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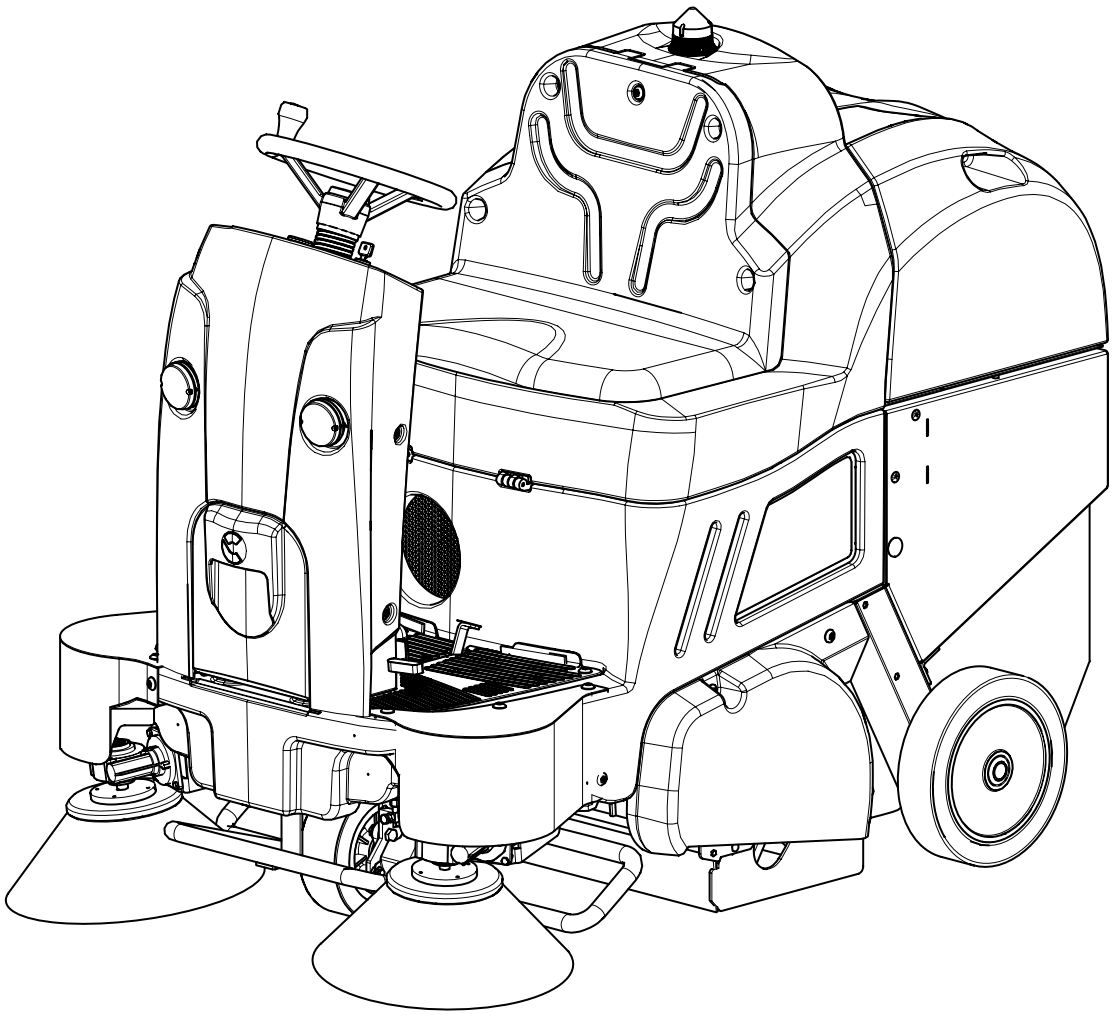

PROFESSIONAL SWEEPING MACHINES

USE AND MAINTENANCE MANUAL

comac
professional people

ORIGINAL INSTRUCTION DOC. 10108587 - Ver. AA - 09-2021

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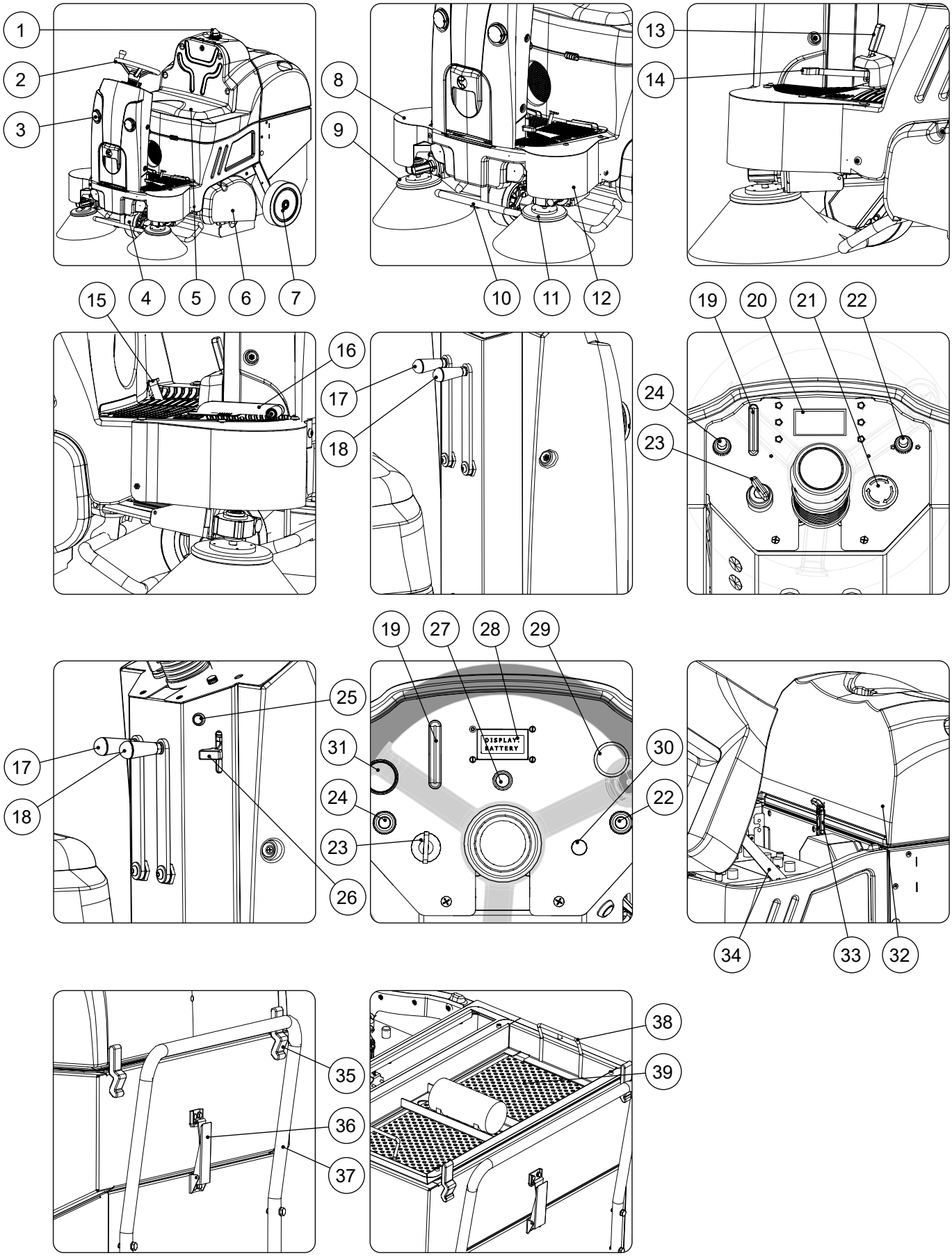
LOCATION OF THE MAIN MACHINE COMPONENTS

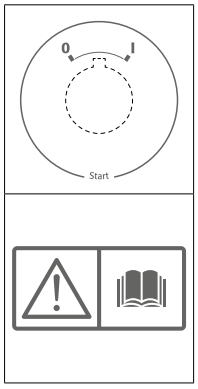


The machine's main components are the following:

1. Blinking light.
2. Steering wheel.
3. Headlights.
4. Traction wheel.
5. Operator seat.
6. Central brush side inspection carters.
7. Rear wheel.
8. RH side brush protection carter.
9. RH side brush.
10. Front bumper.
11. LH side brush (optional).
12. LH side brush protection carter (optional).
13. Parking brake activation lever.
14. Service brake pedal.
15. Front flap control pedal.
16. Drive pedal.
17. Central brush control lever.
18. Side brush control lever.
19. Tag insertion slot (versions with CFC).
20. Control display (battery-powered versions).
21. Emergency switch.
22. Debris hopper lifting joystick (automatic version).
23. Machine main switch.
24. Debris hopper rotation joystick (automatic version).
25. Horn button (version with endothermic engine).
26. Engine rpm control lever (version with endothermic engine).
27. Control display button (version with endothermic engine).
28. Control display (version with endothermic engine).
29. Vacuum control knob (version with endothermic engine).
30. Parking brake activation indicator light (version with endothermic engine).
31. Engine air lever control knob (version with endothermic engine).
32. Vacuum filter compartment cover.
33. Front retainer on vacuum filter compartment cover.
34. Operator seat rotation retainer lever.
35. Rear retainer on vacuum filter compartment cover.
36. Debris hopper retainer (manual version).
37. Debris hopper control handlebars (manual version).
38. Vacuum filter press.
39. Vacuum filter.

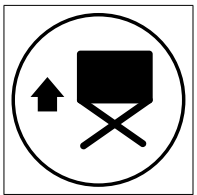
SYMBOLS AND LABELS USED ON THE MACHINE

SYMBOLS ON THE CONTROL PANEL (BATTERY-POWERED VERSION)

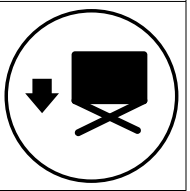


Main switch symbol:
Used on the control panel to indicate in which direction to turn the key to activate or deactivate the machine's general switch.

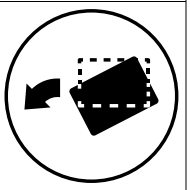
Open book caution symbol:
Used on the control panel to tell the operator to read the manual before using the machine.



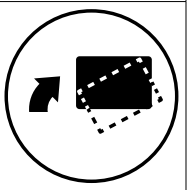
Symbol for debris hopper movement to dumping position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to raise the hopper to its dumping position.



Symbol for debris hopper movement to work position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to lower the hopper to its work position.

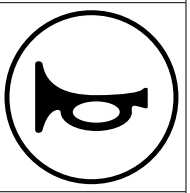


Symbol for debris hopper rotation to dumping position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to rotate the hopper to its dumping position.

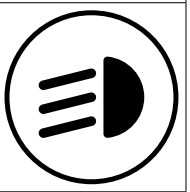


Symbol for debris hopper rotation to work position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to rotate the hopper to its work position.

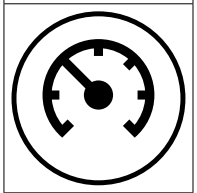
Symbol for Eco-Mode activation:
Used on the control panel to indicate the button that activates/deactivates Eco-Mode.



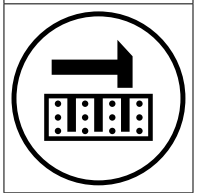
Symbol for horn activation:
Used on the control panel to indicate the button that commands the activation of the horn on the machine.



Symbol for headlight activation:
Used on the control panel to indicate the button that activates/deactivates the headlights on the front of the machine.



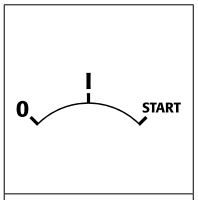
Symbol for forward speed regulation:
Used on the control panel, to indicate the button that allows you to regulate the forward speed of the machine.



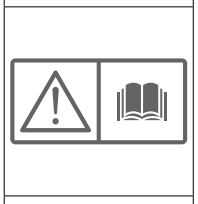
Symbol for vacuum system filter shaker activation:
Used on the control panel to indicate the button that commands the activation of the filter shaker in the machine vacuum system.

Symbol for vacuum system control:
Used on the control panel to indicate the button that activates/deactivates the machine vacuum system.

SYMBOLS ON THE CONTROL PANEL (VERSION WITH ENDOTHERMIC ENGINE)

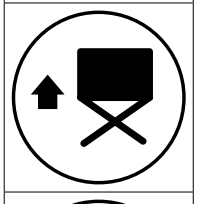


Main switch symbol:
Used on the control panel to indicate in which direction to turn the key to activate or deactivate the machine's general switch.

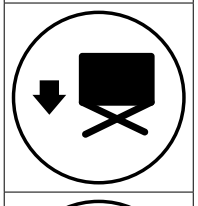


Open book caution symbol:
Used on the control panel to tell the operator to read the manual before using the machine.

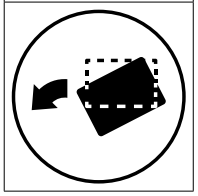
Symbol for parking brake activation:
Used on the control panel, for the indicator light showing when the parking brake is engaged.



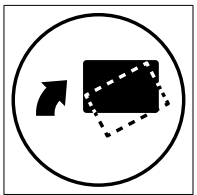
Symbol for debris hopper movement to dumping position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to raise the hopper to its dumping position.



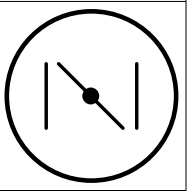
Symbol for debris hopper movement to work position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to lower the hopper to its work position.



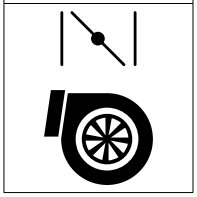
Symbol for debris hopper rotation to dumping position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to rotate the hopper to its dumping position.



Symbol for debris hopper rotation to work position (automatic version):
Used on the control panel to indicate in which direction the debris hopper joystick should be moved to rotate the hopper to its work position.



Endothermic engine starter control symbol:
Used on the control panel to indicate the control knob for the endothermic engine starter.

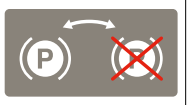


Symbol for vacuum system filter shaker activation:
Used on the control panel to indicate the knob that activates the filter shaker in the machine vacuum system.

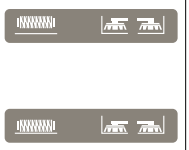
LABELS ON THE MACHINE

Label warning about the risk of crushed hands:
Indicates danger to hands due to crushing between two surfaces.

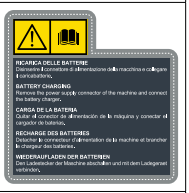
Treading ban label:
Located on the machine, to identify the surfaces that must not be trodden on (risk of personal injury or damage to the machine).



Parking brake control lever label:
Used near the steering column to indicate the control lever rotation direction to engage/disengage the parking brake.



Brush control lever label:
Used near the steering column to indicate the rotation direction for the central and side brush control levers to bring the brushes to their work or idle position.



