CTOMAPT
DENTAL SOLUTIONS

OPERATOR'S HANDBOOK

MICRO SMART

SUSTAINABLE PROGRESS

CATTANI
AIR TECHNOLOGY

ENGLISH

CATTANI
AIR TECHNOLOGY

MICRO SMART

SUSTAINABLE PROGRESS

INDEX

• *General running data Micro-Smart dental aspirator*

Model	Micro-Smart
Rated voltage	230 V ~
Rated frequency	50/60 Hz
Rated current	6,3 A
Protection against electric shock	Class *I*
Operating conditions	Continuous operation
Protection against ingress of liquids	Ordinary
Degree of protection against electric shock	Type B
Max. absorbed power	1,30 kW
Max. flow	55 m^3/h
Max. head for continuous service	2100 mm H_2O
Sound pressure (version without box) from 60Hz to 120Hz* *	from 64 dB(A) to 71 dB(A)
Sound pressure (version with plastic box) from 60Hz to 120Hz	from 63 dB(A) to 68,5 dB(A)
Sound pressure (version with outdoors box) from 60Hz to 120Hz	from 53,6 dB(A) to 62 dB(A)

~	Alternating current	IEC 417-5032
⏚	Earthing	IEC 417-5019
	Degree of protection against electric shock	CEI EN 60204-1
○	Open (disconnected from the main electrical supply)	IEC 417-5008
I	Closed (connected to the main electrical supply)	IEC 417-5007

Sound pressure level tested according to the standard ISO 3746-1979 (E).
Parameters: r or d = 1,5 – background noise: 34 dB (A) – instrument Bruel & Kjær type 2232.
** Sound pressure level registered at maximum speed and head.

• Introduction
• Signals and warnings

• Introduction

This booklet is intended to illustrate the installation and initial operation of the appliance. It also informs on possible dangers and the precautions that should be taken in order to avoid accidents.

This manual should be always available for consultation during installation, initial operation, use and maintenance operations of Micro-Smart.

Our updated manuals are available at **www.cattani.it**.

We recommend their consultation, especially for **updates** concerning **safety**.

• Signals and warnings

•Electrical shock risk: also 230 V ~ can be lethal. 

• Biological danger, risk of infections from epidemic diseases. 

• General danger sign. 

• Personal protections for heavy works. 

• Personal protections against biological danger. 

• High temperature. 

• Keep the room free from flammable, corrosive or explosive material. 

• Compulsory direction of flow or of rotation. 

Warning signs cannot always fully express danger warnings, therefore it is necessary that the user reads the warnings and keeps them in due consideration.

Failure to observe a danger sign or warning may harm operators or patients.

Safety devices must not be removed. Appliances or their functioning must never be modified.

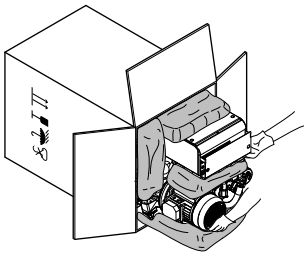
Despite all our efforts, it is still possible that danger warnings are not exhaustive: we apologise to the users and kindly request them to care for all danger sources that might have passed unnoticed, and to inform us accordingly.

• Installation and initial operation

• Recommended precautions

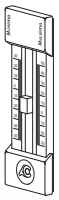
Before unpacking the appliance, check the warning shock-watch on the carton. In the case of it being red or the carton being damaged, accept the material while reserving the right to examine the machine.

Unpack the appliance following the instructions shown on the package. The carton is recyclable. Dispose of it in compliance with regulations in force.



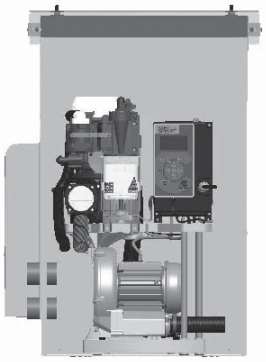
The machine installation must be carried out by a specialist, equipped with the necessary tools. Install the appliance in a clean location, far from heat sources, humidity and dust. Micro-Smart can be installed outdoors (on a balcony, in veranda or gardens), provided that it is sheltered from rain, humidity, frost and direct sunshine.

For outdoor installation we recommend the use of our special designed enclosure fitted with double isolating roof, anti-freeze and ventilation systems (both fitted with fixed thermostat for automatic temperature control).

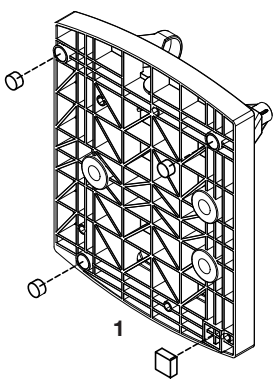


In the plant room temperature can range from a minimum of + 5 °C to +35 °C max.

Micro-Smart fitted with box, for indoors our outdoors installation, can be supplied with antifreeze device. In the case of the plant room requiring ventilation or air-conditioning, we suggest to contact a thermo-technician for a tailored solution. The plant room must be closed to patients and extraneous people. If such a room is not available, machines must be protected by a suitable cover, which must not be easy to remove. Use protections and danger warning boards to prevent accidental risk from electrical shocks, and/or the possibility (unlikely but not excludible) of fire, explosion and contaminating air or liquid leakage. Use indoors and outdoors boxes designed and produced by the manufacturer of the machines only.



Keep the plant room free from flammable material. Make sure that there is no possibility for gas leakages. Do not connect damaged appliances to the mains power supply. Do not use extension leads, multiple plugs or sockets. Before connecting the machine to the mains, ascertain that the feeding line is complying with the regulations C.E.I. 64-8 and that a thermal switch and a residual current operated circuit-breaker (class A or B) (16A) according to the regulations EN 61008-1 are installed. Light coloured, wooden, linoleum, rubber or marble floors can change colour or be marked if they are kept in contact with rubber vibration-proof devices **(1)**. Therefore, it is necessary to use a rubber sheet or some other suitable material to isolate vibration-proof devices from the floor.



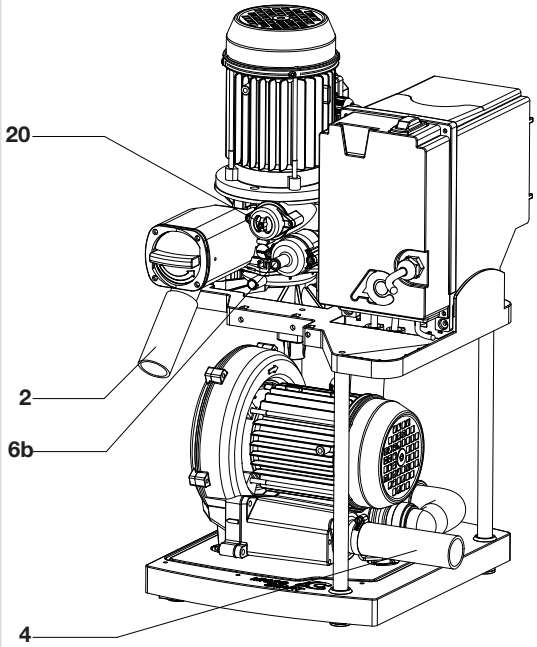
• *Installation*

Before connecting the aspirator to the piping of the centralized system, ascertain that aspiration piping is clean, as heavy debris can damage the appliance.

Connect the PVC light grey aspiration tube **(3)** (supplied with the machine) to the 30 mm Ø tube-holder **(2)** ("aspirated fluid inlet"). The other end of the same tube should be connected to the aspiration piping **(2b)** coming from the surgeries.

