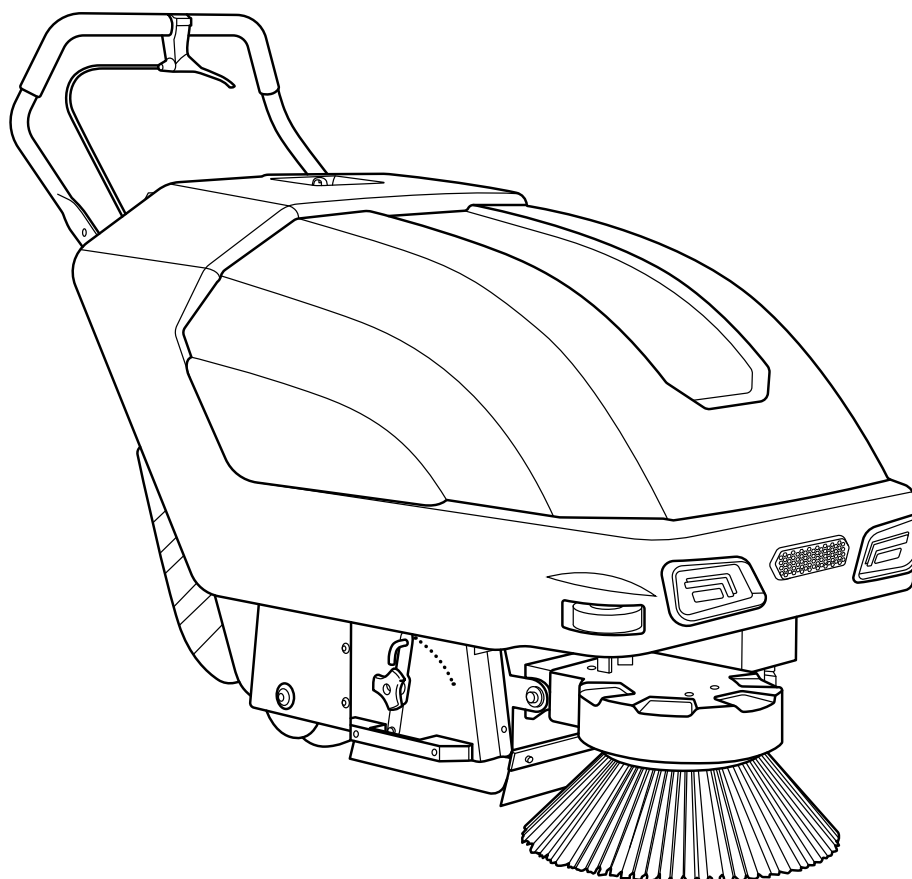




CS500



PROFESSIONAL SWEEPING MACHINES

USE AND MAINTENANCE MANUAL



TRANSLATION OF THE ORIGINAL INSTRUCTIONS DOK. 10130339 - Ver. AA - 09-2023

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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 or 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.

GENERAL SAFETY REGULATIONS

Before using the machine, please read the following document carefully and follow the instructions contained herein, along with the instructions in the document supplied with the machine itself, "GENERAL SAFETY REGULATIONS" (document number 10083659).

GENERAL DESCRIPTION

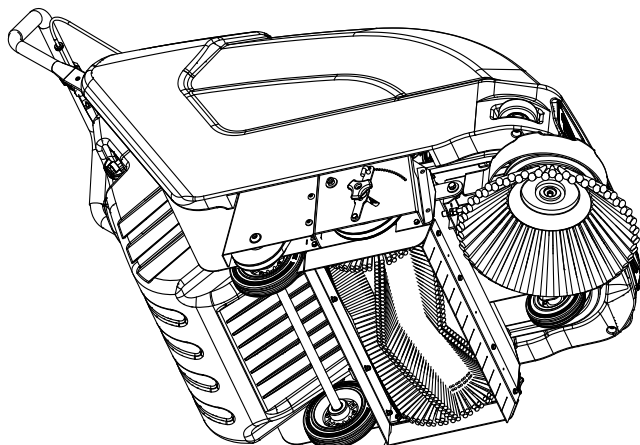
The descriptions contained in this document are not binding. The company therefore reserves the right to make any modifications at any time to elements, details, or accessory supply, as considered necessary for reasons of improvement or manufacturing/commercial requirements. The reproduction, even partial,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

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

TECHNICAL DESCRIPTION



The **CS500** is a walk-behind sweeping machine powered by batteries with an output voltage of 12V. It is designed to clean tiled, cement or tarred flooring, both indoors and outdoors.

The **CS500** must be used on dry surfaces, but can also work on wet surfaces if necessary as long as the vacuum is not activated.

This sweeping machine features a central brush for collecting brushed-up material, a side brush for cleaning along edges and in corners, a vacuum system with filter to avoid raising dust, and a debris hopper that is moved manually by the operator.

The machine must be used only for this purpose.

INTENDED USE

This machine is designed and built to clean both indoor and outdoor flooring surfaces in tile, cement and asphalt. They are intended exclusively for professional use by a qualified operator in industrial, commercial and public contexts, in guaranteed safe conditions.

 **ATTENTION:** the sweeping machine is not designed to clean carpet floors or rugs. It is not suitable for use in closed places and should be used in open but covered areas (it must not be used in the rain or underneath jets of water).

 **IT IS FORBIDDEN:** to use the sweeping machine in places with an explosive atmosphere or to collect hazardous dust or inflammable liquids. In addition, it must not be used for transporting people or objects.