Instruction label for how to recharge the batteries (battery-powered versions):
Used near the steering column to indicate the correct battery recharging sequence. You are advised in any case to carefully read “RECHARGING THE BATTERIES (battery-powered versions)” on page 18.

Label with battery recharging warnings (battery-powered versions):
Used near the steering column to indicate the precautions to be adopted when recharging the batteries. You are advised in any case to carefully read “RECHARGING THE BATTERIES (battery-powered versions)” on page 18.

Label indicating that flammable/explosive dusts and/or liquids must not be vacuumed:
Located near the steering column, to indicate that it is forbidden to vacuum flammable or explosive dusts or liquids with the machine.

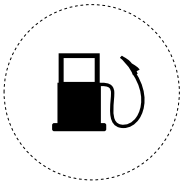
Label indicating the need to read the Use and Maintenance Manual:
Applied in the vicinity of the steering column in order to remind the operator to read the user and maintenance manual before using the machine.

Label indicating the need to read the Use and Maintenance Manual:
Used in the brush head body, and indicates the prohibition to approach the brush head while the brush is moving.

Label indicating the need to read the Use and Maintenance Manual:
Applied in the vicinity of the steering column in order to remind the operator to read the user and maintenance manual before using the machine.

RFID key label (versions with automatic fleet management):
Used on the control panel to indicate where the RFID key should be inserted.

Label indicating the risk of burns (versions with endothermic engine):
Located near the endothermic engine to indicate the risk of burns if certain surfaces are touched.

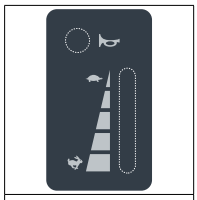


Label for the fuel tank cap (versions with endothermic engine):
Located above the gasoline tank cap on the endothermic engine.

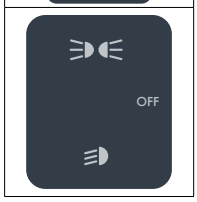
Label showing prohibition to approach with naked flames (versions with endothermic engine):
Located near the endothermic engine fuel tank, to indicate the prohibition to approach with any type of naked flame.

Label showing prohibition to put out fires with water (versions with endothermic engine):
Used in the vicinity of the endothermic engine's fuel tank to indicate the prohibition to extinguish fires using water.

Label with warning to read the endothermic engine use and maintenance manual (versions with endothermic engine):
Located near the endothermic engine to remind the operator to read the engine use and maintenance manual before using the machine.



Label for horn activation plus endothermic engine speed regulation (versions with endothermic engine):
Located on the steering column to indicate the horn activation button. Also shows how to move the lever to regulate the engine speed.



Label for headlight activation (versions with endothermic engine):
Located on the steering column to indicate the headlight activation switch (bring it to the upper position to activate the headlights in position mode; the lower position activates dipped headlight mode).

GENERAL DESCRIPTION

The descriptions contained in this document are not binding. The company therefore reserves the right to make any modifications at any time to elements, details, or accessory supply, as considered necessary for reasons of improvement or manufacturing/commercial requirements. The reproduction, even partial, of the text and drawings contained in this document is prohibited by law. **The company reserves the right to make any technical and/or supply modifications. The images are shown as reference only and are not binding as to the actual design and/or equipment.**

GENERAL SAFETY REGULATIONS

Before using the machine, please read both this document and the one supplied with the machine itself - "GENERAL SAFETY REGULATIONS" (document code 10083659) - carefully and follow the instructions given in them.

DEFINITION OF LEVELS OF WARNING

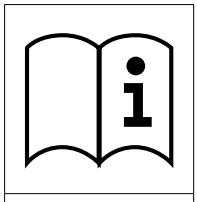
DANGER: indicates an imminent dangerous situation that, unless avoided, will result in death or serious injuries.

WARNING: Indicates a potentially dangerous situation that, unless avoided, could cause death of serious injury.

ATTENTION: Indicates a potentially dangerous situation that, unless avoided, could cause slight or moderate injuries.

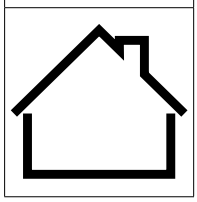
N.B.: instructs the reader to pay particular attention to the topic that follows.

SYMBOLS USED IN THE MANUAL



Open book symbol with an "i":
Indicates the need to consult the instruction manual.

Open book symbol:
Tells the operator to read the user manual before using the device.



Covered place symbol:
The operations preceded by this symbol must always be carried out in a dry, covered area.

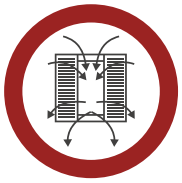
Information symbol:
Indicates additional information for the operator, to improve the use of the device.

Warning symbol:
Carefully read the sections preceded by this symbol meticulously following the instructions indicated for the safety of the operator and the device.

Danger symbol (corrosive substances):
The operator should always wear protective gloves to avoid the risk of serious injury to the hands caused by corrosive substances.

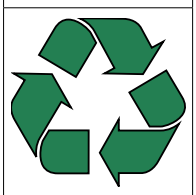
Danger symbol (battery acid leakage):
Indicates the danger of leaking acid or acid fumes from the batteries while they are being recharged.

Danger symbol (moving trolleys):
Indicates that the packed product should be handled with suitable trolleys that conform to legal requirements.

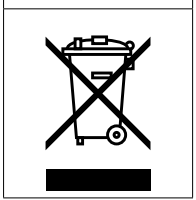


Mandatory room ventilation symbol:
Informs the operator that the room must be ventilated while the batteries are being recharged.

Symbol indicating the compulsory use of protective gloves:
Indicates that the operator should always wear protective gloves, to avoid the risk of serious injury to his hands from sharp objects.



Recycling symbol:
Tells the operator to carry out the operations in compliance with environmental regulations in force in the place where the appliance is being used.



Disposal symbol:
Carefully read the sections marked with this symbol for disposing of the appliance.

PURPOSE AND CONTENT OF THE MANUAL

The aim of this manual is to provide customers with all the information needed to use the machine in the safest, most appropriate and most autonomous way. This includes information concerning technical aspects, safety, operation, downtime, maintenance, spare parts and scrapping. The operators and qualified technicians must carefully read the instructions in this manual before carrying out any operations on the machine. If in doubt about the correct interpretation of instructions, contact your nearest Comac Customer Service Centre for clarification.

TARGET GROUP

This manual is written both for operators and for qualified machine maintenance technicians. Operators must not perform operations that should be carried out by qualified technicians. The manufacturer is not liable for damages resulting from failure to comply with this veto.

PRESERVATION OF THE USER

The Use and Maintenance Manual must be stored in its special pouch close to the machine, protected from liquids and anything else that could compromise its legibility.

ON CONSIGNMENT OF THE MACHINE

When the machine is consigned to the customer, an immediate check must be performed to ensure all the material mentioned in the shipping documents has been received, and also to check the machine has not suffered damage during transportation. If this is the case, the shipping agent must ascertain the extent of the damage at once, informing our customer service office. It is only by prompt action of this type that the missing material can be obtained, and compensation for damage successfully claimed.

INTRODUCTORY COMMENT

Any machine can only work properly and effectively if used correctly and kept in full working order by carrying out the maintenance operations described in the attached documentation. We therefore suggest you read this instruction booklet carefully and read it again whenever difficulties arise while using the machine. If necessary, remember that our assistance service (organised in collaboration with our dealers) is always available for advice or direct intervention.

IDENTIFICATION DATA

When requesting technical assistance or spare parts, always give the model, the version and the serial number (found on the relative plate). See SERIAL NUMBER PLATE.

TECHNICAL DESCRIPTION

Cs700 2021 B and **Cs800 2021 B** are ride-on battery-powered sweeping machines designed to clean indoor surfaces (tiled, cement or asphalt floors).
Cs700 2021 H and **Cs800 2021 H** are ride-on sweeping machines with an endothermic engine, designed to clean outdoor surfaces (tiled, cement or asphalt floors).
These machines must be used on dry surfaces, but can also work on wet surfaces if necessary as long as the vacuum is not activated.
The machine has a central brush for collecting debris, a side brush for cleaning edges and corners, a vacuum system with filter to avoid raising dust, and a debris hopper that can be manually removed by means of a mechanical leverage.

INTENDED USE

Cs700 2021 B and **Cs800 2021 B** are designed for the professional cleaning of indoor surfaces (tiled, cement and asphalt floors) in industrial, commercial and public areas.
Cs700 2021 H and **Cs800 2021 H** are designed for the professional cleaning of both indoor and outdoor surfaces (tiled, cement and asphalt floors) in industrial, commercial and public areas.

ATTENTION: the machine is suitable for use in closed - or at least covered - places only. It is not designed to be used in the rain or under jets of water.

IT IS FORBIDDEN to use the machine in environments with an explosive atmosphere to clean dangerous powders or flammable liquids. In addition, it is not suitable as a means of transport for people or objects.

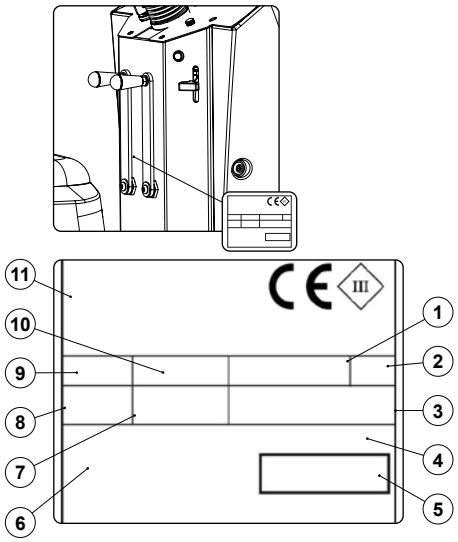
SAFETY

Operator cooperation is paramount for accident prevention. No accident prevention programme can be effective without the full cooperation of the person directly responsible for machine operation. The majority of occupational accidents that happen either in the workplace or during transfer are caused by failure to respect the most basic safety rules. An attentive, careful operator is most effective guarantee against accidents and is fundamental in order to implement any prevention programme.

REGULATIONS

All references made in this manual to forwards and backwards, front and rear, right and left refer to the operator in the driving position with his/her hands on the steering wheel.

SERIAL NUMBER PLATE



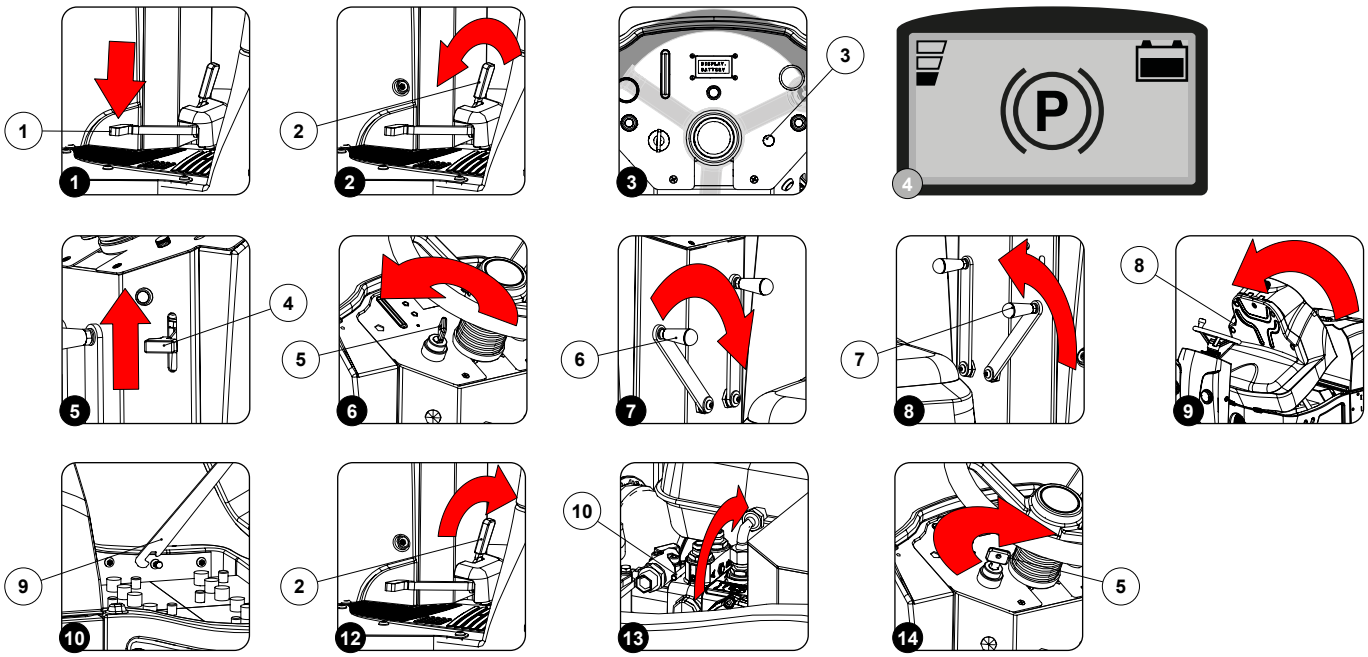
The serial number plate is located at the rear of the steering column, and indicates the machine's general characteristics, including its serial number. The serial number is a very important piece of information and should always be provided together with any request for assistance or when purchasing spare parts. The serial number plate contains the following:

1. The weight of the batteries that power the machine (expressed in kg).
2. The IP protection rating of the machine.
3. The gross weight of the machine (expressed in kg).
4. The machine ID code.
5. The machine serial number.
6. The machine ID name.
7. The nominal power consumed by the machine (expressed in W).
8. The maximum grade that the appliance can handle during work activities (expressed in %).
9. The year of machine manufacture.
10. The nominal voltage of the machine (expressed in V).
11. The commercial name of the machine, and the manufacturer's address.

TECHNICAL DATA

TECHNICAL DATA	UM SI [KMS]	CS 700 B 2021	CS 700 H 2021	CS 800 B 2021	CS 800 H 2021
Rated voltage	V_{DC}	24	-	24	-
Nominal input power [IEC 60335-2-72; IEC 62885-9]	KW	1,32	3,7	1,32	3,7
Working gradeability GVW [IEC 60335-2-72; IEC 62885-9]	%	10	10	10	10
Gross weight GVW [IEC 60335-2-72; IEC 62885-9]	kg	535	475	620	555
Weight during transport [IEC 60335-2-72; IEC 62885-9]	kg	360	300	445	380
Sound pressure level on the operator's ears (Lp_A) [ISO 11201, ISO 4871, EN 60335-2-72]	dB (A)	<70	<70	<70	<70
Sound pressure level (Lw_A) [ISO 11201, ISO 4871, EN 60335-2-72]	dB (A)	<80	<80	<80	<80
Uncertainty Kp_A	dB (A)	±1,5	±1,5	±1,5	±1,5
Vibration level on the operator's hands/arms [ISO 5349-1, EN 60335-2-72]	m/s^2	<0,5	<0,5	<0,5	<0,5
Vibration level on the operator's whole body [ISO 5349-1, EN 60335-2-72]	m/s^2	<2.5	<2.5	<2.5	<2.5
Vibration measurement uncertainty		±1,5%	±1,5%	±1,5%	±1,5%

PREPARATION OF MACHINE



HANDLING THE PACKAGED MACHINE

Gross weight of machine with packaging is:

- 290kg for CS700 B 2021
- 350kg for CS700 H 2021
- 375kg for CS800 B 2021
- 430kg for CS800 H 2021

The external dimensions of the package are: width 120cm; length 166cm and height 145cm.