The black heat resistant exhaust air pipe **(4b)**, fitted with a metal spiral, must be connected to the 30 mm Ø tube-holder **(4)** ("exhaust air outlet"). Connect the other end of the pipe to the antibacterial filter **(5)**, passing preferably through a silencer **(5a)** supplied with the aspirator. The hot air coming from the antibacterial filter must be conveyed outside.

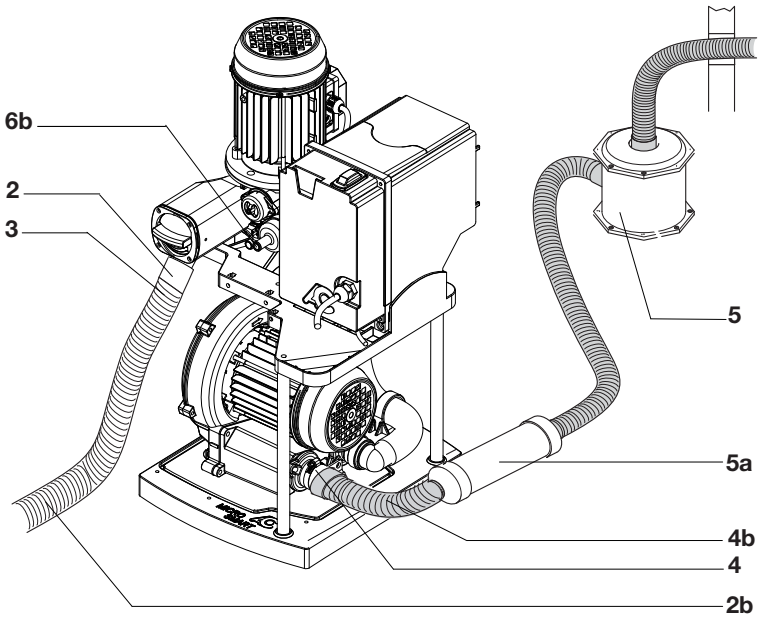
Connect the 18 mm Ø tube-holder **(6, page 7)** to the liquid drain pipe. In the version fitted with Hydrocyclone the aspirator is draining liquids by gravity and therefore fluids cannot be pumped upwards at all, and the pipe must be at the same level as, or lower than, the waste fluid outlet. The 10 mm Ø tube-holder **(8, page 6)** ("emergency drain") must be connected to the liquid drain pipe. In the version without Hydrocyclone the 11 mm Ø tube-holder **(6b)** must be connected to the liquid drain pipe. The piping connecting the machine to the aspiration and draining system should be flexible to damper the small vibrations produced by the aspirator.



The aspiration piping should be run in the floor and at a point near the aspirator it should rise about 30 cm to reach the tube-holder **(2)** (draw. A and B, page 21).

If Micro-Smart is installed at a level lower than the surgeries, the aspiration piping must not enter the centrifugal separator perpendicularly. Rather, place a few metres of piping horizontally on the same level of the machine and then connect it to the centrifugal separator inlet which is at a higher level (using a flexible pipe) (draw.B, page 21).

After the installation is completed, connect the power cable to the mains power supply according to the regulation EN 61008-1.



Finally, connect the low voltage line which connects the dental unit to the aspirator. Ascertain that the contacts on the dental unit are clean (volt-free contacts).

- ***Starting, final testing and users instructions***

Install and connect the aspirator. Select the ON position on the switch, which is illuminated once one of the dental units has started working. At this point aspiration will start.

To check if Micro-Smart is working correctly, it is advisable to carry out the dynamic tests (see draw. E, page 24) and to consult the Micro-Smart working diagram (draw. F, page 25).

Users must be instructed on the use and routine maintenance of the new, not used, and therefore not yet contaminated, machines.

Demonstrate to users how to follow the Micro-Smart working phases on the display, to interpret danger warnings and to carry out routine maintenance using Puli-Jet plus **(A)** - (by means of Pulse-Cleaner) **(B)** - and Antifoaming Tablets **(C)** regularly.

- ***Operation***

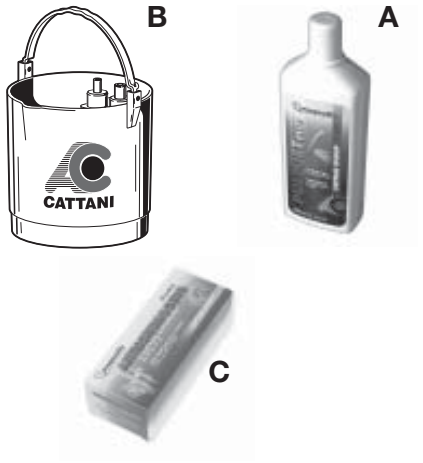
The aspirating unit **(9)** (through pipe **10**) creates vacuum inside the centrifugal separator **(11)**. The fluid coming from the dental units enters the centrifugal separator **(11)** from the pipe **(2)**.

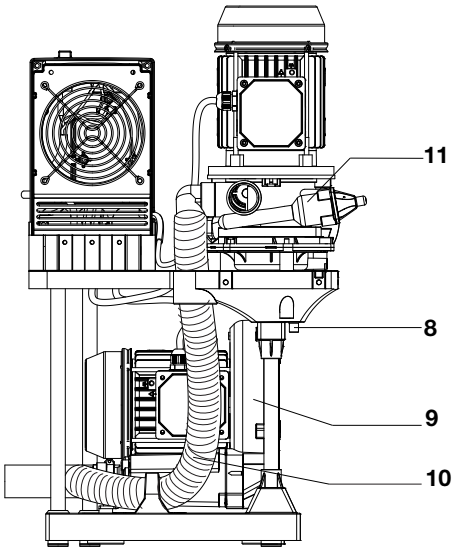
The centrifugal separator separates air from liquids: air is aspirated through to the suction motor, via the pipe **(4)**, whereas liquids are drained to the sewage through the waste pipe connected to the tube-holder **(6)** in the version without Hydrocyclone and to the tube-holder **(6b)** in the version with Hydrocyclone.

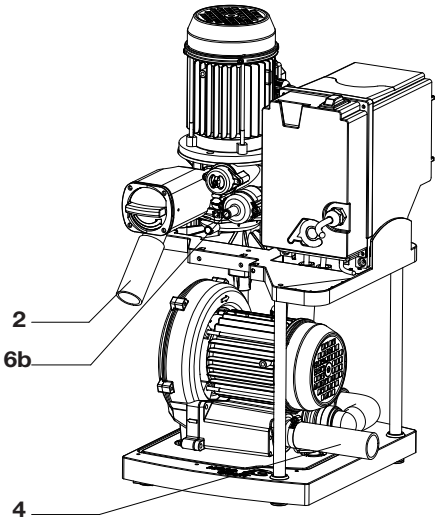
The centrifugal separator **(11)** starts before the aspirating unit **(9)**, this allows drainage of liquids that may have collected inside the centrifugal separator before aspiration starts. Moreover, when the machine is switched off, a timer (adjustable) keeps the motor running for min.10” - max. 120”.

- ***Amalgam Separator complying to the standard ISO 11143***

On request, Micro-Smart can be supplied with the amalgam separator “Hydrocyclone ISO 5,5 l/min.” having its separate manual.



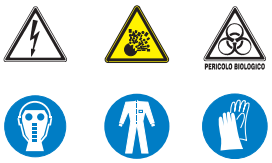




• Routine maintenance

Routine maintenance must be entrusted to specially instructed surgery staff.

• We recommend that special attention be paid to all danger signals, and that protective goggles, gloves and disposable overalls for personal protection be used.

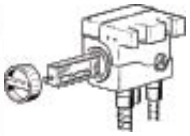


Daily (especially at the end of the working day and/or several times a day according to need)

• Check for any possible alarm on the display. In case of alarms, contact the technician.

