

SERVICE MANUAL NEW HOSPIVAC 400



Issued By:
Quality Assurance Manager / Technical Office Manager

GENERAL SAFETY INSTRUCTIONS

Read carefully all of the instructions in this manual when operating on this product; any intervention must strictly comply with manufacturer's instruction.

Any repairing and/or maintenance intervention must be carried out by qualified staff and only with CA-MI technical service authorization. CA-MI considers qualified only staff with the specific certificate of qualification, released only after a special CA-MI course.

CA-MI shall not be held liable for any damages or problems, to things or people, arising from interventions that fail to strictly comply with this operating and maintenance instruction manual.



Before any intervention on the device make sure that the equipment is unplugged from the power source. For further security make sure to unplug the power cord from the electrical outlet and from the device itself.



Read carefully the paragraph SANITARY MEASURES OF INTERVENTION and strictly follow all of the instructions in it.

SANITARY MEASURES OF INTERVENTION

- a) Any kind of maintenance and / or repairing intervention must be carried out in a close dedicated space and not in contact with the external environment.
- b) It's necessary to wear adequate protective clothes (disposable latex gloves, surplice, disposable protective mask) before any intervention on the device.
- c) If the device results or is suspected to be contaminated refer to points d),e),f),h).
- d) The accessories or part of them which are contaminated must be replaced and stored as described at point e). The repairing can cause contamination both to the technician and to the final user.
- e) All the replaced parts (vacuum pump, motor unit, bowls, accessories, pipes etc...) suspected to be bacterially contaminated must be treated and stored as hospital potentially contaminating stuff.
- f) All CA-MI equipments presents two safety devices preventing those kind of failures (a "too full" device and an antibacterial and hydrophobic filter). Any penetration of contaminants in the product or in the pump unit arises from the improper use of the product itself (non-use of the antibacterial filter, non-substitution of the filter itself, etc...). In this case there could be a very high risk of bacterial contamination for all the users after the technical assistance intervention. The repairing is therefore highly UNADVISABLE and CA-MI must not be held liable for any eventual consequences. In this case CA-MI will replace the whole equipment with another new one (see point h). If the user wants to go on anyway, he has to consider what indicated at point c) and act consequently. Replacing all the tubes and the internal pipes is more advisable than repairing the contaminated vacuum pump. It must be replaced in the whole and thrown away as described at point e).
- g) When there is no internal contamination, technical assistance interventions on the products must follow the instructions at points a) and b) . Before operating remove the accessories (disposable bowl or pocket, suction pipe and used pipes) as described at point e). After the intervention disinfect the external framework with a specific chemical preparation.
- h) In case of internal contamination, due to an improper use of the product, or in case of failure of operating encountered after the end of the warranty period, you must communicate to CA-MI all the information about product's BATCH NUMBER and SERIES NUMBER and discard the product itself as described at point e).
CA-MI will replace it with another new one at the cost of euros.....

For the repairing cases (break up, failure of operating due to a manufacturing defect etc..) CA.MI. will replace the equipment with another new one.

TECHNICAL SPECIFICATIONS

MODEL	NEW HOSPIVAC 400
TPOLOGY	Class IIa Medical Device
UNI EN ISO 10079-1	HIGH VACUUM / HIGH FLOW
ELECTRIC HAZARD PROTECTION	Class II
DIRECT/INDIRECT CONTACT PROTECTION	Type B
SUBSTANCE PENETRATION PROTECTION DEGREE	IPX1
SAFETY DEGREE IN THE PRESENCE OF ANESTHETIC AND/OR EXPLOSIVE MIXTURES	Not Applicable
POWER FEEDING STANDARD	230V – 50Hz
POWER CONSUPTION	385VA
FUSE	1 x F 4A 250V (Ø 5x20 rapido)
MOTOR	Oiless and maintenance-free piston pump
MAX FREE AIR FLOW RATE	90 l/min
MAX VACUUM (ADJUSTABLE)	- 0.90 Bar / -90 kPa / - 675 mmHg
AUTOCLAVABLE JAR	2
CAPACITY	2000cc
MATERIAL	Polycarbonate
OVERFLOW VALVE SYSTEM	YES
ASPIRATION TUBE (material, Diameter)	Set of silicone tubes Ø 8 (internal) x Ø 14 (external)
ANTIBACTERIAL AND HYDROPHOBIC FILTER	1
SUCTION REGULATOR	Vacuum regulator with scale
VACUUM INDICATOR	Ø63 0 / -1 Bar (0 / -100kPa)
ACCURACY OF VACUUM INDICATOR	± 5%
DIMENSION	Cm 46 x 85 x 420
WEIGHT	20 Kg
DUTY CICLE	Non-Stop Operated
CONFORMITY	MDD 93/42/EEC / EN 60601-1 / EN 60601-1-2 / ISO 10079-1