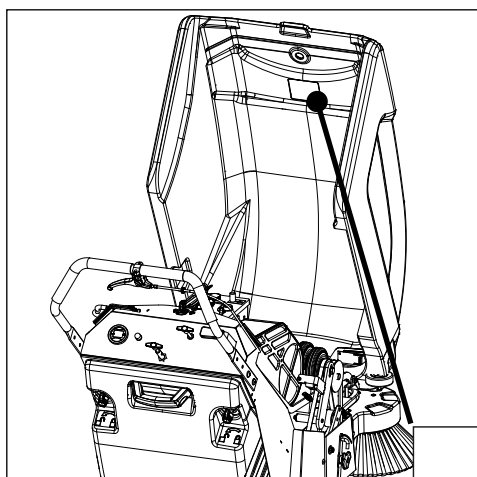
SAFETY

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 whilst moving 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

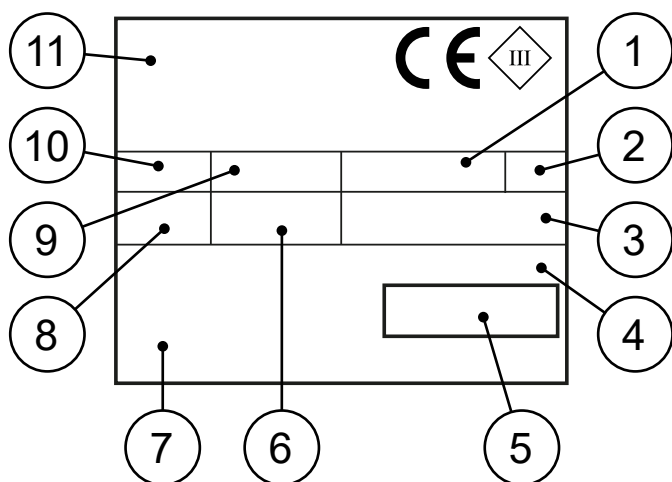
All references to forwards and backwards, front and rear, right and left indicated in this manual should be understood as referring to the operator in a driving position with his/her hands on the handlebars wheel.

SERIAL NUMBER PLATE



The serial number plate is located at the rear of the bonnet, and indicates the general characteristics thereof, specifically the serial number of the machine. 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 information:

1. The weight of the batteries that power the machine (expressed in kg).
2. The IP protection rating of the machine.
3. The value in kg of the GVW (Gross vehicle weight) - refer to ["TECHNICAL DATA"](#).
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) - refer to ["TECHNICAL DATA"](#).
8. The maximum gradient that the machine can handle during work tasks (expressed as %) - refer to ["TECHNICAL DATA"](#).
9. The year of machine manufacture.
10. The nominal voltage of the machine (expressed in V) - refer to ["TECHNICAL DATA"](#).
11. The commercial name of the machine, and the manufacturer's address.

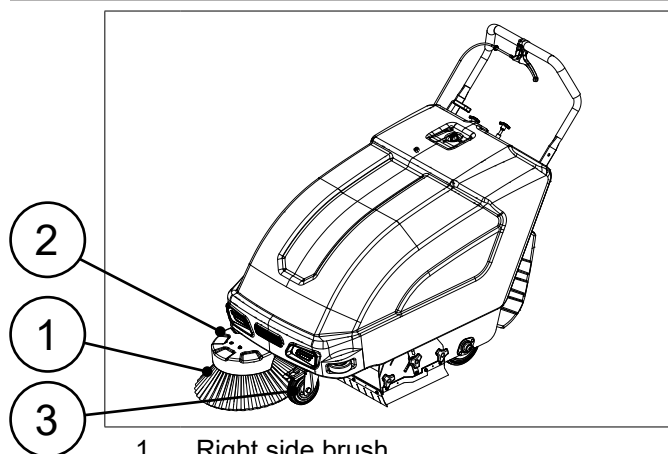


Fill in the following table at the time of delivery and/or installation, so it can be used as a future reference when necessary.

