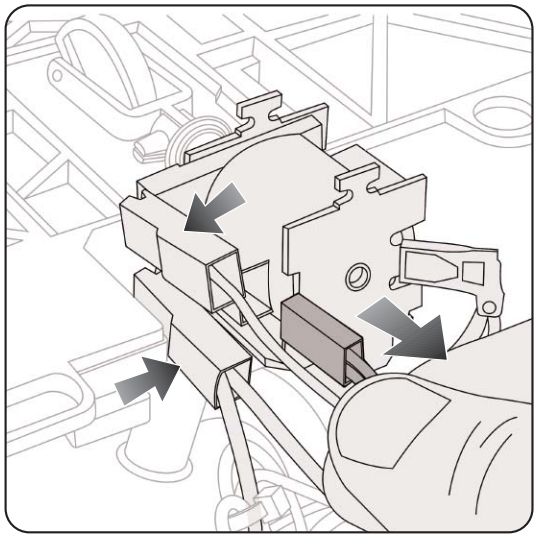
Preparation: follow the procedures described in paragraph 6.1.

Attention!
The POWER card is found on the side of the machine. The transformer is located under the POWER card.

To remove the POWER card undo the 4 screws that secure it to the support.

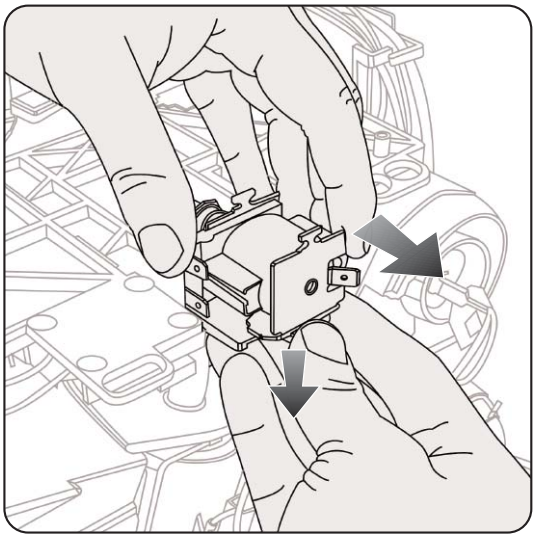
Note: before removing the card, make sure that all the cables that are connected to the card are removed.
To remove and/or replace the transformer, consult paragraph 6.12.

6.6 Disassembly of the capsule release coil

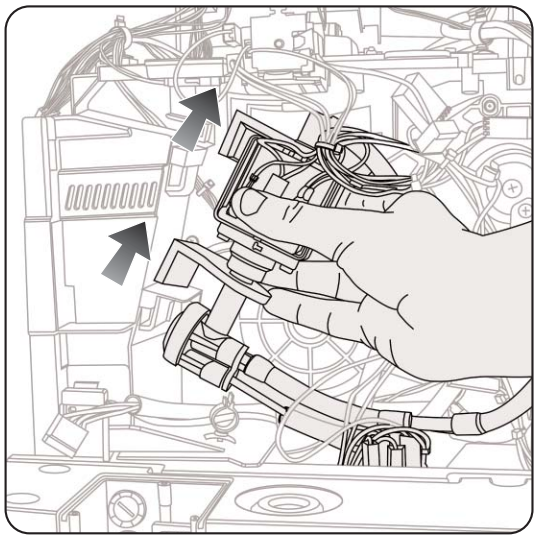


Preparation: follow the procedure described in paragraph 6.1.

Before disassembling the capsule release, remove the thermal switch from its position. Then disconnect the electric cables.



The capsule release coil can be removed from its position. To remove the coil, lower the lock behind the coil; with the lock lowered extract the coil by turning it outwards.



6.7 Disassembly of the pump

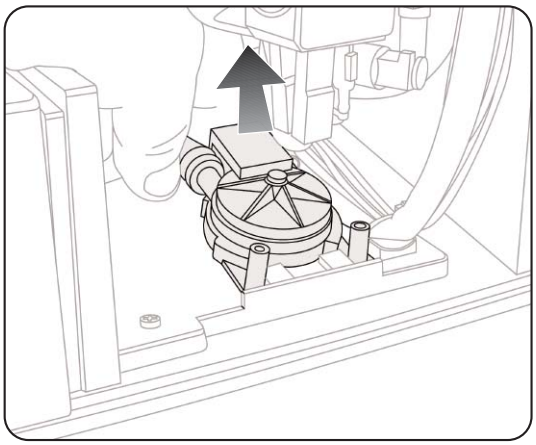
Preparation: follow the procedures described in paragraph 6.1.

The pump can be disassembled by simply turning the screws of the lock and pulling the rubber support that holds it upwards.

Then the compensation/safety valve installed on the pump can be removed.

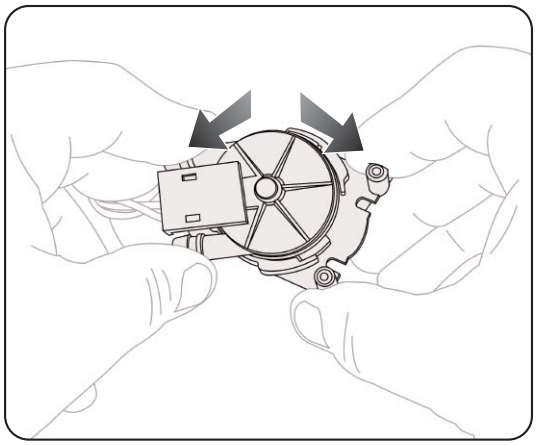
6.8 Disassembly of the volume metering device

Preparation: follow the procedures described in paragraph 6.1

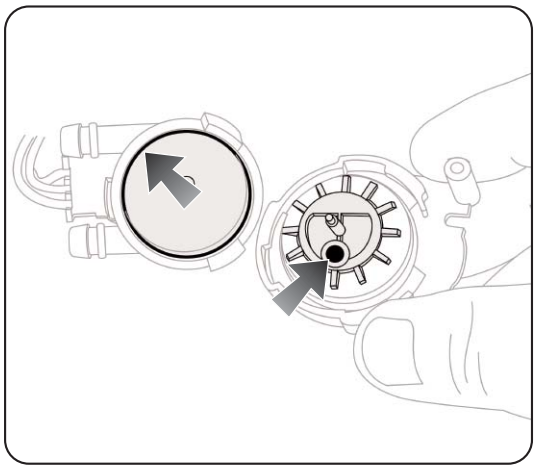


The volume metering device can be removed and cleaned.
Lift the device and remove it from its position.
Remove the water connection tubes.

Attention!
It is important to carefully check the water connection tubes. If the tubes become interchanged during the assembly operation the machine will malfunction.



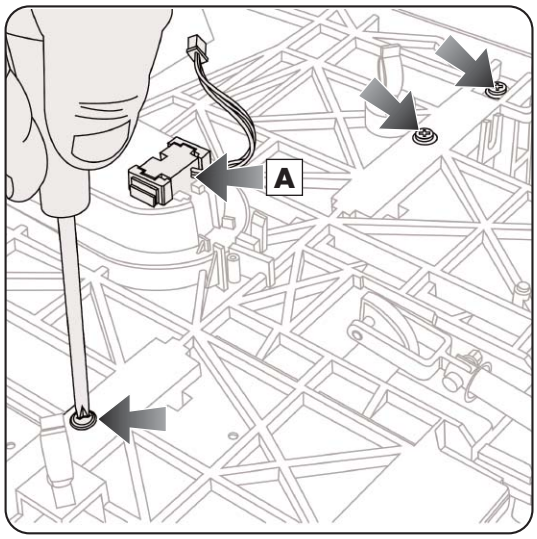
To open, rotate the upper part of the volume metering device.



Clean the flow meter of the device.

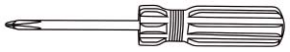
Attention!
During assembly position the rubber gasket of the upper part of the volume metering device correctly.
When the flow meter is repositioned, the magnet should revolve upwards.

6.9 Disassembly of the capsule release unit

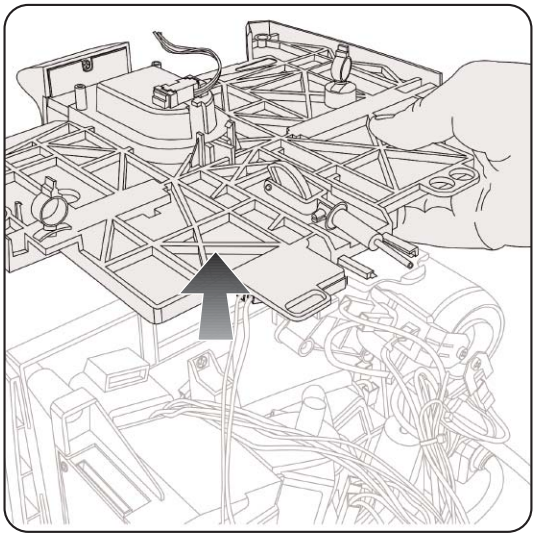


Preparation: follow the procedure described in paragraph 6.1. Extract the support of the electric card (para 6.5) and disassemble the capsule release coil without disconnecting the cables (par. 6.7).

To carry out maintenance of the capsule insertion and release unit, the screws that secure the upper support of the machine must be undone.

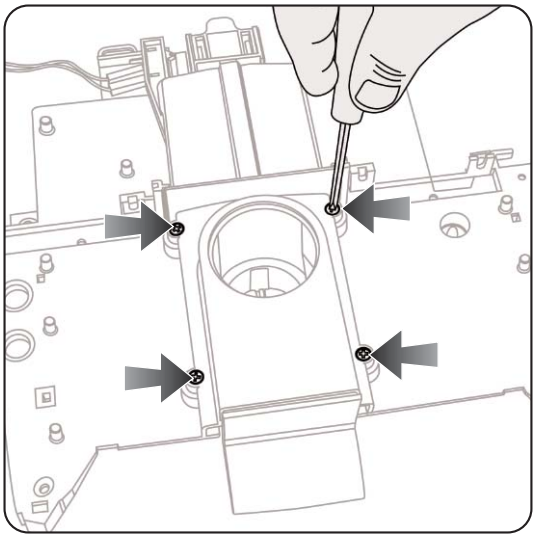


Now the microswitch can be accessed (A); this microswitch ensures that there is a capsule present in the unit.

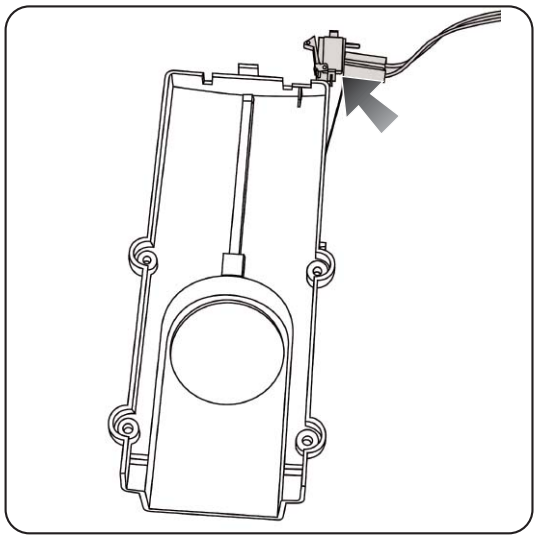


Attention!
This microswitch is delicate and should be removed with caution.