VARIANTS:

MODEL	DESCRIPTION
NEW HOSPIVAC 400 – RE 410350	With 2x2000cc autoclavable jars
NEW HOSPIVAC 400 – RE 410350/01	With 2x2000cc autoclavable jars, footswitch control and jar selector
NEW HOSPIVAC 400 – RE 410350/05	With 2x4000cc autoclavable jars
NEW HOSPIVAC 400 – RE 410350/09	With 2x2000cc autoclavable jars, footswitch control
NEW HOSPIVAC 400 – RE 410350/10	With 2x4000cc autoclavable jars, footswitch control
NEW HOSPIVAC 400 – RE 410350/18	With 2x4000cc autoclavable jars, footswitch control and jar selector

DIAGNOSTICS AND TROUBLESHOOTING

N°	DEFECT	CAUSE	SOLUTION
1	No Aspiration	Jar Cap badly screwed down	Unscrewed the cap, then rescrew it correctly. Unscrew the cap and insert the seal properly in its seat
		Tubes with external folds.	Eliminate the bottlenecks of the tubes.
		Protection filter blocked or damaged	Replace the filter
2	Shut-off valve blocked or damaged	Incoreect assembly	If the cap has been washed, ensure that the float is not partially detached. Insert the float into it's place
3	Failure	Fuse broken	Replace the fuse
4	The switch doesn't turn on and the motor doesn't start	Power cord interrupted	Replace the power cord
		Fuses interrupted due to short circuit or to sudden voltage changes	Replace the fuse: if there the unit on, dismantle the equipment and make sure that all the cables are connected to the motor. If all the cables are correctly connected it is possible that the motor is in short circuit, so replace it.
		Internal cable unplugged from the electrical outlet or from the switch	Open the device and plug the cables in again.
5	The switch turns on but the motor doesn't start.	Motor blocked	Replace the motor
		Internal cable unplugged from the switch	Reconnect the cable to the switch
6	The switch turns on but the motor doesn't rotate and vibrates slightly	Capacitor wire disconnected	Reconnect the capacitor's cable
		Capacitor interrupted	Replace the capacitor
7	Degree of vacuum is not reached	The pump is not working properly	The pumps needs revision.
		The vacuum meter is not working properly	Replace the vacuum meter
		The suction regulator is not working properly	Disassemble and inspect the component. If the defect is due to the regulator to replace the component.
8	Low suction	Tubes with external folds.	Check the aspiration circuit (tubes, filter, etc..)
9	Very noises device	Breaking or disconnection of internal componets	Restore the fixing or replace the detective and / or broken parts.
10	The footswitch doesn't start	Electronic board interrupted	Replace the electronic board
		Internal cable unplugged from the electronic board	Open the device and plug the cables in again.
11	Electrovalves not working	Electronic board interrupted	Replace the electronic board
		Internal cable unplugged	Replace the electronic board
		Faulty electrovalves	Check the electrovalves are working correctly. In case of faults, electrovalves should be replaced.