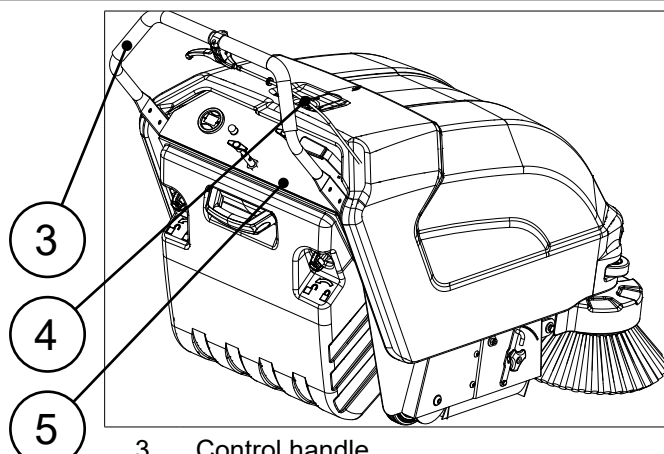
MACHINE ID NAME	
SERIAL NUMBER	
DATE OF DELIVERY AND/ OR INSTALLATION	

MAIN MACHINE COMPONENTS

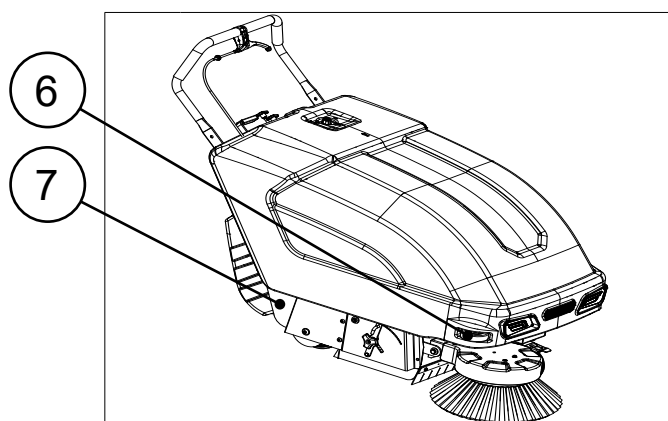
STANDARD COMPONENTS



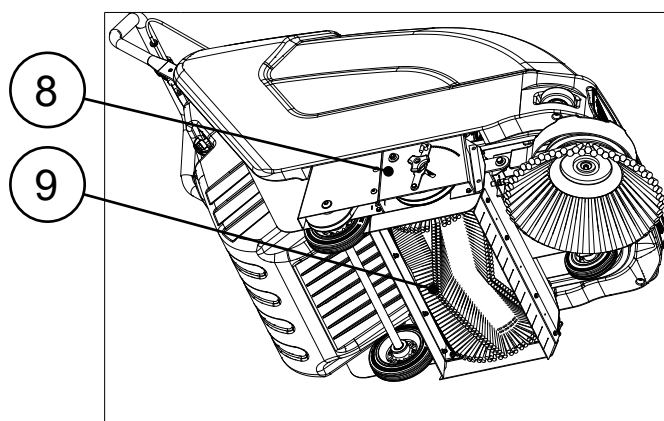
- 1 Right side brush
- 2 Brush carter
- 3 Front swivel wheel



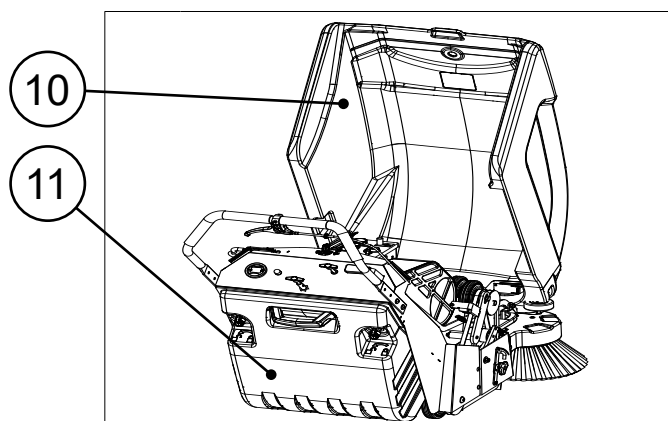
- 3 Control handle
- 4 Instrument panel locking key
- 5 Instrument panel



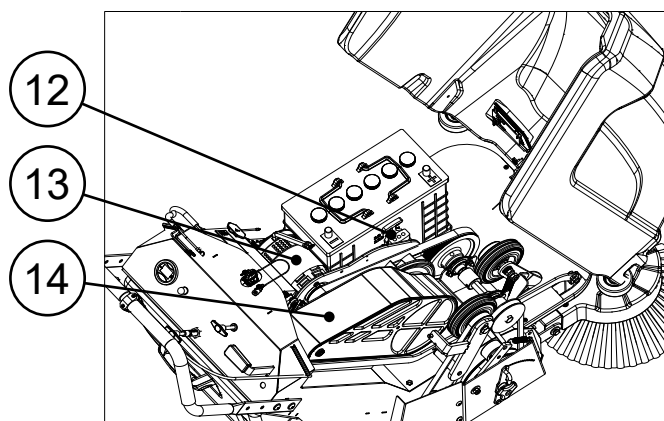
- 6 Bumper wheel
- 7 Frame



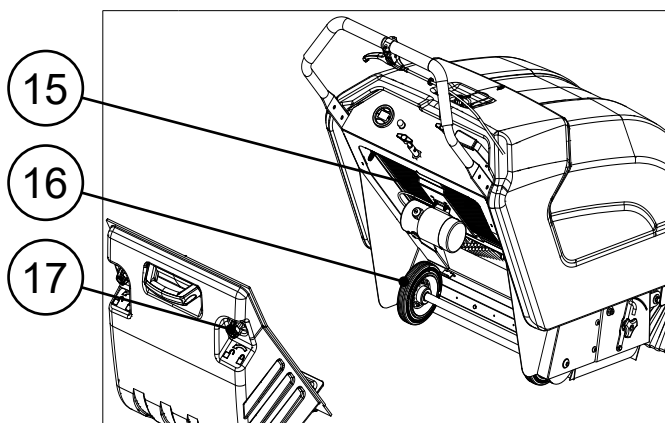
- 8 Central brush carter
- 9 Central brush



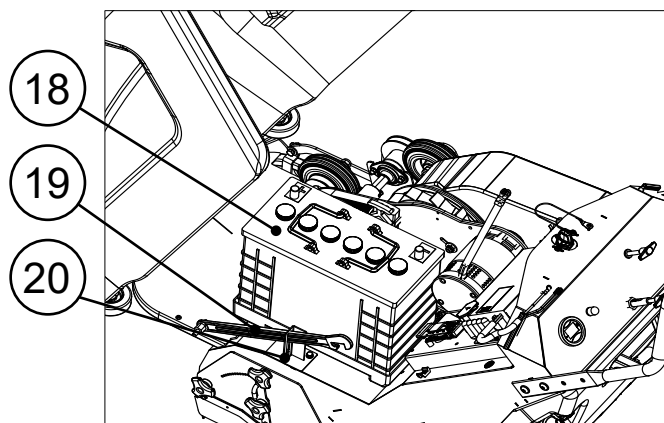
- 10 Bonnet
- 11 Rear debris hopper



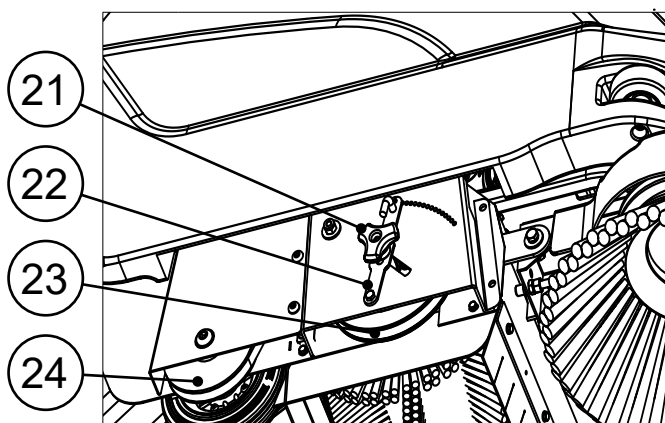
- 12 Battery connector
- 13 Vacuum motor
- 14 Conveyor