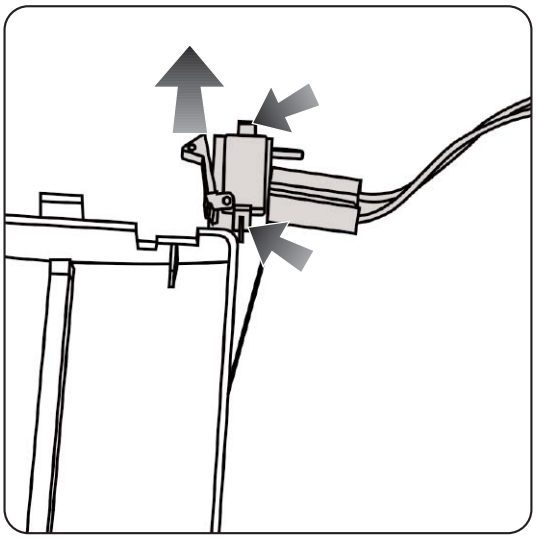
Remove the upper support by lifting it.



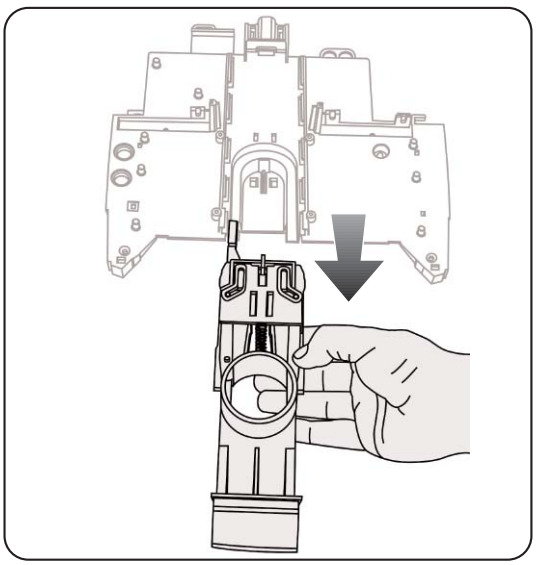
Undo the 4 screws to access the internal parts of the unit.



Now the microswitch that determines whether the capsule insertion aperture is open can be accessed.

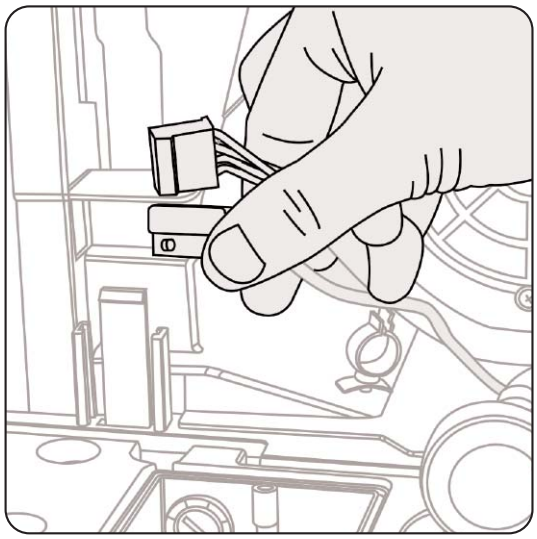


To extract the microswitch, lightly widen the 2 locks and lift the microswitch.



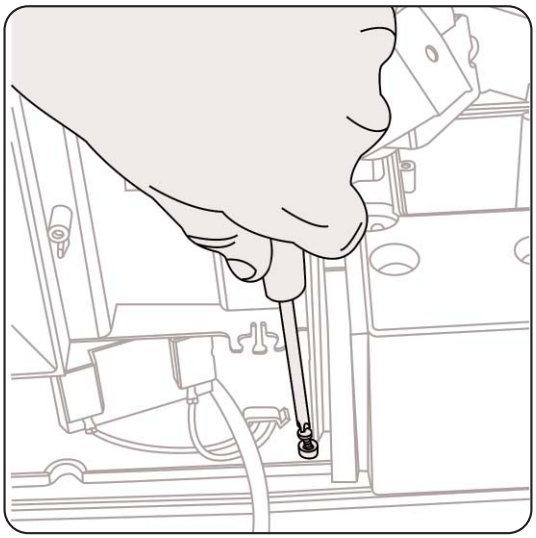
The unit can be checked by removing it from its position as indicated in the figure.

6.10 Disassembly of the water tank support

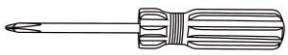


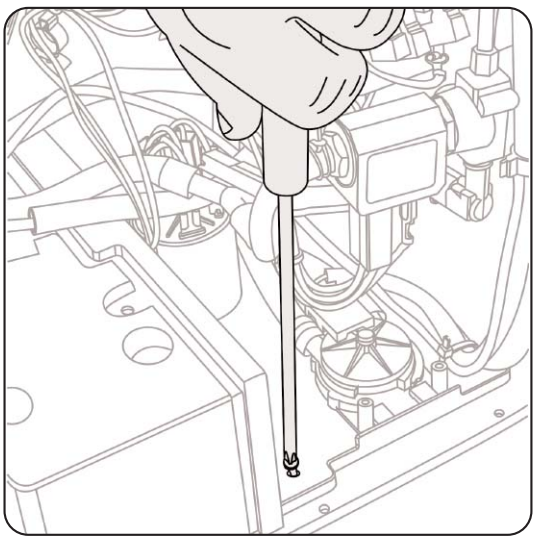
Preparation: follow the procedures described in paragraph 6.1.

Remove the REED sensor from its position.

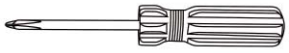


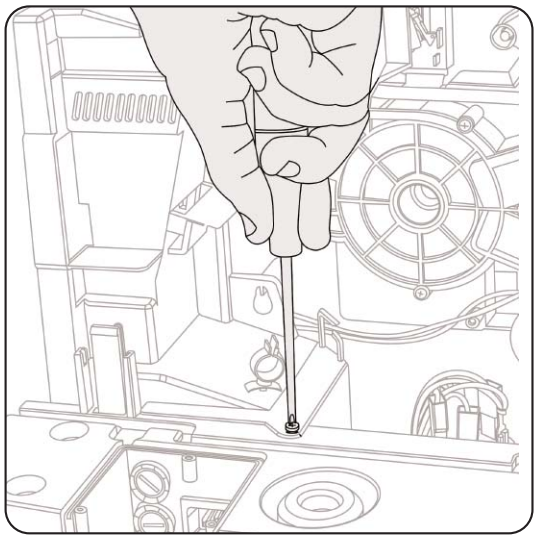
Undo the screw under the POWER card that secures the support to the base.



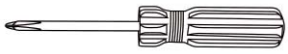


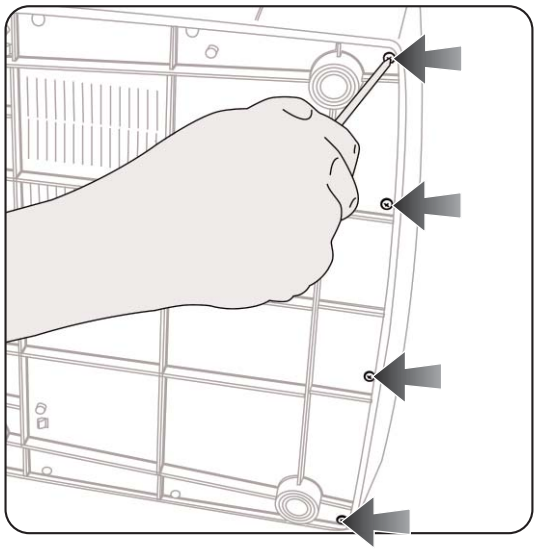
Undo the screw on the outside that secures the support to the base.



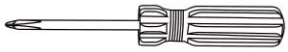


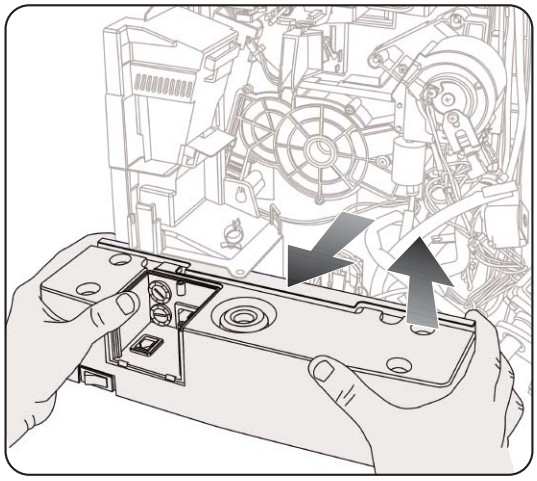
Undo the screw that secures the pump support to the tank support.





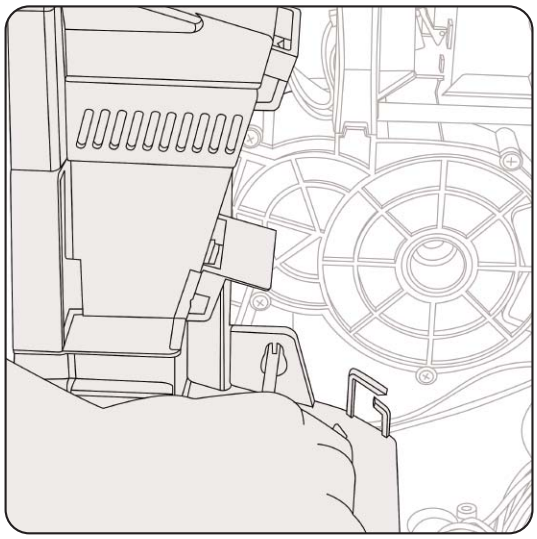
Undo the screws that secure the support to the base of the machine.





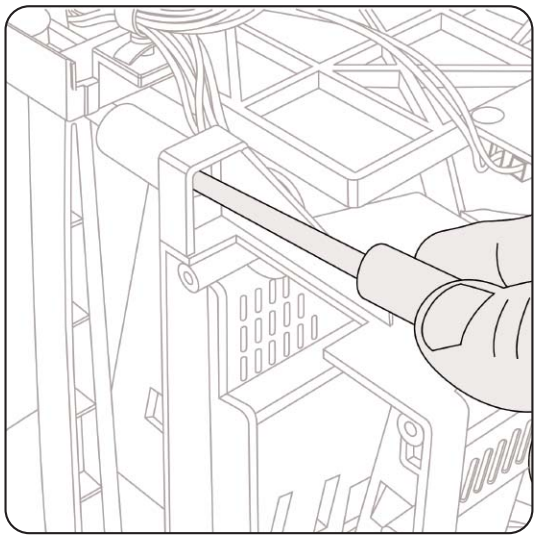
Lift the water tank support and pull it outwards, so that the maintenance operations can be more easily carried out.