MAIN SPARE PARTS AVAILABLE

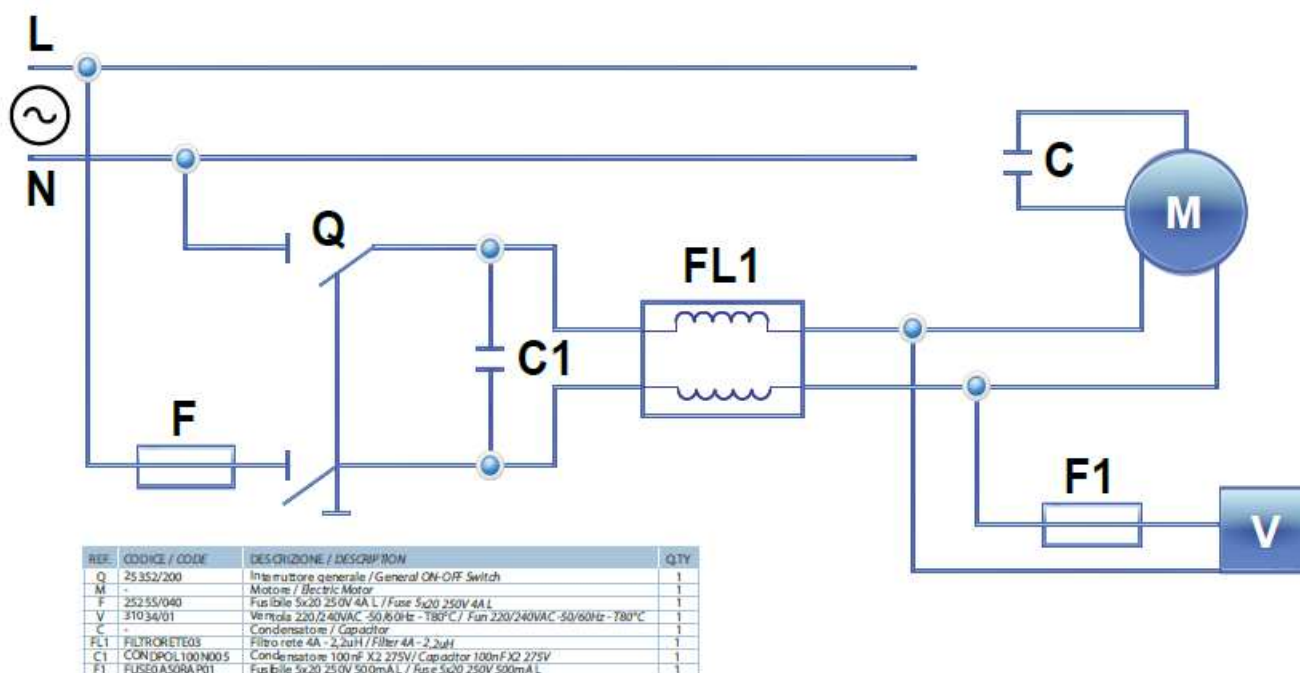
In the table we report all the spare parts supplied by CA.MI. for their replacement in case of failure, wear and tear or damage.

SPARE PART	CODE	SPARE PART DESCRIPTION
WHOLE ELECTROPUMP	MA 410350	The spare part includes the whole already assembled electro-pump, complete the anti-vibration motor component.
REGULATOR UNIT	SP 0006/05	It includes the regulator unit assembled.
FUSE CARRIED SOCKET	SP 0086	It includes the power socket (no fuse).
FUSE	SP 0097/01	It includes the fuse (4 pcs)
CONTROL PANEL VDE SOCKET (footswitch version)	SP 0086/01	It includes the control panel VDE socket (footswitch model).
SWITCH	SP 0009/07	It includes only the switch with its cover.
VACUUM METRE UNIT	SP 0073	It includes the measurement tool and the whole fastenet to fix it to the device's fairing
HANDLE	SP 0202	It includes the handle and the fixing tools.
POWER CORD	SP 0021	It includes the power cord
COMPLETE FOOTSWITCH	SP 0068/01	It includes the footswitch cable
ELECTRIC CARD (for Basic Version)	SP 0107/02	It includes the spare part for the Basic Version
FOOTSWITCH AND JAR SELECTOR ELECTRIC CARD	SP 0107/03	It includes the spare part for the remote control electric card
ELECTROVALVES (x version with deviator)	SP 0203	It includes #2 complete electrovalves, equipped with plate for fixing and related screws.
SUCTION KIT (without filter)	SP 0033	It includes the transparent silicone pipes kit to connect the jar to the external connector and the feeler pipe fitting. Antibacterial filter NOT included.
SUCTION KIT (with filter)	SP 0032	It includes the transparent silicone pipes for the connections, jar-filter-device and n°1 antibacterial filter.
ANTIBACTERIAL FILTER	SP 0047	The packaging includes only the filter.
COMPLETE 4000cc JAR	RE 210006	It includes the 4000cc bowl with its cover, and with "too full" valve. All the components are sterilizable with autoclave. The jar is already assembled and ready to be used.
JAR'S LID (4000cc)	RE 210008	It includes the cover with "too full" valve sterilizable.
COMPLETE 2000cc JAR	RE 210351	It includes the 2000cc bowl with its cover, and with "too full" valve. All the components are sterilizable with autoclave. The jar is already assembled and ready to be used.
JAR'S LID (2000cc)	RE 210352	It includes the cover with "too full" valve sterilizable.
2000cc JAR	RE 210353	It only includes the 2000cc jar, sterilizable with autoclave.
4000CC JAR	RE 210007	It only includes the 4000cc jar, sterilizable with autoclave.
CONICAL CONNECTOR	RE 210420	It includes the spare parts conical connector.