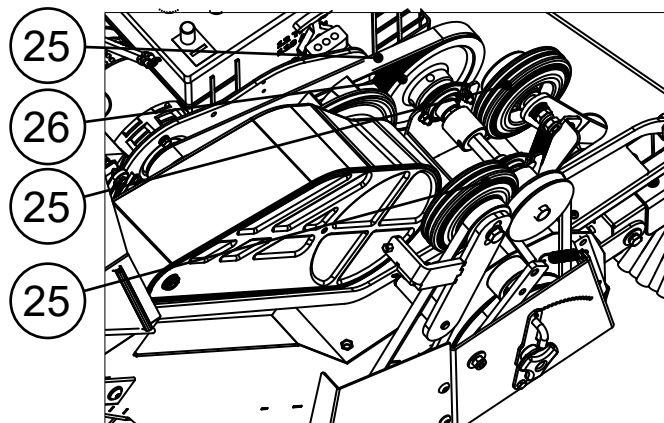
- 15 Filter
- 16 Traction wheel
- 17 Rear hopper closing levers



- 18 Battery
- 19 Bonnet prop
- 20 Bonnet prop retainer bracket

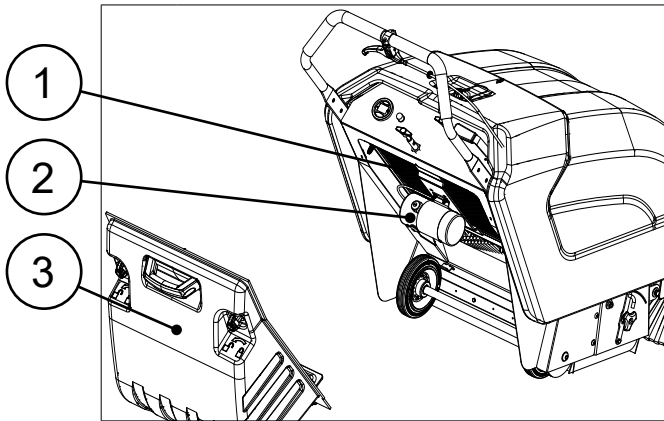


- 21 Locking knob
- 22 Brush locking bracket
- 23 Brush pulley
- 24 Rear wheel pulley (BT version)

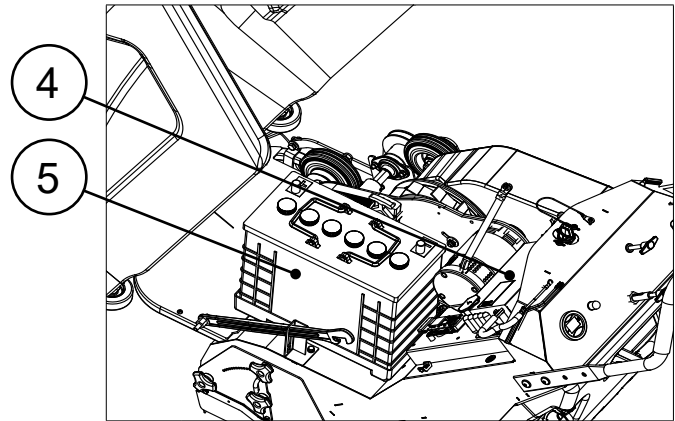


- 25 Timing belt
- 26 Drive pulley
- 25 Brush movement wheel
- 25 Drive movement wheel (BT version)

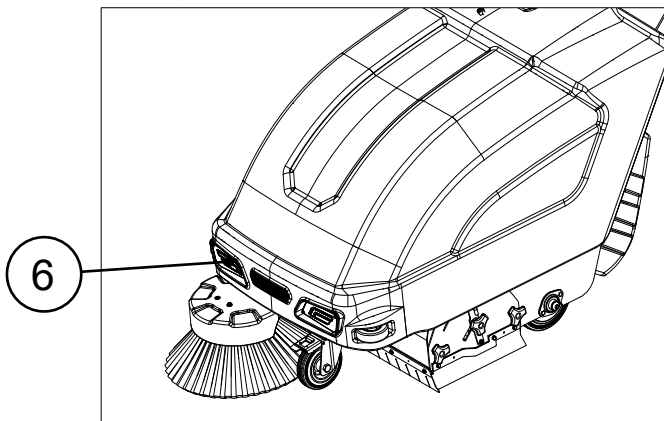
OPTIONAL COMPONENTS



- 1 HEPA filter, padel court filter, football pitch filter
- 2 filter shaker
- 3 Hopper with padel court net, hopper with football pitch net