N.B.: it is recommended that all the packaging components be kept for any future machine transportation.

DANGER: Move the packaged product with handling trolleys that comply with legal requirements regarding size and mass of the packaging.

MACHINE SAFETY

To ensure that work is carried out in the best safety conditions, proceed as follows:

1. Engage the parking brake by pressing the brake pedal (1) (**Fig.1**) and rotating the retainer lever (2) anti-clockwise (**Fig.2**).

N.B.: in versions with an endothermic engine, the red indicator light (3) on the control panel will light up as soon as the parking brake is engaged (**Fig.3**).

N.B.: in battery-powered versions, the relative icon will fill the control display screen as soon as the parking brake is engaged (**Fig.4**).

2. For versions with an endothermic engine, reduce the engine speed and push the engine speed control lever (4) upwards (**Fig.5**).
3. Bring the main switch to position "0" by making a quarter turn anti-clockwise with the key (5) (**Fig.6**).
4. Remove the key from the instrument panel.
5. Bring the central brush to its idle position by rotating the central brush control lever (6) clockwise (**Fig.7**).
6. Bring the side brush(es) to their idle position by rotating the side brush control lever (7) anti-clockwise (**Fig.8**).
7. Make sure the debris hopper is empty. If it isn't, empty it (refer to “EMPTYING THE DEBRIS HOPPER” on page 30).
8. Rotate the seat hood (8) to its maintenance position (**Fig.9**), remembering to engage the rotation retainer (9) to prevent it from accidentally closing (**Fig.10**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

9. For battery-powered versions, disconnect the battery connector from the electrical system connector.
10. For versions with an endothermic engine, bring the fuel valve lever to the OFF position (refer to the STOPPING THE ENGINE paragraph in the endothermic engine use and maintenance manual, supplied with the machine).
11. Rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.

HOW TO UNPACK THE MACHINE

The machine is shipped in specific packaging. To remove it, proceed as follows:

1. Place the lower part of the outer packaging in contact with the floor.

N.B.: use the pictograms printed on the box as a reference.

2. Remove the outer package.

WARNING: the machine is contained in specific packaging materials, whose elements (plastic bags, staples, etc.) can pose potential hazards, and must not be left within reach of children, disabled persons, etc.

CAUTION: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

3. Insert a ramp in the rear part of the machine.

ATTENTION: the ramp gradient must not be such as to cause damage to the machine as it comes down.

4. The machine is secured to the footboard with wedges that lock the wheels, remove these wedges.
5. Bring the main switch to the "0" position by making a quarter turn anti-clockwise with the key (5) (**Fig.6**). Remove the key from the instrument panel.
6. Make sure the central brush is in its idle position. If it isn't, rotate the central brush control lever (6) clockwise (**Fig.7**).
7. Make sure the side brush(es) is/are in the idle position. If this isn't the case, rotate the relative control lever (7) anti-clockwise (**Fig.8**).
8. For versions with an endothermic engine, rotate the seat hood (8) to its maintenance position (**Fig.9**), remembering to engage the rotation retainer (9) to prevent it from accidentally closing (**Fig.10**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

9. For versions with an endothermic engine, put the hydraulic oil system in standby and rotate the lever (10) in the bypass valve (**Fig.13**).
10. For versions with an endothermic engine, rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.
11. Disengage the parking brake by pressing the brake pedal (1) (**Fig.1**) and rotating the retainer lever (2) anti-clockwise (**Fig.2**).
12. Drive the machine down the ramp.

ATTENTION: during this operation, check there are no people or objects near the machine.

HOW TO MOVE THE MACHINE

To transport the machine safely, proceed as follows:

DANGER: before beginning any task, carefully follow the safety regulations in force with regards the transportation of dangerous substances in the country where the machine is being - and will be - transported.

1. Make sure the debris hopper is empty. If it isn't, empty it (refer to “EMPTYING THE DEBRIS HOPPER” on page 30).
2. Sit on the driver’s seat.
3. Bring the central brush to its idle position by rotating the central brush control lever (6) clockwise (**Fig.7**).
4. Bring the side brush(es) to their idle position by rotating the side brush control lever (7) anti-clockwise (**Fig.8**).
5. Insert the key (5) into the main switch on the control panel.
6. For battery-powered versions, bring the main switch to the "I" position (**Fig.14**) and make a quarter turn clockwise with the key.
7. For versions with an endothermic engine, read the STARTING THE ENGINE paragraph in the endothermic engine use and maintenance manual supplied with the machine.
8. Press the drive pedal (8) (**Fig.5**) to begin moving the machine.
9. Use a ramp to move the machine up onto the transport vehicle.

CAUTION: during this operation, check there are no people or objects near the machine.

N.B.: the ramp gradient must not be such as to cause damage to the machine as it goes up.

N.B.: for versions with an endothermic engine, the ramp gradient must not be more than 20° or 36%.

10. Position the machine on the means of transport, and set the main switch to “0” by turning the key (3) a quarter turn anti-clockwise (**Fig.6**). Remove the key from the instrument panel.
11. Get off the machine.
12. Rotate the seat hood (8) to its maintenance position (**Fig.9**), remembering to engage the rotation retainer (9) to prevent it from accidentally closing (**Fig.10**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

13. For battery-powered versions, disconnect the battery connector from the electrical system connector.
14. For versions with an endothermic engine, bring the fuel valve lever to the OFF position (refer to the STOPPING THE ENGINE paragraph in the endothermic engine use and maintenance manual, supplied with the machine).
15. Rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.

TYPE OF BATTERY TO BE USED (battery-powered versions)

Used batteries must meet the requirements set out in DIN EN 50272-3 "Traction batteries for industrial trucks".
To ensure proper performance, the machine must be powered with 24V.

N.B.: the use of four 6V MFP 180 batteries (6V 180Ah/C_5) is recommended.

TYPE OF STARTER BATTERY TO BE USED (versions with endothermic engine)

The starter battery must meet the requisites set out in DIN EN 50272-3 "Traction batteries for industrial trucks".
To ensure good work results, a 12V 35Ah/C_5 150A battery must be used.

BATTERY MAINTENANCE AND DISPOSAL

For battery maintenance and recharging, respect the instructions provided by the battery manufacturer. When the batteries reach the end of their service life, they must be disconnected by a specialized and properly trained operator, and must be subsequently removed from the battery compartment using suitable lifting devices.

N.B.: used batteries, which are classified as hazardous waste, must be returned to a legally authorised waste disposal authority.

INSERTING THE BATTERIES IN THE MACHINE (battery-powered versions)

The machine batteries must be housed in the specific compartment beneath the seat body, and handled using lifting equipment suitable in terms of both weight and coupling system.

DANGER: make sure that you comply with the accident prevention regulations in force in the country where you work or with DIN EN 50272-3 and DIN EN 50110-1, before any handling of the batteries.

WARNING: to prevent an accidental short circuit use insulated tools to connect the batteries, and do not place or drop metal objects on the battery. Remove rings, watches and any clothing with metal parts that may come into contact with the battery terminals.

The various phases for inserting the batteries in the battery compartment are as follows:

1. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 15).
2. Rotate the seat hood (8) to its maintenance position (**Fig.9**), remembering to engage the rotation retainer (9) to prevent it from accidentally closing (**Fig.10**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

N.B.: for battery maintenance and daily recharging, respect the indications provided by the manufacturer or retailer.

WARNING: all installation and maintenance operations must be carried out by specialized personnel.

N.B.: before installing the battery, clean the battery compartment. Check that the connectors on the cables supplied are functioning correctly.

ATTENTION: check that the characteristics of the battery that you are looking to use are appropriate for the type of work to be performed. Check the battery charge and the condition of the contacts on the battery.

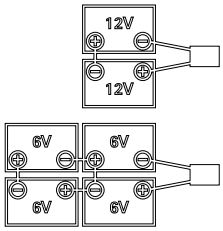
N.B.: you are advised to only lift and move the batteries with lifting and transportation means suitable for the specific weight and size

WARNING: the lifting hooks must not damage the blocks, connectors or cables.

N.B.: Before inserting the batteries into the machine, remember to cover the terminals with a little grease to protect them against external corrosion.

3. House the batteries in the relative compartment, counter-positioning the “+” and “-“ poles so that, if wired, their voltage is 24V (**Fig.15** for 12V batteries, **Fig.16** for 6V batteries).

CONNECTING THE BATTERIES TO THE MACHINE'S ELECTRICAL SYSTEM (battery-powered versions)



The batteries should be connected so as to obtain a total voltage of 24V.

ATTENTION: it is recommended that all installation and maintenance operations be carried out by expert personnel, trained at the specialised assistance centre.

WARNING: to prevent an accidental short circuit use insulated tools to connect the batteries, and do not place or drop metal objects on the battery. Remove rings, watches and any clothing with metal parts that may come into contact with the battery terminals.

The various phases for inserting the batteries in the battery compartment are as follows:

1. Using the supplied jumper cables, connect the battery “+” and “-” poles in series.
2. Connect the battery connector cable to the "+" and "-" poles in order to obtain the terminal voltage of 24V.
3. Connect the connector on the supply cable of the machine's electrical system to the connector on the battery cable.

RECHARGING THE BATTERIES (battery-powered versions)

The batteries must be charged prior to first use, and whenever they no longer provide sufficient power.

ATTENTION: to avoid any permanent damage to the batteries, it is essential to avoid their complete discharge; begin recharging them within a few minutes of noting the "discharged batteries" signal.

ATTENTION: never leave the batteries completely discharged, even if the device is not being used.

1. Bring the machine to the battery recharging area.
2. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 15).

ATTENTION: park the machine in an enclosed place, on a flat and level surface; near the machine there must be no objects that could either damage it, or be damaged through contact with it.

ATTENTION: the room used to recharge the batteries must be adequately ventilated to prevent the accumulation of gases that leak from batteries.

3. Rotate the seat hood (8) to its maintenance position (**Fig.9**), remembering to engage the rotation retainer (9) to prevent it from accidentally closing (**Fig.10**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

To recharge the batteries without the built-in battery charger, proceed as follows:

- Disconnect the electric system connector from the battery connector.
- Connect the external battery charger cable to the battery connector.

N.B.: the coupling connector of the battery charger is consigned inside the bag containing this instruction booklet, and must be assembled on the cables of the battery charger as indicated in the instructions.

ATTENTION: before connecting the batteries to the battery charger, make sure it is suitable for the batteries used.

N.B.: carefully read the use and maintenance instructions of the battery charger that is used for charging.

WARNING: keep the tailgate open throughout the battery recharging cycle, to allow gas fumes to escape.

- Once the recharge cycle has been completed, disconnect the battery charger's cable from the battery connector.
- Connect the electrical system connector to the battery connector.
- Rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.

To recharge the batteries with the on-board battery charger proceed as follows:

N.B.: carefully read the use and maintenance instructions of the battery charger that is used for charging.

- Connect the supply cable connector to the socket on the battery charger cable.
- Insert the supply cable plug in the mains socket.

WARNING: before connecting the batteries to the battery charger, make sure it is suitable for the batteries used.

WARNING: before inserting the battery charger supply cable in the socket on the battery charger cable, make sure there is no condensate or any other type of liquid.

N.B.: the battery charger power cable is delivered inside the bag containing this instruction booklet.

WARNING: keep the tailgate open throughout the battery recharging cycle, to allow gas fumes to escape.

- When the recharge cycle is complete, disconnect the battery charger cable from the mains.
- Take the supply cable connector out of the battery charger cable socket.
- Rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.

TYPE OF FUEL TO BE USED (versions with endothermic engine)

To determine which fuel must be used to power the machine, refer to the RECOMMENDED FUEL paragraph in the endothermic engine use and maintenance manual supplied with the machine.

REFUELLING (versions with endothermic engine)

The fuelling phases are as follows:

1. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 15).
2. Rotate the seat hood (8) to its maintenance position (**Fig.9**), remembering to engage the rotation retainer (9) to prevent it from accidentally closing (**Fig.10**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

N.B.: to refuel, read the REFUELLING paragraph in the endothermic engine use and maintenance manual supplied with the machine.

DANGER: Gasoline is highly flammable and explosive. Shut off the engine and allow it to cool before refuelling.

DANGER: The refuelling place must be well aired. Never refuel the engine inside a building where the gasoline fumes could come into contact with flames or sparks.

DANGER: Gasoline is highly and easily flammable. Keep away from fires and do not shake fuel containers. Don't smoke in the refuelling area! Discharge any static electricity from your body before approaching the fuel tank.

WARNING: You are advised to always put on protective gloves before handling the fuel, to avoid any risk of serious injury to your hands. Fuels may contain substances similar to solvents. Avoid any contact of mineral oil products with the skin and eyes. Use gloves when refuelling. Change your protective clothes frequently, and clean them.

WARNING: Always open the tank cap carefully, to slowly discharge the overpressure and prevent fuel from spurting out.

WARNING: Don't inhale the fuel vapours.

WARNING: For environmental protection purposes, make sure the fuel doesn't seep into the ground.

WARNING: In the event of a fuel spill, clean the machine immediately.

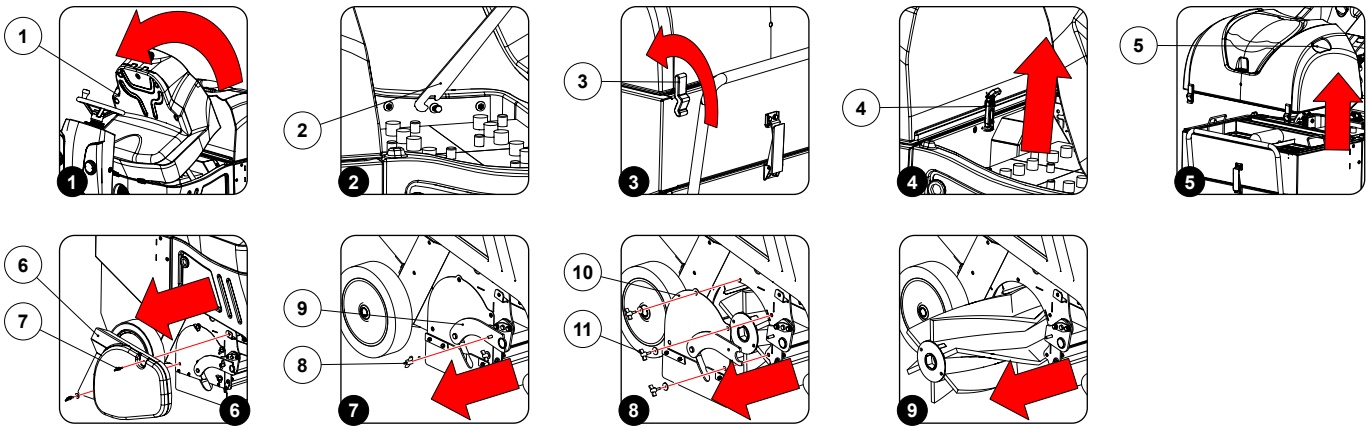
WARNING: After refuelling, replace the tank cap. Tighten it firmly, but without using tools. The cap must not come loose while the machine is being used.