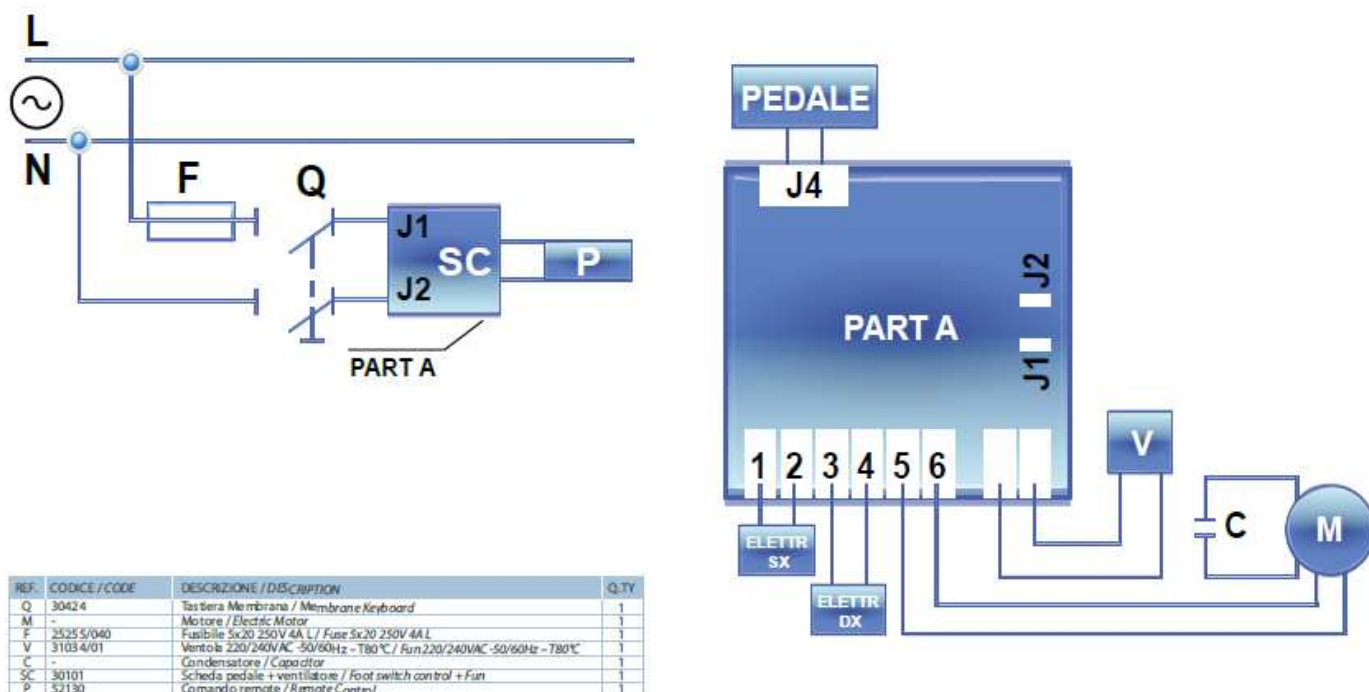
N.B: Several other accessories are available as well, as indicated in the CA-MI price list.

ELECTRIC DIAGRAM

Basic Version (rif. DG.EL._06.0001-1)



Footswitch and Jar selector model (rif. DG.EL._06.0003-1)



MOBILE OPENING

Unplug the device from the electrical outlet.

Position the device on a plane, dry surface (covered with anti-slip and anti-scratch material if possible) with the wheel's brake on. The control panel must be at the opposite of the user.

Unscrew the 6 screws (using a suitable screwdriver / unscrewdriver) fitted on the back panel and the 3 screws fitted at the bottom of the device.

Lift the back panel making sure no damage is caused to cabling and silicon tubing. Hence maintenance operations can be carried out on the device concerned.

After the check/repair of the device, close the casing making sure that no silicon tubing section has been narrowed and/or bended and that all electric cables have been cabled correctly.

NOTES

CA-MI manufacturing always recommends to replace the whole internal pipes set which constitutes the pneumatic circuit, whenever such an intervention is required.

This replacement is necessary to restore the suction circuit efficiency totally.

For this reason specific replacement kits are available.