- 4 Battery charger
- 5 Lithium batteries



- 6 LED headlights

TECHNICAL DATA

TECHNICAL DATA	UM [SI]	CS500 B	CS500 BT
Rated voltage [IEC 60335-2-72; IEC 62885-9]	V	12	12
Nominal input power [IEC 60335-2-72; IEC 62885-9]	KW	0.75	0.75
Working gradeability with GVW [IEC 60335-2-72; IEC 62885-9]	%	2	2
Machine working weight (gross weight - GVW) [IEC 60335-2-72; IEC 62885-9]	kg	164	167
Weight during transport [IEC 60335-2-72; IEC 62885-9]	kg	112	115
Machine dimensions during working phase (length; height width)	mm	1265 900 660	1265 900 660
Operator station sound pressure level (Lp _A) [IEC 60335-2-72; IEC 62885-9; ISO 11201]	dB (A)	64	64
Sound power level (Lw _A) [IEC 60335-2-72; IEC 62885-9; ISO 3744]	dB (A)	80	80
Uncertainty Kp _A	dB (A)	±1,5	±1,5
Hand-arm vibrations [IEC 60335-2-72; IEC 62885-9; ISO 5349-1]	m/s ²	2,15	2,15
Vibration measurement uncertainty		±4%	±4%

TECHNICAL DATA	UM [SI]	CS500 B	CS500 BT
Rated voltage [IEC 60335-2-72; IEC 62885-9]	V	12	12
Nominal input power [IEC 60335-2-72; IEC 62885-9]	KW	0.75	0.75
Working gradeability with GVW [IEC 60335-2-72; IEC 62885-9]	%	2	2
Machine working weight (gross weight - GVW) [IEC 60335-2-72; IEC 62885-9]	lb	361,5	368,2
Weight during transport [IEC 60335-2-72; IEC 62885-9]	lb	247	253,5
Machine dimensions during working phase (length; height width)	in	49,8 35,5 26	49,8 35,5 26
Operator station sound pressure level (Lp _A) [IEC 60335-2-72; IEC 62885-9; ISO 11201]	dB (A)	64	64
Sound power level (Lw _A) [IEC 60335-2-72; IEC 62885-9; ISO 3744]	dB (A)	80	80
Uncertainty Kp _A	dB (A)	±1,5	±1,5
Hand-arm vibrations [IEC 60335-2-72; IEC 62885-9; ISO 5349-1]	m/s ²	2,15	2,15
Vibration measurement uncertainty		±4%	±4%

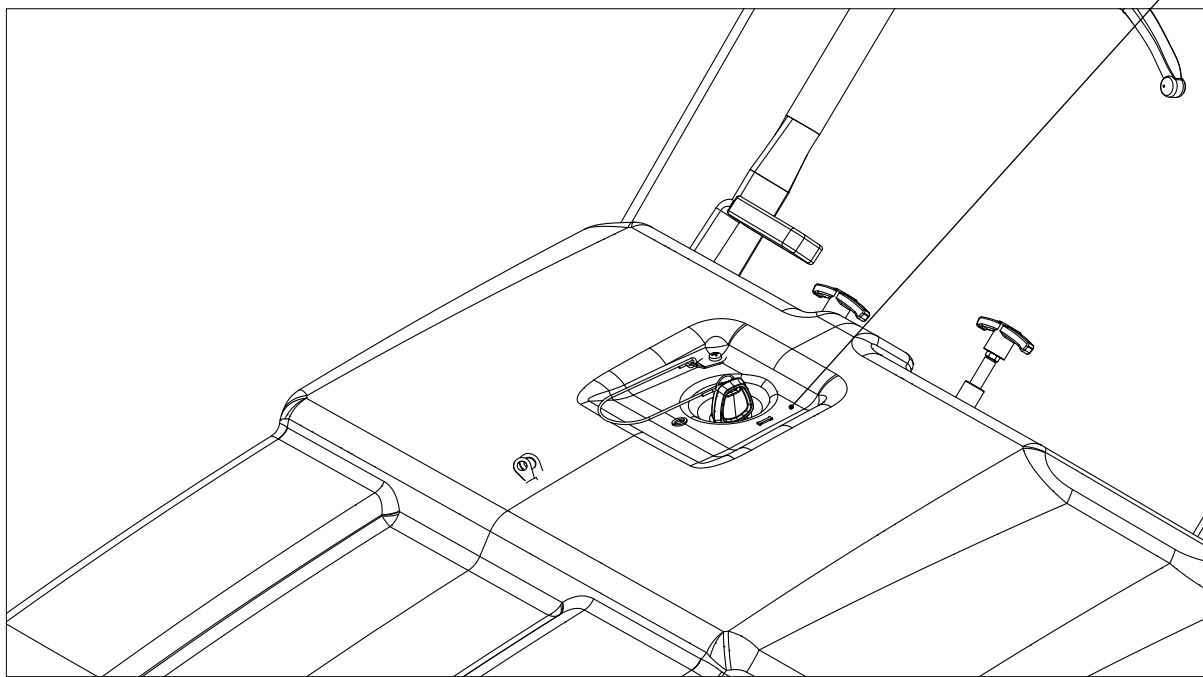


N.B.: for all other technical data, contact the COMAC service centre of reference or the one closest to you, or visit the website www.comac.it.