WARNING: Check the tank for any leaks or ineffective seals. If you notice a fuel leakage, do not switch on or use the machine.

WARNING: Keep the fuel in containers that meet the legal requisites and bear an identification label.

WARNING: The endothermic engine must only be powered using the fuel type indicated in the RECOMMENDED FUEL paragraph of the engine use and maintenance manual supplied with the machine.

PREPARING TO WORK



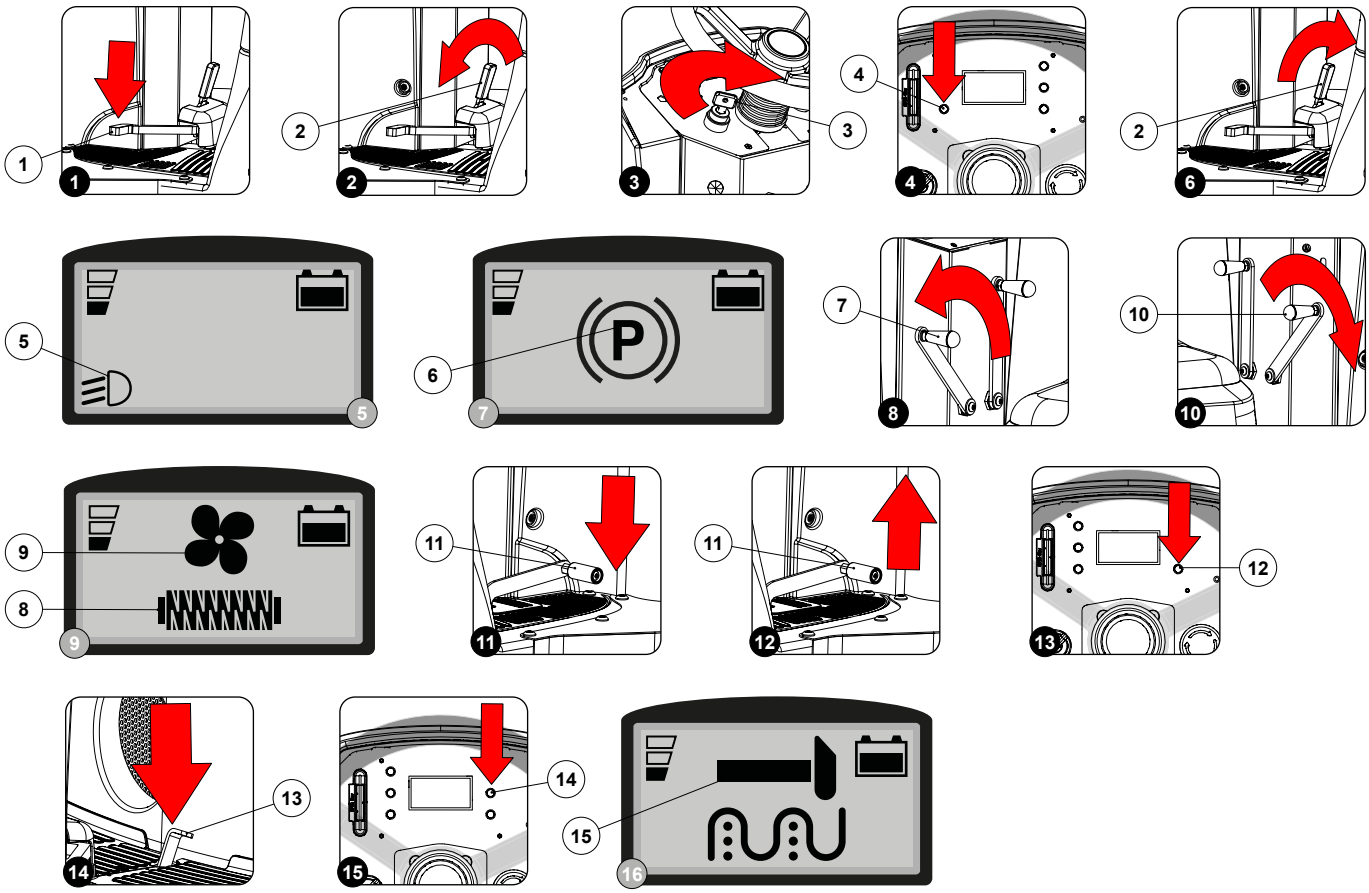
Before beginning to work, it is necessary to:

1. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 15).
2. Make sure the debris hopper is empty. If it isn't, empty it (refer to “EMPTYING THE DEBRIS HOPPER” on page 30.
3. Rotate the seat hood (1) to its maintenance position (**Fig.1**), remembering to engage the rotation retainer (2) to prevent it from accidentally closing (**Fig.2**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

4. For battery-powered versions, connect the battery connector to the machine's main system connector.
5. For versions with an endothermic engine, carry out the checks indicated in the CHECKS PRIOR TO USE chapter in the engine use and maintenance manual supplied with the machine.
6. Go to the back of the machine and release the rear retainers (3) that hold the vacuum cover in place (**Fig.3**).
7. Go to the side of the machine and release the front retainer (4) that holds the vacuum cover in place (**Fig.4**).
8. Remove the vacuum cover from the machine, using the moulded handles (5) to lift it up (**Fig.5**).
9. Make sure the vacuum filter isn't clogged. If it is, clean it. Refer to “CLEANING THE VACUUM FILTER” on page 32.
10. To reassemble the vacuum cover, repeat the operations above but in reverse order.
11. Rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.
12. Go to the right-hand side of the machine and remove the RH side carter (6) after loosening the wing nuts (7) (**Fig.6**).
13. Remove the wing nut (8) that holds the central brush idle support (9) (**Fig.7**).
14. Remove the central brush inspection carter (10) after loosening the wing nuts (11) (**Fig.8**).
15. Remove the central brush (**Fig.9**) and check that the condition of the bristles is suitable for the type of work to be carried out. If they are too worn, fit a new brush. Refer to “CENTRAL BRUSH REPLACEMENT” on page 34.
16. To refit the central brush inspection carter and the RH carter, repeat the operations above but in reverse order.
17. Go to the front of the machine and check the condition of the bristles of the side brush(es) is suitable for the type of work to be carried out. If they are too worn, fit a new brush. Refer to “SIDE BRUSH REPLACEMENT” on page 34.

STARTING WORK (battery-powered versions)



To start working, proceed as follows:

1. Carry out all the checks listed in the section “PREPARING TO WORK” on page 20.
2. Sit on the driver’s seat.
3. Check the parking brake is engaged by pressing the service brake pedal (1) (**Fig.1**) and rotating the lever (2) anti-clockwise (**Fig.2**).
4. Bring the main switch to the "I" position, then make a quarter turn clockwise with the key (3) (**Fig.3**).
5. At switch-on, a number of screens appear in sequence on the display.

N.B.: the first and second screen shows the name of the machine.

N.B.: the third screen shows:
- (in the upper part) the nominal battery voltage value and the type of battery set on the control board;
- (in the central part) the total machine hour meter (value expressed in hours and minutes);
- (in the lower part) the software version of the control board installed.

N.B.: as soon as the machine is switched on, the working headlights on the front are activated. If more light is required, press the button (4) on the control panel (**Fig.4**). When the button (4) is active, the relative symbol (5) appears on the control display (**Fig.5**).

6. Disengage the parking brake by rotating the lever (2) clockwise (**Fig.6**).

N.B.: as soon as the parking brake is disengaged, the relative symbol (6) disappears from the control display (**Fig. 7**).

7. The procedure for a brushing operation with the aid of the vacuum is explained below.
8. Lower the central brush by rotating the lever (7) on the back of the steering column anti-clockwise (**Fig.8**).

N.B.: as soon as the central brush makes contact with the ground, the relative symbol (8) will appear on the control display along with the vacuum function symbol (9) (**Fig.9**).

9. Lower the side brush(es) by rotating the lever (10) on the back of the steering column clockwise (**Fig.10**).

N.B.: use the side brush(es) only for perimeter areas, as there is no assistance from the vacuum.

10. Press the drive pedal (11) (**Fig.11**) to begin moving the machine.

N.B.: the control board only activates the suction motor and the gearmotors of the central brush and side brush(es) when the drive pedal has been pressed.

N.B.: in the first few metres, adjust the working speed according to the amount of waste and debris to be collected.

N.B.: to adjust the forward speed, refer to the “REGULATING THE MOVEMENT SPEED (battery-powered versions)” on page 27.

N.B.: for reverse movement, move the pedal (11) upwards (**Fig.12**). Refer to “DRIVE PEDAL” on page 26.

11. The machine will now work at its maximum efficiency level until the batteries run down or until the debris hopper is completely full.

N.B.: check the debris hopper at regular intervals, emptying it when necessary. Keep in mind that the weight of the waste collected is proportional to the specific weight of the material swept. In the case of heavy material such as sand, earth, gravel, etc., the debris hopper should ideally not be filled to more than 70% as otherwise it may be difficult to empty.

ATTENTION: deactivate the vacuum when you are about to clean wet or damp surfaces, to avoid ruining the filter. Shut off the vacuum without activating the filter shaker.

N.B.: to deactivate the vacuum, press the button (12) on the control panel (**Fig.13**). The relative symbol (9) will immediately disappear from the control display (**Fig.9**).

N.B.: if voluminous waste such as cans or bottles needs to be picked up, press the front flap control pedal (13) (**Fig.14**) to allow the central brush to collect it.

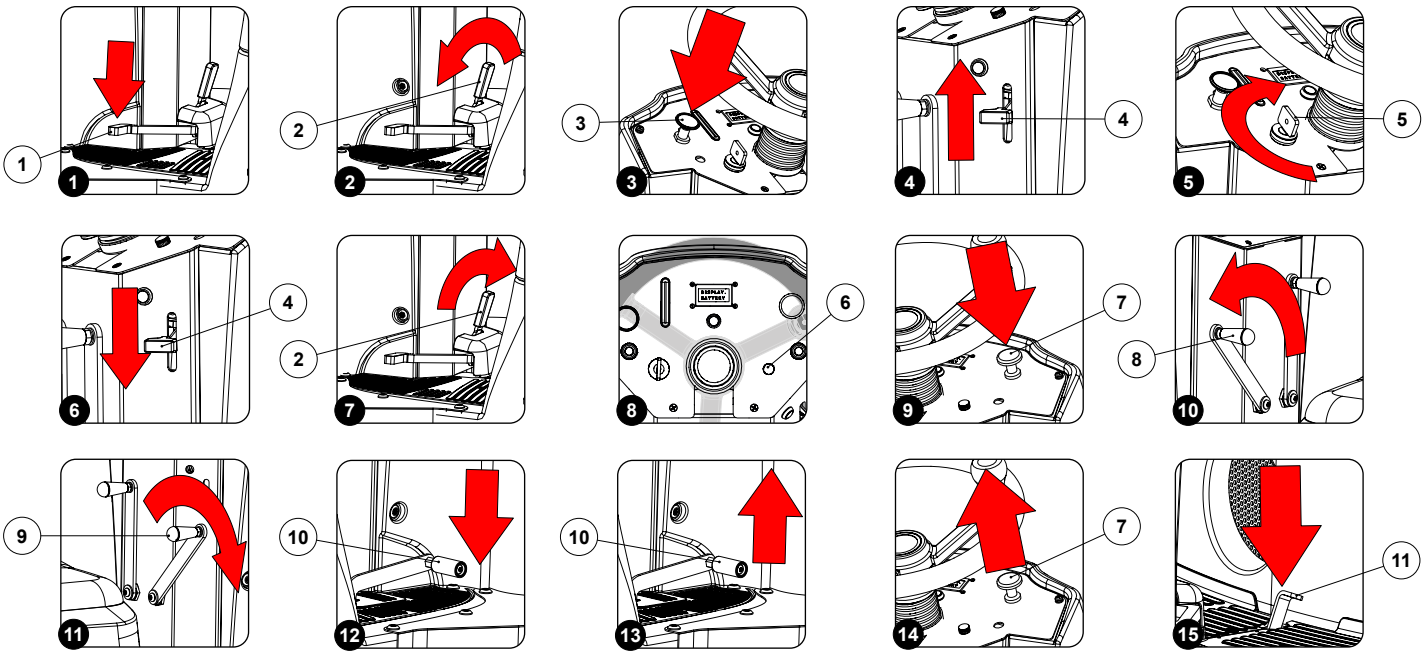
N.B.: to ensure a correct vacuum action, clean the filter approximately every 15 minutes and always clean it before emptying the debris hopper. To do this, proceed as follows:

- Stop the machine and engage the parking brake by pressing the service brake pedal (1) (**Fig.1**) and rotating the lever (2) anti-clockwise (**Fig.2**). As soon as the parking brake has been engaged, the control display will show the relative symbol (6) (**Fig.7**).
- Activate the filter shaker on the filter by pressing the button (14) on the instrument panel (**Fig.15**).

N.B.: when the button (14) is pressed, the suction motor will be switched off straight away (if it was enabled) and then the filter shaker will be briefly activated and the relative symbol (15) will appear on the control display (**Fig.16**). At the end of the operation, the suction motor will be automatically reactivated if it was enabled beforehand.

N.B.: the filter cleaning intervention can be carried out intermittently, with a 5-second break between one intervention and the next.

STARTING WORK (versions with endothermic engine)



WARNING: for your own safety, do not switch the engine on in a closed place as the exhaust gases contain carbon monoxide which is poisonous; it can quickly saturate a closed area and cause ailments or even be lethal.

WARNING: a person who breathes in carbon monoxide may lose consciousness or even suffer lethal consequences.

To start working, proceed as follows:

1. Carry out all the checks listed in the section “PREPARING TO WORK” on page 20.
2. Sit on the driver’s seat.
3. Check the parking brake is engaged by pressing the service brake pedal (1) (**Fig.1**) and rotating the lever (2) anti-clockwise (**Fig.2**).
4. Carry out all the procedures explained in the STARTING THE ENGINE paragraph in the engine use and maintenance manual supplied with the machine.