REPLACING THE WHOLE ELECTROPUMP

Disconnecting electric and pneumatic connections and extracting the mobile device

- A. Disconnect the pneumatic connections through the mobile's hole. Take the 8x14 transparent silicone pipes with the hands or with pliers and disconnect the ends which connect to the vacuum metre connector to the regulator unit connector and to the air pipe union respectively. Leave the other pipes' ends connected to the cross-shaped pipe fitting and so to the remaining pneumatic circuit.
- B. Disconnect from the electrical board (both in the standard version and in the version with pedal) the 2 blue and black wires coming from the motor. Also proceed to disconnect the cables from the power outlet (position I in the Basic version and contacts J1-J2 version with foot pedal). At this point from under the bottom with a special unscrew, unscrew the fasteners that hold blocked anti-vibration to the bottom.
- C. Detach the thin cables from the condenser contact points.



Extracting and replacing the WHOLE ELECTROPUMP

- A. Now the motor is free: pull it apart from the bottom. Disconnect the whole pneumatic circuit (pipes with cross-shaped connection) from the electro-pump pipe union and connect it to the spare part in the same way.
- B. In the 4 threaded holes of the engine, unscrew the 4 antivibrants fixed.
- C. Take the replacement complete electropump and assembly the 4 antivibrants as indicated to follow:
In the 4 threaded holes obtained, place #4 upper supports, #4 compression springs and the lower support. Fix them with #4 TE 6X50 screws, #4 notched washers d. 10 and #4 large washers d. 6x24.



Restoring the device

- A. Take the back panel temporarily displaced and place it next to the bottom.
- B. Reset the circuit as shown below:
 1. **Basic version: (reference wiring diagram DG.EL._06.0001-1 on page 6):** The two wires of the motor must be connected to contacts "engine" of the circuit board while the two wires from the socket fuse should be placed in contact in position 0. Be sure again that the cables are banded between them so that they are as much as possible blocked.
 2. **Version with pedal: (reference wiring diagram DG.EL._06.0003-1 on page 6):** The two wires of the motor must be connected to contacts "engine" of the circuit board while the two wires from the socket holder must be placed in contact J1 and J2. Be sure again that the cables are banded between them so that they are as much as possible blocked.
- C. Restore the pneumatic circuit of the device reconnecting the three pipes' ends from the cross-shaped pipe fitting, so that the shortest pipe will be connected to the vacuum metre, the medium length one will be connected to the flux regulator and the longest one will be connected to the central suction pipe union.
- D. Put the mobile back again on the bottom in the final position (do not tug electric and/or pneumatic circuits) and plug the device in to the power source again. Before closing definitely the mobile, control the success of the intervention turning the

device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to – 0.90bar (the value is readable on the vacuum metre alleged to the device).

- E. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents an anomalous value of maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on pag.4 and/or contact CA-MI technical service.

REPLACING CAPACITOR

Unplug the device from the electrical outlet.

Position the device on a plane, dry surface (covered with anti-slip and anti-scratch material if possible) with the wheel's brake on. The control panel must be at the opposite of the user.

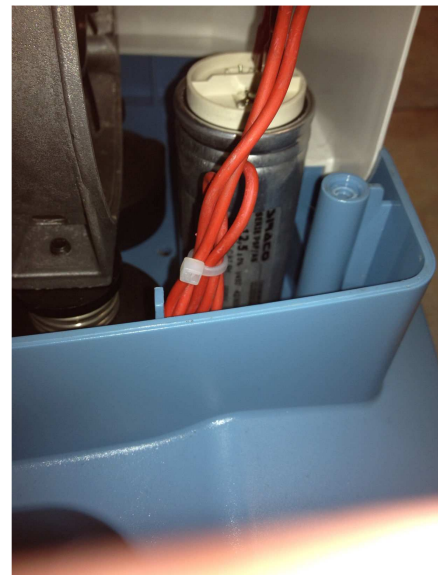
Unscrew the 6 screws (using a suitable screwdriver / unscrewdriver) fitted on the back panel and the 3 screws fitted at the bottom of the device.

Lift the back panel making sure no damage is caused to cabling and silicon tubing. Hence maintenance operations can be carried out on the device concerned.

After the check/repair of the device, close the casing making sure that no silicon tubing section has been narrowed and/or bended and that all electric cables have been cabled correctly.

Disconnecting electric connections and extracting the Capacitor

- Disconnect the electric connections: Unplugged the 2 thin motor cables red
- Unplug from the damaged capacitor, taking care of not touching other internal parts.
- With the hands or with pliers rotate anti-clockwise the capacitor and unscrew it until it will be free from the bottom
- Insert the spare capacitor in bottom from which it has been extracted the damaged element and screw it until it will be well fixed.