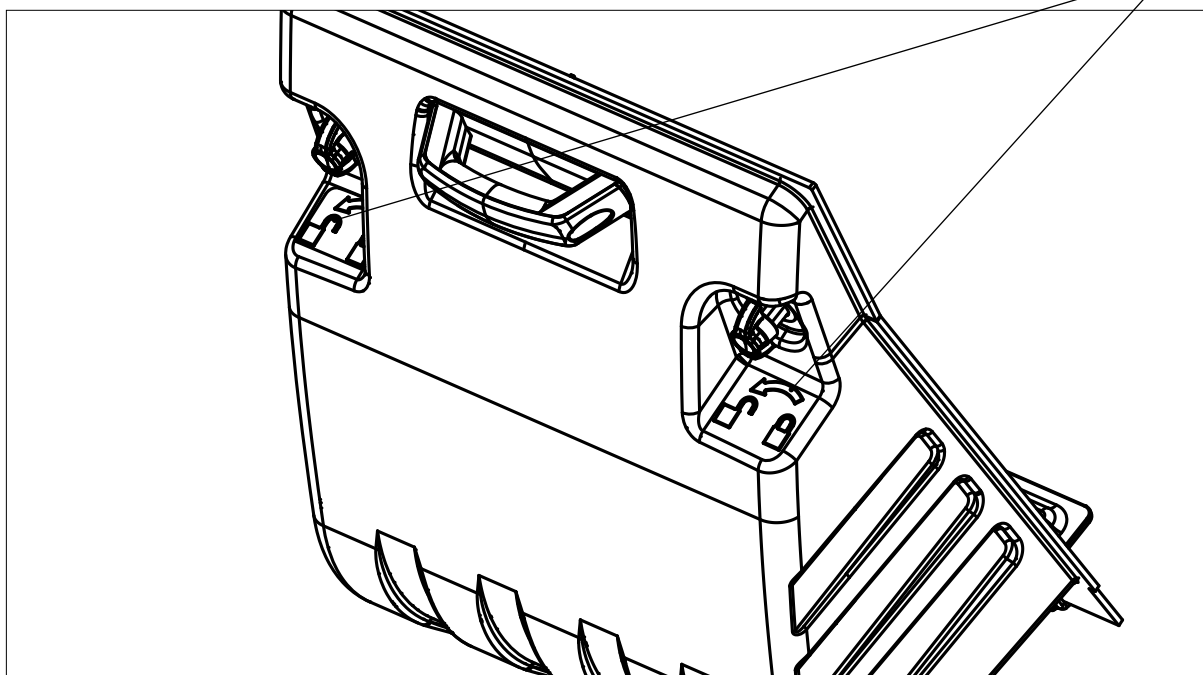
SYMBOLS USED ON THE MACHINE

Ignition symbol 0/I:
located on the top of the bonnet, to indicate the main key switch

I/O



Rear hopper open/close symbol:
located on the back of the rear hopper, to indicate the debris hopper fastening knobs - refer to "EMPTYING THE DEBRIS HOPPER"

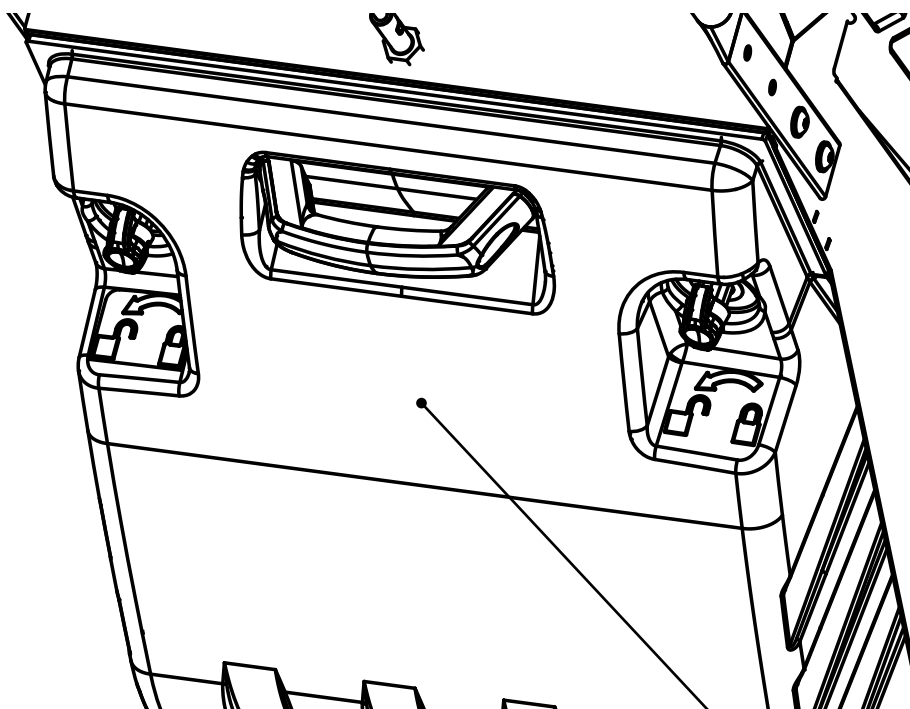
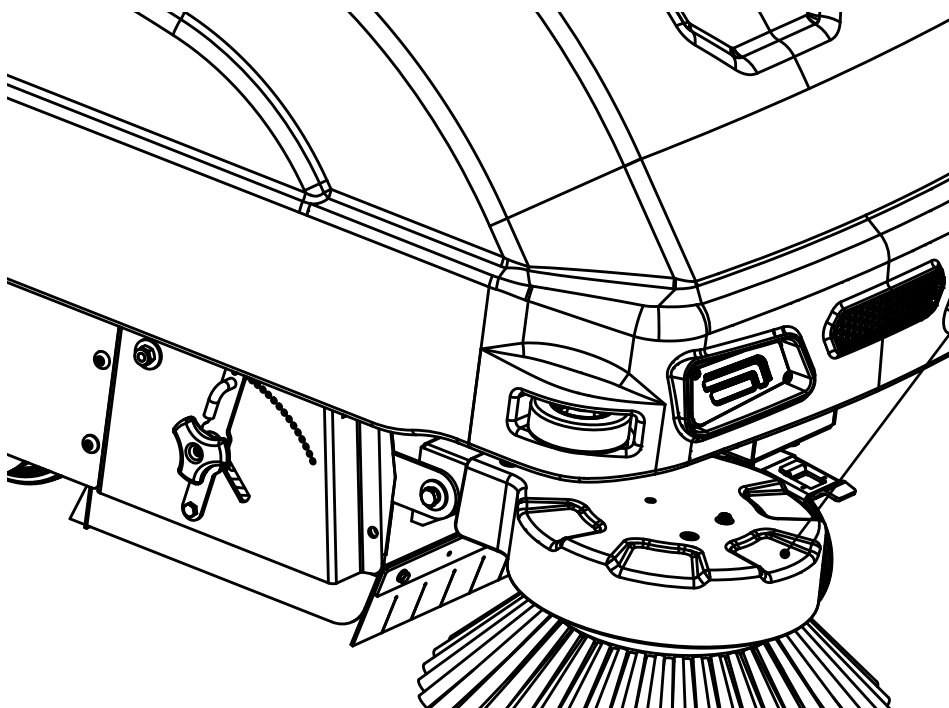