N.B.: before beginning the engine start-up procedure, make sure the engine starter regulation knob (3) is in the “CLOSED” position (**Fig.3**).

N.B.: before beginning the engine start-up procedure, make sure the engine speed regulation lever (4) is in the “MINIMUM” position (**Fig.4**).

N.B.: the main switch (5) is on the control panel (**Fig.5**).

N.B.: as soon as the endothermic engine is activated, bring the speed regulation lever (4) to the maximum of its stroke to ensure the machine works properly (**Fig.6**).

5. At switch-on, a number of screens appear in sequence on the display.

N.B.: The first screen shows (on the top line) what type of hour meter has been set; in this case it's a total hour meter (to display a different type - for instance partial - contact the qualified personnel of a specialised assistance centre). The bottom line shows the “service” setting (in this case there is no setting).

N.B.: The second screen shows which power supply technology has been set for machine operation.

N.B.: The third and last screen (known as “work”) displays the battery charge status and the total functioning time. When the endothermic engine is powering the starter battery, the top line is made up of 8 light indicators that represent a battery. The bottom line indicates the hours and minutes of functioning. The flashing “:” symbol indicates that the hour meter is counting the machine functioning time.

N.B.: as soon as the machine is switched on, the working headlights on the front are activated.

6. Disengage the parking brake by rotating the lever (2) clockwise (**Fig.7**).

N.B.: as soon as the parking brake is disengaged, the relative indicator light (6) on the control panel will turn off (**Fig.8**).

7. The procedure for a brushing operation with the aid of the vacuum is explained below.
8. Activate the suction motor by moving the knob (7) on the control panel downwards (**Fig.9**).
9. Lower the central brush by rotating the lever (8) on the back of the steering column anti-clockwise (**Fig.10**).
10. Lower the side brush(es) by rotating the lever (9) on the back of the steering column clockwise (**Fig.11**).

N.B.: use the side brush(es) only for perimeter areas, as there is no assistance from the vacuum.

11. Press the drive pedal (10) (**Fig.12**) to begin moving the machine.

N.B.: the control board only activates the suction motor and the gearmotors of the central brush and side brush(es) when the drive pedal has been pressed.

N.B.: in the first few metres, adjust the working speed according to the amount of waste and debris to be collected.

N.B.: for reverse movement, move the pedal (10) upwards (**Fig.13**). Refer to “DRIVE PEDAL” on page 26.

12. The machine will now work at its maximum efficiency level until the fuel runs out or until the debris hopper is completely full.

N.B.: check the debris hopper at regular intervals, emptying it when necessary. Keep in mind that the weight of the waste collected is proportional to the specific weight of the material swept. In the case of heavy material such as sand, earth, gravel, etc., the debris hopper should ideally not be filled to more than 70% as otherwise it may be difficult to empty.

ATTENTION: deactivate the vacuum when you are about to clean wet or damp surfaces, to avoid ruining the filter. Shut off the vacuum without activating the filter shaker.

N.B.: to deactivate the vacuum, push the knob (7) on the control panel upwards (**Fig.14**), taking care not to move it to the end of its stroke as this will enable the filter shaker.

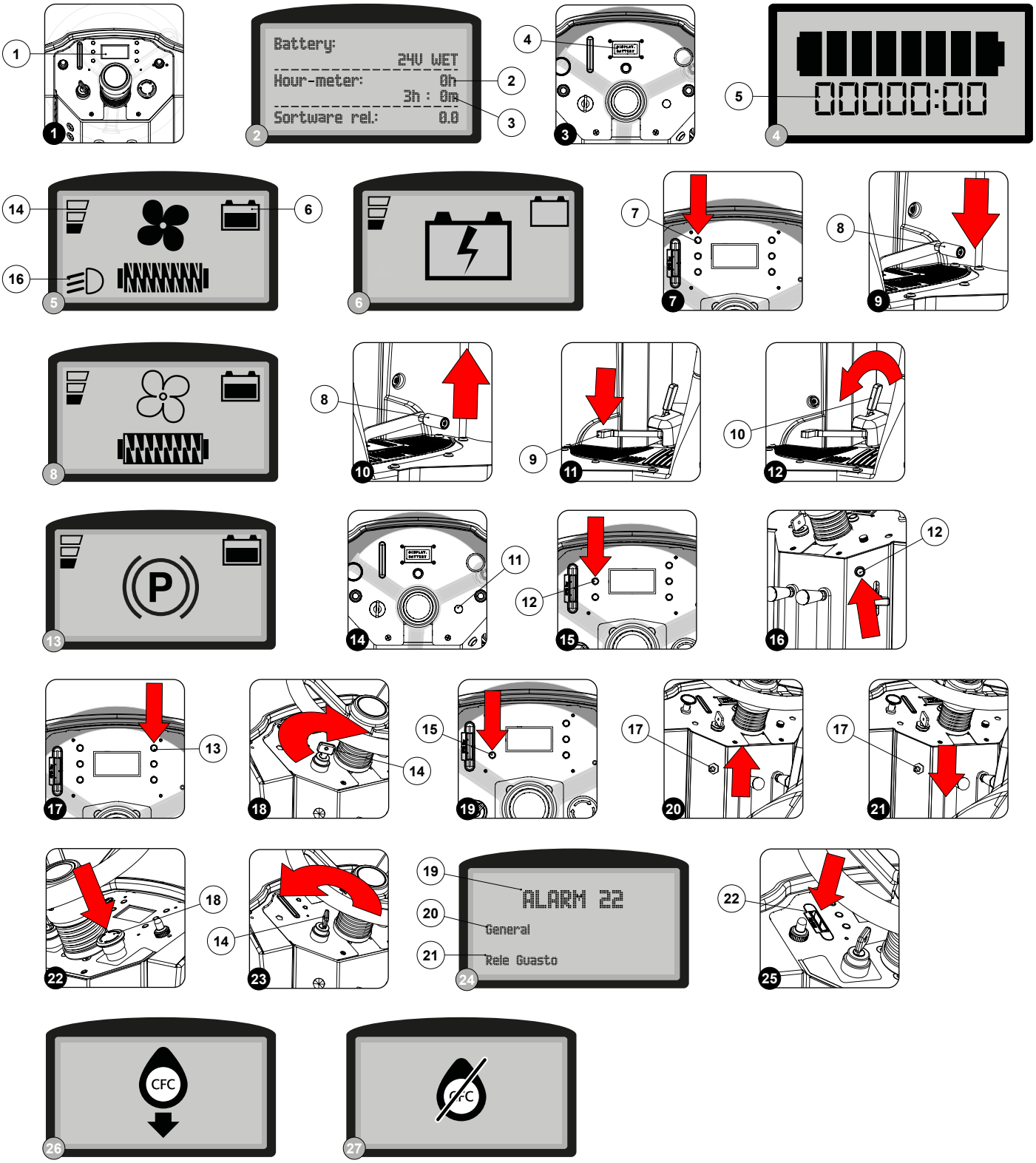
N.B.: if voluminous waste such as cans or bottles needs to be picked up, press the front flap control pedal (11) (**Fig.15**) to allow the central brush to collect it.

N.B.: to ensure a correct vacuum action, clean the filter approximately every 15 minutes and always clean it before emptying the debris hopper. To do this, proceed as follows:

- Stop the machine and engage the parking brake by pressing the service brake pedal (1) (**Fig.1**) and rotating the lever (2) anti-clockwise (**Fig.2**). As soon as the parking brake has been engaged, the indicator light (6) on the control display will light up (**Fig.8**).
- Activate the filter shaker on the filter by pushing the knob (7) on the control panel as far upwards as it will go **Fig.14**).

N.B.: activate the filter shaker for no longer than 3 seconds. The filter cleaning intervention can be carried out intermittently, with a 5-second break between one intervention and the next.

ADDITIONAL FUNCTIONS



HOUR METER

For battery-powered versions, the instrument panel has a control display (1) (**Fig.1**); the third screen after machine switch-on shows the machine operating hours in the central part.
The first row shows the total machine usage time (2), and the second row the partial usage time (3) (**Fig.2**).

N.B.: The numbers followed by the letter “h” identify the hours, while the numbers followed by the letter “m” identify the tenths of an hour (a tenth of an hour corresponds to six minutes).

N.B.: to change the type of overall hour meter displayed, refer to the “10084457-AA_USER INTERFACE CONFIGURATION GUIDE (DISPLAY 2”)” manual supplied with the machine. The hour meter set in the factory is the one relating to the ignition key.

For versions with an endothermic engine, the instrument panel has a control display (4) (**Fig.3**); the third screen after machine switch-on shows the machine usage time in the lower part (5) (**Fig.4**).

N.B.: the numbers before the ":" symbol indicate the machine operating hours; the numbers after the ":" symbol indicate the machine operating minutes.

BATTERY CHARGE LEVEL INDICATOR (battery-powered versions)

On the machine control panel there is a control display (1) (**Fig.1**). At the top right of the work screen, a graphic symbol (6) represents the battery charge level indicator (**Fig.5**).

N.B.: there are five light indicators that are all lit up when the batteries are fully charged and then gradually turn off as the batteries run down.

N.B.: When the minimum remaining charge is reached, the graphic symbol will start to flash then, after a few seconds, it will appear in larger dimensions in the middle of the screen (**Fig.6**). In these conditions, the machine must be taken to the designated battery charging area.

N.B.: when the battery charge reaches the minimum, the brush motors switch off automatically but the residual charge is sufficient to complete the task before recharging.

N.B.: A few seconds after the battery charge level has reached the minimum, the suction motor switches off automatically. With the remaining charge, it is still possible, however, to move the machine to the location designated for its recharging.

ECO-MODE (battery-powered versions)

Eco-Mode sets a working configuration that reduces noise and saves energy.

ACTIVATING/DEACTIVATING ECO-MODE (battery-powered versions)

To activate and deactivate Eco-Mode while using the machine, press the button (7) on the control panel (**Fig.7**).

N.B.: Eco-Mode reduces the speed of the brush gearmotors and the suction motor, thus reducing the energy consumption of the machine.

N.B.: when Eco-Mode is active, the suction motor and brush symbols appear on the control display in silhouette form (**Fig.8**).

DRIVE PEDAL

The machine has a drive pedal (8) that must be pressed to move the machine forwards (**Fig.9**); to move backwards, push the pedal (8) upwards (**Fig.10**).

N.B. : As soon as the machine begins to reverse, the safety buzzer will sound intermittently.

N.B. : If the horn button is pressed while reversing, this will be ignored by the machine, as the intermittent reversing buzzer will take priority.

N.B. : if reverse movement is activated while the central brush and side brush(es) are in the work position, the relative gearmotors will carry on working.

SERVICE BRAKE

The machine is equipped with a mechanical braking system, located on the front wheel. To brake under normal conditions, simply press the service brake pedal (9) (**Fig.11**).

PARKING BRAKE

The machine is equipped with a mechanical parking brake, located on the front wheel. To engage the parking brake under normal conditions, simply press the service brake pedal (9) (**Fig.11**) and shift the parking brake control lever (10) to the left (**Fig.12**).

N.B. : in battery-powered versions, the relative symbol will fill the control display screen as soon as the parking brake is engaged (**Fig.13**).

N.B. : in versions with an endothermic engine, the red indicator light (11) on the control panel will light up as soon as the parking brake is engaged (**Fig.14**).

N.B. : When the parking brake is engaged, the traction motor is deactivated.

HORN

For battery-powered versions, the horn can be activated by pressing the button (12) on the control panel (**Fig.15**) (the horn will sound continuously as long as the button is pressed).
For versions with an endothermic engine, the horn can be activated by pressing the button (12) on the back of the steering column (**Fig.16**) (the horn will sound continuously as long as the button is pressed).

N.B. : the horn will sound continuously as long as the button (12) is pressed.

N.B. : If the button (12) is pressed during the reverse movement, as a signal priority, only the intermittent buzzer connected to the reverse will be heard.

REGULATING THE MOVEMENT SPEED (battery-powered versions)

To adjust the movement speed, press the button (13) on the control panel (**Fig.17**).

N.B. : the selected level is shown by the symbol (14) on the control display (**Fig.5**).

N.B. : Each time the button (13) is pressed, the speed level of the machine's movement is increased, once the maximum level has been reached, the speed will start again from the first level. Pressing the button subsequently changes the movement speed of the machine, there are three selectable levels (50% - 75% - 100%).

N.B. : the reverse speed is lower than the forward speed to comply with current health and safety standards.

WORKING HEADLIGHTS

The machine is fitted with headlights that can be activated in “position” or “dipped” mode.

On battery-powered machines, the headlights are activated in “position” mode as soon as the machine is switched on (to switch on the machine, bring the main switch to the “I” position by making a quarter tun to the right with the key (14) (**Fig.18**)).

N.B. : if you want to increase the light produced by the headlights on battery-powered versions (i.e. activate them in “dipped” mode), press the button (15) on the control panel (**Fig.19**). As soon as the button is pressed, the relative symbol (16) will appear on the control display (**Fig.5**).

To activate the headlights in "position" mode on machines with an endothermic engine, switch on the machine (refer to the STARTING THE ENGINE paragraph in the engine use and maintenance manual supplied with the machine) and push the headlight control switch lever (17) upwards (**Fig.20**).

N.B. : if you want to increase the light produced by the headlights on versions with an endothermic engine (i.e. activate them in “dipped” mode), push the headlight control switch lever (17) downwards (**Fig.21**).

N.B. : if you want to switch the headlights off on versions with an endothermic engine, push the headlight control switch lever (17) towards the centre, to the “0” position.

EMERGENCY BUTTON

If there are any problems while you are working, press the emergency button (18) on the control panel (**Fig.22**).

CAUTION: this command shuts off the machine's electric circuit.

N.B.: After having stopped and resolved the problem, the work operations can be resumed by doing the following:
1. Bring the main switch to the "0" position by making a quarter turn anti-clockwise with the key (14) (**Fig.23**).
2. Rotate the mushroom-head emergency button (18) as shown by the pictograms on it.
3. Follow all the necessary steps to switch on the machine.

ALARM SCREEN (battery-powered versions)

If an alarm is triggered, the control display will show the alarm screen (**Fig. 24**). This screen will remain visible until the error has been resolved.

N.B. : the first row of the alarm screen shows the error code (19); the second row shows the origin of the error (20); the third row contains a brief description of the type of error (21).

When an error occurs, do as follows:

1. Stop the machine immediately.
2. If the error persists, switch off the machine, wait for at least ten seconds and switch on the machine.
3. If the error persists contact the nearest service centre.

