cino eC PRO

type: compact

espresso

cafe

INSTALLATION AND MAINTENANCE MANUAL
Translation of the original instructions

MAN1010119 rel. 01 dated 30.01.2014

rheavendors group
before using the machine, carefully read this information that helps you behave properly and guarantee a safe use;
the following pages use the symbols listed here below, whose meaning is of attention:

**GENERAL;**
if the text is highlit by this symbol, it is recommended to pay special attention to the performance of the procedures described; if not carefully performed on safe conditions, they can be source of general danger;

**HIGH VOLTAGE;**
if not properly performed, the actions marked by this symbol may expose to accidental contacts with electric voltage;

**DANGEROUS TEMPERATURE;**
if not properly performed, the actions marked by this symbol may expose to accidental contacts with high-temperature parts;

**MOVING MEMBERS;**
if not properly carried out, the actions marked by this symbol may expose to accidental contacts with moving members;

the same symbols are placed inside the vending machine to indicate the parts on which to act with the utmost caution;

**SERVICE KEY IN USE;**
the symbol recommends the utmost attention during the actions described; the use of the service key intended to activate all machine functions when the door is open is only reserved to the technical operators who know the operation of the vending machine, who are aware of potential risks and who make sure they are operating on totally safe conditions;
the use of the service key shall be strictly limited to the time necessary to perform the actions requiring the use thereof; users shall be informed of the prohibition on using and approaching the vending machine;

**WEIGHT:**
the symbol reminds the user to consider the machine weight carefully for handling and placing it definitively.

**WATER SUPPLY;**
it marks the parts duly requiring caution in case of leakage, if connected with the hydraulic network;

**SUPPORT SURFACE;**
it reminds the user to install the machine on a support surface, the max. inclination of which is 2°;
safety rules for using the vending machine

*** pay special attention to the chapters and notes high lit by the symbols of alert; strictly observe the rules concerning, in particular, the operators’ and users’ safety;

*** the vending machine may be used by children who are at least 8 years old and by people having reduced physical, sensory or mental capacities or not having all necessary experience and knowledge, provided that they are under supervision or after they have received all necessary instructions for using the machine on safe conditions and for understanding the dangers related thereto; children must be supervised and prevented from playing with the vending machine; cleaning and servicing shall not be carried out by children;

*** if you should find out a water leak or the presence of smoke, immediately detach the vending machine from the electric and hydraulic network, never try to restore its operation and apply to skilled technicians;

*** the machine shall be installed according to national rules; pay special attention to the rules about the machines directly connected with the hydraulic network;

*** room (during storage and operation):
  temperature: 5 °C ÷ 35 °C
  relative humidity: max 80 %

*** the inclination of the vending machine support surface shall not exceed 2°;

*** if the hydraulic connection tube is not supplied with the machine or in case of replacement, the connection must be carried out only with:
  - new tube;
  - of type-approved material for food use;
  - compliant with “IEC 61770 Electric appliances connected to the water mains”;
  - it can support the working pressure;

*** the user is not allowed to access the maintaining and servicing area that shall be properly signalled;

*** never remove protections, never override safety devices and never modify the machine or its components;

*** tools necessary to act with this vending machine:
  - a pair of scissors for electricians, a Phillips PH2 cross screwdriver for 4/6 mm self-threading screws, a set of wrenches up to 13 mm, a set of Allen wrenches from 2 to 8 mm;
  - it may be of use to procure some expendables, such as disposable paper, single-use gloves, clean cloths, cups and a bucket for the collection of waste water;

*** never wash the machine by using water jets;

*** for cleaning at regular intervals refer to chapter 12;
the symbol means that it is forbidden to dispose of the equipment as urban waste and compulsory to provide for separate collection in order to prevent any potential effect on the environment and human health; strictly follow the provisions of the European Parliament’s 2002/96/EC Directive;
residual risks

A residual risk is understood as a potential danger that cannot be eliminated and it persists despite all precautions in use since it is related to the intrinsic features of the product and it also includes non-identifiable risks;

The actions and behaviours listed here below are intended to reduce residual risks and you shall always adopt them when interacting with the machine;

- Wear clothes that can properly avoid any accident (never wear rings, chains, clothes with laces or excessively long sleeves, ...);

- Carefully evaluate the treatment of residues from installation (wood, plastics, ...) and utilisation (product powder, bags, ...);

- Never repair or carry out any technical action if you have not been properly trained;

- Signal that a technical action is in progress on the machine (barriers against approach, signs, ...), carry it out quickly without leaving the station;

- Install the machine in a sheltered, illuminated, ventilated and noiseless environment; keep it clean and never place tools or any other object on it; never install it outdoors or, anyway, never expose it to atmospheric agents;

- Make sure it can be neither reached by water sprays or vapours nor hit by objects that might damage it;

- Carefully consider the machine weight and stability during the installation and in the final working position;

- Supply the machine within voltage, temperature, pressure and hydraulic limits, ... as it is detailed on the following pages and provide for an effective earthing;

- Even if detached from supply, the machine may contain hot pressurised water at a high temperature;

- Never detach hydraulic and electric supplies when they are active;
These conditions regulate Rheavendors Industries S.p.A.’s obligations with reference to guarantee and repair; any other term or condition, either verbal or written, is not applicable, including those in the purchaser’s purchase orders, if not explicitly accepted and signed by Rheavendors Industries S.p.A.; if the guarantee terms held below should be held not to be valid and/or lawful in the Country where the product is sold, they will not be effective whereas all the other clauses will remain valid and applicable;

1st

the mechanical and electronic components of the machine are guaranteed for twelve months, starting from the sales date certified by the fiscal receipt;

2nd

the guarantee shall be understood as the free replacement or repair of any part of the machine that – at the manufacturer’s unquestionable discretion – should prove to be originally defective due to manufacturing defects; the cost of sending the manufacturer machines, defective pieces and spare parts will be totally charged to the user’s account; the manufacturer reserves the right to use new or reconditioned components for repair; if replaced, original components will be guaranteed for 12 months; the parts replaced under guarantee will become the property of RheVendors Services S.p.A. (request for “Form PO 19.01/2b” Materials under guarantee – Authorisation to return);

3rd

in case of irreparable failure or if a failure of the same origin is repeated, the manufacturer may – at its unquestionable discretion – replace the machine with another one, the model of which is either the same or an equivalent one; the guarantee of the new machine will be extended up to the original term of guarantee of the replaced machine;

4th

all the parts that should prove to be defective due to negligence or carelessness (non-observance of the instructions for the operation of the machine), incorrect installation or maintenance by unauthorised personnel, transport damage or any circumstance – anyway – not due to the manufacturing defects of the machine are not covered by guarantee; the installation and connection with supply plants as well as the maintenance operations mentioned by the installation manual are also excluded from any performance under guarantee; the guarantee will not cover payment systems either; whether installed on the machine or supplied as an accessory, they are subject to their manufacturer’s guarantee whereas Rheavendors Industries S.p.A. will just act as a broker; all changes made to the machine and not agreed with the manufacturer in writing will involve the immediate termination of the guarantee period and anyway fall under the Customer’s total responsibility;

5th

the guarantee is excluded in all cases of improper use of the machine;

6th

Rheavendors Industries S.p.A. will disclaim all responsibility for any damage that may be directly or indirectly caused to people, animals or things as a result of:

- improper use of the vending machine; incorrect installation;
- improper energy or water supply; serious maintenance deficiency;
- actions or changes not explicitly authorised; use of non original spare parts;

in case of failure, Rheavendors Industries S.p.A. is obliged neither to compensate any economic damage due a forced stop of the machine nor to extend the guarantee period;

7th

if the machine should be transferred to a centre designated by the manufacturer for overhaul or repair, the relative transportation risks and costs will be charged to the user’s account. The freight charges of machines, defective pieces and spare parts are always understood as charged to the user’s account;
Rheavendors Industries S.p.A. declares that this drink vending machine has been designed and manufactured in compliance with the following directives and safety standards:

**Directives:**
2004/108/EC; 2006/42/EC; 97/23/EC;
2011/65/EC (RoHS); 2002/96/EC (RAEE);

**Regulations:**
1907/2006/EC (REACH); 1935/2004/EC;

**Standards:**
**SAFETY:**
EN 60335-1: 2012

**EMC:**
EN 61000-3-3: 2008;

**EMF:**
EN 62233: 2008;

**manufacturer**
Rhea Vendors Group S.p.A.
Via Valleggio, 2/bis – 22100 Como – (CO) - Italia

**factory**
Rheavendors Industries S.p.A.
Via Garavaglia, 58 - 21042 Caronno Pertusella – (VA) – Italy

CEO & Legal Representative

(C. D. Majer)

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ISO 9001 certification

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conformity
quality

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ce
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in the listed chapters, the manual describes a

cino eC PRO

vending machine in its hardware and software components for a complete and fully-aware use of all machine functions; due to the large variety of available options and the constant technical update of our vending machines, some special device or function might be indicated and described not in the manner you expect; in this case, do not hesitate to contact us;

telephone: 0039 02 966 551
fax: 0039 02 96 55 086
e mail: rheavendors@rheavendors.com

ATTENTION: this label applied next to the serial number label inside the vending machine points out that the instructions supplied by this manual must be carefully read before the installation and operation of the vending machine;

please, print this manual only if necessary; environmental protection is our common interest;
01. legend

01.01. abbreviations and pictograms

E = dispensing cycle of drinks based on instant products and coffee beans;
A = machines with internal water tank;
R = machines with external water supply;
X = mixer for mixing the instant product with water;
VSF = worm screw pitch in the product canister;
§ = product shaker of instant canisters;

§ = espresso coffee brewer

= hot water dispenser

= maximum operating pressure of the boiler;

= water supply pressure range of the vending machine;