6.11 Disassembly of the transformer

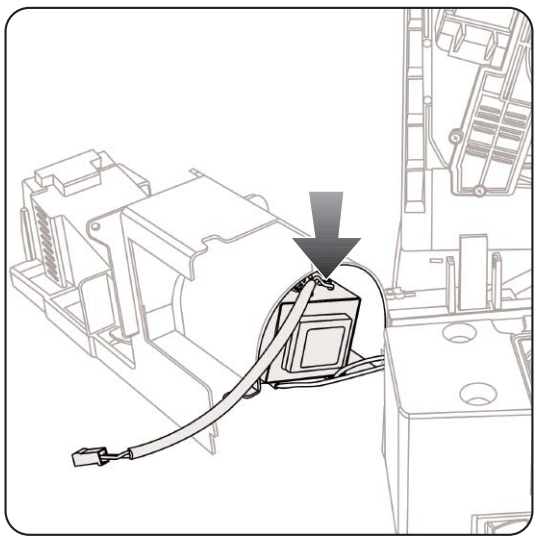


Preparation: follow the procedures described in paragraph 6.1. Disassemble the electronic POWER card as described in paragraph 6.6 and disassemble the water tank support as described in paragraph 6.11.

Undo the screw that attaches the support of the pump found on the lower part.



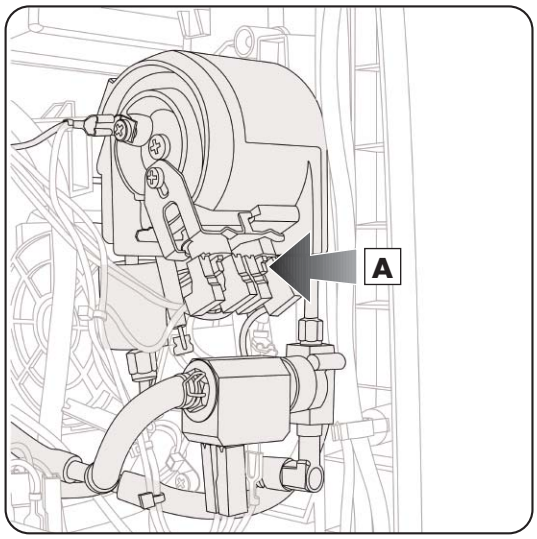
Undo the screw that attaches the pump support found above the electronic POWER card.



Remove the support and place it on a surface.

At this point the transformer of the machine can be removed and replaced.

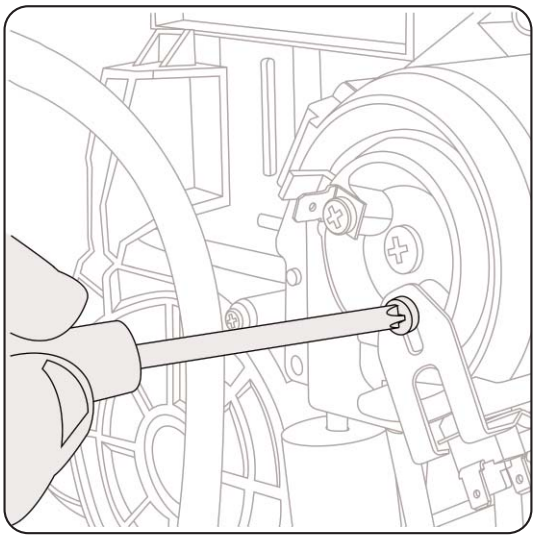
6.12 Disassembly of the resettable safety thermostats



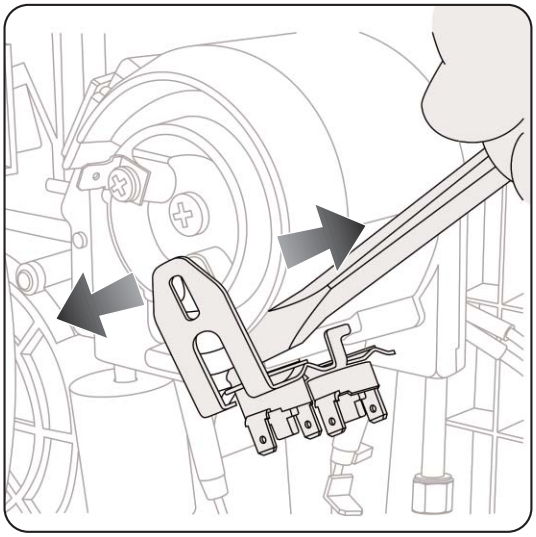
This paragraph describes how to disassemble the thermostats.

Preparation: follow the procedures described in paragraph 6.1.

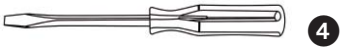
Disconnect the electric connections of the thermostat (A).

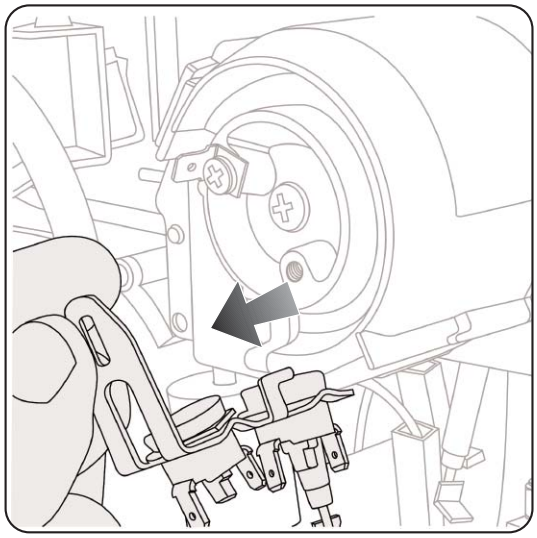


Undo the screw.



Lever with a screwdriver to unlock the lock.





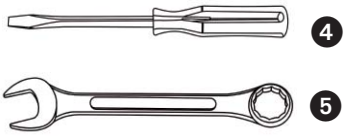
Extract the lock and remove the thermostats.

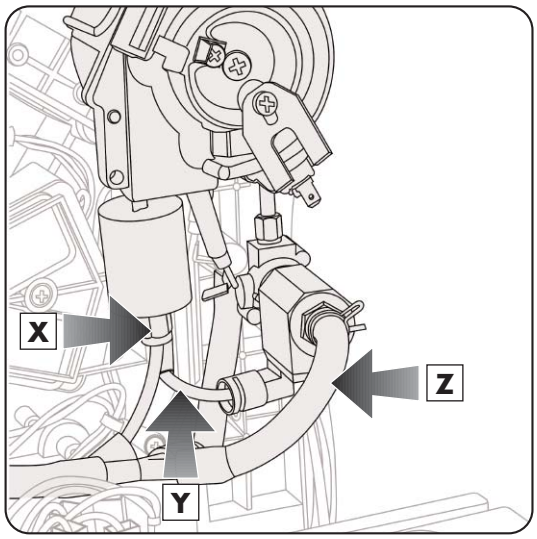
6.13 Disassembly of the boiler

This paragraph describes how to disassemble the boiler of the coffee machine.

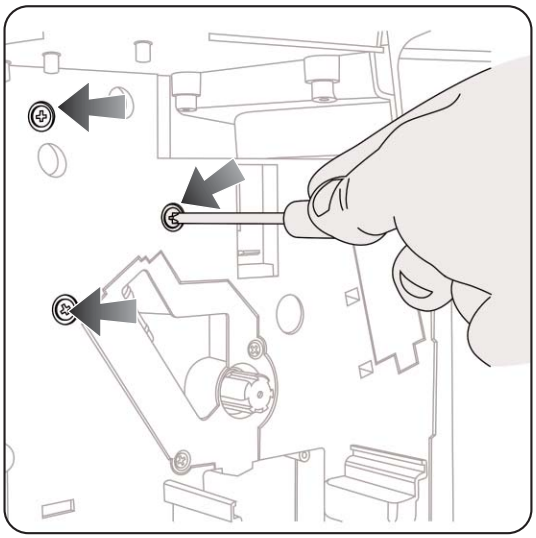
Preparation: follow the procedures described in paragraph 6.1. Disassemble the thermostats as described in paragraph 6.13.

Disconnect the electric connections of the boiler.



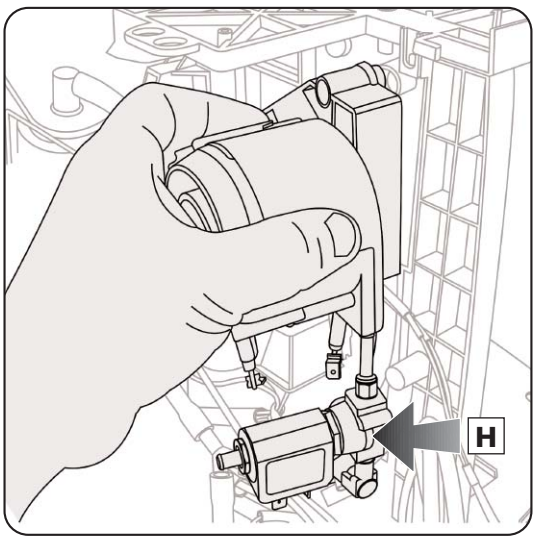


Undo the nut (X), slip off the bracket and remove the teflon tube (Y), disconnect the silicone tube (Z).



Undo the screws.

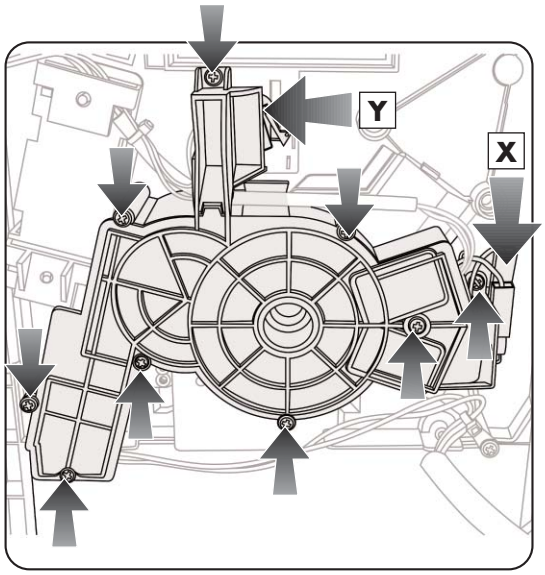
Attention!
The bushing present in the plate must remain in place.



Lift the boiler as indicated to remove the pin of the plate and then the boiler can be removed.

After having removed the boiler the solenoid valve (H) can be removed.

Note: pay attention to the temperature sensor.