List of alarms:

NUMBER	TYPE	DESCRIPTION
AL_1	Function	Brush current protection
AL_2	Function	Vacuum cleaner current protection
AL_3	Function	Power stage of damaged brush or vacuum cleaner
AL_4	Function	Overcurrent on brush or vacuum cleaner outputs
AL_5	Function	Thermal cut-out protection on brush / vacuum cleaner stage
AL_8	Function	Current protection: RH side brush
AL_9	Function	Current protection: LH side brush
AL_13	Function	Potentiometer pulled
AL_14	Traction	Pedal pressed at start-up

NUMBER	TYPE	DESCRIPTION
AL_15	Traction	Thermal cut-out protection on traction stage
AL_16	Traction	Damaged traction power stage
AL_17	Traction	Overcurrent on traction output
AL_18	Traction	Traction current protection
AL_19	Traction	Traction power stage seen as damaged
AL_20	General	Error reading internal memory
AL_21	General	Key sequence incorrect
AL_22	General	General relay damaged
AL_23	General	Overvoltage
AL_24	General	Battery not connected to the function board
AL_25	General	No keyboard-function communication

COMAC FLEET CARE FUNCTION (CFC versions)

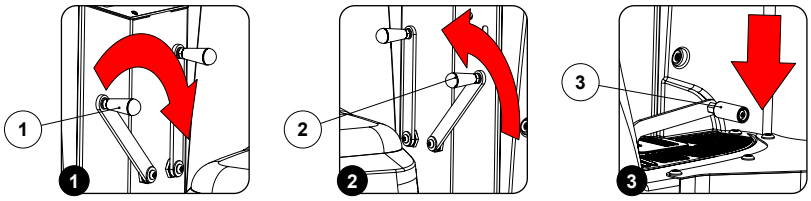
Upon request, the machine can be equipped with the Comac Fleet Care function for the automatic management of the whole fleet of machines used. This system allows the remote control of the condition of the machines, if and where each machine is being used and by whom, and whether maintenance is needed (allowing prompt intervention to avoid the need for extraordinary maintenance).

INSERTING THE TAG (versions with CFC system)

To activate the automatic fleet management data recording function for machine versions with the COMAC FLEET CARE system, wait until the screen showing the machine programming characteristics appears and then insert the TAG in the slot (22) on the control panel (**Fig.24**).

N.B.: if the TAG needs to be inserted in the control display in order for the machine to work, the relative screen will appear **Fig.25**. If the TAG inserted in the machine has not been enabled on the control display, the relative screen will appear **Fig.26**.

AT THE END OF THE WORK



At the end of the work, and before carrying out any type of maintenance, perform the following operations:

1. Turn the central brush head control lever (1) anti-clockwise (**Fig.1**) to raise the brush off the floor.
2. Raise the side brush(es) off the floor by rotating the side brush control lever (2) clockwise (**Fig.2**).
3. Press the drive pedal (3) (**Fig.3**) to begin moving the machine.
4. Take the machine to the designated maintenance area.

WARNING: the place designated for this operation must comply with current regulations concerning safety at work and current environmental protection regulations.

5. Follow all the procedures listed under the "DAILY" column in the “RECOMMENDED ROUTINE MAINTENANCE” on page 29.
6. Once the maintenance work is finished take the machine to the designated storage place.

ATTENTION: Park the machine in an enclosed place, on a flat surface; near the machine there must be no objects that could either damage it, or be damaged through contact with it.

7. Secure the machine, see the section entitled “MACHINE SAFETY” on page 15.

RECOMMENDED ROUTINE MAINTENANCE

INTERVAL	MACHINE COMPONENTS	PROCEDURE	REFERENCE
DAILY/ BEFORE A LONG PERIOD OF NON-USE	DEBRIS HOPPER	Empty the debris hopper.	“EMPTYING THE DEBRIS HOPPER” on page 30.
	VACUUM FILTER	Clean the vacuum chamber filter.	“CLEANING THE VACUUM FILTER” on page 32.
	SWEEPING HEAD	Clean the central brush.	“CLEANING THE CENTRAL BRUSH” on page 33.
		Clean the side brush(es)	“CLEANING THE SIDE BRUSH” on page 33.
	ENDOTHERMIC ENGINE	Good maintenance is vital for ensuring the endothermic engine works safely, so carry out all the maintenance tasks listed in the ENGINE MAINTENANCE paragraph of the engine use and maintenance manual supplied with the machine.	
WEEKLY	POWER SUPPLY UNIT	Good maintenance is vital for ensuring the supply batteries work safely, so carry out all the maintenance tasks listed in the battery use and maintenance manual supplied with the machine.	
	ENDOTHERMIC ENGINE	Good maintenance is vital for ensuring the endothermic engine works safely, so carry out all the maintenance tasks listed in the ENGINE MAINTENANCE paragraph of the engine use and maintenance manual supplied with the machine.	
	HYDRAULIC SYSTEM (versions with endothermic engine)	Check the level of oil in the machine's hydraulic system.	“CHECKING THE OIL LEVEL IN THE HYDRAULIC SYSTEM (versions with endothermic engine)” on page 33.

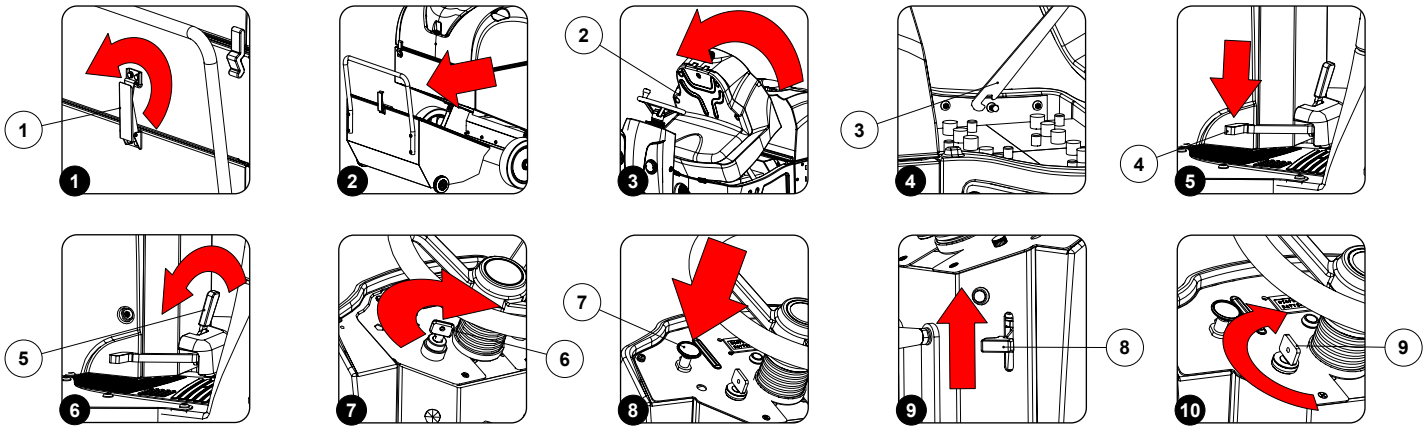
Before carrying out any routine maintenance operations, proceed as follows:

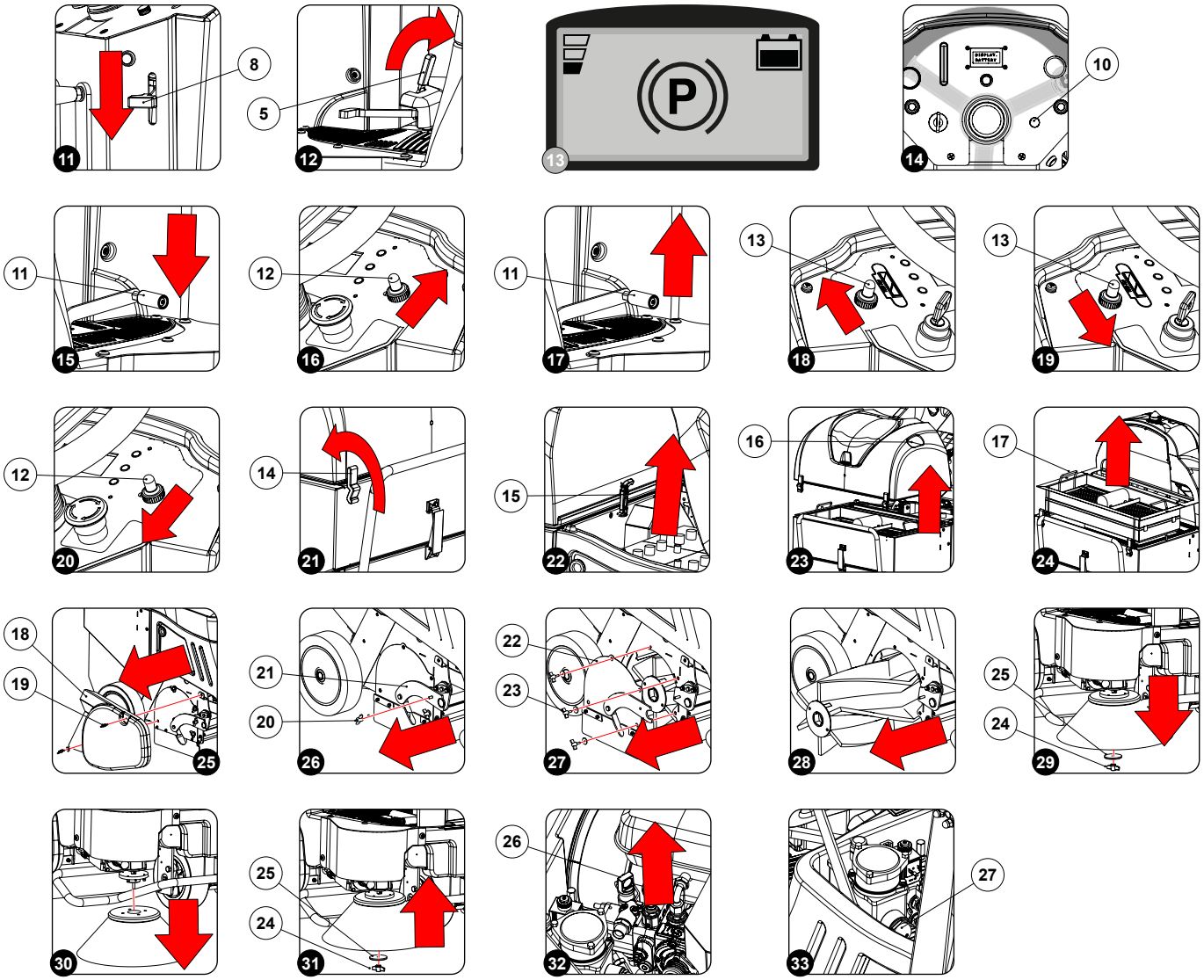
1. Take the machine to the maintenance area.

WARNING: the place designated for this operation must comply with current regulations concerning safety at work and current environmental protection regulations.

2. Make sure the machine is in a safe condition (see “MACHINE SAFETY” on page 15).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.





EMPTYING THE DEBRIS HOPPER

To empty the debris hopper (**manual version**), proceed as follows:

1. Stand at the back of the machine.
2. Release the retainer (1) (**Fig.1**).
3. Remove the debris hopper from the machine frame (**Fig.2**).
4. Take the hopper to the designated waste disposal area.

WARNING: the place designated for this operation must comply with current regulations concerning safety at work and current environmental protection regulations.

5. Empty the contents of the hopper into the waste shuttle.

N.B.: Keep in mind that the weight of the waste collected is proportional to the specific weight of the material swept.

6. Clean the inside of the hopper.
7. Repeat the operations in reverse order to reassemble all the parts.

To empty the debris hopper (**automatic version**), proceed as follows:

1. Stand at the side of the machine.
2. Rotate the seat hood (2) to its maintenance position (**Fig.3**), remembering to engage the rotation retainer (3) to prevent it from accidentally closing (**Fig.4**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

3. For battery-powered versions, connect the battery connector to the electrical system connector.

4. For versions with an endothermic engine, bring the fuel valve lever to the ON position (refer to the STARTING THE ENGINE paragraph in the endothermic engine use and maintenance manual, supplied with the machine).
5. Rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.
6. Sit on the driver's seat.
7. Check the parking brake is engaged by pressing the service brake pedal (4) (**Fig.5**) and rotating the lever (5) anti-clockwise (**Fig.6**).
8. For battery-powered versions, bring the main switch to the "I" position and make a quarter turn clockwise with the key (6) **Fig.7**).
9. Carry out all the procedures explained in the STARTING THE ENGINE paragraph in the engine use and maintenance manual supplied with the machine.

N.B.: before beginning the engine start-up procedure, make sure the engine starter regulation knob (7) is in the "CLOSED" position (**Fig.8**).

N.B.: before beginning the engine start-up procedure, make sure the engine speed regulation lever (8) is in the "MINIMUM" position (**Fig.9**).

N.B.: the main switch (9) is on the control panel (**Fig.10**).

N.B.: as soon as the endothermic engine is activated, bring the speed regulation lever (8) to the maximum of its stroke to ensure the machine works properly (**Fig.11**).

10. Disengage the parking brake by rotating the lever (5) clockwise (**Fig.12**).

N.B.: in battery-powered versions, the relative icon will disappear from the control display as soon as the parking brake is disengaged (**Fig.13**).

N.B.: in versions with an endothermic engine, the red indicator light (10) on the control panel will go off as soon as the parking brake is disengaged (**Fig.14**).

11. Press the drive pedal (11) (**Fig.15**) to begin moving the machine, and take it to the designated waste disposal area.

WARNING: The place designated for this operation must comply with current regulations concerning safety at work and current environmental protection regulations.

12. Go close to the waste disposal shuttle.

ATTENTION: calculate the distance between the machine and the waste shuttle carefully, bearing in mind the rotation radius of the debris hopper when it moves.

13. Engage the parking brake by pressing the service brake pedal (4) (**Fig.5**) and rotating the lever (5) anti-clockwise (**Fig.6**).

N.B.: in battery-powered versions, the relative icon will fill the control display screen as soon as the parking brake is engaged (**Fig.13**).

N.B.: in versions with an endothermic engine, the red indicator light (10) on the control panel will light up as soon as the parking brake is engaged (**Fig.14**).

14. Push the knob (12) on the control panel upwards (**Fig.16**) to begin raising the debris hopper. Rotate the hopper to the required height.

ATTENTION: during this operation, make sure there is nobody near the machine or the waste disposal shuttle.

15. Disengage the parking brake by rotating the lever (5) clockwise (**Fig.12**).

N.B.: in battery-powered versions, the relative icon will disappear from the control display as soon as the parking brake is disengaged (**Fig.13**).

N.B.: in versions with an endothermic engine, the red indicator light (10) on the control panel will go off as soon as the parking brake is disengaged (**Fig.14**).

16. Push the drive pedal (11) upwards (**Fig.17**) to begin moving the machine in reverse mode.
17. Bring the machine close to the waste disposal shuttle, in such a way that the debris hopper is inside the shuttle mouth.

WARNING: reduce the machine movement speed when the debris hopper is lifted off the ground.