02. introduction

02.01. copyright information

© Rheavendors Industries S.p.A.; all rights reserved; this document contains some confidential information of Rheavendors Industries S.p.A.’s exclusive property; the content of this document can be neither disclosed in favour of third parties, nor copied or reproduced in any form whatsoever, either fully or partially, without Rheavendors Industries S.p.A.’s prior authorisation in writing; the utilisation, reproduction or disclosure of the technical information in this document can be protected by Rheavendors Industries S.p.A. according to the Law;

this manual is intended for the owner of the vending machine; it is an integral part of the machine and it shall be kept with it;

the information supplied by this manual are intended to achieve the best performances of the vending machine within the scope of application established by the Manufacturer; Rheavendors Industries S.p.A. reserves the right to improve future production without serving any prior notice and without assuming any obligation to update the products on the market; the manufacturer will disclaim all responsibility for any inaccuracy due to misprints;

02.02. contacts

Rheavendors Services S.p.A. is at disposal for any kind of support and information on this vending machine;

telephone: + 39 02 966 551
fax: +39 02 96 55 086
e mail: rheavendors@rheavendors.com

for any reference about our partners all over the world please visit site : www.rheavendors.com

to be able to identify the vending machine rapidly and univocally as well as to get the best support, please specify the data of the serial number label;

code : D12345A67890
s/n: 1234 56 7890 (example)
silvery serial number labels are applied inside and outside the case of the machine;

Rheavendors group's sole property
### 03. Technical Data

#### 03.01. Dimensions
- Height: 560 mm
- Height (including opened water door): 625 mm
- Width: 315 mm
- Depth: 530 mm
- Depth (including opened door): 780 mm

#### 03.02. Mass
- 26 kg

#### 03.03. Supply

<table>
<thead>
<tr>
<th>Water</th>
<th>- Connection by means of a solenoid valve with 3/8(^{\text{th}}) gas male face: from 0.1 MPa to 0.8 MPa;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Supply by a submersible pump: 24 V dc, 1.2 A max.;</td>
</tr>
<tr>
<td></td>
<td>- Connection from internal tank: 2.2 litres capacity;</td>
</tr>
<tr>
<td>Energy</td>
<td>- 230 V ac, 50/60 Hz; single-phase and ground; 1,600 W;</td>
</tr>
<tr>
<td></td>
<td>- 100 V ac, 50/60 Hz; single-phase and ground; 1,400 W;</td>
</tr>
</tbody>
</table>

#### 03.04. Sound Pressure
- A-weighted sound pressure level: less than 70 dB(A);

#### 03.05. Keyboard
- Ten selection buttons;

#### 03.06. Display
- Two sixteen-character lines; graphic; three colors; 64 x 128 pixel resolution;

#### 03.07. Dispensing Cpt.
- Open; folding cup support (useful height 85 mm); maximum 140 mm;

#### 03.08. Drip Tray
- Drip tray beneath the cup surface; capacity 750 ml;

#### 03.09. Dispenser
- A fixed dispensing place;

#### 03.10. Safety

<table>
<thead>
<tr>
<th>Water</th>
<th>Overflow sensor and pressure relief valve; water inlet solenoid valve with anti-flood sensor;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>A main switch, a door switch;</td>
</tr>
<tr>
<td></td>
<td>- In 230 V ac machine: two 6.3x32 mm fuses: 230 V dc; 12 A delayed;</td>
</tr>
<tr>
<td></td>
<td>- In 100 V ac machine: two 6.3x32 mm fuses: 100 V ac; 16 A fast;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Heat</th>
<th>Manually resettable sensors: 127 °C;</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Software</th>
<th>Time limits for water dispensing cycles;</th>
</tr>
</thead>
</table>

#### 03.11. Grinder Motor
- In 230 V ac machine: 230 V dc;
- In 100 V ac machine: 120 V dc;

#### 03.12. Millstones
- Conical;

#### 03.13. Coffee Brewer
- Variable-volume brewing chamber; Ø 45 mm; 8 ÷ 15 gr.
- Motor: 24 V dc; 30 W;

#### 03.14. Air Break
- Air break with overflow and level switch;

#### 03.15. Pump
- A vibration pump with bypass;
- In 230 V ac machine: 230 V ac; 1.0 MPa;
- In 100 V ac machine: 100 V ac; 1.0 Mpa;

#### 03.16. Product Motors
- Max. two, according to the machine configuration; 95 r.p.m.; 24 V dc;

#### 03.17. Mixing Bowl
- One;

#### 03.18. Mixer Motor
- One; 15,000 r.p.m.; 24 V dc;

#### 03.19. Boiler
- One single pressurised boiler;
- In 230 V ac machine: 0.4 litres; 230 V; 1,500 W;
- In 100 V ac machine: 0.4 litres; 100 V; 1,300 W;
- Maximum 1.0 MPa;
03.20. product canisters

max. two instant, according to the machine configuration; single (55 mm) or double (110 mm) width; dispensing worm screws 9 mm or 18 mm in pitch; with mixer gear and product shaker, if arranged by the configuration and with standard or reduced product slide outlet (see 05.23.);

- instant canister capacity:

<table>
<thead>
<tr>
<th>Width</th>
<th>Capacity</th>
<th>Milk</th>
<th>Chocolate</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 mm</td>
<td>1.7 l</td>
<td>0.38 kg</td>
<td>0.94 kg</td>
</tr>
<tr>
<td>110 mm</td>
<td>3.5 l</td>
<td>0.80 kg</td>
<td>2.20 kg</td>
</tr>
</tbody>
</table>

- coffee beans canister (or hopper) capacity: 0.8 kg

03.21. miscellaneous

machine parameters programmable by means of a flash key or selection keyboard; NRI G13 or similar payment system compartment; protocols: serial, parallel, executive, MDB; data collection by means of a flash key (see 09.06.);

03.22. notes

the water and energy supply tolerance limits that can ensure a good and proper operation of the cino eC PRO machine are:

water:
- total hardness:
- recommended conductivity: 400 μS @ 20 °C

(*) if harder, please use anti-limestone filters;

energy:
- nominal voltage: +10 % /- 15 %

room (during storage and operation):
- temperature: 5 °C ÷ 35 °C
- relative humidity: max 80 %

electric consumption:
- power (vending phase): 340 Wh

the power supply cable supplied with the vending machine shall not be altered under any circumstance; in case of loss or damage replace it by using an original component only;

make sure that the electric installation can deliver the power suitable for the machine (see 03.03.);

a good ground connection is not only a legal obligation for the protection of users and operators, but it can also provide for correct power supply;
cino eC PRO configurations

04.01. cino eC PRO configurations are numerous; they are coded by means of some categories exemplified here below in the abbreviation of the machine:

a. product canisters
   number of instant products and coffee beans:
   - external, by means of the inlet solenoid valve:
   - internal, from the internal tank to the vending machine:

b. water supply
   cino eC PRO E/3
   cino eC PRO E/3 R
   cino eC PRO E/3 A

04.02. examples of configurations

V.M. cino eC PRO E/3 R

The configurations above are just some of possible cino eC PRO configurations, considering the vending machine releases and programmability; the principles of operation and information are anyway universal and applicable to all machines of the cino eC PRO range;

04.03. accessories

to complete and supplement the vending machines of the cino eC PRO range, Rheavendors Industries S.p.A. has got a series of accessories manufactured for these machines, such as cabinets, autonomous water supply kits, anti-limestone filters, payment systems, ...

Rheavendors Services S.p.A. is at disposal for any kind of support and information on special configurations (see 02.02.);
05.01. general information

The Rhea cino eC PRO vending machine is a machine explicitly designed for being easily used by all users since no specific competence is required in preparing drinks;

The function consists in dispensing drinks by mixing food products and water at a proper temperature; the correct operation of the vending machine occurs in closed rooms in normal environmental conditions and at a room temperature between 5 °C and 35°C, the relative humidity below 80%;

**Use only specific ingredients for vending machines;**

dispense by briefly pressing a key of the selection keyboard (see 05.02.); make sure that the cup has been properly positioned at the dispensing station, if necessary by using the flap support for caps (see 03.06.);

05.02. selection keyboard

After having closed the door, press the buttons to dispense; all buttons are lighted in standby mode whereas they turn off during the dispensing cycle and only the selected button turns on; keys will assume various functions in the programming mode (see 09.) and enable the user to modify the machine parameters; keys are numbered progressively from the top: 1, 2, ... and from the left;

05.03. display

The display messages inform users and operators about the operation state of the vending machine;

05.04. dispenser

The cino eC PRO vending machine has got a fixed drink dispenser on the cup support surface;

05.05. door lock

The door is closed by means of a lock; the key is mapped and numbered for identification;

05.06. drip tray

It collects possible residual drops from the dispenser and, if necessary, the waste water in excess from the three-way valve; it is slided at the bottom of the machine case, in the front, and it is composed by a covering drawer and a grilled cover that can be washed by running water; an electric contact is intended to control the filling level (see 11. and 13.03.).

05.07. electric connection

A three-terminal socket is arranged at the back of the case for the connection of the mains cable;

05.08. power on switch

To power on and off the machine;

05.09. fuses

Installed on the mains power supply to protect the machine (see 03.10.); fuses must be necessarily replaced by specialised technical personnel only;

05.10. water drain plug

From where to let the silicone tube from the air break come out for emptying; (see 13.20.);

05.11. pressure boiler drain tap

Open it to let water come out of the air break and empty it; (see 13.20.);

05.12. water inlet solenoid valve

The water inlet solenoid valve on R machines only has got an anti-flood safety device intended to stop the water inlet in case of failures; to its electrical pins can be connected in parallel an any submersible pump (see 03.03.);

05.13. door switch

To power off the machine when the door is open;

**Attention**

Some parts remain anyway network-connected.