• At the end of every working day aspirate a solution of Puli-Jet plus disinfectant using the Pulse Cleaner.

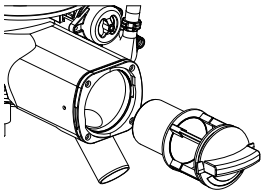
• Clean the aspiration filters on the dental unit, collect the waste, especially amalgam, according to the regulations in force and place the Disinfectant Antifoam Tablets in the dental unit filters.

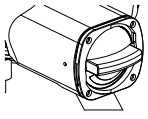


• **Disconnect the machine from the mains before any maintenance intervention.**

• Clean the aspirator's filter.

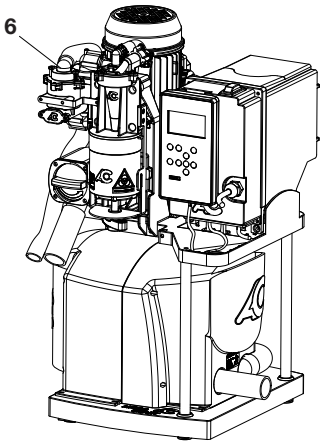
Periodically, according to need





• Make sure that the aspirator ventilation is not obstructed.

• Keep the plant room free from anything not related to the machines, especially from flammable material. Make sure that there is no possibility for the formation of corrosive, flammable and explosive mixtures.



• Extraordinary maintenance

Extraordinary maintenance must be entrusted to a trained technician in possession of original spare parts.

• Pay special attention to danger signals. Use protective goggles, gloves and disposable overalls for personal protection.

• Check that routine maintenance has been duly carried out and make sure that Magnolia products are used.

• Before any intervention carry out a series of washes with Eco-Jet 2 disinfectant, then wait 10 minutes for a complete disinfectant action.

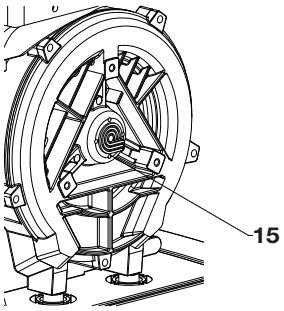
Recommended every 12 months

• Check maximum detected temperatures and all alarms. Intervene accordingly.

• Where routine maintenance is not carried out properly or unsuitable products are used, train the staff and inform the person in charge. Warranty ceases in case appliances are treated with products which are different from those recommended.

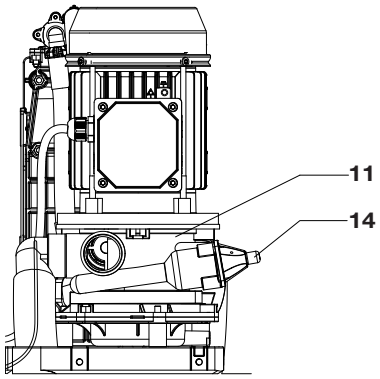
• Check the aspirator noise level (see page 2).

• Remove dust from the control panel's fan and heat sink using a blast of dry air not exceeding 2 bar pressure. By means of a 6 bar blast of air clean also the small holes on the frontal cover of the aspirating unit **(15)**.



Recommended every 18-24 months

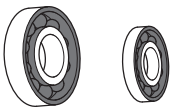
• Check the conditions of plastic hoses, in particular the hoses under pressure connecting the centrifugal separator **(11)** and the Hydrocyclone ISO. We suggest to replace these hoses every 18-24 months.



• Check the working conditions of the centrifugal separator **(11)** and re-circulation valve **(14)**.

Recommended every 10,000/15,000 working hours

• Every time a component containing a rubber part ("O" ring, gasket or seal) is disassembled, replace the rubber part.



• Replace the motors bearings.

• *Instructions to navigate Micro-Smart menus and to modify some parameters*

Main menus

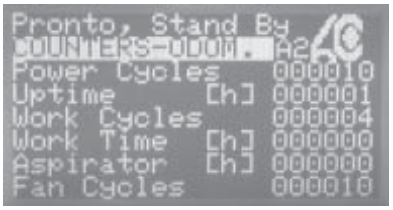
When Micro-Smart is switched on, the display shows the Cattani logo for 10 seconds, after which time the main menu appears.

Main Menu "A1"

This menu shows some parameters such as: cycles, suction activation time, temperature, presence/absence of the amalgam container and system software release.

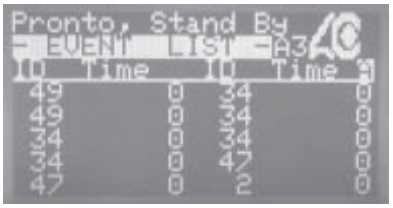
Control Menu "A2"

The display shows the number of times Micro-Smart has been switched on by means of the main switch (Power Cycles), the total hours Micro-Smart has had power supplied (Uptime), the number of times suction has been activated (Work Cycles), the total running hours of the aspirator (Work Time), the average working hours of the blower (Aspirator) and the number of times the control panel cooling fan has been activated (Fan Cycles).



Events Menu "A3"

This menu shows the last 10 events or alarms that have occurred to Micro-Smart. Alarms are indicated with a number; refer to the table at page 18 to identify them.



Control Menu "A2"

COUNTERS – ODOM . A2		
POWER CYCLES	000000	Number of times the aspirator has been switched on by means of the main switch.
UPTIME [h]	000000	Total hours Micro-Smart has had power supplied.
WORK CYCLES	000000	Number of times the aspirator has been activated by the dental unit.
WORK TIME [h]	000000	Number of real running hours (motors running).
ASPIRATOR [h]	000000	Average working hours of the aspiration motor (UNI-JET 40).
FAN CYCLES	000000	Number of times the control panel cooling fan has been activated.

Secondary Menus

Press  to enter the Secondary Menus.

Pressing the key  takes you through the other menus.

Drive Status

This menu can be accessed without any access password. The display shows useful information about the Micro-Smart functioning.

User Parameters

Use the password 0000123000 to enter this menu.

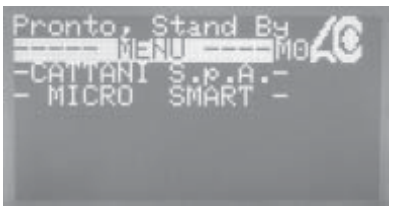
From this menu the Vacuum Set Point and the unit's displayed Language can be set.

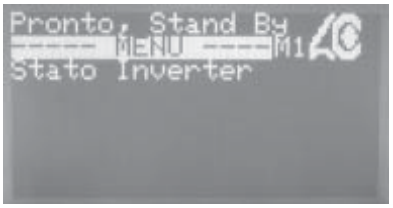
System Parameters Setup

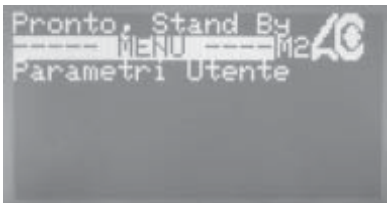
The password 0000456000 must be entered to gain access to this menu. From this menu Off Delay Time and other technical parameters can be set.

Factory Settings Restricted Access

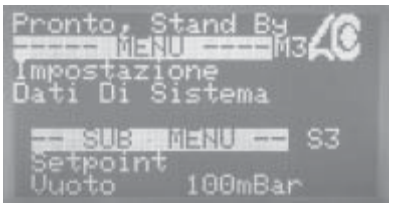
This menu cannot be accessed by the user. It can be entered by the manufacturer only.