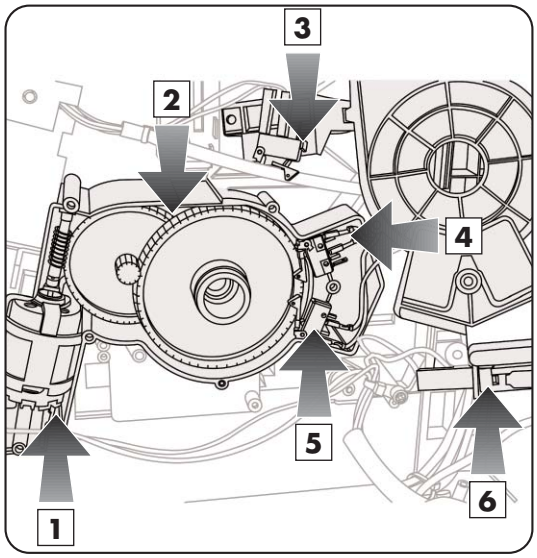
6.14 Disassembly of the gear motor

Preparation: follow the procedures described in paragraph 6.1. Disassemble: the pump (para 6.8), the water tank support (par. 6.11), the transformer support (par. 6.12) and the boiler (para. 6.14).

The used capsule collection drawer -presence microswitch (X) can now be accessed.

To access the unit presence microswitch (Y) the transparent cover must be removed.

To do this, undo the screws indicated.



After undoing the screws, remove the cover; it is now possible to access the:

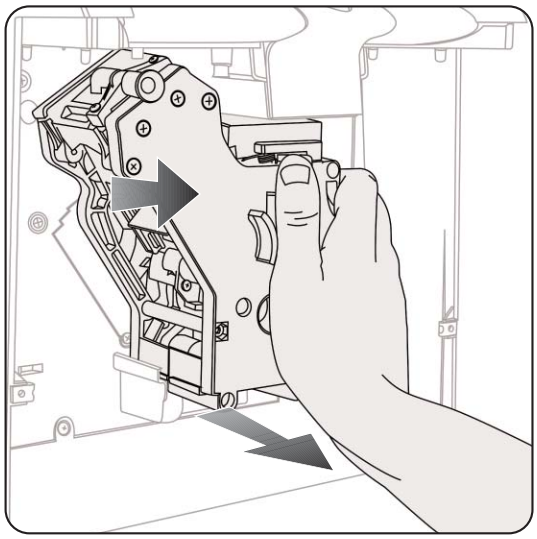
1 motor;
2 gears;
3 dispenser unit-presence microswitch;
4 dispenser unit-resting position microswitch;
5 dispenser unit working position microswitch;
6 used capsule collection drawer-presence microswitch.

Attention!
Do not interchange the positions of the two microswitches (4 and 5) that sense the positions of the dispensing unit.

6.15 Disassembly of the filter perforator

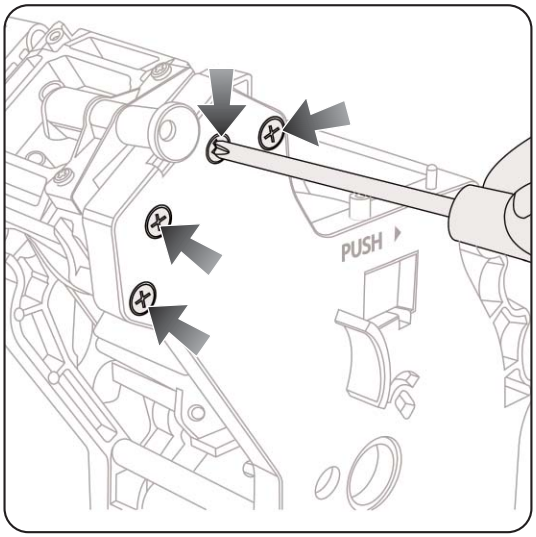
This paragraph describes how to disassemble the filter perforator and carry out maintenance on it.

Preparation: follow the procedures described in paragraph 6.1.

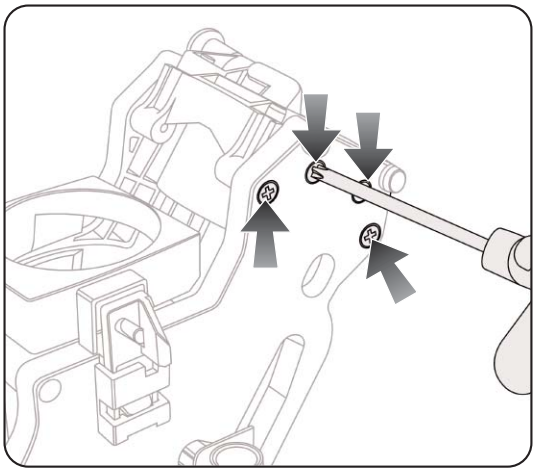


Push on the lever "PUSH" and remove the dispensing unit by pulling outwards.

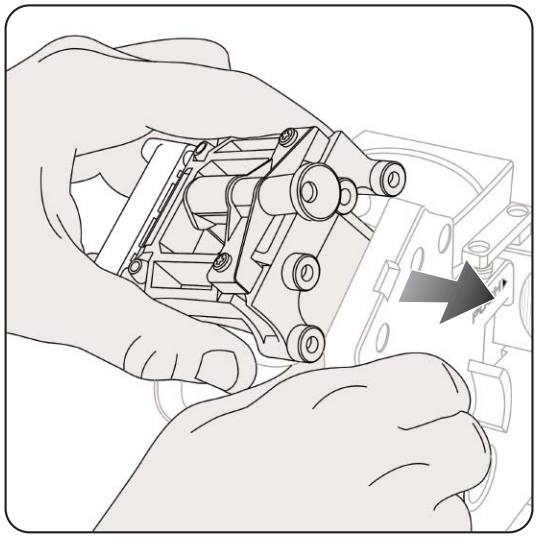
Attention. There are very sharp parts present in this section may cause injury to the operator. Take extreme care when following the maintenance operations.



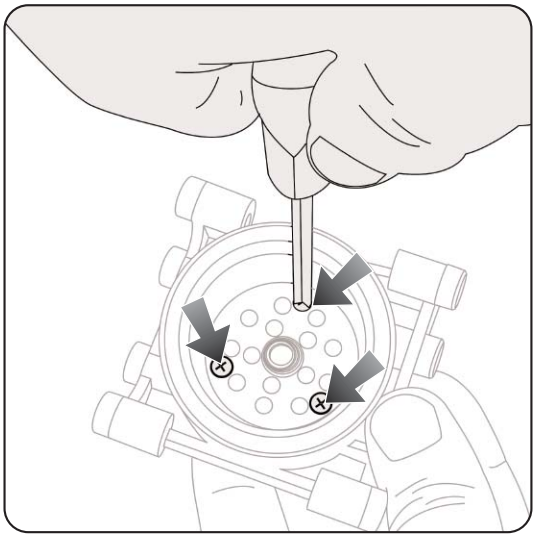
Undo the 4 screws on the front part of the dispenser.



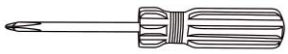
Undo the 4 screws that are found on the back part of the dispenser unit.

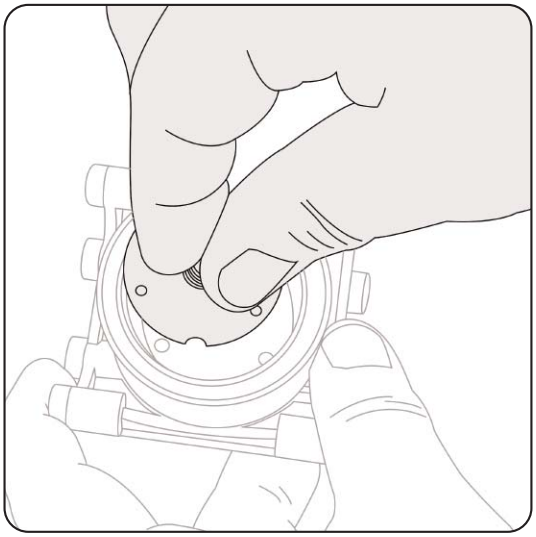


Gently widen the surface of the dispensing unit and slip off the fixed container for the coffee capsules.



Undo the 3 screws that secure the perforator.

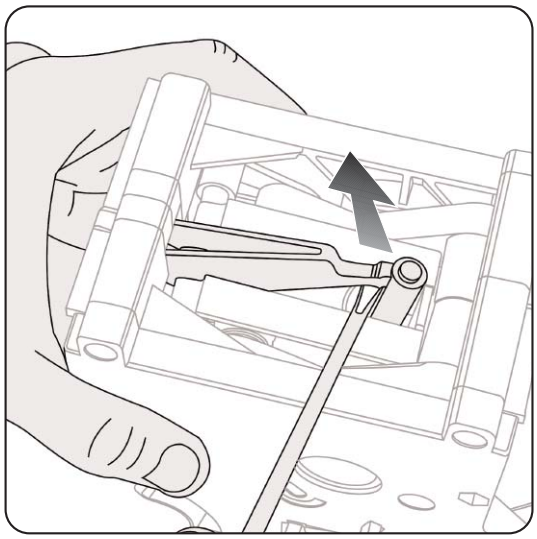




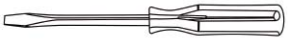
Remove the old perforator and mount the new one.

Note: the perforator can only be mounted in its predetermined position. To correctly install the perforator, use the notch on the inside of the piston stop as a reference.

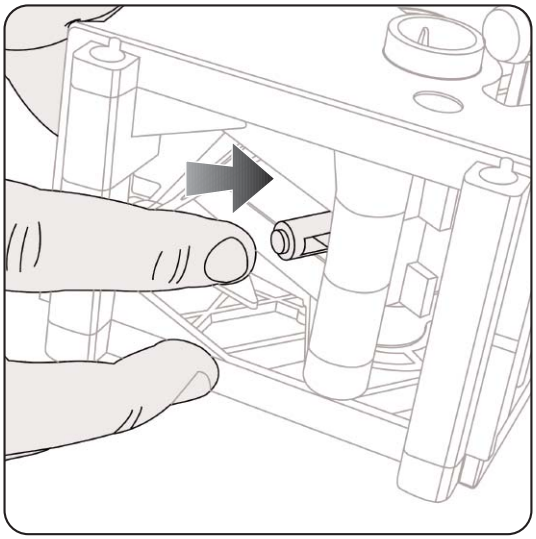
Note: average filter perforator life is 5000 coffees.
The perforator should be also replaced if it has any damaged pins.



Once the piston has been removed all the gaskets can be easily replaced.