Act extremely carefully;

Use the service key to supply the vending machine if it is necessary to activate the machine when the door is open; the key is housed in the cover;
the button giving access to the machine programming mode is arranged on the orange protection carter inside the door;

programming flash keys are arranged in the carter inside the door (see 09.06.);

product labels are arranged inside the door panel, beneath the orange carter; insert the labels into the pockets by observing the machine configuration (see 13.02.);

after receiving the coffee dose from the grinder and compressing it, percolation occurs in the coffee brewer with the water from the pump; the used dose is conveyed towards the slide and the drawer at the bottom of the machine; the structure of the brewer is kept at the correct temperature by a hot air heating system programmable via software (see 09.01.e.);

the coffee brewer presence is controlled by a micro-switch that can inhibit the selections including coffee beans, if it is not present;

a safety cover is intended not only to protect the operator against moving parts, but also to keep the coffee brewer at the correct temperature through an air heater preserving the drink quality even after a long vending machine pause;

the variable coffee brewer motor is intended to regulate the chamber closing and compressing phases in order to compress ground coffee for its percolation; its action is controlled by an encoder that informs the CPU on the brewer position;

it grinds the coffee beans in the canister to pour it in the coffee brewer chamber; the grinding degree can be manually adjusted by means of the wheel you can access after removing the coffee canister whereas the ground quantity is determined by a software parameter (see 09.01.a “grinder time”) that establishes the grinder work time;

it collects over thirty ground doses after having used them in the coffee brewer; a software option (see 09.01.o.) will show a warning message as soon as the tray is full;

instant product canisters dispense their content in the underlying mixing bowls; an internal worm screw driven by the product motor will push the instant product to the product slide; they can be equipped with a wheel and a product shaker for constant dispensing; the outlet, the dimension of which can be either standard or smaller, has got a closing baffle; the coffee beans canister (hopper) has a closing blade; pull it before lifting the container; the presence of the coffee beans canister is detected by a switch; to protect the products, containers are closed by a cover; a water tank is intended for supply in the versions not connected with the water network (see 01.01.); this tank can be filled through a hatch of the vending machine cover;

in A machines, a door on the vending machine cover will enable you to access to the internal water tank and fill it in; an internal water tank is complete with a float signalling by means of a red strip if you have filled it in excess;
they are intended to rotate the worm screws inside instant product canisters to pour the product quantity necessary for selection in the mixing bowls;

the mixing bowls of the mixer will accommodate the instant products you have poured to mix them with water; the fan of mixer motor will act at the bottom and the drink outflow to the dispenser occurs by means of a silicone tube; mixing bowls and outlet tubes can be washed with lukewarm running water;

a fixed support on the cup station is intended to house the dispensers from the coffee brewer, the mixer bowl and the direct hot water unit; press the release lever to move it to the right to clean or to remove the coffee brewer;

the motors of mixers help you mix instant products with water by means of the rotation of the fan mounted on their axis; the rotation speed can be adjusted (see 09.01.a.) to the features of the various products;

an aspirator will eject suspended product residuals from the vending machine; the aspirator is connected with a drawer beneath product slides to intercept the residual impalpable powder coming from selections; the action time of the aspirator is programmable by means of a software parameter (see 09.01.f.); aspirated air is ejected through the slots of the rear panel;

to aspirate the air from the internal environment of the machine to avoid any condensate;

it accumulates water for sending to the pressure boiler; the level is controlled by a float and – if above the established level – it will flow back to the inlet solenoid valve safety device, thus preventing the inlet of new water;

it supplies the CPU the water quantity running through the coffee brewer to establish its volume; the water quantity of instant selections is established by the time set in the “water N” parameter only (see 09.01.a.);

the components intended to support the payment system (not supplied) are made available in some versions, inside the door; the coin box is equipped with a lock and the payment system cable shall be connected with the CPU board; (see 05.37.a.);

- each selection key is lighted by a led mounted on the display board (see 05.37.b.);
- the front transparent stud, the dispensing compartment and the door panel are lighted by a led mounted on printed circuits inside the door;
  the dispensing compartment is lighted by four leds in standby mode and during a dispensing cycle;
  leds of different colours turn on alternatively to signal the end of a dispensing cycle;
05.35. pressure boiler pump

- A vibration pump with bypass conveys water to the solenoid valves block for instant and three-way valve for espresso;

05.36. pressure boiler

- Pressure boiler complete with a temperature probe and protection clicsons; the drain tap may be used to empty the hydraulic circuit (see 09.01.f.);

**Attention:**

These components may be very hot even if the machine is off;

<table>
<thead>
<tr>
<th>Solenoid Valve</th>
<th>Name Sw</th>
<th>Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>water 1</td>
<td>mixing bowl 1</td>
</tr>
<tr>
<td>E2</td>
<td>water 2</td>
<td>hot water</td>
</tr>
<tr>
<td>EX</td>
<td>coffee water</td>
<td>coffee brewer</td>
</tr>
</tbody>
</table>

The water quantity of instant selections is established by the time set in the “water N” parameter (see 09.01.a.);
05.37. electronics

05.37.a. CPU

The CPU board governs the operation of the machine, it is the seat of the machine programmes and it is secured to the frame by means of turrets; the temperature probe cable is separated from the machine wiring to avoid hampering any removal of the probe itself.

05.37.b. display board

It collects and processes the signals necessary to display the messages for the user and the operator; it receives the signals from the two selection keyboards and supplies the lighting LEDs of the cup compartment.

05.37.c. RFID

The RFID card is a hardware option that can equip the machine; it is housed inside the cover, it enables the operator to programme the product decounters (see 09.01.n.) and/or it can be used as a payment system (see 09.01.p.).
the software installed in **cino eC PRO** can be subdivided into two different chapters called:

- **master:**
  it is the software determining the machine cycles, the links between the functions, the order of execution of operations; this software can not be modified by the operator, but it can be replaced in the CPU by means of a flash key written at works or by means of **rheAction** (see 09.06. and 05.39.);

- **configuration:**
  it is the software determining the times and the succession of dispensing drinks, the payment system protocol, the display modes, ...; variables may be modified by the operator either manually aboard the machine or by means of **rheAction** (see 09.06. and 05.39.) to adapt the machine behaviour to the final users' needs (product quantities and mixtures, warning messages ...) (see 09.);

if it is necessary to update one of the software programmes above on the machine, the flash key may be of great use; the key can contain either software or both of them and provide for a rapid and safe transfer;

please note that the flash key used for these software handlings must have been previously initialised (with RheAction for example);

in general, the transfer procedure is:

- power off the machine;
- insert the flash key into the corresponding connector (see 05.15.);
- power on the machine by means of the service key (see 05.13.);
- wait for the message on the machine display;
- answer the messages on the display;
- power off the machine and remove the flash key;

please note: if the flash key should contain a master software, the transfer will certainly occur from the key to the machine, whereas it will be necessary to follow the steps described by 09.06 in case of a configuration software;

**05.39. rheAction**

a system called **rheAction** is intended to complete and supplement the programming executable in the machine; it is composed by a software and hardware, installable in a pc, capable of storing, modifying and writing the configuration data of Rhea machines; Rheavendors Services S.p.A. is at disposal for any kind of support and information on the RheAction system (see 02.02.);
06. preliminary actions

06.01. handling

the vending machine may be transported, handled and positioned by skilled and trained personnel only; while handling, never overturn the machine; observe the orientation arrows on the package;

**attention**

handle the machine carefully to prevent the authorised personnel from being injured; considering the weight and overall dimensions of the vending machine, it is recommended to use a truck at low speed;

06.02. unpacking

- approach the packed vending machine to its work position;
- cut the two plastic belts;
- lift the external package;
- extract the protection bag up;
- lift the vending machine and arrange it on the work surface;

**attention**

the materials composing the package shall never be left within the reach of people from outside, in particular of children, because they represent a potential source of danger; only specialised companies may be charged to provide for the disposal of package components;

06.03. positioning

the vending machine shall be arranged for work in a sheltered room by using a support suitable for the weight of the machine (see 03.02.); its distance from the walls shall provide for good air circulation and easy access;

any inclination of the surface shall not exceed 2°;

it is recommended to arrange an easily cleanable impermeable protection beneath the vending machine to collect any accidental product fall;

06.04. preparation

when the machine is in its final working position:

- cut the clamp securing the door key to the drip tray grilled cover;
- insert the door key into the lock (see 05.05.), rotate it and open the door;
- remove the envelope of documents and labels;
- take the power supply cable and the water union; the water union can be used for water connection with the network;
- lift the machine cover and remove the guards intended to fasten product containers for transport;
- insert the labels by observing the order of selections determined by the machine configuration (see 04.02.).
07. connections

07.01. water

make sure that the water used to supply the vending machine has all proper features for human consumption;

make sure that there is no sign of impurity and check the degree of hardness; if necessary, contact an analysis lab;

if necessary, use a softening filter and replace the cartridge at regular intervals, in observance of the manufacturer’s instructions, to preserve the machine components;

make sure that the network pressure is the one preset for the machine (see 03.03.); use a pump or a reducer in case of non-compliance; it is recommended to install a tap to detach the machine from the network; connection shall occur by means of:

- new tube;
- of type-approved material for food use;
- compliant with “IEC 61770 Electric appliances connected to the water mains”;
- it can support the working pressure;

if the tube is not supplied with the machine or in case of replacement use tubes featured as above only;

if the machine is supplied by an internal water tank, make sure that the tank is properly positioned in its seat and fill it;

for the drinkability features of “waters intended for human consumption” refer to the following Internet address:


07.02. energy

observe the rules on connections with the electric network, in particular on grounding; connect the machine permanently without using any reduction, adaptor, multiple socket or extension; use the network connection cable supplied with the vending machine only; it is recommended to install a switch detaching the machine from the network;

it is recommended to install a differential current device operating below 30 mA, detaching the machine from the mains and promptly tripping in case of improper electric input in order to considerably reduce the risks arising out of any short-circuit;

**attention**

check the power plant capacity to supply the power required by the machine (see 03.03) and the observance of the rules in force; strictly refer to the data of the serial number label (see 02.03.)