WARNING: Avoid unloading the debris while the machine is sloped.

WARNING: do not activate the filter shaker while the debris hopper is lifted off the ground.

18. Stop the machine and engage the parking brake by pressing the service brake pedal (4) (**Fig.5**) and rotating the lever (5) anti-clockwise (**Fig.6**).

N.B.: in battery-powered versions, the relative icon will fill the control display screen as soon as the parking brake is engaged (**Fig.13**).

N.B.: in versions with an endothermic engine, the red indicator light (10) on the control panel will light up as soon as the parking brake is engaged (**Fig.14**).

19. Push the knob (13) on the control panel upwards (**Fig.18**) to begin rotating the debris hopper so that the waste is discharged into the shuttle.

ATTENTION: bear in mind that the debris hopper rotates towards the front of the machine to discharge the waste inside it.

20. After completely emptying the debris hopper, push the knob (13) on the control panel downwards (**Fig.19**) to begin rotating the hopper back to its work position.
21. Disengage the parking brake by rotating the lever (5) clockwise (**Fig.12**).

N.B.: in battery-powered versions, the relative icon will disappear from the control display as soon as the parking brake is disengaged (**Fig.13**).

N.B.: in versions with an endothermic engine, the red indicator light (10) on the control panel will go off as soon as the parking brake is disengaged (**Fig.14**).

22. Press the drive pedal (11) (**Fig.15**) to begin moving the machine and detach it from the waste disposal shuttle.

WARNING: reduce the machine movement speed when the debris hopper is lifted off the ground.

WARNING: Avoid unloading the debris while the machine is sloped.

ATTENTION: calculate the distance between the machine and the waste shuttle carefully, bearing in mind the rotation radius of the debris hopper when it moves.

23. Engage the parking brake by pressing the service brake pedal (4) (**Fig.5**) and rotating the lever (5) anti-clockwise (**Fig.6**).

N.B.: in battery-powered versions, the relative icon will fill the control display screen as soon as the parking brake is engaged (**Fig.13**).

N.B.: in versions with an endothermic engine, the red indicator light (10) on the control panel will light up as soon as the parking brake is engaged (**Fig.14**).

24. Clean the inside of the hopper.
25. Push the knob (12) on the control panel downwards (**Fig.20**) to begin lowering the debris hopper to its work position.

ATTENTION: during this operation, make sure there is nobody near the machine or the waste disposal shuttle.

ATTENTION: if the debris hopper is not in the right position, the machine cannot work in the best way.

CLEANING THE VACUUM FILTER

A vacuum filter that is kept clean and in good condition is a guarantee for better machine efficiency. The following procedure refers to the cleaning of the panel filter, but the sequence is the same for the fabric filter too.

1. Go to the back of the machine and release the rear retainers (14) that hold the vacuum cover in place (**Fig.21**).
2. Go to the side of the machine and release the front retainer (15) that holds the vacuum cover in place (**Fig.22**).
3. Remove the vacuum cover from the machine, using the moulded handles (16) to lift it up (**Fig.23**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

4. Unplug the filter shaker power cable from the machine's electrical system.
5. Remove the vacuum filter assembly from the vacuum chamber in the machine, using the handles (17) to help you (**Fig.24**).
6. Clean the filter with a vacuum cleaner.

N.B.: if necessary, clean the radiator with an air jet activated at least 20cm away.

ATTENTION: make sure it is in good condition, replacing it if necessary.

7. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

CLEANING THE CENTRAL BRUSH

A central brush that is kept clean and in good condition is a guarantee for better machine efficiency.

1. Go to the right-hand side of the machine and remove the RH side carter (18) after loosening the wing nuts (19) (**Fig.25**).
2. Remove the wing nut (20) that holds the central brush idle support (21) (**Fig.26**).
3. Remove the central brush inspection carter (22) after loosening the wing nuts (23) (**Fig.27**).
4. Take the brush out of the tunnel (**Fig.28**), then clean it under a jet of water to remove any impurities from the bristles.

ATTENTION: check the bristles are not excessively worn. If necessary, replace the brush - refer to “CENTRAL BRUSH REPLACEMENT” on page 34.

5. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

ATTENTION: when inserting the brush, make sure the pentagon on the brush shaft is correctly coupled with the pentagon on the gearmotor.

CLEANING THE SIDE BRUSH

Thorough cleaning of the side brush guarantees enhanced working efficiency.

1. Go to the front right of the machine.
2. Remove the wing nut (24) that attaches the side brush to the gearmotor (**Fig.29**).
3. Take out the brush (**Fig.30**) and clean it under a jet of water to remove any impurities from its bristles.

ATTENTION: check the bristles are not excessively worn. If necessary, replace the brush - refer to “SIDE BRUSH REPLACEMENT” on page 34.

4. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

ATTENTION: remember to insert the special washer (25) between the brush and the wing nut (24) (**Fig.31**).

CHECKING THE OIL LEVEL IN THE ENDOTHERMIC ENGINE (versions with endothermic engine)

The machine is equipped with an engine oil level extension kit. To check the level, proceed as follows:

1. Go to the right side of the machine.
2. Rotate the seat hood (2) to its maintenance position (**Fig.3**), remembering to engage the rotation retainer (3) to prevent it from accidentally closing (**Fig.4**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

3. Remove the filler cap/dipstick (26) (**Fig.32**).
4. Carry out all the procedures explained in the CHECKING THE OIL LEVEL paragraph in the engine use and maintenance manual supplied with the machine.
5. After completing the task, rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.

CHECKING THE OIL LEVEL IN THE HYDRAULIC SYSTEM (versions with endothermic engine)

The right level of oil in the hydraulic system is a guarantee for better machine efficiency. To check the oil level, proceed as follows:

1. Go to the right side of the machine.
2. Rotate the seat hood (2) to its maintenance position (**Fig.3**), remembering to engage the rotation retainer (3) to prevent it from accidentally closing (**Fig.4**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

3. Make sure the hydraulic oil level can be seen via the level bulb (27) (**Fig.33**). If the level is lower than this, top it up - refer to “TOPPING UP THE OIL IN THE HYDRAULIC SYSTEM (versions with endothermic engine)” on page 36.

N.B.: check the oil level with the engine switched off and the machine on a flat surface.

4. After completing the task, rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.

EXTRAORDINARY MAINTENANCE WORK

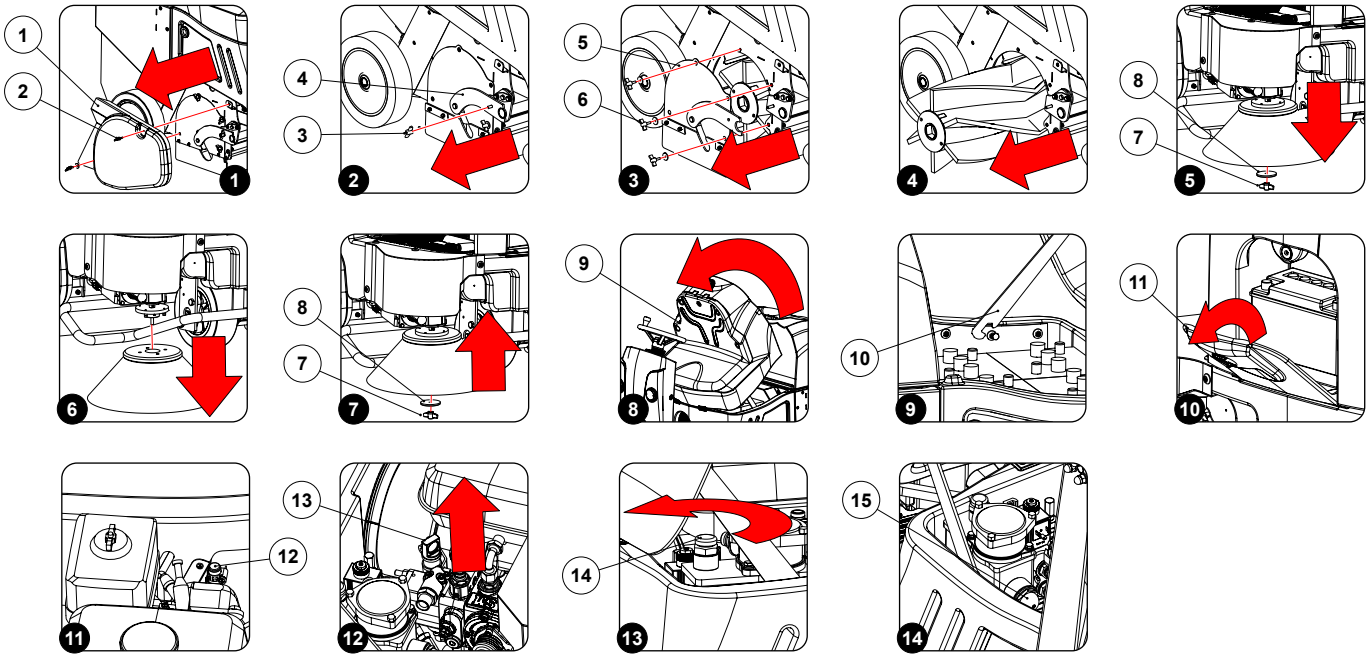
Before carrying out any extraordinary maintenance operations, proceed as follows:

1. Take the machine to the maintenance area.

WARNING: the place designated for this operation must comply with current regulations concerning safety at work and current environmental protection regulations.

2. Make sure the machine is in a safe condition (see “MACHINE SAFETY MEASURES”).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.



CENTRAL BRUSH REPLACEMENT

A central brush that is kept in good condition is a guarantee for better machine efficiency. To replace the brush, proceed as follows:

1. Go to the right-hand side of the machine and remove the RH side carter (1) after loosening the wing nuts (2) (**Fig.1**).
2. Remove the wing nut (3) that holds the central brush idle support (4) (**Fig.2**).
3. Remove the central brush inspection carter (5) after loosening the wing nuts (6) (**Fig.3**).
4. Take the old brush out of the tunnel (**Fig.4**) and replace it with the new one.

ATTENTION: when inserting the brush, make sure the pentagon on the brush shaft is correctly coupled with the pentagon on the gearmotor.

5. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

SIDE BRUSH REPLACEMENT

The good condition of the side brush guarantees enhanced working efficiency. To replace the brush, proceed as follows.

1. Go to the front right of the machine.
2. Remove the wing nut (7) that attaches the side brush to the gearmotor (**Fig.5**).
3. Take out the old brush (**Fig.6**) and fit a new one.
4. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

ATTENTION: remember to insert the special washer (8) between the brush and the wing nut (7) (**Fig.7**).

REPLACING THE BATTERIES (battery-powered versions)

To replace the machine batteries, proceed as follows:

WARNING: to prevent an accidental short circuit use insulated tools to connect the batteries, and do not place or drop metal objects on the battery. Remove rings, watches and any clothing with metal parts that may come into contact with the battery terminals.

1. Rotate the seat hood (9) to its maintenance position (**Fig.8**), remembering to engage the rotation retainer (10) to prevent it from accidentally closing (**Fig.9**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

2. Disconnect the connector in the machine's electrical system from the battery connector.
3. Remove the negative cable of the machine's electrical system from the negative battery pole.

ATTENTION: use the right equipment, remembering to position the newly removed cable so that it doesn't touch any metal part.

ATTENTION: the negative cable is the black one; the negative pole of the battery has the “-” printed on it.

4. Remove the positive cable of the machine's electrical system from the positive battery pole.

ATTENTION: use the right equipment, remembering to position the newly removed cable so that it doesn't touch any metal part.

ATTENTION: the positive cable is the red one; the positive pole of the battery has the “+” printed on it.

5. Remove the jumper cable from the batteries.

ATTENTION: use the right equipment, remembering to always remove the terminal connected to the negative battery pole first.

6. Take the batteries out of the machine.

N.B.: you are advised to only lift and move the batteries with lifting and transportation means suitable for the specific weight and size

7. To position the batteries in the machine, refer to “INSERTING THE BATTERIES IN THE MACHINE (battery-powered versions)” on page 17.
8. Connect the batteries to each other and to the machine's electrical system. Refer to “CONNECTING THE BATTERIES TO THE MACHINE’S ELECTRICAL SYSTEM (battery-powered versions)” on page 18.

N.B.: when choosing the batteries to use, refer to “TYPE OF BATTERY TO BE USED (battery-powered versions)” on page 17.

REPLACING THE STARTER BATTERY (versions with endothermic engine)

To replace the starter battery, proceed as follows:

WARNING: to prevent an accidental short circuit use insulated tools to connect the batteries, and do not place or drop metal objects on the battery. Remove rings, watches and any clothing with metal parts that may come into contact with the battery terminals.

1. Move to the front of the machine.
2. Rotate the nose carter (11) to the maintenance position (**Fig.10**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

3. Remove the negative cable of the machine's electrical system from the negative battery pole.

ATTENTION: use the right equipment, remembering to position the newly removed cable so that it doesn't touch any metal part.

ATTENTION: the negative cable is the black one; the negative pole of the battery has the “-” printed on it.

4. Remove the positive cable of the machine's electrical system from the positive battery pole.

ATTENTION: use the right equipment, remembering to position the newly removed cable so that it doesn't touch any metal part.

ATTENTION: the positive cable is the red one; the positive pole of the battery has the “+” printed on it.

5. Take the battery out of the machine.

N.B.: you are advised to only lift and move the batteries with lifting and transportation means suitable for the specific weight and size

Insert the new battery in the machine.
Connect the positive cable of the electrical system to the positive battery pole.
Connect the negative cable of the electrical system to the negative battery pole.

N.B.: when choosing the batteries to use, refer to “TYPE OF STARTER BATTERY TO BE USED (versions with endothermic engine)” on page 17.

REPLACING THE OIL IN THE ENDOTHERMIC ENGINE (versions with endothermic engine)

To change the oil, proceed as follows:

1. Go to the right side of the machine.
2. Place a container on the ground to collect the used oil.
3. Rotate the seat hood (2) to its maintenance position (**Fig.3**), remembering to engage the rotation retainer (3) to prevent it from accidentally closing (**Fig.4**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

4. Release the oil discharge tube (12) from its position (**Fig.11**).
5. Use the specific tool to remove the cap from the tube.
6. Place the end of the tube in the container for collecting the used oil.

WARNING: used oil is considered hazardous waste material, so it is mandatory to consign it to a legally authorised waste disposal authority.

7. Carry out all the procedures explained in the CHANGING THE OIL paragraph in the engine use and maintenance manual supplied with the machine.

N.B.: the machine is equipped with an engine oil level extension kit (13) (**Fig.12**); use the tube when changing the oil.

8. After completing the task, rotate the seat hood to its work position, remembering to disengage the rotation retainer beforehand.