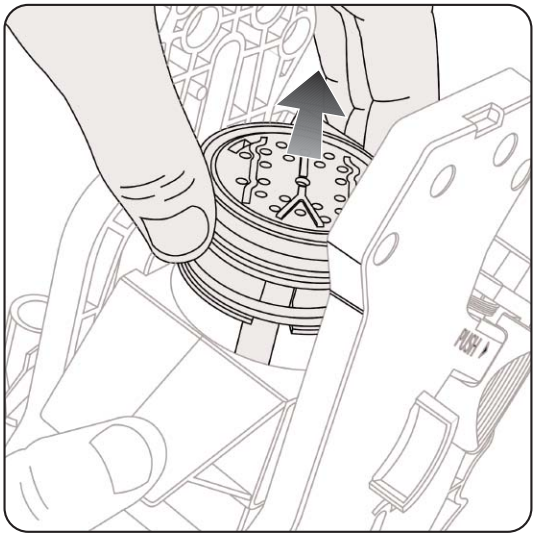


4



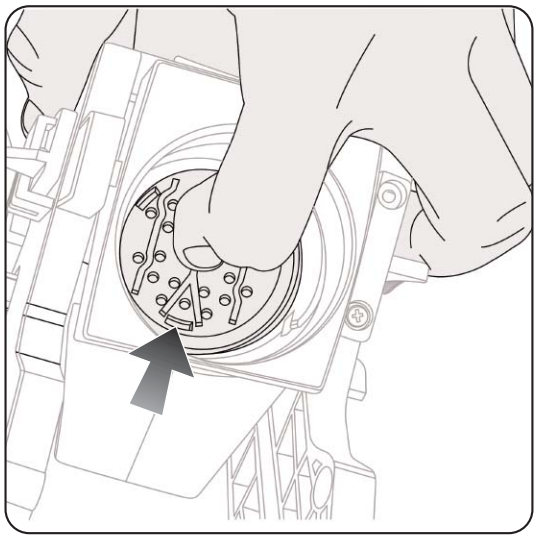
To remount the piston, insert it again in its position as shown in the figure.

Attention!
At this stage the piston should remain pressed down towards the base.
The lower perforator is present in the piston; this can come out if pressed too firmly and may cause injury to the operator.
Use all means possible to ensure the safety of the operator.



Keeping pressure on the piston, press the rod into the slit in the piston until it is fixed in place.

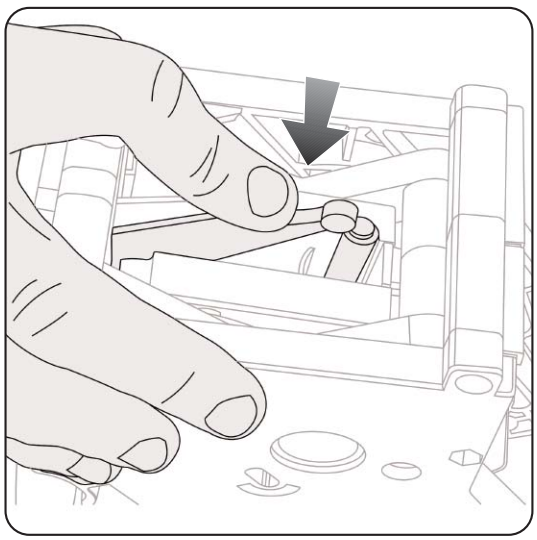
Once the piston has been removed all the gaskets can be easily replaced.



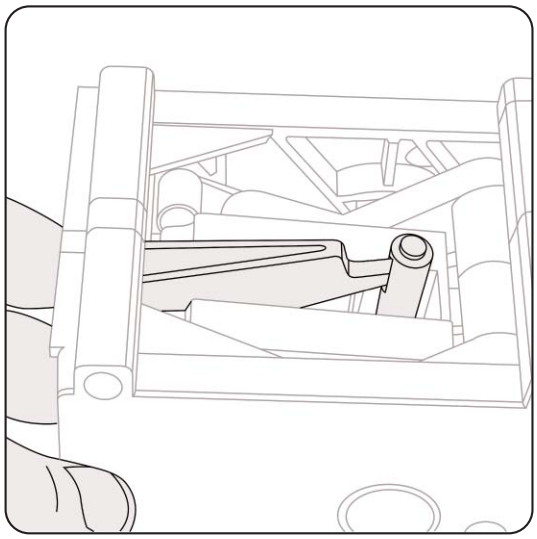
To remount the piston, insert it again in its position as shown in the figure.

Attention!
At this stage the piston should remain pressed down towards the base.
The lower perforator is present in the piston; this can come out if pressed too firmly and may cause injury to the operator.
Use all means possible to ensure the safety of the operator.

Note: insert the piston with a fork as indicated in the diagram.



Keeping pressure on the piston, press the rod into the slit in the piston until it is fixed in place.



Once the rod is fixed in place the operation is finished.
The fixed container for the coffee capsules that was previously removed can now be reinstalled.

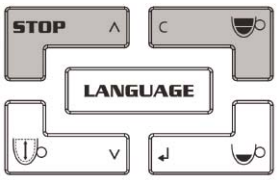
Index
Test mode

This mode checks the correct functioning of the various components, present within the machine, that are activated electrically.

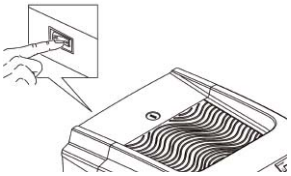
Attention!
Be careful when in test mode, in this mode some of the safety measures included by the manufacturer are overridden.

Note: the dispenser unit will work only if the used capsule collection drawer is correctly inserted.

7.1 Entry into test mode



Keeping the button UP and CANCEL both pressed (Stop and coffee) on the keyboard, turn the machine on by the main switch. Then, when the machine is on, release the buttons.



When the machine is in test mode confirmation is shown;
this also confirms the version of the software that is present in the machine.

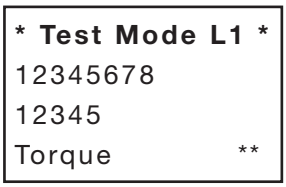
The test mode has 6 levels, each level allows control of only some functions; this structure allows the test to be followed on the machine in the most rational manner.

As soon as the buttons which allow entry into the test mode are released, the machine enters into the first test level (test mode L1).

DISPLAY

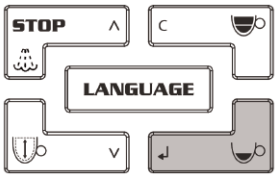
* Test Mode L1 *	Line 1: Display of test mode level
12345678	Line 2: Display of micro/sensor
12345	Line 3: Display of button pressed
Torque **	Line 4: Display of machine value

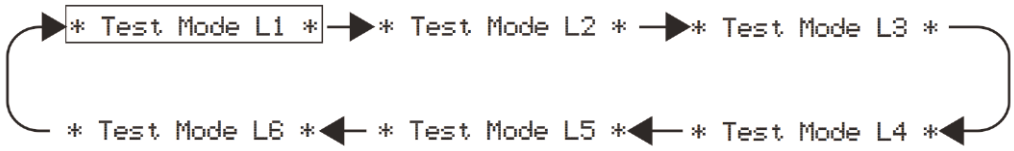
LEGEND:



Line 1

This line displays the test mode level that has been selected.
Pressing the ENTER button (Espresso) causes the next level to be reached, independent of the function activated.





Test mode (Level 1)

In this level the functioning of the dispenser unit and of the electromagnet of the capsule release are tested.

Test mode (Level 2)

In this level the functioning of the pump and the solenoid valve of the coffee unit are tested.

Test mode (Level 3)

In this level the functioning of the main boiler heating element is tested.

Test mode (level 4)

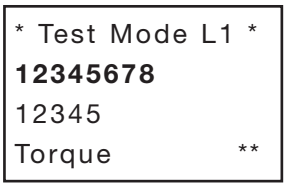
Presently there is no function assigned.

Test mode (level 5)

This level allows the contrast of the LCD display to be varied.

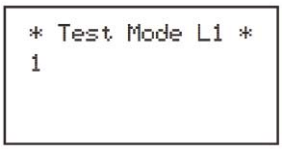
Test mode (level 6)

In this level the brightness of the backlight of the LCD display can be varied.

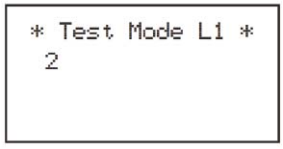


Line 2

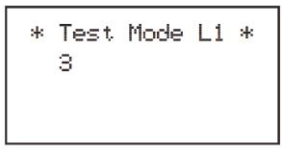
In this line the activated microswitches/sensors are displayed. Following is the list of the parts that will be monitored.



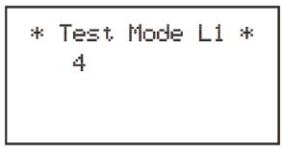
1 - Motor unit microswitch for dispensing postion



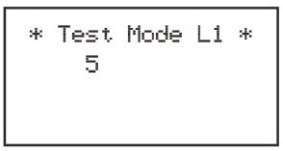
2 - Motor unit microswitch in rest position



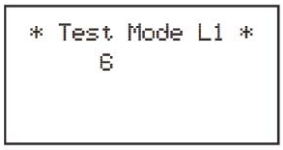
3 - Unit-presence microswitch



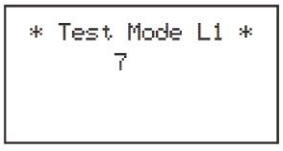
4 - Capsule drawer-presence microswitch



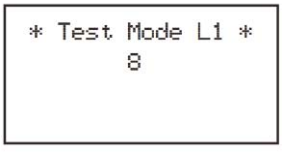
5 - Capsule-presence microswitch



6 - Capsule insertion door microswitch



7 - Water tank sensor

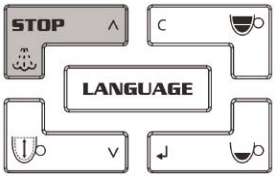


8 - Pulse volume metering device

```
* Test Mode L1 *
12345678
12345
Torque          **
```

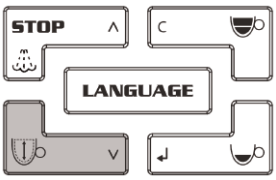
Line 3

In this line the button function is shown. Following is a list of the buttons present on the machine.



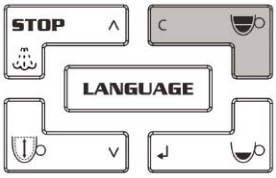
1 -UP button (Stop).

```
* Test Mode L1 *
1
```



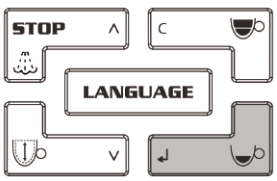
2 - DOWN button (free programming).

```
* Test Mode L1 *
 2
```



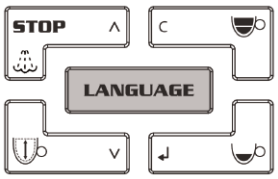
3 - CANCEL button(Coffee).

```
* Test Mode L1 *
  3
```

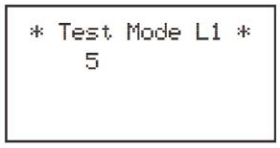


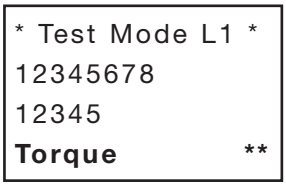
4 - ENTER button (Espresso).

```
* Test Mode L1 *
   4
```



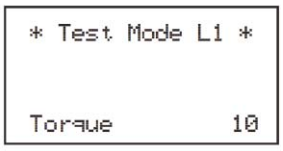
5 - LANGUAGE button (Language).



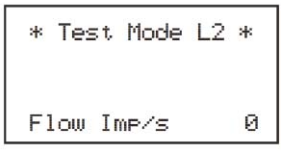


Line 4

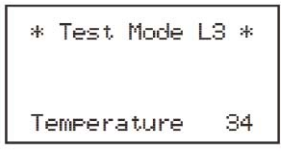
In this line the relative values of the components in their activated state can be seen.