Restoring the device

- Restore the electric circuit reconnecting the motor thin cables. Fasten the cables again with a band so that they are as much blocked as possible.
- Put the mobile back again on the bottom in the final position (do not tug electric and/or pneumatic circuits) and plug the device in to the power source again. Before closing definitely the mobile, control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to –0.90bar (the value is readable on the vacuum metre alleged to the device).
- In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents an anomalous value of maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on pag.4 and/or contact CA-MI technical service.

REPLACING THE REGULATOR UNIT

Disconnecting pneumatic connections and replacing the REGULATING UNIT

- A. Unscrew the clamping screw of the regulator handle and then extract it, moving to high.
- B. Working with the hands or with pliers through the mobile's hole, left free after the air grating extraction, take up the transparent silicone pipes linked up with the damaged flux regulator pipe union, which appears from the internal of the device mobile. Disconnect it from the damaged part and leave it connected to the remaining pneumatic circuit.
- C. Insert a hand in the hole and use it to block the regulator from the inside, while unscrewing the regulator fixing nut from the outside, using the CH18 spanner. Unscrew completely the two components and extract them.
- D. Take the spare part up and repeat points C, B and A in the opposite direction. Control to tight strongly and block the regulator to the upper fairing of the device.



Restoring the device

- A. Restore the pneumatic circuit, reconnecting the air pipe left free to the regulator connector strongly.
- B. Take the back panel temporarily displaced and place it next to the bottom.
- C. Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device). Open and close the regulator in order to verify the effective flux regulation, reading it on the enclosed vacuum metre (the minimal regulation range must go from -0.25bar to -0.90bar).
- D. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.

REPLACING THE SWITCH

Extracting the damaged switch and unplugging the electric connections

- A. After opening the device, detach the wires from the power outlet and wires from the contacts J1-J2 (Basic version) the circuit board.
 - B. Insert the flat-head screwdriver in the hole, left open by the extraction of the air grating, and use it to lever the fixing levers of the switch in order to extract it from the upper fairing and pull it out.
 - C. Pull the switch out enough to make it possible to work on its electric contacts from the outside. Unplug the internal wiring thin cables ends from the switch electric contacts. Take the thin cables tighten with each other in order to make it possible to use them again.
 - D. Insert the replacing switch in the square hole left free on the anterior fairing. The I symbol should be turned to the upside, to the vacuum metre.
- Make sure that the fixing levers are well fixed.



Replacing the SWITCH and restoring the device

- A. Replace the damaged switch with the whole covering substitute and restore the electric circuit connecting again the internal wiring cables of the switch as follows:
 - The two wires coming from the power supply must be connected to the switch contacts in position 0
 - The cables from contacts J1-J2 the circuit board must be connected to the switch contacts remain free.

Make sure that all the cables are well fastened up together with a band so that they cannot move easily.

- B. Take the back panel temporarily displaced and place it next to the bottom.
- C. Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device).
- D. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.

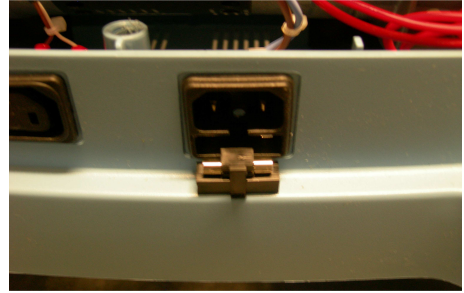
NOTES

Always control that the protective cap is on the switch

REPLACING THE FUSE CARRIER SOCKET

Unplugging electric connections and replacing the FUSE CARRIER SOCKET

- A. After opening the device, disconnect the cables, coming to the switch and the cable from fuse carrier socket side-contacts.
- B. Now the power plug is unplugged from the electric elements and it can be extracted. Extract the fuse carrier socket from the mobile part, using a spanners.
- C. Insert the spare part in the hole, left free, and control that the fixing levers are well fixed.



Restoring the device

- A. Restore the electric circuit connecting the electric wiring cables to the switch and to the power socket as follows:
 - The two wires coming from the power supply must be connected to the switch contacts in position 0
 - The cables from contacts J1-J2 the circuit board must be connected to the switch contacts remain free.Make sure that all the cables are well fastened up together with a band so that they cannot move easily.
- B. Take the back panel temporarily displaced and place it next to the bottom.
- C. Put the mobile back again on the bottom in the final position (do not damage the electric and/or pneumatic circuits). Open the fuse carrier drawer, placed in the electric outlet and insert one 5x20 glass fuse, type F4A. Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device).
- D. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.