LABELS USED ON THE MACHINE

Label indicating that touching the brush when it is moving is forbidden: located at the top of the side brush carter, to indicate that it is forbidden to bring your hands near the brush while it is moving



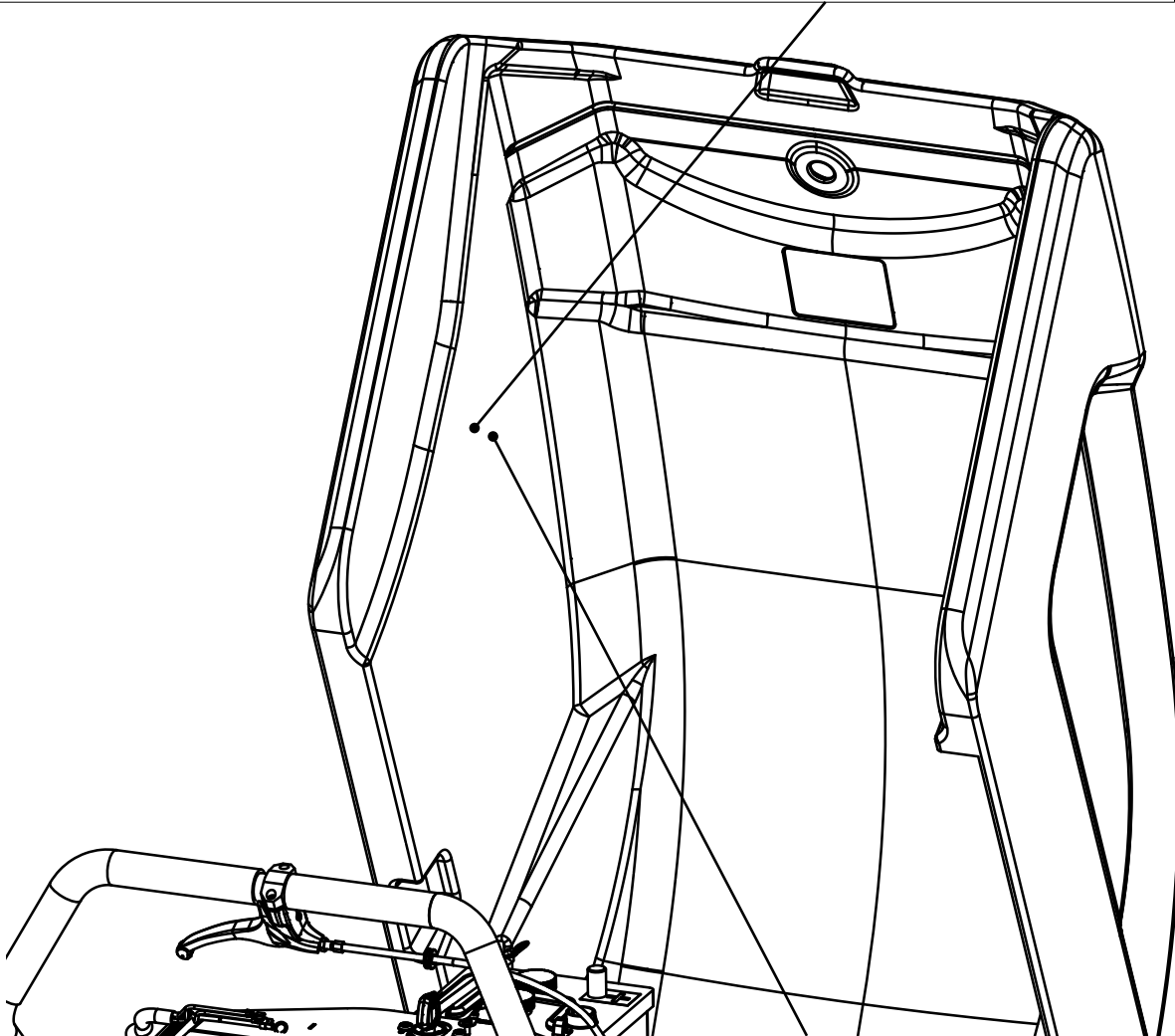
Do not go next to the brush head while the brush is moving.



Label indicating that it is forbidden to vacuum hazardous elements: located on the debris hopper, to indicate that it is strictly forbidden to vacuum incandescent particles or flammable and/or explosive dust and/or liquids, and even to use the machine in their vicinity.