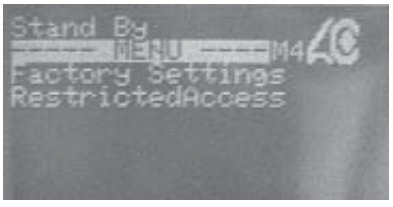






scroll down button





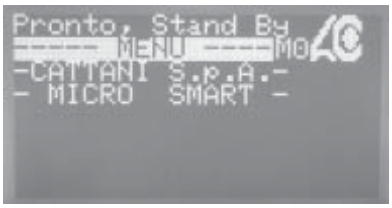
Entering Access Passwords

The Drive Status menu is the only menu that can be accessed without the use of an access password.

To enter the User Parameters and System Parameters Setup menus, you must first enter an access password.

The access password for the User Parameters menu is 0000123000.

The access password for the System Parameters Setup menu is 0000456000.



From the CATTANI S.p.A. menu, press → and then ↑.

The Access Password screen Access Password 0000000000 should then be displayed.

Press the ⏻ Enter Key which will make a cursor appear on the last zero to the right.

Press ← until the cursor is flashing on the 6th zero.

Press ↑ until number 1 appears.

Press → to move to the next zero and then press ↑ until number 2 appears.

Press → to move to the next zero and then ↑ press until number 3 appears.

Press the ⏻ Enter Key to confirm the password. The cursor will disappear.

Press ← to return to the Cattani S.p.A. menu.

It is now possible to modify the parameters of the User Parameters menu.

Repeat the same process and enter the password 0000456000 instead of 0000123000 to gain access to the System Parameters Setup menu.

Drive Status Menu

This menu can be accessed without any access password. It displays various technical parameters regarding the real-time working conditions of MICRO-Smart. Listed below is the more commonly required information.

Blower Output Frequency (max. setting: 120 Hz)

Blower Output Voltage (max. setting: 220V)

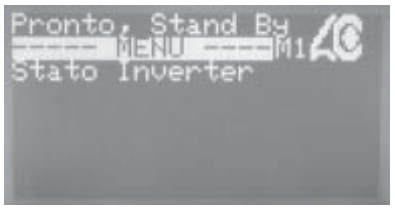
Blower Overall Current (max. setting: 4,3 A)

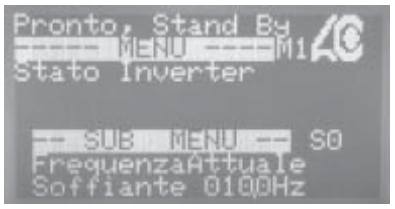
Pump (Centrifuge) Output Frequency (fixed setting: 75 Hz)

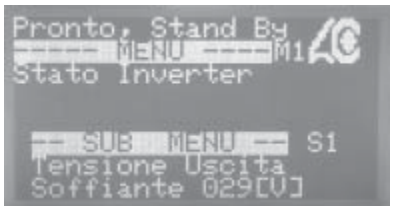
Pump (Centrifuge) Output Voltage (max. setting: 220V)

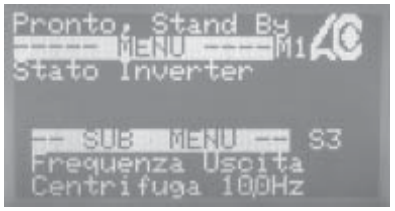
Pump (Centrifuge) Overall Bus Current (max. setting: 3,2 A)

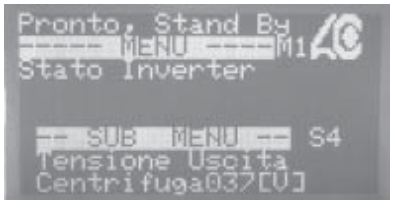
scroll down button

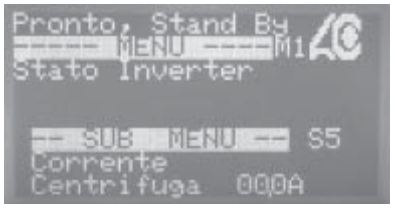












System Temperature

Maximum Detected Temperature (+60 °C: Alarm and Stop of the aspirator, it can be reset)

Maximum Detected Temperature (+60 °C: Temperature memory, it cannot be reset)

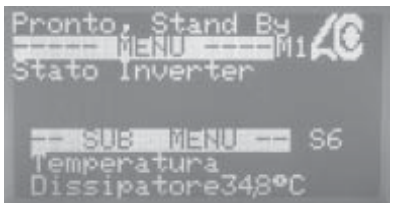
Power Bus Voltage (Max. 390V)

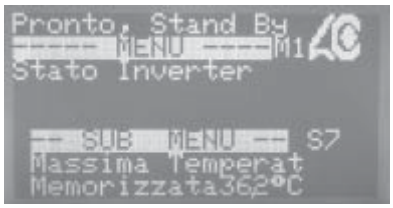
Max. Detected Power Bus Voltage (Max. 390V)

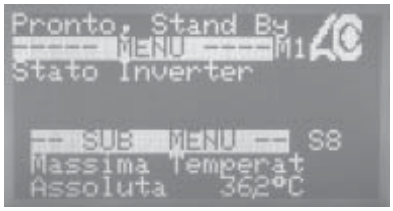
Power Bus Ripple

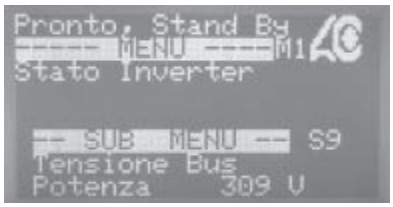
Vacuum Set Point (max. setting: 210 mbar)

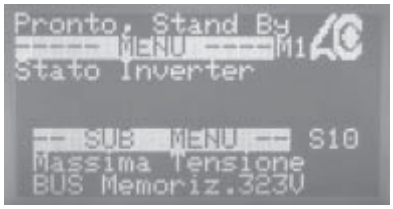
scroll down button

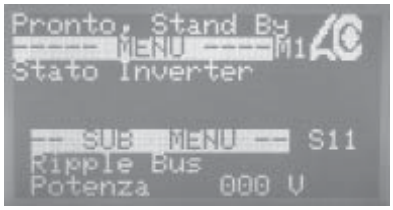


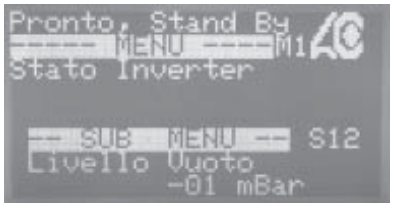




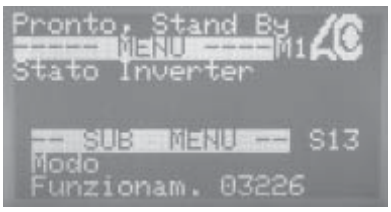






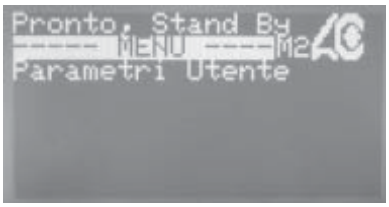


Run mode (it describes the machine's running mode)



User Parameters menu

To access this menu and/or make any changes, you are required to enter the access password 0000123000 (see instructions on page 11).



Vacuum Set Point

This is the figure to which the unit will limit the vacuum.

Press the Enter Key to make the cursor appear.

The figure can be changed using the arrow keys .

Press the Enter Key again to confirm and continue.

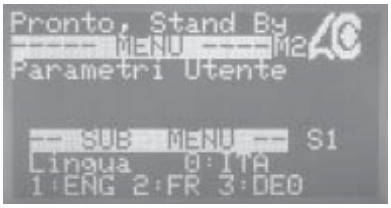
scroll down button

Language

It is possible to choose either English (1) or Italian (0), French (2), German (3) for the displayed language.