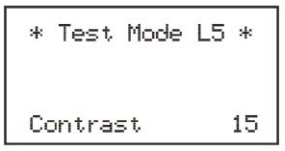
Level "L1" shows: Torque XX (XX is a value referring to the force of the motor unit).



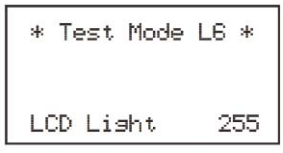
Level "L2" shows: Flow imp/s XX (XX is a value referring to the rotation of the flow meter of the volume metering device).



Level "L3" shows: Temperature XX (XX is a value in degrees of the temperature of the boiler).



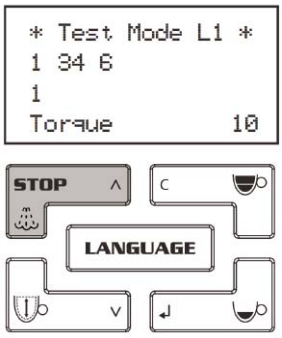
Level "L5" shows: Contrast XX (XX is the value of the contrast of the display).



Level "L6" shows: LCD Light XX (XX is the value of the brightness of the display).

7.2 Test Mode (Level 1)

At this level the functioning of the dispenser unit and of the electromagnet of the capsule release are tested.



By pressing UP the gear motor takes the dispenser unit to the upper end point (working position); upon reaching the upper end point; the appropriate signal on the LCD display of the machine will be displayed (**1**).

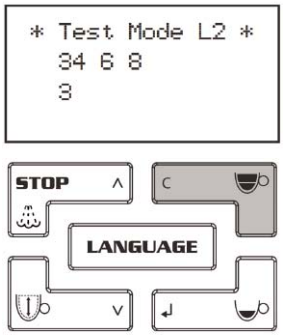
By pressing DOWN the gear motor takes the dispenser unit to the lower end point (resting position); upon reaching the lower end point, the appropriate signal on the LCD display of the machine will be displayed (**2**).

During the movement, the force acting on the dispenser unit will appear on the 4th line of the display. The number displayed does not correspond with a unit of measure but is proportional to the current used by the motor.

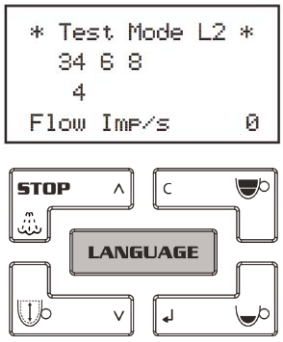
Pressing CANCEL activates the electromagnet of the capsule release.

7.3 Test mode (Level 2)

In this level the functioning of the pump and of the solenoid valve of the unit is tested.



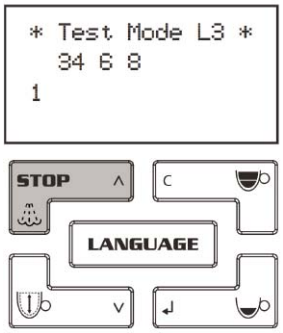
Pressing CANCEL will activate the solenoid valve.



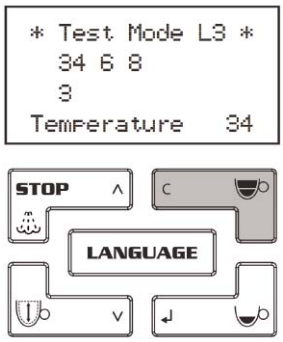
Pressing LANGUAGE will activate the pump and will allow the display of the flow in impulses/sec of the volume metering device.

7.4 Test mode (Level 3)

In this level the functioning of the heating element of the main boiler is tested.



Pressing the button UP activates the heating element of the main boiler.



Pressing the button CANCEL allows the display of the temperature in the last line of the LCD display (in degrees centigrade) measured by the sensor in the main boiler.

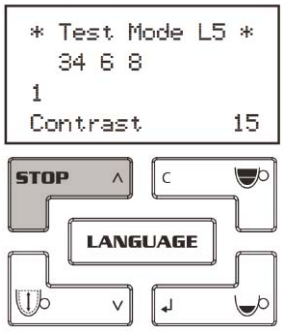
Attention!
If this button is pressed for too long it could affect the safety thermostat of the boiler.

7.5 Test mode (Level 4)

Presently there are no functions assigned.

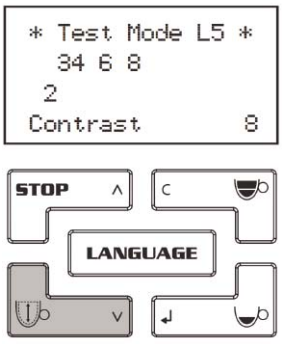
7.6 Test mode (Level 5)

In this level it is possible to vary the contrast of the LCD display.



Keeping the button UP pressed progressively diminishes the contrast of the display to the minimum allowed.

The number in the 4th line of the LCD display does not correspond with a unit of measure, it is simply the number used to maintain the memorised settings for the future restarts of the machine.



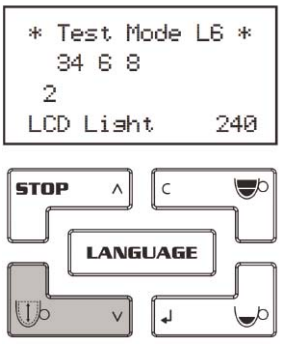
Alternatively, keeping the button DOWN pressed increases the contrast to the maximum allowed.

7.7 Test mode (Level 6)

In this level it is possible to vary the brightness of the LCD display.

Keeping the button UP pressed progressively increases the brightness of the LCD display.

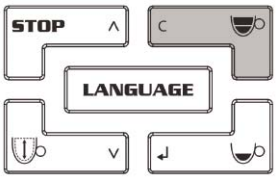
The number in the 4th line of the LCD display does not correspond with a unit of measure, it is simply the number used to maintain the memorised settings in the future restarts of the machine.



On the contrary, keeping the button DOWN pressed diminishes the brightness until it is completely extinguished.

7.8 Exit from test mode.

When in level 6, the button CANCEL exits from the test mode.



Pressing the button CANCEL for less than 2 seconds has no effect, pressing for longer, when released causes the machine to automatically reset, and to restart in normal mode.

In this mode the machine will restart with the most recently set features.

This chapter details troubleshooting procedures, to follow in the case of machine-signalled error.

(•) = Alarm reset when the machine is switched off. (From software version 14 forward).

Error code	What has happened	Possible cause	Where to find the cause
11 (•)	After the product selection command the capsule did not fall into the dispenser unit within 2 seconds. (Only after the fifth attempt)	Capsule deformed and/or not up to standard	Replace the capsule with a new one
		Release unit broken or malfunctioning	Release unit mechanism broken or blocked
			Triac broken on the power card.
			CPU card broken.
			Wiring interrupted.
12 (•)	Zero Crossing Miss	Unsuitable net frequency (Neither 50 Hz, nor 60 Hz)	Check the electric net.
		Unspecified voltage (Too low)	Check the electric net.
		Power card broken	Power card
		CPU card broken	CPU card
13 (•)	Coin Mechanism Miss	Through the programming menu the payment system has been enabled (menu 2.8)	The coin mechanism is not correctly connected to the machine
			The coin mechanism is not compatible with the system
			The connecting cord is not compatible
			The coin mechanism is broken. The CPU card is broken
21 (•)	Hydraulic circuit interrupted	Even though the machine is ready it does not detect the water flow in the circuit.	The REED sensor for water level is damaged
			The turbine sensor is damaged.

Error code	What has happened	Possible cause	Where to find the cause
21 (•)	Hydraulic circuit interrupted	Even though the machine is ready it does not detect water flow in the circuit	Hydraulic circuit tube interrupted, clogged or disconnected
			Unit occluded
			Solenoid valve occluded or broken
			Pump damaged or interrupted
			Pump thermal switch off
			Heating unit occluded
			Power card broken (TRIAC)
			Command from CPU card
31	Failure of memory clock	CPU card broken	CPU card not functioning
			CPU card battery completely discharged (the battery is not replaceable)
51	Short circuit of sensor	Coffee temperature sensor short circuit	Check the coffee temperature sensor
52	Temperature sensor not connected	Temperature sensor broken	
		Temperature wire disconnected	
53	Temperature too high.	The temperature of the heating unit is inexplicably increased.	Check the coffee temperature sensor
			CPU card malfunctioning (It does not command the POWER card).

Error code	What has happened	Possible cause	Where to find the cause
54	Heating unit temperature error	Heating temperature out of control (eg. heating unit on and the temperature does not increase)	Thermostat on the heating unit engaged.
			Heating unit resistance broken
			Triac on POWER card broken
			Temperature sensor malfunction
			CPU card malfunction (it does not command the POWER card)
			Temperature sensor disconnected from the heating unit
61-68	Eprom error	CPU card broken or badly connected	
81 (•)	Maximum effort for dispensing	The motor has exceeded the maximum effort allowed to position the dispenser unit in the dispensing position (automatically performed after the second attempt).	Capsule blocked on the dispenser unit
			Dispenser unit jammed or blocked
			Previous capsule not ejected
			Gears blocked or sticking
82 (•)	Maximum effort for rest.	The motor has exceeded the maximum effort allowed to position the dispenser unit in the rest position.	Capsule fallen behind the dispenser unit
			Dispenser unit jammed or blocked
			Gears blocked or sticking.