insert the cable into the connection socket (see 05.07.); then, connect the plug with the socket and supply the vending machine;

for a correct and safe configuration of the electric power supply installation refer to the following Internet address, if necessary:

08. installation and first power on

08.01. introduction

after having unpacked the vending machine, arranged it firmly in the work place and connected hydraulically and electrically, carry out some actions to operate it;

**wash hands thoroughly with water and soap before handling the machine and the products; only use potable water to clean the components;**

08.02. activity

open the door, lift the cover, power on the main switch of the machine (see 05.08.);

pour a small quantity of coffee beans into the coffee hopper to avoid displaying the no coffee message; remember to open the hopper orange blade;

**attention**

arrange a cup beneath the nozzles, insert and rotate the service key into the door switch (see 05.13.);

**attention**

the vending machine is supplied and running to all effects; the mobile parts of the coffee brewer will be handled; act extremely carefully;

at the end of assembly and final testing, the water used for testing is discharged from the machine; at the first power-on at the station, all circuits must be filled in before any other action; for this reason, the machine will automatically load water;

the vending machine executes a diagnostic cycle for loading and heating waters; the warning messages for the progress of these phases appear on the display;

make sure that the machine is hydraulically supplied and that the drip tray is inserted; while following the display messages, press “10” to carry out the first installation;

the display shows:

wait for water to come out of the product nozzles for some seconds; the flow will automatically stop after dispensing all necessary water and the display will show:

the pressure boiler water starts heating to achieve the temperature setpoint (see 09.01.e.);

at the end of this phase, ca. 3 minutes later, the display will show the standby messages:
08.03. washing transportation, storage and installation conditions can not provide for immediate utilisation of the vending machine and it is recommended to perform a complete wash cycle before using the vending machine;

press the programming button (see 05.14.);
the display shows alternatively the messages:

attention

the vending machine is supplied and running to all effects; the mobile parts of the coffee brewer will be handled; act extremely carefully;
arrange a cup beneath the nozzles; the machine will dispense a pre-fixed water quantity for each wash cycle;
press “4” to enable the wash cycle of the water circuit (boiler, tubes, mixing bowls, ...);

follow the display instructions that require the operator to must be sure that the drip tray is empty and the machine is hydraulically connected;

the display shows:
key “1=pb” will dispense water through the coffee brewer;
selection “2=mx1” will do it in the mixing bowls for instant products; key “4=water” in the hot water outlet hole to the cup;
key “8=hc.” will carry out the sanitary wash cycle for the brewer and then the wash cycles for the mixing bowls and the direct water circuit; (see 09.04.);
repeat the operation for some times to rinse the whole water circuit of the machine; during the wash cycles, the display will show the circuit that is being washed;

a special wash cycle is intended to sanitise the coffee brewer by using specific cleaning products in tabs; press key “8=hc. “, the display shows:

attention
ca. 100 cc. water will be dispensed for each one of the six wash cycles;

at the end of the sanitary wash cycle of the coffee brewer, the machine will also wash the mixing bowls and the direct water circuits; for this reason, make sure that at least a couple of cups can be placed beneath the product nozzles;

power off the vending machine by means of the service key; arrange it in its support (see 05.13.); power off the main switch at the back of the machine (see 05.08.).
prepare a chlorine-based anti-bacterial sanitising solution by observing the instructions supplied with the product; remove and immerse the following into the solution: the product canisters you have disassembled, the trays of mixers, their fans and the silicone tubes intended to dispense products; the time necessary to sanitise is specified by the anti-bacterial product package; at the end, remove all the parts you have sanitised from the solution, dry them carefully by using clean cloths and reassemble them into the machine; rotate the baffles of the product slides of instant canisters to close them and load the canisters with reference to the machine configuration (see 04.) and to the canister labels; fill in the coffee hopper with coffee beans; close the canisters and the coffee hopper with their upper covers; rotate the baffles of the product slides (see 05.23.) to open them and pull the orange blade intended to close the coffee hopper; (see also 12.);

to clean and treat food products properly, refer to the content of the following Internet address:

http://eur-lex.europa.eu/
regulation 2004/852/EC of 29/04/2004

08.05

power on the machine by means of the main switch; the display will show in sequence following messages:

switching on…
please wait
wait
temperature

Cino eC PRO

place your cup

Cino eC PRO

Cino eC PRO

till the water temperature of the pressure boiler is suitable for the value set in the memory (by default);

at the end of this phase intended to heat water in the pressure boiler, the vending machine is ready to dispense on a free basis and the display will alternatively show some stand-by messages:
09. programming

the vending machine is programmed by means of parameters considered standard for the specific configuration required; values forming the composition of recipes - written in the board memories - enable the user to dispense drinks without requiring the installer to set up special programmes; to modify these parameters to adapt the drinks you have produced, refer to the following; at the end of the chapter (see 09.07.), a summary table may help the user trace back all the programming items;
to access the programming mode, open the front door of the machine and use the service key in the safety switch;

attention

the vending machine is supplied and running to all effects in this mode of operation; act extremely carefully;

access the programming mode

press the "PROG" key (see 05.14.);
the display shows alternatively the messages:

- "1" to access the programming mode of machine variables;
- "2" to display the drink quantities you have dispensed;
- "3" to dispense on a free basis;
- "4" to dispense water to wash the water circuits;
- "5" to schedule maintenance operations;

quit the programming mode after having programmed, press "1" and then the key "PROG" to go back to the usual operation of the vending machine and to store all changes you have made; the display will show:

09.01. "progr"

press the key "PROG", press "1"; the buttons of the selection keyboard will assume the following functions:

Key 1 to scroll the items forward
Key 2 to scroll the items forward
Key 3 to scroll the items backward
Key 4 to increase the value of the variable on the screen
Key 5 to decrease the value of the variable on the screen
the items are (scroll by means of key "1"):

09.01.a. key 1 contains the variable composing selection 1;
key 10 ... contains the variables composing selection 10;

09.01.b. prices to establish the prices of every single dispensing cycle;

09.01.c. happy price to establish the prices of every single dispensing cycle produced in special time bands;

09.01.d. coins to determine the values of coins;

09.01.e. temperatures to set up the pressure boiler water temperatures;

09.01.f. miscellaneous to programme different options;

09.01.g. diagnostics to display some machine parameters;

09.01.h. sales audit to display the quantity of dispensing cycles you have performed;

09.01.i. MDB it contains the programming of the MDB protocol parameters;
**09.01.l. clock**

To set up the machine clock;

**09.01.m. out of service**

To record any failure that may have occurred;

**09.01.n. product qty**

To check and enable product dispensing cycles;

**09.01.o. maintenance**

It contains the maintenance control parameters of the machine;

**09.01.p. RFID CARD**

To determine the RFID card parameters;

**09.01.q. tuning motors**

To regulate the time of product motors and the grinder motor;

**09.01.r. calibration product flux**

Programming of the product quantities delivered per unit of time;

**09.01.s. product audit flux**

Products delivery data;

**09.01.t. id. machine**

It contains the machine identification parameters;

**09.01.u. variflex brewer**

Coffee brewer programming;

**09.01.a. button from 1 to 10**

Press key “2” when the display shows “key n” to scroll the variables composing the function of that key (by pressing keys “4” and “5”);

- If you press “2” when “FUNCTIONING”, the key will perform the function you have programmed (dispensing cycle of a drink); see paragraph “functioning”;

- If you press “2” when “INHIBITED”, the key will be inhibited and it will perform no function;

- If you press “2” when “PRESELECTION”, the key you have pressed before the real selection will fulfill the function of the items listed in the “preselection” paragraph (scroll by pressing key “4” and “5”);

“functioning”

Use key “2” to scroll the following items:

Choose the “extended” option to display all variables and the “reduced” option to display only the parameters, the values of which are other than zero (use keys “4” and “5” to change the option);

Espresso coffee is the first product you can programme for each selection key; there are two variables:

- The water quantity in the cup; change it by means of “4” and “5”; if the variable is zero, no espresso will be dispensed (drink composed by instant products only);

- Coffee will be dispensed before (value 1) or after (value 0) instant products;

- To allow the adjustment of the internal coffee group pressure increasing the height of the chamber (from 0 to 10 mm);

Press “2” to display:

Press keys “4” and “5” to change the rotation time of the N product motor, thus changing the product quantity you have dispensed; if time is zero, no product N will be dispensed; you can carry out a “time test” on the set-point; (see 13.18.);
if the time you have programmed is other than zero, the N product
motor will be activated at the expiry of the delay time you have
programmed; the delay time is increased or decreased by pressing
keys “4” and “5”;

the rotation time of the product motor can be briefly interrupted
one or two times during the dispensing cycle (0 = no break); (see
also 13.16.);

parameter used to adjust the amount of grounded coffee will be
dispensed and filled into the coffee brewer;

if you enable this option after having compressed the ground dose,
the pump will deliver a small water quantity to make it wet, stop
and restart the usual dispensing cycle; the stop time can be here
programmed from 01 to 15;

to determine the solenoid valve opening time and then the water
quantity it will deliver; you can carry out a ”time test” on the set-
point; (see 13.18.);

water will be dispensed in the mixing bowls at the expiry of the
delay time you have programmed;

the rotation time of the mixer fan can be changed by pressing keys
”4” and “5”; if time is equal to zero, the mixer will not rotate; you
can carry out a ”time test” on the set-point; (see 13.18.);

if the rotation time is other than zero, the mixer fan will be rotated
at the expiry of this delay time;

the mixer rotation speed can be regulated between low, medium,
high by pressing keys ”4” and “5”;

LM dispensing  to establish the delay between the second milk and the espresso
coffee dispensing cycle in the ”Latte macchiato” selection;

LM dispensing  to establish the milk quantity of the second dispensing cycle;

LM dispensing  to determine the delay of the second milk dispensing cycle;

LM dispensing  to determine the breaks of the second milk dispensing cycle;