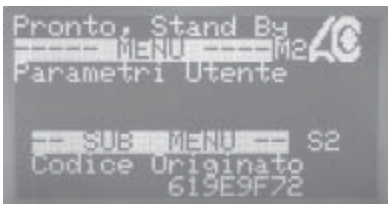
Press the Enter Key to enable the cursor and use the arrow keys to select 0 or 1 or 2 or 3.

Press the Enter Key again to confirm the change and continue.



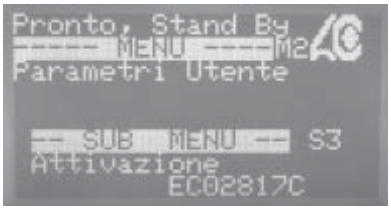
Generated Code

This code is generated by Cattani S.p.A. Each unit is allocated a unique code. At present this code is not used.



Activation Code

At present this code is not used.



System Parameters Setup menu

To access this menu and/or make any changes, you are required to enter the access password 0000456000 (see instructions on page 11).

To change any parameters in this menu:

Scroll with ⇧⇩ through to display the required parameter.

Press the Enter Key to enable the cursor. The figure can be changed using the arrow keys ⇧⇩ .

Once the figure has been set to the desired figure, press the Enter Key again to confirm and continue.

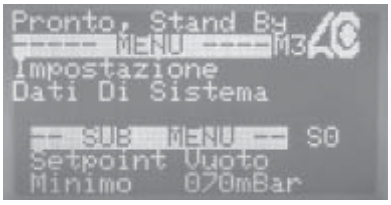
All the parameters can be regulated.

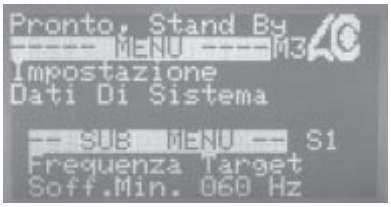
Min. Vacuum Setting

Max. Blower Output Frequency at the Min. Setting

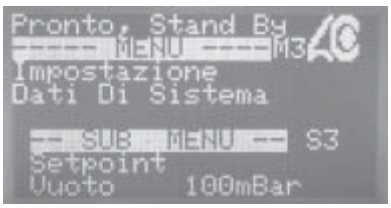
Blower Current limit at the Min. Setting

Medium Vacuum Setting





Scroll down button



Max. Blower Output Frequency at the Medium Setting

Blower Current limit at the Medium Setting

Surgery Vacuum Setting

Max. Blower Output Frequency at the Surgical Setting

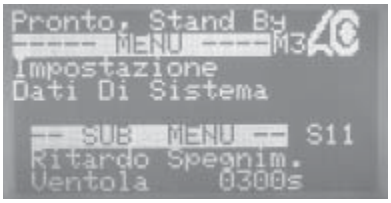
Blower Current limit at the Surgical Setting

Off Delay Time (max. setting: 300”)

Pump Off Delay Time (max. setting: 30”)

scroll down button

Blower Off Delay Time (max. setting: 300”)



Running Options

This enables or disables the amalgam level sensor.

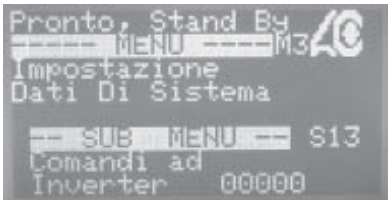
Set to 0: without amalgam separator

Set to 2: with amalgam separator

scroll down button

Drive Commands

Factory use only.



• *Description of alarms*

Alarm code	DESCRIPTION	SOLUTION
0	Microcontroller memory alarm	Contact the technician
32	Microcontroller memory alarm	Contact the technician
33	Short-circuit in one of the two motors	Identify where the short-circuit is coming from and eliminate it
34	Short-circuit before the motors' starting	Contact the technician (the PC-Board is likely to be damaged)
35	Condensers have not been charged	Contact the technician (replace the PC-Board)
36	Overtemperature (temperature has exceeded the max. allowed limit)	Ventilate the plant room Check operation of the cooling fan
37	Blower overcurrent (the blower has exceeded the current limit)	Check the operation of the blower (seized or excessive friction)
39	Condensers overvoltage (the condensers have exceeded the max.voltage limit)	Check the mains voltage (max. 260V)
40	Centrifuge short-circuit	Eliminate the short-circuit
41	PC-Board short-circuit on the centrifuge output	Replace the PC-Board
42	Centrifuge instant overcurrent (the centrifuge has exceeded the current limit)	Eliminate siphons in the piping or check the centrifuge operation (seized or excessive friction)
43	Centrifuge time delayed overcurrent (the centrifuge has exceeded the current limit)	Eliminate siphons in the piping or check the centrifuge operation (seized or excessive friction)
46	Amalgam level > 95%	Replace the amalgam container as soon as possible
47	Amalgam level > 100%	Replace the amalgam container
48	The vacuum detecting tube is disconnected	Connect the vacuum detecting tube to the centrifuge

IMPORTANT NOTICES

• Appliances are guaranteed for one year from the date of sale, provided that the warranty slip is returned to the manufacturer with date of sale, retailer's and customer's name.

• Warranty and manufacturer's liability cease in case appliances are treated with products which are unsuitable or different from those recommended by the manufacturer and also in case appliances are improperly used or tampered with operations of any kind carried out by people who are not authorized by the manufacturer.

• The manufacturer, concessionaires, agents and authorized technicians are at customers' disposal for advice and assistance and to supply literature, spare parts and anything useful.

• The manufacturer reserves the right to modify the products for improvements, for technical, normative and functional reasons or for problems due to the availability of products or semi-finished products, without prior notice.

• Our updated manuals are available at **www.cattani.it**.

We recommend they are consulted especially for **updates** concerning **safety**.

• Transport and storage
• Transport of second-hand appliances

• *Transport and storage*

• Packed appliances can be transported and stored at a temperature ranging from -10 °C to + 60 °C.

• Packages must be kept away from water and splashing and cannot tolerate humidity >70%.

• Packages with the same weight can be stored in piles of three only.

• *Transport of second-hand appliances*

• Before packing, cleanse and disinfect the machine's inside with Eco-Jet 2 and the outside with Eco-Jet 1 (refer to the paragraphs "Routine maintenance" and "Extraordinary maintenance").

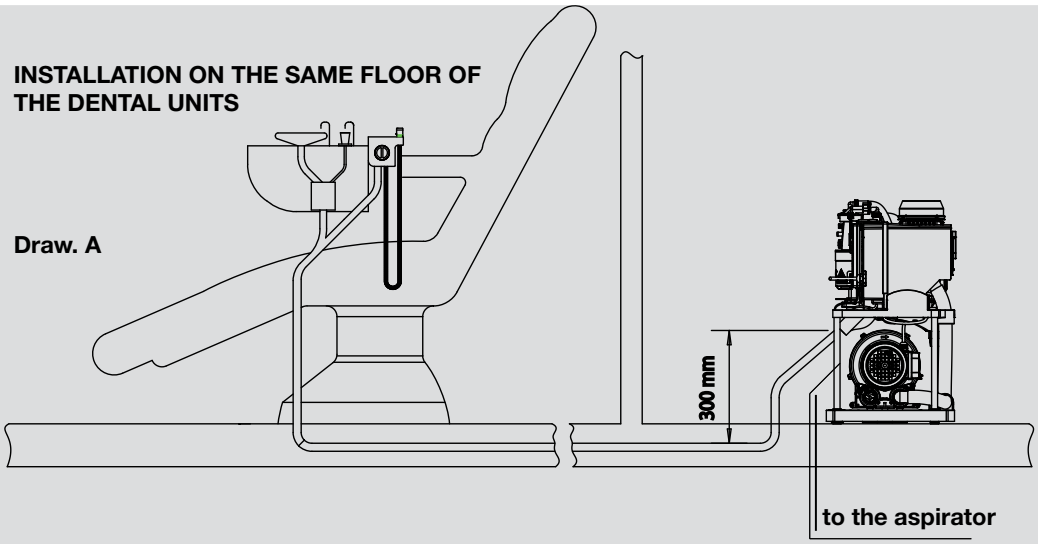
• Close with polyethylene plugs all machine inlets and outlets.