Error code	What has happened	Possible cause	Where to find the cause
83 (•)	Out of maximum time for dispensing	The dispenser unit has not been positioned in the dispenser position in the time predetermined by the manufacturer	Gear motor power insufficient or not appropriate
			Working microswitch broken or disconnected
			Motor of gear malfunctioning or broken
			CPU card malfunctioning
			Power card malfunctioning (TRIAC)
			Gears broken
84 (•)	Out of maximum time for rest	The dispenser unit has not been positioned in the rest position in the time predetermined by themanufacturer	Gear motor power insufficient or not appropriate
			Rest microswitch broken or disconnected
			Motor of gear motor malfunctioning or broken
			CPU card malfunctioning
			Power card malfunctioning (TRIAC)
			Gears broken
85	Out of maximum time for return		Rest microswitch broken or disconnected
86 (•)	The rest microswitch was activated while the unit was going into working position.	The dispenser unit has exceeded the dispenser position without stopping.	Working microswitch broken or disconnected
			Inverted wiring on the motor of the gear motor

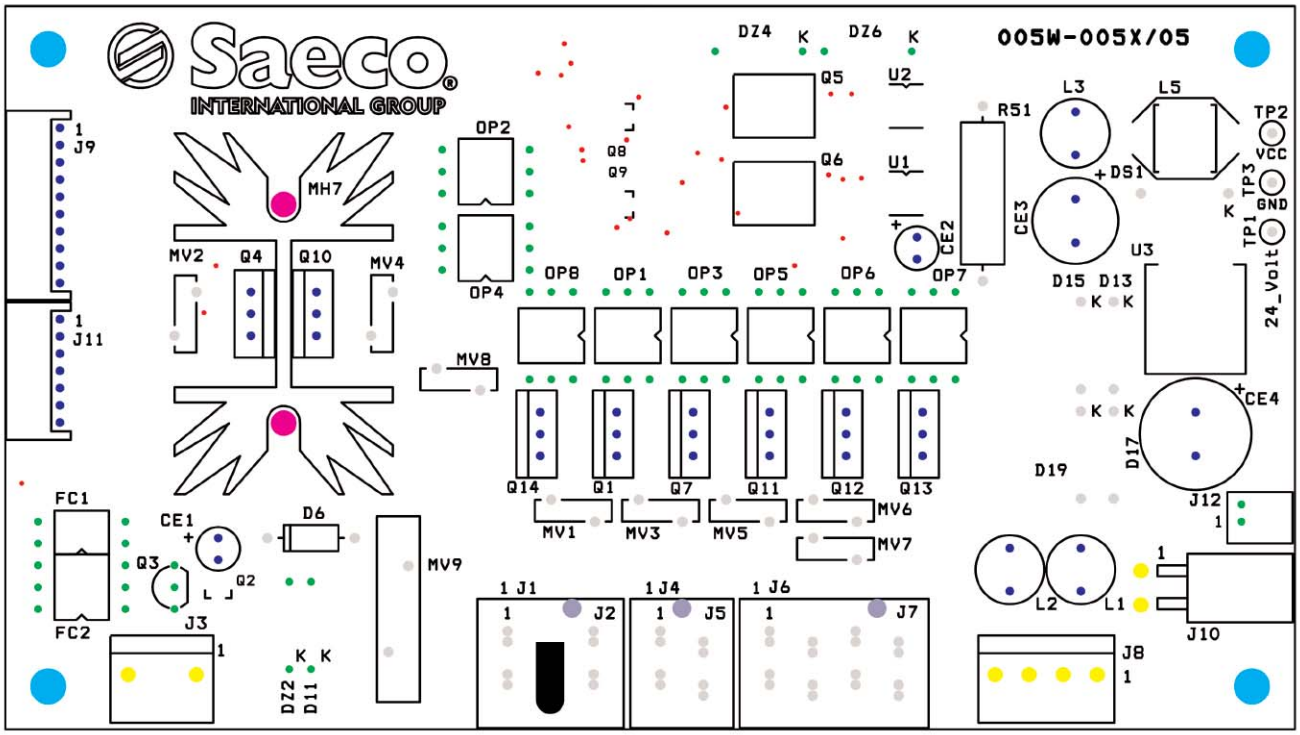
Error code	What has happened	Possible cause	Where to find the cause
86 (•)	The rest micro switch was activated when the unit was going into working position	The dispenser unit has exceeded the dispenser position without stopping	Working micro switch broken or disconnected
			Inverted wiring on the motor of the gear motor
87 (•)	The working micro switch was activated when the unit was going into rest position	The dispenser unit has exceeded the rest position without stopping.	Rest micro switch broken or disconnected
			Inverted wiring on the motor of the gear motor
88 (•)	The working and rest micro switch activated at the same time	Both the micro switches were activated at the same time	Both the micro switches are in short circuit condition
			Dispenser unit badly mounted.
91 (•)	Maximum torque value exceeded.	Displays if the machine has exceeded the torque limit during the positioning of the dispenser unit in the dispenser position.	

Menu		Notes
Password		Requested only if different to '0'.
0. Exit		Exit with ENTER.
1. Identification	1.1. Machine code	Identification of the machine.
	1.2. Model	Read-only.
	1.3. Version	Read-only.
	1.4. Point-of-sale	Identification of the user.
2. Settings	2.1. Temperature 2.1.1. Temperature std. Default: 100°C	Hot" working temperature of the machine.
	2.2. Progr. dose 2.2.1. Dose prod. short Default: 150 2.2.2. Dose prod. long Default: 250	Short product dose (is a numeric parameter without a corresponding unit e.g. cc). Long product dose (is a numeric parameter without a corresponding unit e.g. cc).
	2.3. Preinfusion Default: Medium	Preinfusion time.
	2.4. Start-up Default: No	Enable/Disable rinse at start-up (only if the machine is cold).
	2.5. Descaling 2.5.1. Water hardness Default: 1 2.5.2. Warning descale Default: Si	Range: 0-4 - Setting of the water hardness which sets the volume of water after which the descaling alarm is activated. 0 = disable function of the descaling control. Enable/Disable indication to display the descaling alarm.
	2.6. Warning filter Default: No	Enable/Disable indication to display the alarm to replace the filter.
	2.7. Credit 2.7.1. Ctrl. crediti Default: No 2.7.2. Warning crediti Default: No	Enable/Disable the dispensing control through the credit management. Enable/Disable the display of the alarm 'credit lacking' and 'no credit'
	2.8. Syst. Payment 2.8.1. Enable system Default: No	Enable/Disable the control of the dispensing through the use of an external coin box.

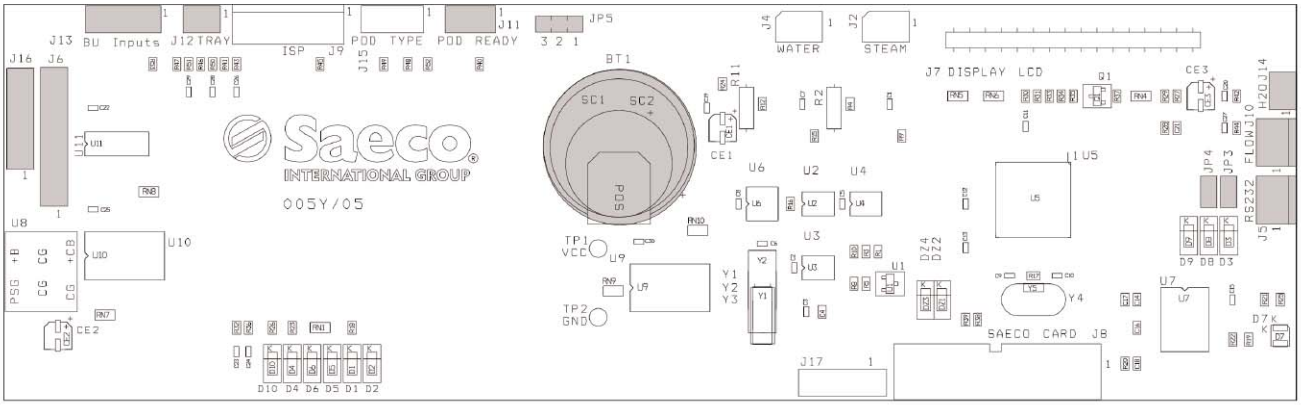
Menu		Notes
2. Settings	2.8.2. Visual. credit Default: No	Enable/Disable the display of the credit inserted in the slot.
	2.9. Check of used capsules Default: Yes	Enable/Disable the machine to dispense without controlling the number of used capsules inside the used-capsule collection drawer.
3. Energy saving	3.1. Stand-by active Default: No	Enable/Disable of the stand-by function.
	3.2. Stand-by delay Default: 10	Time to turn-off in minutes after the last time used when in stand-by mode.
	3.3. Monday 3.3.1. Start-up Default: 08.00 3.3.2. Turn-off Default: 20.00	Allows regulation of the timetable of start-up and shut-down of the machine on Monday.
	3.4. Tuesday 3.4.1. Start-up 3.4.2. Turn-off	Allows regulation of the timetable of start-up and shut-down of the machine on Tuesday.
	3.5. Wednesday 3.5.1. Start-up 3.5.2. Turn-off	Allows regulation of the timetable of start-up and shut-down of the machine on Wednesday.
	3.6. Thursday 3.6.1. Start-up 3.6.2. Turn-off	Allows regulation of the timetable of start-up and shut-down of the machine on Thursday.
	3.7. Friday 3.7.1. Start-up 3.7.2. Turn-off	Allows regulation of the timetable of start-up and shut-down of the machine on Friday.
	3.8. Saturday 3.8.1. Start-up 3.8.2. Turn-off	Allows regulation of the timetable of start-up and shut-down of the machine on Saturday.
	3.9. Sunday 3.9.1. Start-up 3.9.2. Turn-off	Allows regulation of the timetable of start-up and shut-down of the machine on Sunday.
4. Security	4.1. Password Default: 000000	Set the access password for the program (6 digits).
	4.2. PIN Servizio Default: 0000	Set the access password for the service menu (4 digits) with "Yes" all the predefined values are reset.
5. Predefined settings		With "Yes" all the predefined values are reset.

Menù		Note
Password		Requested only if different to '0'
0. Exit		Exit with ENTER
1. Time/Date	1.1. Time	Current timetable set
	1.2. Date 1.2.1. Day 1.2.2. Month 1.2.3. Year 1.2.4. Day of the week	
2. Statistics	2.1. Last Restart	Read-only - Date and time of last initialisation
	2.2. Last Reset	Read only - Date and time of last reset
	2.3. Prod. 1 to reset	Number of type 1 products (espresso) since the last reset.
	2.4. Prod. 2 to reset	Number of type 2 products (long coffee) since last reset.
	2.5. Prod. 3 to reset	Number of type 3 products (Free cycle) since last reset.
	2.6. Prod. 1 to init	Number of type 1 products (espresso) since the machine was put into use.
	2.7. Prod. 2 to init	Number of type 2 products (long coffee) since the machine was put into use.
	2.8. Prod. 3 to init	Number of type 3 products (Free cycle) since the machine was put into use.
	2.9. Reset statistics	With "YES" the partial counter is reset.
3. Descale	3.1. Quantity remaining	Amount of water to dispense that remains before the next descaling (value expressed in litres)
	3.2. Last descale	Date and time of the last descaling.
	3.3. Do now	Pressing “Enter” initiates the descaling cycle.
4. Filter wash		Washing of the new filter installed on the machine.

Menu		Notes
5. Errors	5.1. Historical error 5.1.1. Display error with up/down buttons	Look through the last N errors: index 0 = oldest errors. Accessible only if there is at least one error.
	5.2. Historical Reset	With "Yes" the last list of errors is cancelled.
	5.3. Reset error	With "Yes" the conditions of preset out of service command (if present) are cancelled.
6. Credits	6.1. Add credit 0	The value indicates the number of credits that one wishes to add to those already present in the machine.
	6.2. Reset credit Default: No	With "Yes" all the credits present in the machine are reset.
	6.3. Alarm level 0	The value indicates the number of credits remaining besides those that appear marked in the message "Credit lacking".