LM dispensing  to establish the water quantity of the second milk dispensing cycle;

LM dispensing  to determine the water quantity delay of the second milk
dispensing cycle;

LM dispensing  to establish the mixer rotation time of the second milk dispensing
cycle;

LM dispensing  if other than zero, the mixer power on will be delayed by the time
you have set up;

LM dispensing  to determine mixer rotation speed of the second milk dispensing
cycle;

LM dispensing  to specify the product canister to be used for the milk dispensing
cycle;

LM dispensing  to establish the water to be used for the second milk dispensing
cycle;
to repeat the selection by N times automatically and produce drinks of remarkable volume (jug);  

press “4” and “5” to choose the drink name to display during the dispensing cycle; options are listed here below:

- "standard", the display will show "drink N under preparation";
- "list of names" of drinks made available in the machine memory; the display will show "drink name under preparation";
- "custom": the display will show the user’s customised names; it is necessary to create a configuration file with rheAction (see 05.39.) and load it on the machine by means of a flash key (see 09.06.);

“pre-selection” several pre-selection messages are made available according to the various machine releases; they are supplied here below:

“decaffeinated/barley”: espresso coffee can be replaced with instant coffee (or barley) by means of pre-selection; variables are listed here below:

- message appearing on the display during the dispensing cycle;
- decaffeinated product canister (keys “4” and “5”);
- mixing bowl and mixing water (keys “4” and “5”);
- price change with respect to the standard espresso drink (keys “4” and “5”);
- keys for which preselection has effect (scroll by means of key “2” and select enable or disable by means of key “4” and “5”); this instruction is repeated in any preselection to enable the effect in the key or not (*);

“extra milk” - to choose the milk canister;
- to determine by how many seconds to change the rotation time of the product motor you have set up in the configuration; to enable see (*);

“espresso” - to decrease the NN water percentage to the water you have set up in the espresso selections; to enable see (*);

“no sugar” - to choose the sugar canister; to enable see (*);

“extra sugar” - to choose the sugar canister;
- to determine by how many seconds to change the rotation time of the product motor you have set up in the configuration; to enable see (*);

“sugar” - to choose the sugar canister; to enable see (*);
09.01.b. prices  press key “2” to display:
each selection can be assigned a sales price; use “4” and “5” to
to change the amount and “2” to scroll the price lines;

09.01.c. happy price  press key “2” to display:
every single selection may be assigned a sales price that will be
valid only in well-defined time ranges (see 09.01.l. “clock”); use
“4” and “5” to change the amount and “2” to scroll the price lines;

09.01.d. coins  assign each channel its value for the parallel payment system;  
press “2” to scroll the coins from A to J and use “4” and “5” to
change its value;

09.01.e. temperature  press key “2” to display:
use keys “4” and “5” to change the pressure boiler temperature;
press key “2” to display:
to establish how many minutes after the latest espresso to activate
the following parameter;
to establish the power on time of the pressure boiler heating
element to increase the water temperature;
to determine the temperature at which to heat the coffee brewer
during operation;

(see also 10.03.);

09.01.f. miscellaneous the “miscellaneous” item includes some options (press keys “4”
and “5” to modify the values of these options):
- machine code A and B: you can number the machine to
distinguish it from others similar (data collection);

- message number: press keys “4” and “5” to choose the messages
to display on the screen when the machine is in standby mode;

- coin mechanism programming options: press keys “4” and “5” to
display the options of communication with the payment system;
choose among:
  - parallel single vend
  - parallel multiple vend
  - executive
  - executive price holding
  - MDB
- fan time: to determine for how many minutes after the latest dispensing cycle the powder suction fan will remain active;

- beep time: beep time active at the end of each machine function;

- number of decimals: to determine how many decimals are considered in the comparison between the selection price and the credit you have inserted;

- language: to display the messages in one of the three languages made available;

- display colour; to select the display aspect you wish;

- first installation: used to make sure that the water circuit will be filled in at the next power on; if the value is zero, the machine will perform the cycle just as for 08.02 at the next power on;

- deinstallation: to empty water circuits automatically:
  - detach the water supply and press “10”;
  - following the display’s messages, verify that the drip tray and the grounds container are empty an press key “10”;
  - insert an extension into the drain tap of the pressure boiler (see 05.11. and 13.20.), remove the plug from the outlet hose of the air break (see 05.10. and 13.20.), put them close to a bucket and press “10”;
  - open the pressure boiler tap and press “10”;
  - the display shows:
    - remove the tube, close the pressure boiler tap and reinsert the drain plug of the air break when the display shows:
  
    - at the end of the uninstall cycle, the pressure boiler water temperatures will be set to zero and the machine will be set to "FIRST INSTALLATION=0";

  - to enable the summer time function (from the last Sunday in March to last Sunday in October, the set time is automatically increased by one);

  - if enabled, the operator can reset the water filter decounter by pressing the “PROG” key; (see 05.14.);

  [09.01.g. diagnostics]

  - press key “2” to access diagnostics and to enable the machine to display (keys “4” and “5”) the standby message and the pressure boiler water temperature, alternatively;

  - press “2” once again to display the voltage value intended to supply devices at 24 V dc;
09.01. h. sales audit  

This menu is intended to gather the quantities of the selections made by the machine: names are assigned according to the EVA-DTS standard:

- **VA 102**
  - quantity of total vends (parameter not resettable);
- **VA 104**
  - quantity of the vends made after the reset;
- **VA 101**
  - total amount of receipts (parameter not resettable);
- **VA 103**
  - total amount of receipts after the reset;
- **VA 202**
  - quantity of total tests (parameter not resettable);
- **VA 204**
  - quantity of tests after the reset;
- **VA 302**
  - quantity of free vends (parameter not resettable);
- **VA 304**
  - quantity of free vends after the reset;
- **CA 201**
  - total amount sold by cash (parameter not resettable);
- **CA 203**
  - total amount sold by cash after the reset;
- **CA 202**
  - total amount of the selections sold by cash;
- **CA 204**
  - quantity of the selections sold by cash after the reset;
- **CA 305**
  - total amount of cash receipts;
- **CA 301**
  - partial amount of cash receipts;
- **DA 401**
  - total amount loaded on RFID cards;
- **DA 402**
  - total amount loaded on RFID cards after the reset;
- **DA 201**
  - total amount sold by means of a RFID card;
- **DA 203**
  - total amount sold by means of a RFID card after the reset;
- **DA 202**
  - quantity of selections sold by means of a RFID card;
- **DA 204**
  - quantity of selections sold by means of a RFID card after the reset;
- **LA 1\*1**
  - selections sold at a standard price;
- **LA 1\*2**
  - selections sold at a happy price;
- **PA 403**
  - free selections;

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<th>TOTAL SELECTIONS</th>
<th>NN</th>
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<tbody>
<tr>
<td>PART. SELECTIONS</td>
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<tr>
<td>TOTAL SEL. N FREE</td>
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</tbody>
</table>
press “2” to display the variables necessary for the MDB protocol; since **cino eC PRO** is unable to accommodate changegiver payment systems, some of these variables will be of no significance, even if made available; press keys “4” and “5” to scroll the values;

- tube dispensing: to empty coins tubes;
- changegiver enable: to enable the coins change of the changegiver
- maximum credit: to establish the maximum acceptable credit amount;
- maximum change: to determine the maximum change amount;
- single/multiple vend: to keep the residual credit amount after a dispensing cycle or not;
- token value: to quantify the value of the token;
- coins change N: to establish the coins to be used for the change when the machine is able to give it; from A to P;
- coins no change N: to establish the coins not to be accepted when the machine is unable to give the change; from A to P;
- set “0” to enable the changegiver; “1” to enable the changegiver only if the change made available is enough or if there is the RFID card; “2” to enable the changegiver only if there is the RFID card;
- tube value: to specify the value in the ensemble of coins tubes;

**this chapter is intended to determine:**
- current time;
- current day;
- current month;
- current year;
- day of the week;

use the three pairs of parameters (Start FN and End FN) to establish three time bands during which the machine will apply “happy prices” (see 09.01.c.);

for each day of the week you can establish a time band during which the machine will accept no selection and reduce the water temperature of the boiler;

to count the energy consumption of the machine;

the machine will perform a wash cycle at the time you have specified provided that it has performed at least five dispensing cycles after the last cycle;
to display the recording of the twenty errors last occurred in the machine; press key “2” to scroll the records and key “4” to reset the recording (see 11.);

after having reached the time quantity you wish, press key “PROG”; the value will be copied between parentheses on the left of the display;

please note that the first warning threshold can be programmed; if exceeded, the display will show an alarm message without interfering with the operation of the machine;

in this ensemble of parameters, key “2”, you can set up some counters to trigger an alarm after a programmable number of events (press “4” and “5” to set up and PROG to store):

- dispensing cycles before having to replace the cartridge of the external filter, if any; as soon as 500 dispensing cycles are left, the display will show “change water filter” and as soon as the decounter has reached 0, it will display “out of service water filter”, thus inhibiting the operation of the machine;

- espresso dispensing cycles before having to service the coffee brewer; as soon as 5 dispensing cycles are left, the display will show “make brewer cleaning” and as soon as the decounter has reached 0, it will display “out of service cleaning brewer”, thus inhibiting the operation of the machine;

- espresso dispensing cycles before having to empty the grounds container; as soon as the decounter has reached 5, it will display the message “remove coffee grounds” until the decounter has reached 0, thus inhibiting the operation of the machine and the display will show “out of service coffee grounds”;

- the maximum credit you can load from the RFID card;

  - 0 for each coin (from A to J) that can be accepted when the RFID card is available;

  - 0 for each coin (from A to J) that can be accepted when the RFID card is not available;
09.01.q. tuning motors

with respect to the setup in 09.01.a:

- the rotation time of every single product motor can be changed (key "4" and "5") by +/- 30%; the change concerns all the activations of the product motors for all selections;