• Place the machine into a polyethylene bag, seal and pack it in 3-layer corrugated board.

• MICRO-SMART INSTALLATION LAYOUT

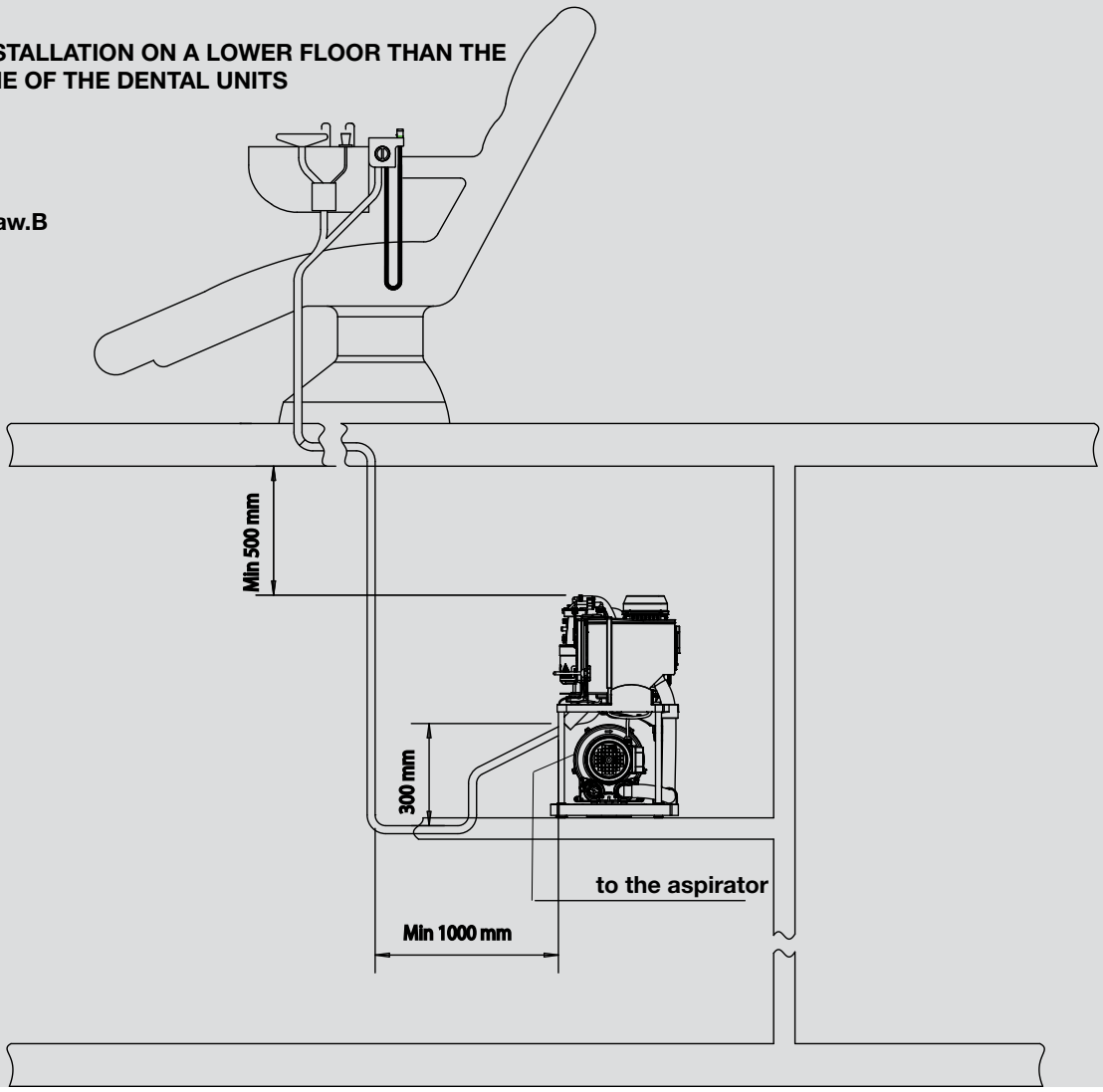
INSTALLATION ON THE SAME FLOOR OF THE DENTAL UNITS