REPLACING THE VACUUM METRE UNIT

Disconnecting pneumatic connections and replacing the VACUUM METRE UNIT

- A. After opening the device, left free after the air grating extraction, take up the transparent silicone pipes linked up with the vacuum metre connector, which appears from the internal of the device mobile. Disconnect it from the damaged part and leave it connected to the remaining pneumatic circuit.
- B. Insert the plain-head screwdriver in the hole and use it to unscrew the two vacuum metre connecting rods. Rotate the vacuum metre slightly until it comes off the blocking system and extract it from the mobile part, operating from the outside. Working from the inside hold the blocking system up and extract it.
- C. Take the new whole vacuum metre unit and insert it in the hole left free on the mobile, operating from the outside of the device; insert the vacuum metre in the blocking system, inserted in the device through the air grating hole. Find the right position of insertion, screw the threaded bars until the vacuum metre is well tighten to the mobile's wall.



Restoring the device

- A. Restore the pneumatic circuit reconnecting strongly the air pipe left free to the regulator connector.
- B. Take the back panel temporarily displaced and place it next to the bottom.
- C. Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device).
- D. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.

REPLACING THE REMOTE CONTROL PANEL VDE SOCKET (ONLY FOR THE FOOTSWITCH VERSION-JAR SELECTOR)

Unplugging electric connections and replacing the panel VDE socket

- A. After opening the device, unplug the panel VDE plug. current reverser, from the two thin cables coming from the foot switch electric card terminal "Pedale". Now it is possible to replace the damaged part.
- B. Insert the spare part in the hole left free (on the side of the fairing) and fix it to the mobile.
There is no need of fixing elements during this step.

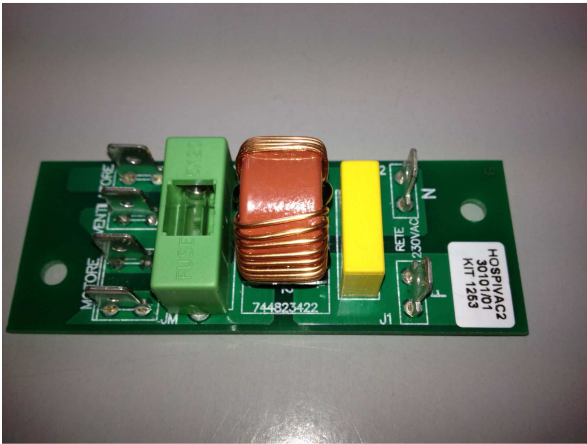
Retoring the device

- A. Restore the electric circuit connecting the electric card cables again to the panel VDE socket.
- B. Take the back panel temporarily displaced and place it next to the bottom.
- C. Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device).
- D. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.

REPLACING THE ELECTRIC CARD (ONLY FOR BASIC VERSION)

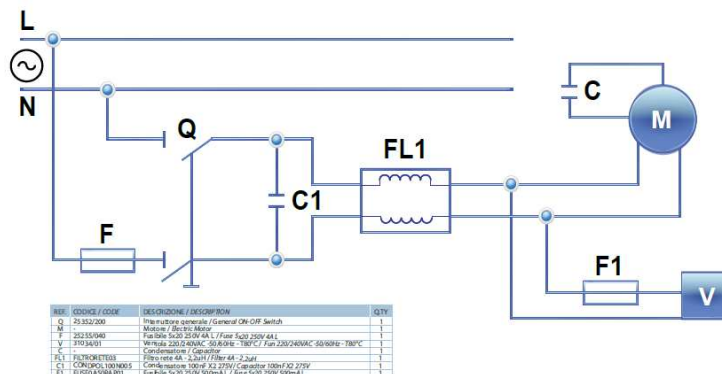
Unplugging electric connections and extracting the Electric card (only Basic Version)

- After opening the device, unplug all the card electric connections for the foot switch. Now it is possible to extract the damaged card.
- Unscrew the four screws which clamp the electric card to the bottom placed near the vacuum metre.
- Now the electric card should be free from any electric obstacle.