- the time required to activate the grinder motor can be calibrated by +/- 30%, according to the values set up for each selection; once fixed, even this increase or decrease is constant for each activation;

09.01.r. calibration product flux

this procedure will convert the programming of the doses of grounded coffee expressing in grams rather than, as usual, in seconds of activation of the grinder motor;

to perform this procedure, you must have the following:

a container (cup) to collect the doses of ground coffee;
a balance with 50 grams scale (d = 0.01 gram);

before starting the calibration procedure, it is necessary to weigh the container (cup) that will collect the grounded coffee;

the calibration

press key "2" to enter, the display shows:

press PROG;

remove the variable coffee brewer (see 13.07.);

put in place the coffee grounded conveyor and properly place the cup to collect the dose;

press PROG; the machine performs two grinding cycles;

the grounded obtained must weigh 20 grams; if this is true, press the key "1"; if not, set the amount weighed by pressing the keys "4" and "5" to change the digits on the display in the lower right corner; at the end, press the key "1" (remember to subtract the weight of the empty cup);

the display shows:

reinstall the coffee group and all the others components (coffee conveyor, carter, drip tray, ...) and press PROG;

the machine will store the data entered; wait for the end of this automatic cycle, which also includes a switch off/switch on cycle without manual intervention;

at the end of this procedure, the display will show the usual stand-by messages:

after that, in each recipe that includes the coffee beans, the dose will now be expressed in grams of grounded coffee and the machine will compensate the variations of dose while maintaining constant the quantity; the natural wear of the blades which over time tends to decrease the amount of coffee poured into the group, will be well automatically compensated without any outside intervention;
for every soluble canister can be set the delivered grams’ quantity by second (key “4” and “5”); display the partial and the total quantity of delivered product; the partial audit can be erased by pressing the key “4” for some seconds;

identification codes for data acquisition in EVA DTS:
- machine number;
- location number;
- machine configuration;
- address for the connection with the DDCMP protocol;
- 0 for the audit via telemetry; 1 to enable the IRDA acquisition; 2 to disable the acquisition;

to set the diameter of the coffee brewer installed in the machine; it decides whether to keep the percolation chamber of the coffee brewer inserted in the upper piston or not in the standby phase (close);

to enable the grinder calibration time;

choose the option “data” to enable the display to show the data of the dispensing cycles you have performed in succession, just as in 09.01.h.;
to dispense selections on a free basis; the selections made in this mode are counted separately (see 09.01.h.);
choose this option and press “1=pb”, “2=mx1”, “4=water” or “8=hc.” to enable the vending machine to dispense a pre-fixed water quantity to wash the corresponding circuit (see 08.03.);
to carry out the same functions as those described by point 09.01.o.;

the values of the variables composing the machine programming (configuration) can be transferred to an external support, i.e. the flash key; to transfer the machine parameters to the key:
- power off the machine;
- open the door;
- insert the flash key into the orange carter slot (see 05.15. and 05.37.c);
- power on the machine with the service key (see 05.13.);
- the display shows:
  - press “2”;
  - and wait for the display to show:
  - power off the machine and remove the flash key;

now, the flash key contains all the parameters typical of the machine from which they have been fetched. If you wish to programme another vending machine with these data, the previous procedure can be repeated by pressing key “1” instead of “2”: the information will be transferred from the flash key to the vending machine; both procedures will not alter the data contained in the supports from which they have been fetched;
09.07. programming diagram

1. PROG
   - button n
   - functioning
   - clock
     - hour
     - day
     - month
     - year
     - day of week
     - start fn
     - end fn
     - switching on
     - switching off
     - kilowatt hours
     - cleaning
   - out of service
     - n. NN
     - off NN
     - dd mm
     - yy
   - product qty
     - prod. qty n
     - prod. n warning
     - enable stop prod. N
   - maintenance
     - water filter cnt
     - dec coff brewer
     - dec coff grounds
   - rfid card
     - max credit card
     - coin n card
     - coin n. no card
   - tuning motors
     - tuning motor n
     - tuning grinder n
   - product flux
     - calibration brewer
     - calibr. motor gr./sec.
   - audit flux
     - prod. N used part. q.
     - prod. N used tot. q.
   - machine id
     - code id 101
     - code id 104
     - code id 106
     - address vidts
     - data audit
   - variflux
     - brewer diameter
     - position stand by
     - autom. adjustment grinder

2. DATA
   - sales audit

3. TEST
   - TEST vend

4. CLEAN
   - cleaning
     - cleaning x

5. MAINT.
   - maintenance
     - water filter cnt
     - dec coff brewer
     - dec coff grounds
the following tables are intended to supply some information on the programmable parameters of the cino eC PRO software; if not otherwise specified, the numeric time values of devices are understood in tenths of a second (e.g. 27 corresponds to 2 seconds and 7 tenths);

10.01. configuration

the generic parameters intended to dispense the drinks with the different possible products are supplied here below, just by way of example; these values enable the operator to program the selections of reference and they can be used to obtain some functional dispensing cycles even if it may be necessary to make some slight changes to appeal to the users;

<table>
<thead>
<tr>
<th>01. espresso</th>
<th>water exp.</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>02. long coffee</td>
<td>water exp.</td>
<td>45</td>
</tr>
<tr>
<td>03. white coffee</td>
<td>water exp.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>prod. 2</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>water 1</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>mixer 1</td>
<td>60</td>
</tr>
<tr>
<td>04. cappuccino</td>
<td>water exp.</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>prod. 2</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>water 1</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>mixer 1</td>
<td>60</td>
</tr>
<tr>
<td>06. milk</td>
<td>prod. 4</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>water 1</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>mixer 1</td>
<td>115</td>
</tr>
<tr>
<td>07. latte macchiato</td>
<td>water exp.</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>prod. 1</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>water 1</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>mixer 1</td>
<td>65</td>
</tr>
<tr>
<td>08. mocaccino</td>
<td>water exp.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>prod. 1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>prod. 2</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>water 1</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>mixer 1</td>
<td>55</td>
</tr>
<tr>
<td>09. chocolate</td>
<td>prod. 2</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>water 1</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>mixer 1</td>
<td>135</td>
</tr>
</tbody>
</table>

see 04.02.

<table>
<thead>
<tr>
<th>product canisters</th>
</tr>
</thead>
<tbody>
<tr>
<td>milk P1</td>
</tr>
<tr>
<td>chocolate P2</td>
</tr>
</tbody>
</table>

MAN1010119 rel. 01 dated 30.01.2014
Cino eC PRO can produce a drink called Latte Macchiato, composed by milk and coffee and served in the cup in differently coloured bands, typically milk, coffee and milk; to get this special drink, refer to a specific package of instructions, every step of which is called "LM dispensing cycle"; le erogazioni di prodotto in sequenza sono:

- dispensing cycle of 1st mixed milk (at low speed rate);
  10÷15 second pause;
- dispensing cycle of 2nd mixed milk (at high speed rate);
  12÷20 second pause;
- dispensing cycle of espresso coffee;

the different milk consistency due to a different mixing treatment enables coffee to remain in a central range, thus giving origin to the "Latte Macchiato" drink;

act as follows in the programming menu:

flow diagram, "Latte Macchiato" selection;

The data supplied by the table provide for a "latte macchiato" dispensing cycle and they can be adapted to achieve dispensing cycles more suitable for the users’ wishes;
10.03. limits

The table is intended to list the minimum and maximum values you can assign to programmable variables:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>m.u.</th>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>exp coffee water</td>
<td>n.</td>
<td>0</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>product</td>
<td>sec.</td>
<td>0</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>product start delay</td>
<td>sec.</td>
<td>0</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>number of product pauses</td>
<td>n.</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>water time</td>
<td>sec.</td>
<td>0</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>water start delay</td>
<td>sec.</td>
<td>0</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>mixer</td>
<td>sec.</td>
<td>0</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>mixer start delay</td>
<td>sec.</td>
<td>0</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>mixer speed</td>
<td></td>
<td>→</td>
<td>→</td>
<td>low, medium, high</td>
</tr>
<tr>
<td>temperature pressure boiler</td>
<td>°C</td>
<td>0</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>first coffee temperature</td>
<td>°C</td>
<td>0</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>first coffee time</td>
<td>min.</td>
<td>0</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>heater temperature</td>
<td>min.</td>
<td>0</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>product decounter</td>
<td>sec.</td>
<td>0</td>
<td>6.000</td>
<td>0 = no limit;</td>
</tr>
<tr>
<td>machine code A e B</td>
<td>n.</td>
<td>0</td>
<td>65.535</td>
<td>0 = no limit;</td>
</tr>
<tr>
<td>message number</td>
<td>n.</td>
<td>0</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>fan delay</td>
<td>min.</td>
<td>0</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>beep time</td>
<td>sec.</td>
<td>0</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>number of decimals</td>
<td>n.</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>coin A ÷ J</td>
<td>n.</td>
<td>0</td>
<td>65.000</td>
<td>0 = no limit;</td>
</tr>
<tr>
<td>prices 1 ÷ 10</td>
<td>n.</td>
<td>0</td>
<td>65.000</td>
<td>0 = no limit;</td>
</tr>
<tr>
<td>tuning motor</td>
<td></td>
<td>→</td>
<td>→</td>
<td>+/- 30%</td>
</tr>
<tr>
<td>tuning grinder</td>
<td></td>
<td>→</td>
<td>→</td>
<td>+/- 30%</td>
</tr>
</tbody>
</table>
11. solution of problems

any event that may occur during the operation of a machine may totally or partially compromise its functionality;

to help the operator restore the normal functionality of the vending machine, the display shows an error code as an abbreviation that identifies the malfunction and helps the operator find the faulty device;

the content of this chapter is intended to collect, expand and comment upon these abbreviations, which are forcibly concise, to facilitate the solution of the failure;

please note:

1° in the machine, the error may be signalled with or without a suffix that – if present – is intended to specify the meaning better; however, the number on the display identifies for sure the devices, assemblies and functions in question;