Draw. A

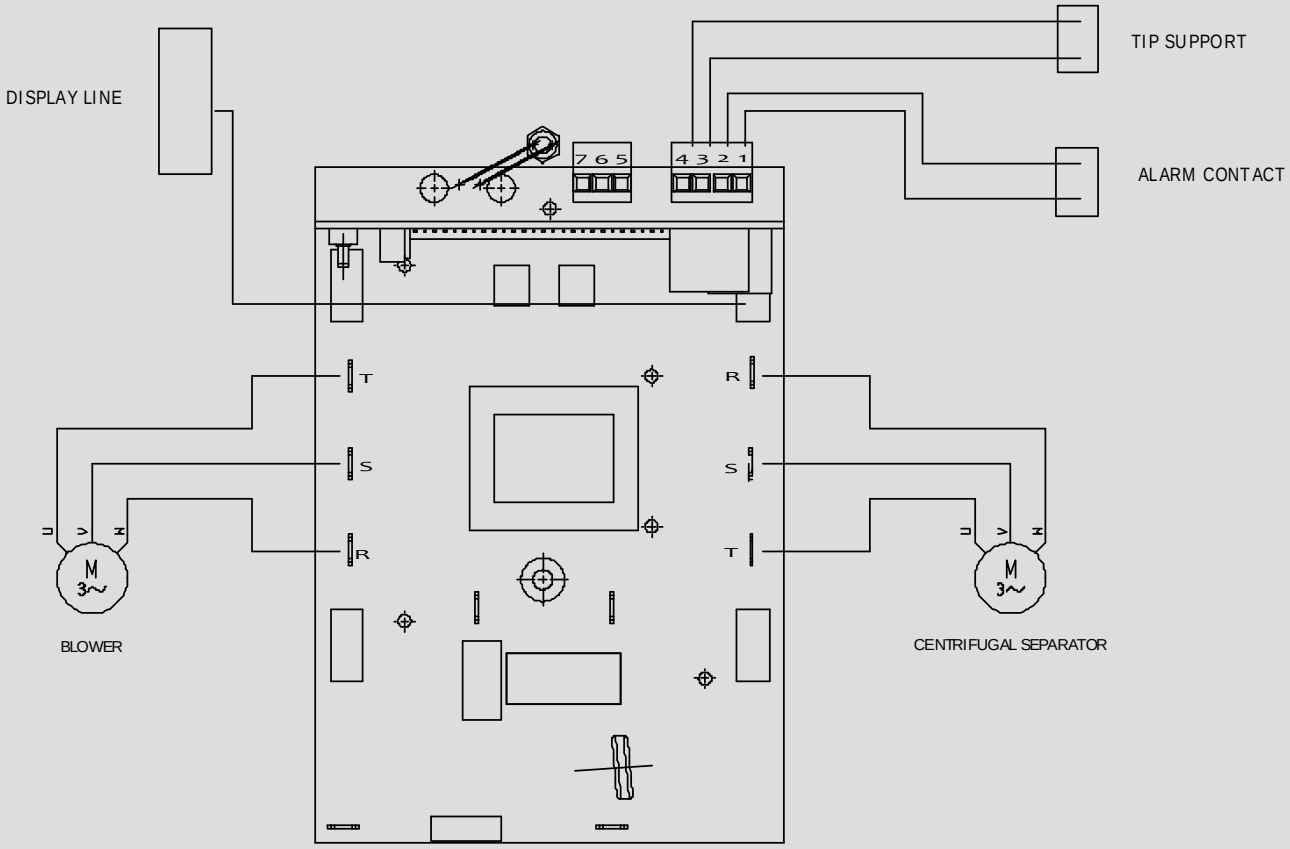


INSTALLATION ON A LOWER FLOOR THAN THE ONE OF THE DENTAL UNITS

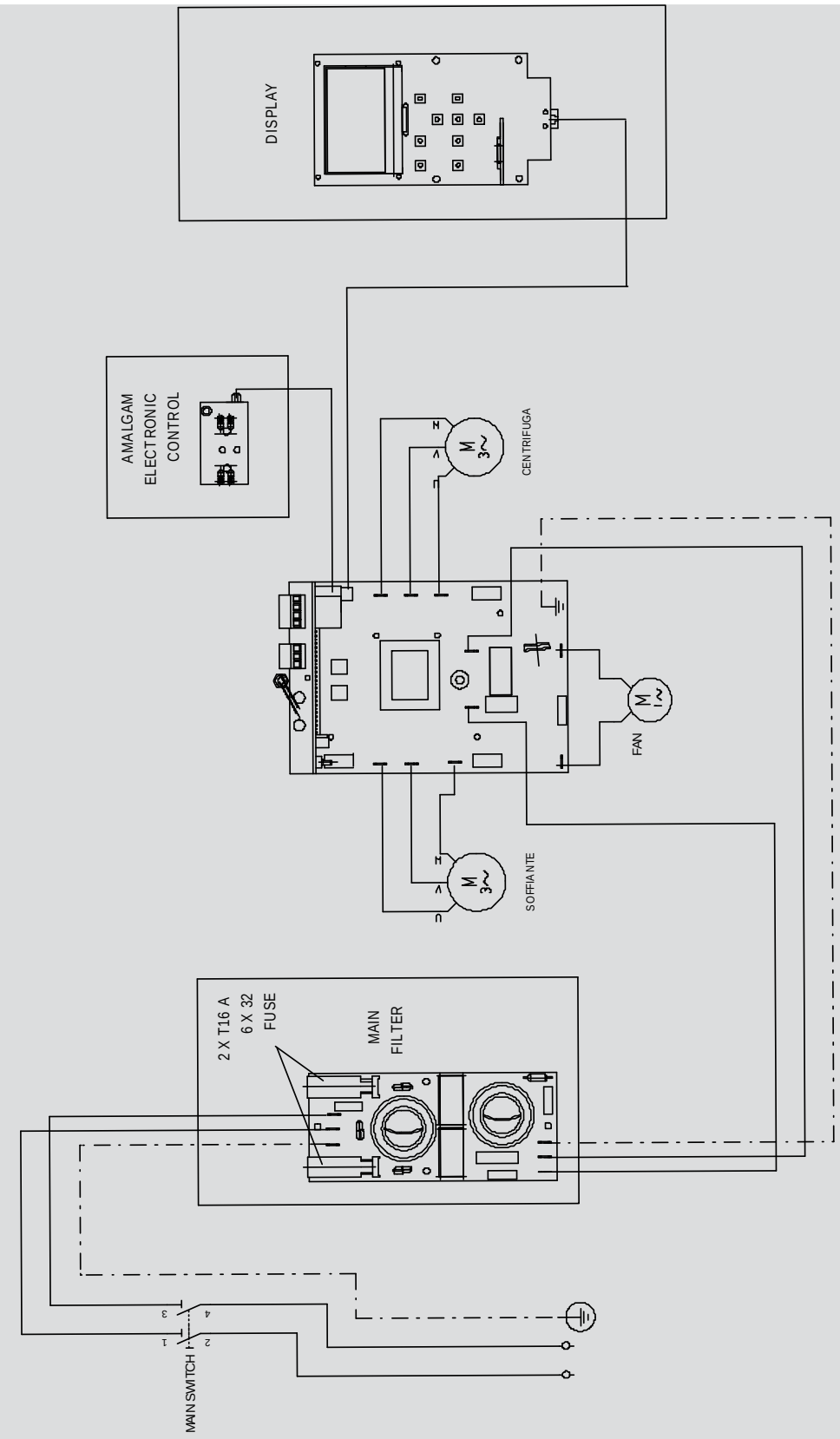
Draw.B



• INVERTER AC100 CONNECTIONS



Draw. C


DISPLAY
AMALGAM
ELECTRONIC
CONTROL
CENTRIFUGA
FAN
SOFFIANTE
2 X T16 A
6 X 32
FUSE
MAIN
FILTER
MAIN SWITCH
1
2
3
4

Draw. D

• DIAGNOSTIC TESTS ON MICRO-SMART

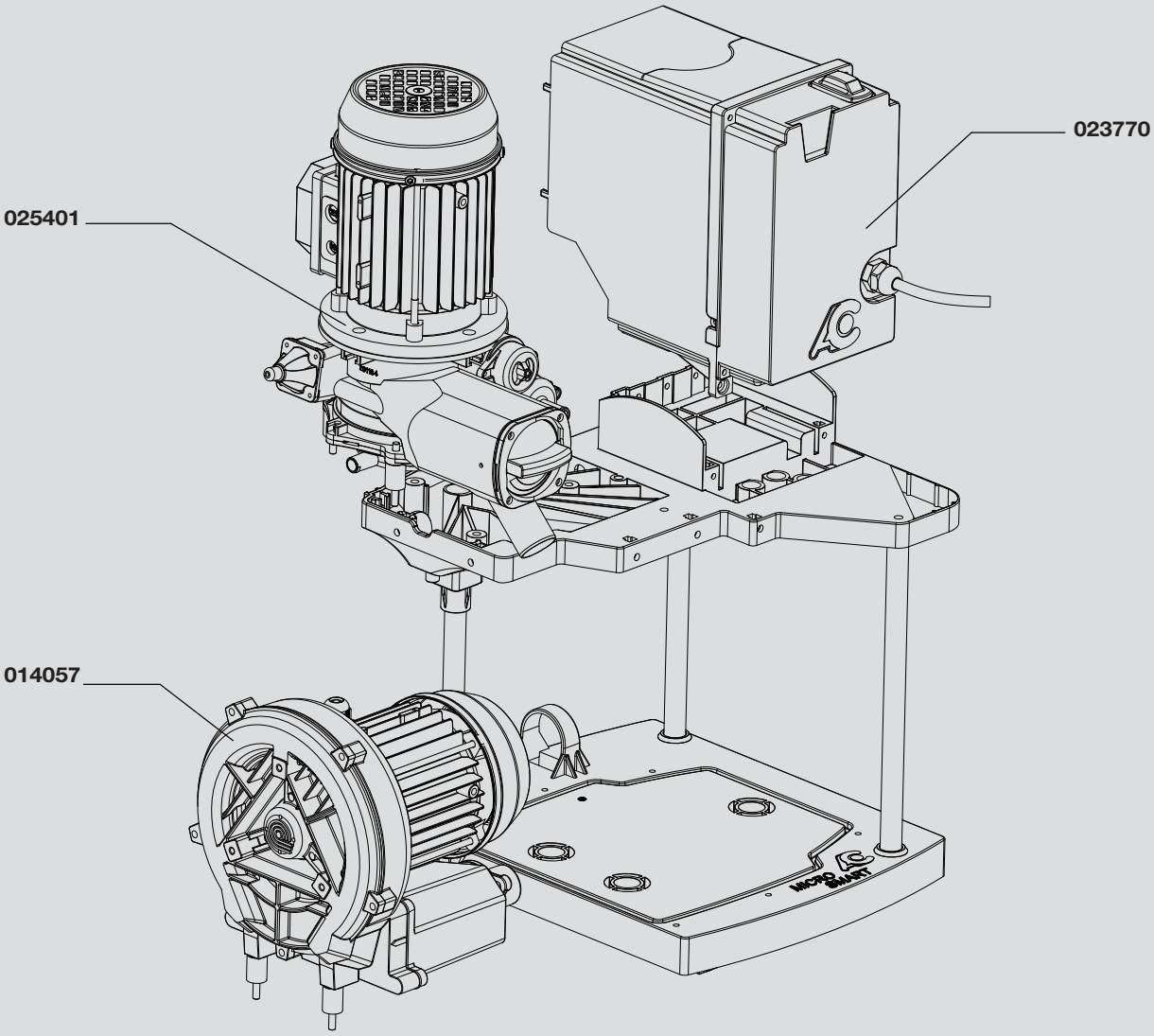
Here below you can find the description of some dynamic tests useful to check the correct working of Micro-Smart.
One test must be carried out on running machines with open aspiration inlet not connected to the piping.