TOPPING UP THE OIL IN THE HYDRAULIC SYSTEM (versions with endothermic engine)

To top up the oil, proceed as follows:

1. Go to the right side of the machine.
2. Rotate the seat hood (2) to its maintenance position (**Fig.3**), remembering to engage the rotation retainer (3) to prevent it from accidentally closing (**Fig.4**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect work sequence may lead to machine malfunctioning.

3. Loosen the cap (14) on the hydraulic oil tank (**Fig.13**).
4. Top up with AGIP ARNICA 46 hydraulic oil or equivalent.
5. Make sure the hydraulic oil level can be seen via the MAX level bulb (15) (**Fig.14**).

N.B.: check the oil level with the engine switched off and the machine on a flat surface.

6. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

ADJUSTMENT INTERVENTIONS

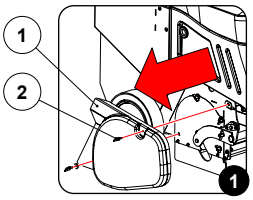
Before carrying out any adjustments, proceed as follows:

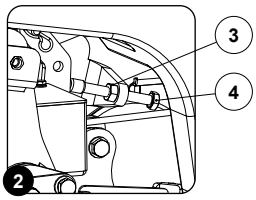
1. Take the machine to the maintenance area.

WARNING: the place designated for this operation must comply with current regulations concerning safety at work and current environmental protection regulations.

2. Make sure the machine is in a safe condition (see “MACHINE SAFETY” on page 15).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.





ADJUSTING SIDE BRUSH

If the side brush does not channel the dirt effectively towards the debris hopper, adjust its height in relation to the ground. Proceed as follows:

1. Go to the right-hand side of the machine and remove the RH side carter (1) after loosening the wing nuts (2) (**Fig.1**).
2. Loosen the locknut (3) that holds the adjustment screw (4) (**Fig.2**).
3. To reduce the height of the side brush from the ground, loosen the adjustment screw (4).

N.B.: To increase the height of the side brush from the ground, tighten the adjustment screw (4).

4. After completing the adjustment, tighten the counternut (2).

N.B.: The side brush is correctly adjusted when its front bristles are bent by half their length in the work position.

DISPOSAL

Dispose of the machine in accordance with the waste disposal regulations in force in the country in which the machine is being used.

TYPE OF BRUSHES USED

TYPE OF BRUSHES FOR CS700 B MACHINE VERSIONS

CODE	QTY	EXTERNAL Ø[mm]	SHAFT LENGTH [mm]	TYPE OF BRISTLE	NOTES
454212	1	280	680	PPL 1.1+0.7	White + black cylindrical brush
454683	1	280	680	PPL 0.7	White cylindrical brush
454684	1	280	680	PPL 1.4	Black cylindrical brush
454685	1	280	680	PPL 0.7	Grey + steel colour cylindrical brush
454686	1	280	680		Beige cylindrical brush
435432	1+1	400	-	PPL 1.1 ACC 0.7	Black + steel colour discoidal brush
435433	1+1	400	-	PPL 1	Black discoidal brush

TYPE OF BRUSHES FOR CS700 H MACHINE VERSIONS

CODE	QTY	EXTERNAL Ø [mm]	SHAFT LENGTH [mm]	TYPE OF BRISTLE	NOTES
454740	1	280	680	PPL 1.1+0.7	White + black cylindrical brush
454741	1	280	680	PPL 0.7	White cylindrical brush
454742	1	280	680	PPL 1.4	Black cylindrical brush
454743	1	280	680	PPL 0.7	Grey + steel colour cylindrical brush
454744	1	280	680		Beige cylindrical brush
435432	1+1	400	-	PPL 1.1 ACC 0.7	Black + steel colour discoidal brush
435433	1+1	400	-	PPL 1	Black discoidal brush

TYPE OF BRUSHES FOR CS800 B MACHINE VERSIONS

CODE	QTY	EXTERNAL Ø [mm]	SHAFT LENGTH [mm]	TYPE OF BRISTLE	NOTES
454296	1	280	780	PPL 1.1+0.7	White + black cylindrical brush
454687	1	280	780	PPL 0.7	White cylindrical brush
454688	1	280	780	PPL 1.4	Black cylindrical brush
454689	1	280	780	PPL 0.7	Grey + steel colour cylindrical brush
454690	1	280	780		Beige cylindrical brush
435432	1+1	400	-	PPL 1.1 ACC 0.7	Black + steel colour discoidal brush
435433	1+1	400	-	PPL 1	Black discoidal brush

TYPE OF BRUSHES FOR CS800 H MACHINE VERSIONS

CODE	QTY	EXTERNAL Ø [mm]	SHAFT LENGTH [mm]	TYPE OF BRISTLE	NOTES
454745	1	280	780	PPL 1.1+0.7	White + black cylindrical brush
454746	1	280	780	PPL 0.7	White cylindrical brush
454747	1	280	780	PPL 1.4	Black cylindrical brush
454748	1	280	780	PPL 0.7	Grey + steel colour cylindrical brush
454749	1	280	780		Beige cylindrical brush
435432	1+1	400	-	PPL 1.1 ACC 0.7	Black + steel colour discoidal brush
435433	1+1	400	-	PPL 1	Black discoidal brush

TROUBLESHOOTING

This chapter lists the most common problems linked with the use of the machine. If you are unable to resolve the problems with the information given here, please contact your nearest assistance centre.

PROBLEM	POSSIBLE CAUSE	SOLUTION
THE MACHINE DOES NOT START	The main switch is set to “0”.	Check the main switch is set to “I”. Otherwise, switch on the machine.
	After the machine switch-on procedure, an alarm has appeared on the control display.	Contact your nearest COMAC service centre.
	In the case of battery-powered versions, the batteries are not correctly connected together.	Make the correct electrical connections - refer to “CONNECTING THE BATTERIES TO THE MACHINE’S ELECTRICAL SYSTEM (battery-powered versions)” on page 18.
	In the case of battery-powered versions, the battery cable is not correctly connected to the batteries.	
	In the case of battery-powered versions, the battery cable is not correctly connected to the machine's electrical system.	
	In the case of battery-powered versions, the battery charge level is not sufficient for the task to be carried out.	Run a complete recharge cycle - refer to “RECHARGING THE BATTERIES (battery-powered versions)” on page 18.
	For versions with an endothermic engine, read the DEALING WITH UNEXPECTED PROBLEMS paragraph in the engine use and maintenance manual supplied with the machine.	
THE BATTERIES ARE NOT CHARGED CORRECTLY (battery-powered versions)	The connector of the battery charger cable is not properly inserted in the battery connector.	Connect the battery charger cable connector to the battery connector again.
	The plug on the battery charger's power cable is not correctly inserted into the electrical outlet.	Connect the battery charger power cable plug to the mains socket.
	The characteristics of the mains power supply do not correspond to those required by the battery charger.	Check that the characteristics in the battery charger plate are the same as those of the mains supply.
	The LEDs of the battery charger blink repeatedly.	Referring to the battery charger use and maintenance manual, check the meaning of the flashing signals that the battery charger emits dung the battery recharge stage.

PROBLEM	POSSIBLE CAUSE	SOLUTION
THE MACHINE HAS A VERY LOW WORKING AUTONOMY	In the case of battery-powered versions, the battery charge level may be insufficient for the task to be carried out.	Run a complete recharge cycle - refer to “RECHARGING THE BATTERIES (battery-powered versions)” on page 18.
	For versions with an endothermic engine, the fuel level may be insufficient for the task to be carried out.	Fill the fuel tank - refer to “REFUELLING (versions with endothermic engine)” on page 19.
THE MACHINE DOES NOT MOVE	The machine does not start.	Read the section THE MACHINE DOES NOT START.
	The parking brake is engaged.	Sit on the driver's seat and release the parking brake.
	For versions with an endothermic engine, the bypass valve is in the standby position.	Rotate the lever on the bypass valve.
THE MACHINE DOES NOT CLEAN CORRECTLY	The machine does not start.	Read the section THE MACHINE DOES NOT START.
	The brushes have not been inserted correctly in the machine.	Check the central brush is correctly inserted in the machine.
		Check the side brush is correctly inserted in the machine.
	The type of brush used is not suitable for the dirt to be cleaned.	Check that the brushes on the machine are adequate for the work to be carried out, contact the nearest technical assistance centre.
	The brush bristles are excessively worn.	Make sure the state of wear of the central brush is acceptable for the task to be carried out. If it isn't, replace it. Refer to “CENTRAL BRUSH REPLACEMENT” on page 34.
		Make sure the state of wear of the side brush is acceptable for the task to be carried out. If it isn't, replace it. Refer to “SIDE BRUSH REPLACEMENT” on page 34.
	The brushes are not working properly.	Bring the central brush into contact with the ground by rotating the brush control lever anti-clockwise.
		Bring the side brush into contact with the ground by rotating the brush control lever clockwise.
		Remove the debris that prevents the central brush from rotating correctly.
	The brushes are not cleaning properly.	Position the central brush correctly.
		Position the side brush correctly.
		Replace the worn central brush with a new one. Refer to "REPLACING THE CENTRAL BRUSH".
		Replace the worn side brush with a new one. Refer to “SIDE BRUSH REPLACEMENT” on page 34.
		Adjust the side brush so it's correctly in contact with the ground. Refer to “ADJUSTING SIDE BRUSH” on page 37.
	The debris hopper is not properly inserted.	Insert the debris hopper properly in the machine frame.
	The debris hopper is too full.	Empty the debris hopper. Refer to “EMPTYING THE DEBRIS HOPPER” on page 30.
EXCESSIVE BRUSH NOISE	Dirt wrapped around the central brush.	Clean the central brush. Refer to “CLEANING THE CENTRAL BRUSH” on page 33.
	Dirt wrapped around the side brush.	Clean the side brush. Refer to “CLEANING THE SIDE BRUSH” on page 33.

PROBLEM	POSSIBLE CAUSE	SOLUTION
EXCESSIVE DUST PRODUCTION	Vacuum system disabled.	In the case of battery-powered versions, activate the suction motor by pressing the relative button on the control panel.
		For versions with an endothermic engine, open the vacuum mouth by pushing the relative knob on the control panel upwards.
	Clogged vacuum filter.	Clean the vacuum filter. Refer to “CLEANING THE VACUUM FILTER” on page 32.
	The debris hopper is too full.	Empty the hopper. Refer to “EMPTYING THE DEBRIS HOPPER” on page 30.
	Dust seal flaps no longer in good condition.	Contact your nearest COMAC service centre if they need to be replaced.
	The central brush is not correctly inserted in the machine.	Disassemble the central brush, then reposition it correctly in the tunnel. Refer to “CENTRAL BRUSH REPLACEMENT” on page 34.
THE MACHINE DOES NOT VACUUM CORRECTLY	Vacuum system disabled.	In the case of battery-powered versions, activate the suction motor by pressing the relative button on the control panel.
		For versions with an endothermic engine, open the vacuum mouth by pushing the relative knob on the control panel upwards.
	Clogged vacuum filter.	Clean the vacuum filter. Refer to “CLEANING THE VACUUM FILTER” on page 32.

EC DECLARATION OF CONFORMITY

The undersigned manufacturer:

COMAC S.p.A.
Via Maestri del Lavoro, 13
37059 Santa Maria di Zevio (VR)

declares under its sole responsibility that the products

SWEEPING MACHINES mod.

CS700 B 2021 - CS800 B 2021

comply with the requirements of the following Directives:

- 2006/42/EC: Machinery Directive.
- 2014/30/EU: Electromagnetic compatibility directive.

MODEL	Lp_A [dB(A)]	Lw_A guaranteed [dB(A)]
CS700 B 2021	<70	<80
CS800 B 2021	<70	<80

They also comply with the following standards:

- EN 60335-1:2012/A1:2019/A2:2019/A14:2019
- EN 60335-2-72:2012
- EN 12100:2010
- EN 61000-6-2:2005/AC:2005
- EN 61000-6-3:2007/A1:2011/AC:2012
- EN 62233:2008/AC:2008

The person authorized to compile the technical file:

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Santa Maria di Zevio (VR), 14/10/2021

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- 2014/35/EU: Low Voltage Directive.
- 2014/30/EU: Electromagnetic compatibility directive.

MODEL	Lp_A [dB(A)]	Lw_A guaranteed [dB(A)]
CS700 B CB 2021	<70	<80
CS800 B CB 2021	<70	<80

They also comply with the following standards:

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- EN 60335-2-72:2012
- EN 12100:2010
- EN 60335-2-29:2004/A2:2010
- EN 61000-6-2:2005/AC:2005
- EN 61000-6-3:2007/A1:2011/AC:2012
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 55014-1:2017
- EN 55014-2:2015
- EN 62233:2008/AC:2008

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- 2006/42/EC: Machinery Directive.
- 2014/30/EU: Electromagnetic compatibility directive.
- 2000/14/EC: Directive by the European Parliament and Council date 8th May, 2000. Noise emission by machines and equipment for outdoor use.

MODEL	Lp_A [dB(A)]	Lw_A guaranteed [dB(A)]
CS700 H 2021	<70	<80
CS800 H 2021	<70	<80

They also comply with the following standards:

- EN 60335-1:2012/A1:2019/A2:2019/A14:2019
- EN 60335-2-72:2012
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- EN 61000-6-2:2005/AC:2005
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UK CA

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37059 Santa Maria di Zevio (VR)

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SWEEPING MACHINES mod.

CS700 B 2021 - CS800 B 2021

comply with the requirements of the following Directives:

- Supply of Machinery (Safety) Regulations 2008.
- Electromagnetic Compatibility Regulations 2016.

MODEL	Lp_A [dB(A)]	Lw_A guaranteed [dB(A)]
CS700 B 2021	<70	<80
CS800 B 2021	<70	<80

They also comply with the following standards:

- BS EN 60335-1:2012+A2:2019
- BS EN 60335-2-72:2012
- BS EN 12100:2010
- BS EN IEC 61000-6-2:2019
- BS EN 61000-6-3:2007+A1:2011
- BS EN 62233:2008

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- Supply of Machinery (Safety) Regulations 2008.
- Electrical Equipment (Safety) Regulations 2016.
- Electromagnetic Compatibility Regulations 2016.

MODEL	Lp_A [dB(A)]	Lw_A guaranteed [dB(A)]
CS700 B CB 2021	<70	<80
CS800 B CB 2021	<70	<80

They also comply with the following standards:

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- BS EN 60335-2-72:2012
- BS EN 12100:2010
- BS EN 60335-2-29:2004+A11:2018
- BS EN IEC 61000-6-2:2019
- BS EN 61000-6-3:2007+A1:2011
- BS EN IEC 61000-3-2:2019
- BS EN IEC 61000-3-3:2019
- BS EN 55014-1:2017+A11:2020
- BS EN 55014-2:2015
- BS EN 62233:2008

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comply with the requirements of the following Directives:

- Supply of Machinery (Safety) Regulations 2008.
- Electromagnetic Compatibility Regulations 2016.
- Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001.

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