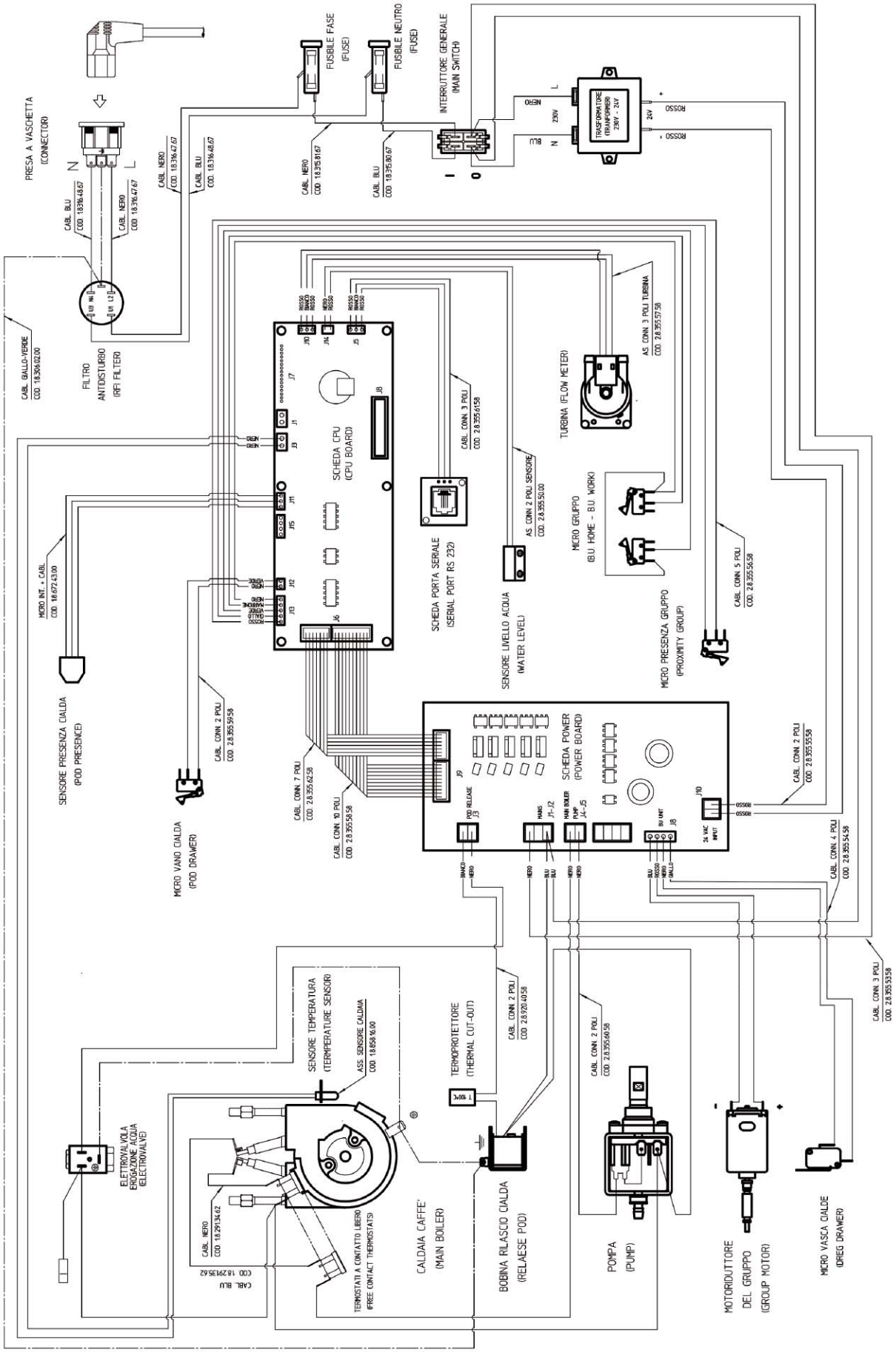


Main component abbreviations	Description
Q1 + OP1	Capsule release
Q4 + OP2	Main heating element 1000 W
Q7 + OP3	Pump
Q10 + OP4	Heating element 437 W (if present)
Q11 + OP5	Steam solenoid valve (if present)
Q12 + OP6	Solenoid valve water supply (if present)
Q13 + OP7	Cup heater (if present)
Q14 + OP8	Solenoid valve unit
J1 - J2	Supply voltage 230 V
J3	Solenoid valve water dispenser cable connection and coil capsule release thermal switch
J4 - J5	Wiring of boiler thermal switch and pump thermal switch
J8	Gear motor cable connector and capsule drawer microswitch
J9	10 pin cable with CPU card
J10	Supply 24 V
J11	7-pin cable with CPU card

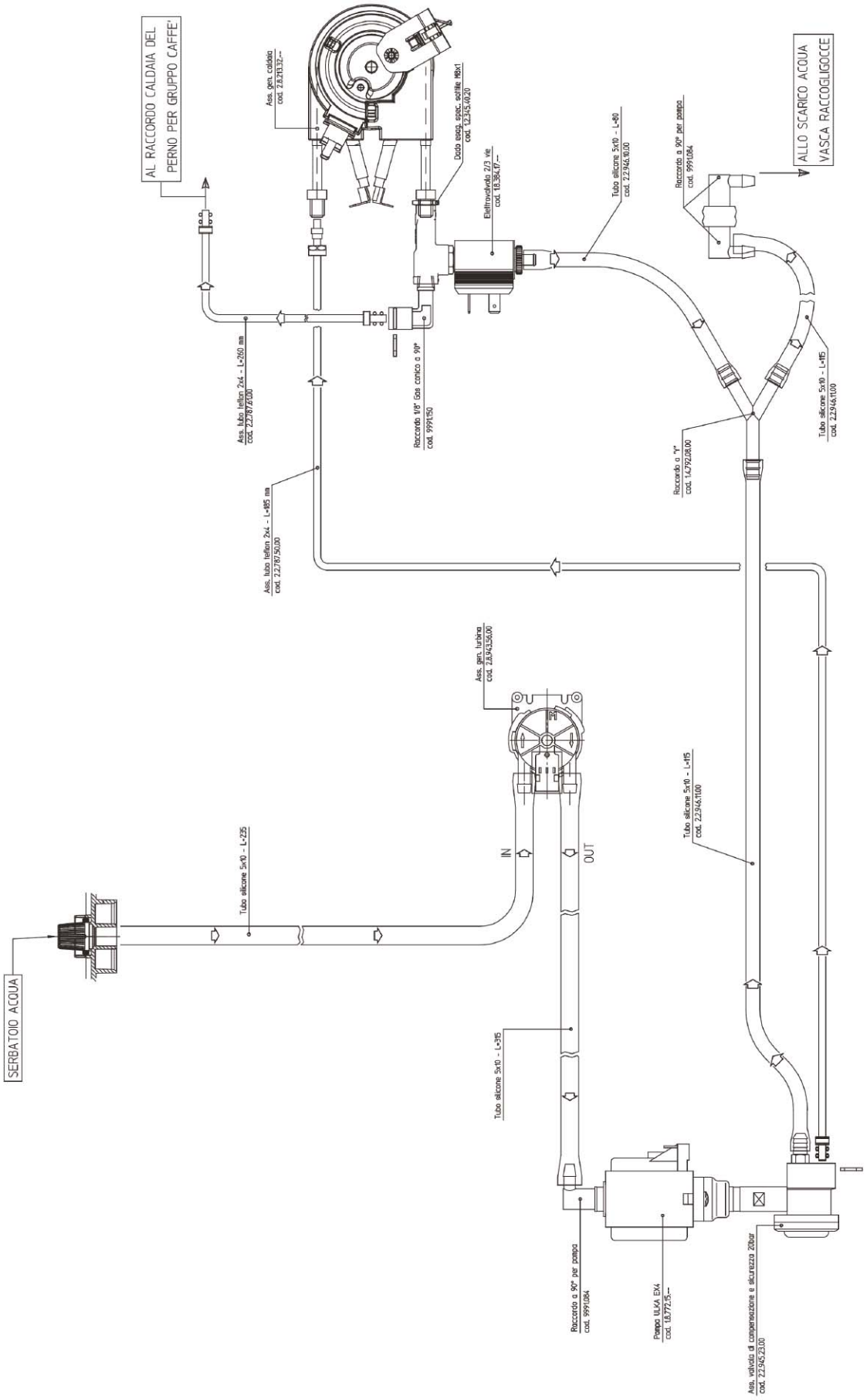


Main component abbreviations	Description
BT1	Battery plug (non removable)
J4	Hot water temperature sensor connection
J5	Serial card port cable connection
J6	10-pin harness with POWER card
J10	Volume metering device harness
J11	Capsule presence microswitch harness
J12	Open capsule drawer microswitch harness
J13	Dispensing unit microswitch harness (Presence and work)
J14	Water sensor harness
J16	7-pin harness with POWER card
JP3 / JP4	Card configuration
JP3OFF / JP4 OFF	Model OCS base
JP3ON / JP4 OFF	Model OCS Deluxe
JP3OFF / JP4 ON	Model OCS water supply
JP3ON / JP4 ON	Reserved (must not be used)

Circuit diagram



Hydraulic diagram



Index
Interface cable RS232diagram

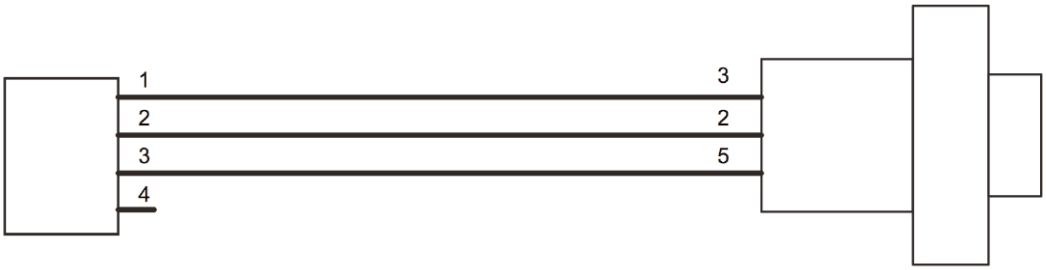
15.1 Serial Connections

The serial connections are used for the connection of the AUDIT systems.

Connection: 4 contact telephone plug
Characteristics of the physical link: RS232, 9600 baud
Protocol: EVA-DTS

This diagram shows how to correctly connect the connector RJ11
present on the machine and a connector RS232 present in the most up-to-date data acquisition equipment.

Cable diagram



RJ-45
pin 1: Machine Rx
pin 2: Machine Tx
pin 3: GND

D-SUB 9
pin 2: Machine Tx
pin 3: Machine Rx
pin 5: GND

15.2 Statistical data

The available data are:

- machine identification
- date/time of last reading/reset
- total number of cycles carried out
- partial number of cycles carried out (automatically reset at each reading)
- list of the last 5 errors

The same data, when read in automatic form, take the following format:
ID1*Machine code*LAV OCS*VersionSw<cr><lf>
EA3*IDReading*Date*Time*Idterminal*DateLastReading*TimeLastReading<cr><lf>
VA1**CyclesfromInitializaion**NoCyclesFromReset<cr><lf>
EA2*ErrorDescription*NoFromReset*NoFromInit<cr><lf>
EA2*ErrorDescription* NoFromReset*NoFromInit<cr><lf>
...
Example:
ID1*12345*LAV OCS*v1.00<cr><lf>
EA3*22*020801*1645*1*020723*1137<cr><lf>
VA1**145**21<cr><lf>
EA2*WaterAlarm*1*3<cr><lf>