	STEP 1 (minimum setting)	STEP 2 (medium setting)	STEP 3 (maximum setting)
Vacuum set point	**70 mbar**	**100 mbar**	**210 mbar**
Max. Blower Output Frequency	**60 Hz**	**85 Hz**	**120 Hz**
Blower Overall Current Limit	**2,2 A**	**2,5 A**	**4,3 A**
Pump (Centrifuge) Output Frequency	**75 Hz**	**75 Hz**	**75 Hz**
Pump (Centrifuge) Overall Bus Current Limit	**3,5 A**	**3,5 A**	**3,5 A**

Draw.E

• *ASPIRATION WORKING DIAGRAM (MODEL MICRO-SMART) WITH VARIABLE FREQUENCY*

Draw.F

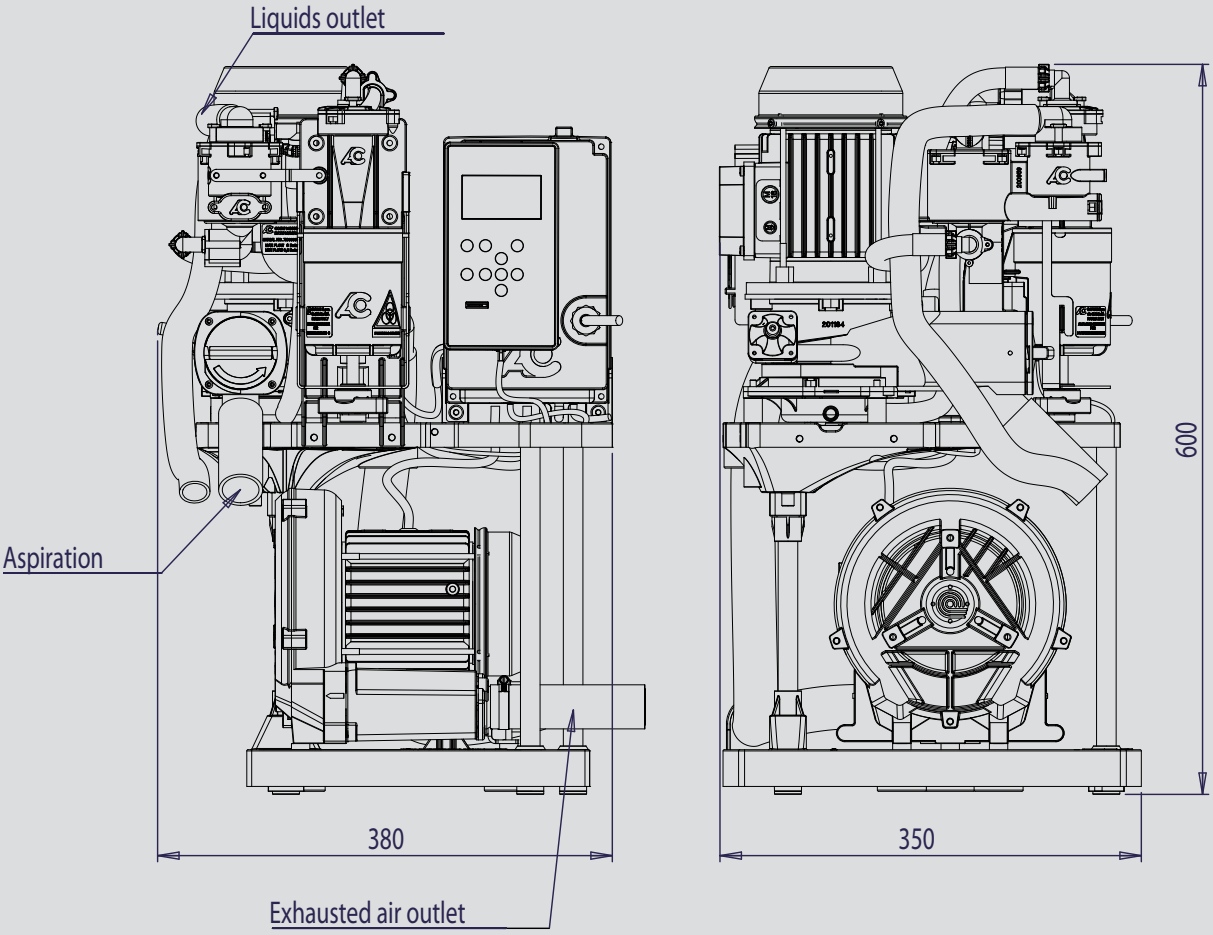


CODE 023770 ELECTRIC CONTROL PANEL

CODE 025401 CENTRIFUGAL SEPARATOR

CODE 014057 BLOWER

Draw. G


Liquids outlet
Aspiration
380
Exhausted air outlet
350
600

Draw.H

ITALIAN PATENTS OR PATENT APPLICATIONS:

CATTANI: 1201707 - 1234828 - 1259318 - 1.187.187 - 1253460 - 233634 - 2337706 -1294904

ESAM: 1225173 - 1253783 - 0791751

FOREIGN PATENTS OR PATENT APPLICATIONS:

CATTANI: AU 546.143 - US 4,386,910 - US 4,787,846 - US 5,039,405 - US 5,002,486 AU 580839 - US 4,684,345 - US 5,330,641 - AT 0040181 - CH 0040181 - DE 0040181 FR 0040181 - GB 0040181 - LU 0040181 - SE 0040181 - CH 0211808 - DE 0211808 FR 0211808 - GB 0211808 - SE 0211808 - DE 0335061 - ES 0335061 - FR 0335061 GB 0335061 - AT 0557251 - DE 0557251 - ES 0557251 - FR 0557251 - GB 0557251 DE 0638295 - DK 0638295 - ES 0638295 - FR 0638295 - GB 0638295 - NL 0638295 SE 0638295 - US 6,083,306 - US 6,090,286 - US 6,022,216

ESAM: US 4,948,334 - DE 0351372 - ES 0351372 - FR 0351372 - GB 0351372 EP 0791751 - US 5,779,443 - CH 0791751 - DE 0791751 - ES 0791751 - FR 0791751 GB 0791751 - PT 0791751 - AU 93321 - ES 107358 - FR 222.394/395

PENDING PATENT

CATTANI: IT M098A000019 - IT M098A000119 - EP 99830010.7 - EP 99830011.5 EP 99830250.9 - EP 00830491.7 - IT M099A000165 - US 09/624,182

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Company with Quality System Certified according to
UNI EN ISO 9001:2000 - UNI EN ISO 13485:2004

ИМ05

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