Restoring the device

- After positioning the replacing electric card, restore the remote control electric circuit connecting the assembling thin cables as follows:
 - The two cables coming from the fuse socket fuse must be connected to contacts 0 of switch.
 - The wires from the motor must be connected to two separate contacts of the card with the words "MOTORE".
 - The wires from the fan must be connected in two separate contacts of the card with the words "VENTILATORE"
 - The two wires from the switch (I position) must be connected to the two contacts J1-J2 (F-N)
- Take the back panel temporarily displaced and place it next to the bottom.
- Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device).
- In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.



REPLACING THE REMOTE CONTROL ELECTRIC CARD (FOOTSWITCH MODEL-JAR SELECTOR)

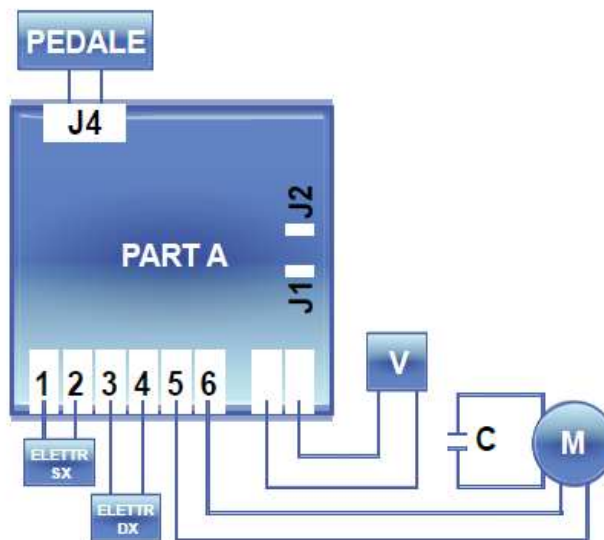
Unplugging electric connections and extracting the foot switch electric card

- A. After opening the device, unplug all the card electric connections for the foot switch. Now it is possible to extract the damaged card.
- B. Unscrew the four screws which clamp the electric card to the bottom placed near the vacuum metre.
- C. Now the electric card should be free from any electric obstacle.



Restoring the device

- A. After positioning the replacing electric card, restore the remote control electric circuit connecting the assembling thin cables as follows:
 - The two cables coming from the outlet fuse must be connected to contacts J1 and J2 of the electrical board.
 - The wires from the motor must be connected to two separate contacts of the card with the words "MOTORE".
 - The cables, already assembled and coming from the two solenoid valves, must be suitably connected to the 4 separate contacts on the circuit board (VSX / Evdx)
 - The cable, pre-assembled, coming from the outlet fuse must be connected to the terminal "PEDALE"
 - The wires from the fan must be connected in two separate contacts of the card with the words "FAN"



- B. Take the back panel temporarily displaced and place it next to the bottom.
- C. Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device).
- D. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.

REPLACING THE ELECTROVALVES (JAR SELECTOR MODEL)

Unplugging electric connections and extracting the solenoid valves

- a. After opening the device, unplug all the card electric connections for the foot switch, and unplug the pneumatic connections.
- b. Using a suitable screwdriver or screwdriver / unscrewdriver, unscrew the four screws fixing the two faulty electrovalves on the front casing placed under the vacuum meter.
- c. It is now possible to replace the two faulty electrovalves.



Restoring the device

- A. Take the electrovalves (fitted with coil and connection thin cables) and screw both exits of the $\frac{1}{4}$ wheel carrier $D=9\text{mm}$.
- B. Take the plate for electrovalves and insert the two electrovalves already assembled.
- C. Fix the plate onto the front panel in the studs provided under the vacuum meter using #4 TC PHL 3.5x13 screws.
- D. Recover pneumatic and electrical connections (the thin cables already assembled coming from the two electrovalves must be properly connected to the 4 contact points on the electronic board, EVsx / Evdx)
- E. Take the back panel temporarily displaced and place it next to the bottom
- F. Before closing definitely the mobile, connect the device to the power source and control the success of the intervention turning the device on and verifying that the maximum suction, obtained closing the suction pipe union, is higher than or equal to -0.90bar (the value is readable on the vacuum metre enclosed to the device).
- G. In case of regular operation, disconnect the device from the electric network again and close the casing using the screws provided 7 for the sides and 3 for the bottom of the device. On the contrary, if the device doesn't turn on, if it is too noisy or presents some anomalous value of the maximum suction, unplug it from the power source and control that the electric and pneumatic connections and the clamping of the internal elements are all entire. If the trouble persists carry out inspections as described in the summarizing table on p.4 and/or contact CA-MI technical service.