2° in the following table:
- the first column shows the machine number; any variant is shown with the detail letters for more specification;
- the second shows the machine district or function affected by the event;
- the third one contains a comment, the purpose of which is to help find a solution; these notes are surely not exhaustive because a malfunction may have several causes or be originated by an ensemble of factors, but they any way give some hints on how to proceed;

3° not all malfunctions are signalled by an error message since the latter is generated by electric controls that are not made available in all machine districts;

4° this document is meant only for the technicians who are – at least briefly - familiar with the technologies, machines, devices and names generally used in the vending field; the wiring diagrams supplied with the machine are absolutely necessary to understand and solve the events described herein;

attention

while performing the actions necessary to restore the machine functions, act with the utmost caution and strictly observe the safety instructions for operators and users;
<table>
<thead>
<tr>
<th>OFF 2</th>
<th>payment system protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF 2 E executive MDB parallel</td>
<td>no communication between the payment system and the vending machine CPU; it might be caused by improper power supply, false programming or payment system malfunction;</td>
</tr>
<tr>
<td>OFF 2 M</td>
<td>dip tray</td>
</tr>
<tr>
<td>OFF 2 P</td>
<td>the contact controlling the liquid level in the drip tray is closed because liquid level;</td>
</tr>
<tr>
<td>OFF 3</td>
<td>EAROM</td>
</tr>
<tr>
<td>OFF 5</td>
<td>water supply</td>
</tr>
<tr>
<td>OFF 6</td>
<td>pressure boiler</td>
</tr>
<tr>
<td>OFF 6 C</td>
<td>air break</td>
</tr>
<tr>
<td>OFF 6 D</td>
<td>air break</td>
</tr>
<tr>
<td>OFF 6 G</td>
<td>pressure boiler</td>
</tr>
<tr>
<td>OFF 7</td>
<td>espresso circuit</td>
</tr>
<tr>
<td>OFF 7 A</td>
<td>pressure boiler pump</td>
</tr>
<tr>
<td>OFF 8</td>
<td>coffee brewer</td>
</tr>
<tr>
<td>OFF 8 A</td>
<td>piston</td>
</tr>
<tr>
<td>OFF 8 B</td>
<td>presence</td>
</tr>
<tr>
<td>OFF 8 C</td>
<td>piston</td>
</tr>
</tbody>
</table>

During the first installation phase, water inlet error in the machine; after having opened the water inlet solenoid valve and activated the pump, the volumetric counter shall send the CPU a sequence of pulses to give evidence that water is flowing; if this does not occur, error 6G is triggered; if the power-on time of the espresso circuit pump has exceeded the limit; the water flow has encountered more resistance than usual and the pulses produced by the volumetric counter have required a time interval deemed to be too long for a dispensing cycle within proper limits; also check the grinding amount and degree of coffee beans poured into the coffee brewer chamber; the machine fails to recognise the presence of the coffee brewer in its correct working position; the brewing chamber is not moving properly;
| OFF 10 | EAROM | stored data are not consistent (reading or writing error) and the overall operation of the vending machine may be otherwise than expected; |
| OFF 14 | water inlet | if water is not reloaded after six dispensing cycles, error 14 is triggered; even a water inlet pressure value other than the pre-set one, may cause this error, thus filling in the pressure boiler in excess and providing for a number of dispensing cycles higher than the pre-set one; if selections are dispensed with a limited water quantity, the error is more likely to occur; |
| OFF 14 B | pressure boiler | |
| OFF 16 | programming keyboard | the programming keyboard inside the machine has a short-circuited key or it has been pressed too long; if pressed too long, the manual release button of cups turrets may cause this error; |
| OFF 17 | keyboards | a button appears as if it were constantly pressed; |
| OFF 17 A | selection | |
| OFF 24 | power supply unit | the actual 24 V dc voltage value is higher than the tolerated one; |
| OFF 24 A | 24 V dc | |
| OFF 24 B | 24 V dc | the measured 24 V dc voltage value is below the admitted threshold or totally absent, e.g. because a fuse has tripped; find out and remove the causes that have produced this error before powering on the machine again; |
| OFF 31 | espresso coffee water | the pressure boiler water temperature is higher than the programmed value; |
| OFF 31 A | temperature | |
| OFF 31 B | temperature | water fails to achieve the set temperature; |
| OFF 31 C | pressure boiler probe | the temperature probe is interrupted or its electric connector is detached; |
| OFF 31 D | time | the temperature fails to achieve the programmed value within the admitted time limit; |
| OFF 77 | CPU | the "clock" function is not properly performed; the buffer battery might be low; after having restored the function, carefully check the clock-related machine functions: happy hour, time bands, ... that might have been compromised by the lack of time references; |
| OFF 80 | MDB change giver | a pipe sensor is not properly working; |
| OFF 80 4 | pipes | |
| OFF 80 6 | validator | validator not inserted or disconnected; |
| OFF 80 7 | pipe | a coin pipe is not properly working; |
| OFF 80 8 | memory | ROM with reading/writing error; |
| OFF 80 C | coin | coin locked in the acceptance path; |
| OFF 80 D | coin | attempt at fraud and coin removal; |
the cino eC PRO vending machine requires no special maintenance procedure to do its job; however, if you provide for careful and frequent cleaning, this may help the machine keep its performance constant, prevent failures and ensure the high quality of dispersed drinks; the frequency of cleaning operations largely depends upon the number of dispensing cycles and the hardness of water in use (use a softener system) and it shall be adjusted to the working conditions of the vending machine;

the actions described are intended to prevent the bacterial growth in the machine areas directly in contact with foodstuffs and to keep the parts conveying drink-composing products clean; after having disassembled the parts of the machine listed here below, use plenty of lukewarm water to remove any residue that might build up;

the support of a bacterialstatic or bactericidal solution may strengthen a deep cleaning action, provided it is compatible with human health and the supply of foodstuffs; reassemble all the parts you have cleaned after having dried them by means of a clean piece of cloth;

refer to the content of the Internet address:

http://ec.europa.eu/food/food/biosafety/
hygienelegislation/index_en.htm

this site is intended to supply the European Parliament recommendations for properly and safely processing foodstuffs;

consult also the 2004/852/EC European Community regulation


before accessing the machine for each maintenance operation, it is recommended to warn the users by means of boards properly positioned that it is forbidden to approach the vending machine and to use it;

**attention**

never wash the machine by using water jets;

wash hands thoroughly with water and soap before handling the machine and the products;

only use potable water;

all components must only be cleaned with warm running water;
| 12.01. weekly | power off the machine; detach the power supply cable and carefully make sure that there is no sign of wear; carefully check the stability and efficiency of the internal connections of the mains supply; |
| drip tray | extract the drip tray (a), remove the upper grilled cover and wash with plenty of water; open the door and clean the drip tray housing and the nozzle holder spout inside the machine (e); |
| grounds container | after having opened the door and removed the drip tray, pull the left side of the drawer forward and remove it; observe the position of the water inlet tube of the brewer;  |
|  | **attention**  |
|  | the residual coffee grounds shall be disposed of in observance of the sanitary obligations in force in the country; |
| product slides | turn the baffles of product slides (c) into a close-position, remove them from the canisters and wash them with plenty of lukewarm water (product slides are plug-in secured); |
| dispensing system | turn the fixing levers of mixing bowls clockwise (d), remove the product nozzles from the holder by releasing them, pull the mixing bowl and the dust extraction ring; wash the assembly of disassembled parts with plenty of lukewarm water; |
| inner side of the machine | remove all residues from the internal surfaces of the machine and the door, above all in the proximity of the cup station and clean with a piece of wet cloth; |
|  | dry the parts carefully and re-mount them on the machine; |
|  | after opening the door, re-connect the supply cable and power on the main switch; |
|  | use the service key;  |
|  | **attention**  |
|  | act extremely carefully; |
|  | the vending machine is supplied and running to all effects; the mobile parts of the coffee brewer will be handled; act extremely carefully; |
|  | perform some wash cycles of the hydraulic machine circuits (see 08.03.); |
|  | remove the service key, put it into its housing, close the door; |
| external body | clean outside the machine by using a piece of non-abrasive cloth, dampened with lukewarm water; use a neutral, non-foamy detergent, only if necessary;  |
|  | **attention**  |
|  | use neutral detergent products only; never use abrasive cloths, steel sponges, aggressive or foamy detergents and other solvents, hot water and acids; |
besides fulfilling the tasks already specified by chapter 12.01. weekly, it is also recommended to act in the following districts:

dispensing system

disassemble all components of the dispensing system:
- extraction drawer (f)
- water dispensing ring (g)
- mixing bowl (h)
- mixer (l)
- dispensing tubes (m)
- product dispensing nozzle holder (n)

extract the mixer fan just by pulling it; check the wear state of the w ring (i) sheathing the mixer motor shaft; wash the assembly of disassembled parts with plenty of lukewarm water;

products canister

remove the product canisters (o) by lifting them in the front and by pulling them; remove the cover and empty the product residue;

turn the baffles of product slides into a close-position; remove them from the canisters and wash them with plenty of lukewarm water, as it is described by chapter 12.01. weekly;

at the back of the product canister turn the black ring nut clockwise and remove it; extract the worm screw by pulling the black bush; to facilitate disassembly, push the stirring wheel in the correct direction;

lift the two fastening clips (one for each side) from the inside of the product canister and remove the two red plugs from the outside; remove the stirring wheel; wash the disassembled parts with plenty of lukewarm water;

coffee brewer

the whole coffee brewer can be cleaned and washed with running water since it has no component that may be damaged; to extract the coffee brewer, first remove the coffee dispensing tube from the nozzle holder, release the carter (p) by pressing on each side and by pulling it to the outside, remove the ground grey conveyor just by pulling it, remove the coffee brewer (q) by pressing the orange release button, by lifting it slightly and by pulling it;

environmental and powder aspirators

carefully check that the rotors of the two aspirators on the rear panel of the vending machine can freely rotate without any hindrance or stoppage; make sure that the corrugated tube for connection between the powder aspirator and the extraction drawer is clean and free of any product deposit;
12.03. yearly

dispensing system replace the gasket at the base of the mixing bowl of the mixer; remove the mixer motor fan by pulling it; replace the gasket of the mixer motor shaft;

products canister disassemble the products canister from the machine; empty them, disassemble them in their basic components and wash them carefully as already described by chapter "12.02. monthly";

powder aspirator drawer disassemble the mixing bowls; pull out the extraction drawers (r); wash them with plenty of lukewarm water;

silicone tubes make sure that the water transport tubes are intact and that they have kept their transparency, replace them, if necessary;

coffee brewer - replace the three sealing rings (s) of the compression chamber and lower piston guide;
- replace the upper and lower filters (t);
- check the state of the compression chamber;

pressure boiler disassemble the pressure boiler; separate the pressure boiler from the solenoid valves block (u) and check the seal o-ring; clean the instant and espresso outlet water circuits; check the third way of the espresso valve drain by removing any trace of residue (v);

air break empty and clean the air break tank (z); carefully check the micro switch functionality operated by the floater rod and make sure that it can freely slide without any hindrance;

12.04. out of order

temporary if the vending machine should be inactive for a long period, please act as follows:
- perform the uninstall cycle (see 09.01.f.);
- detach the water and energy supply;
- empty the liquid waste tray and the internal water tank;
- empty and clean the product canisters;
- clean the internal and external surfaces by using a wet piece of cloth;
- cover the machine by means of a cloth;
- store it in a sheltered place, at a temperature not below 5 °C, at a relative humidity not above 80%;

definitive if you should definitely set the vending machine out of commission and provide for the disposal of some parts thereof, after having carried out the operations above, disassemble the vending machine by separating every single component and subdividing the parts according to the nature of materials; the applied symbol means that the components of the vending machine shall be not processed as home rubbish, but delivered to the collection points capable of recycling electric and electronic equipment; refer to the 2002/96/EC Directive and to the relative rules;

the complete text of the European directive about this specific subject-matter is made available on the Internet site:

13. how to do to:

13.01. get an espresso selection

the parameters that determine the quality and quantity of an espresso selection in a cup are:

- the temperature and quantity of percolation water;
- the coffee grinding degree;
- the ground coffee quantity;
- the ground compression;
- the features of coffee beans;

considering the great variability of these factors, it is important to establish which are the features of the espresso most in demand by the final user and to programme the vending machine components to achieve the best result for this choice;

many of the variables contributing to dispense an espresso can be regulated via software and autonomously programmed for each selection, except for:

- the water temperature that – once set up – is constant;
- the grinding degree of the coffee beans that is manually established and – once set up – is constant;

the boiler water temperature is generally set to $92 \, ^\circ C \div 94 \, ^\circ C$ in a vending machine installed in a room where the temperature is as prescribed ($5 \, ^\circ C \div 35 \, ^\circ C$);

the grinding degree of the coffee beans – fundamentally established by the distance between the grinding wheels – can be manually adjusted by rotating the regulation ring nut;

it is assumed that a grinder with new blades is basically regulated as follows:

- by turning the regulation ring nut clockwise as far as the stop (minimum distance between the grinding wheels);
- by turning the same ring nut counterclockwise by one complete turn plus 5/8 notches;

the resulting grinding degree can be considered of reference; you can certainly adapt it to the espresso you wish by varying the distance between the grinding wheels;

\[\text{guide lines}\]

\begin{align*}
\text{espresso coffee "Italian style" (50 cc. in a cup)} & \quad \text{boiler water temperature: as above;} \\
& \quad \text{grinding degree: as above;} \\
& \quad \text{grinding time (for ~ 8.0 gr.) percolation water time:} \\
& \quad 6 \, \text{sec.;} \quad 15 \, \text{sec.;} \\
& \quad \text{step down brewer: no} \\

\text{espresso coffee "American style" (200 cc. in a cup)} & \quad \text{boiler water temperature: as above;} \\
& \quad \text{grinding degree: as above;} \\
& \quad \text{grinding time (for ~ 12.0 gr.) percolation water time:} \\
& \quad 9 \, \text{sec.;} \quad 35 \, \text{sec.;} \\
& \quad \text{step down brewer: 1;}
\end{align*}

the cup results can be certainly adapted to the final user’s requests better by changing the parameters above;

13.02. insert labels

open the door and remove the orange protection carter, slightly lowering the two fixing lugs; insert the labels into the pockets by observing the machine configuration;

13.03. empty the drip tray

the drip tray is arranged in its work seat and retained by the notches in the structure; pull to remove it;
13.04. empty the grounds container

after having opened the door and removed the drip tray, pull the left side of the drawer forward and remove it; observe the position of the water inlet tube of the brewer;

13.05. remove the coffee hopper

pull the orange closing baffle and lift the coffee hopper; pay attention not to spill the content thereof;

13.06. remove the instant canister

rotate the dispensing slide closure and pull the canister by lifting it slightly; to reassemble it, insert the rear bush into the motor gear and the lower pin into the horizontal surface hole; the product slides are plug-in mounted and removed from the canisters by turning them clockwise;

13.07. remove the coffee brewer

after opening the machine, press on each side of the protection carter (a) and remove it by letting the espresso nozzle through the groove after removing it from the nozzle holder (b); remove the ground grey conveyor by pulling it (c); pull the brewer release button (d), lift and extract it;

13.08. regulate the grinding degree

remove the coffee canister; turn the grinder ring nut (clockwise for a finer degree); the effect produced by the regulation is shown by the drink after three or four dispensing cycles;

13.09. regulate the ground dose

see software "09.01.a. grinder time" and also "13.01. get an espresso selection";

13.10. replace the o-ring of mixing bowls

remove the silicone tubes intended to dispense the product; turn the orange ring nut clockwise; pull the mixing bowl body and extract the mixer fan; you can now access the w-ring of the motor shaft, the water inlet gaskets of the mixing bowl and the mixing bowl gaskets, as already described by chapter 12.01. monthly;

13.11. replace the mixer motor

remove the silicone tubes intended to dispense the product; turn the orange ring nut clockwise and pull the mixing bowl body; unscrew the crosshead by using a PH2 screwdriver and extract the motor; the power supply wires can be removed without any tool;

13.12. replace the product motor

remove the product canister; access the rear part of the machine; extract the two small electric cables from the motor, hold the body, push it to the bottom to release it from the bayonet connection of the structure; the power supply wires can be removed without any tool (observe the polarities);

13.13. determine water and product times

the times specified by table 10.01. can be referred to as the times functional for the machine and the products to be dispensed; however, they can be adapted to the capacity of the user’s cups (by changing “time water N”) and its tastes (by changing “product N”); please, never forget to make sure that the dispensing time of the instant product is always lower than the one of corresponding water;

13.14. programme delays

(if accepted) dispensing starts as soon as the user presses a selection key; the order in which instant products are poured into the cup depends upon the values of delays (e.g. the one, the delay value of which is zero, will be dispensed before the one, the value of which is 40, dispensed four seconds after the user has pressed the selection key); pay special attention when programming the delays in dispensing a product and the water diluting it in the mixing bowl; except for the instant coffee product, for which just the opposite is applicable, it is recommended to dispense water before the product to enable the latter to drop on the water film already present in the mixing bowl for a better mix; espresso is dispensed before and after any instant product by programming the variable “coffee sequence”;
13.15. regulate the speed of mixers  
the rotation speed of the motors of product mixers can be adjusted between 15,000 r.p.m. and 5,000 r.p.m.; the drink quality of instant products depends a lot upon the action of the fans of mixers: instant chocolate generally requires a long mixing time at the maximum speed for dissolution in water whereas instant tea shall not be mixed to get a drink quality without any bubble on the surface; see 09.01.a.

13.16. choose the quantity of break numbers  
if instant products can be hardly dissolved in water, it may be of use to stop the product dispensing cycle from the product canister for a short time; the water flowing into the mixing bowl will have the time necessary to remove any product build-up; see 09.01.a.

13.17. determine the suction fan time  
to remove the residual powder of instant products from inside the machine, it is recommended to use the value in minutes you have already programmed (three); if you should use particularly volatile products, increase the time to five (and more) minutes; see 09.01.f.

13.18. time tests  
to check the rotation time of a product motor and a mixer fan or the activation time of a solenoid valve during the programming phase, when the display shows "PRODUCT N" or "WATER N time" or "MIXER N", press the "PROG" key: the device will be activated for the programmed time; see 09.01.a.

13.19. access to the rear  

**Attention**  
make sure that the power supply cable has been detached from the mains before

unscrew the six screws intended to fasten the metal panel ( );

lift slightly and extract the panel;

all internal components of the machine can be now accessed;

13.20. remove water  
prepare a bucket beneath the support surface of the machine; after having removed the back of the machine, remove the plug closing the drain tube of the air break by unscrewing the screw ( ), access the drain tap of the boiler by unscrewing the two screws ( ) and open it; activate the "deinstallation" cycle (see 09.01.f.);

13.21. install a payment system  
there is a kit including all the parts necessary to install a payment system in cino ec PRO; after having installed the components of this kit, refer to the above to programme the system functionality;

Rheavendors Services S.p.A. is at disposal for any kind of support and information on the installation of payment systems; (see 02.02.);

13.22. return some material under guarantee  
if you should return any material under guarantee that is either defective or not in compliance with your requirements, fill in the form "MOD. PO 19.01/2B Materials under guarantee – Authorisation to return" and send it to the fax number above to apply for authorisation; only after having received the authorisation form signed and numbered, you are permitted to send the goods at your expenses to the address specified by the form;
cino eC PRO by rheavendors group

14. hydraulic diagram

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