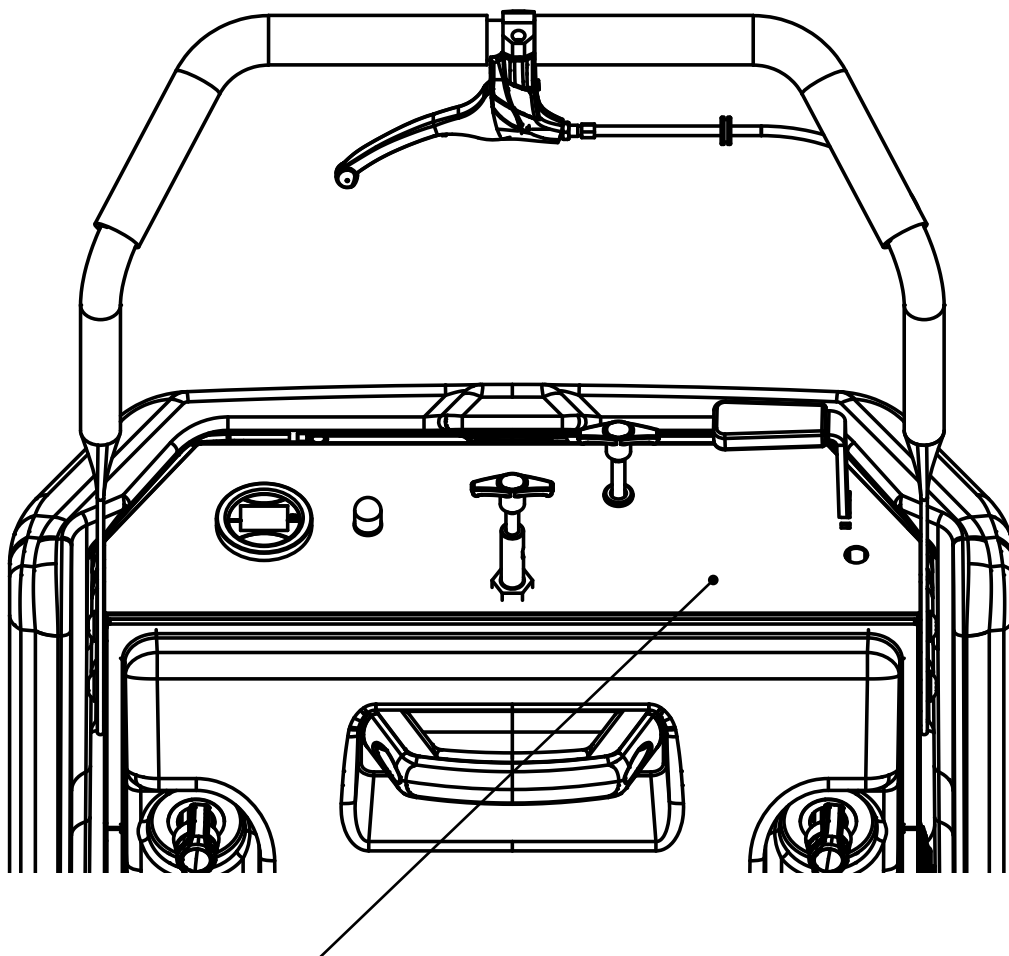


Label warning about battery emissions: located on the inside of the machine, to warn the user that the cells may release highly flammable hydrogen gas during the recharging phase - refer to "RECHARGING THE BATTERY".

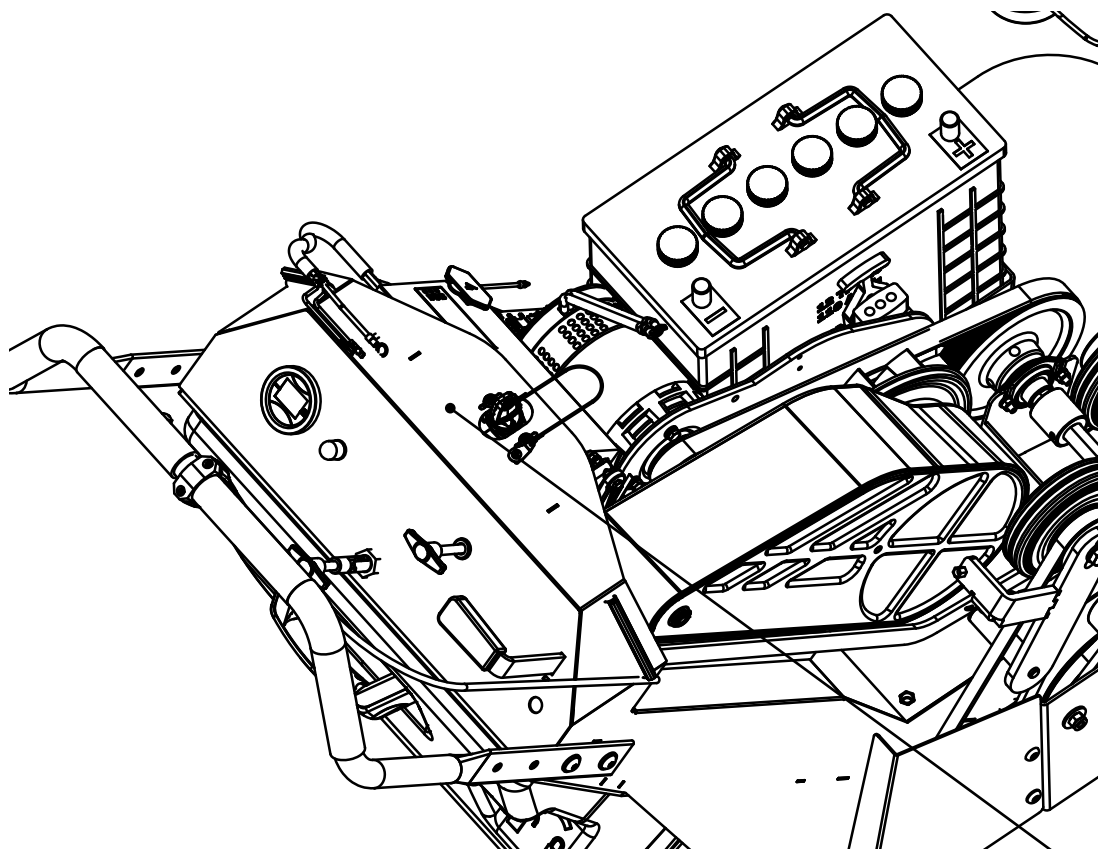


Battery box charging instructions label: informs the user about the procedures to be carried out to recharge the battery box properly - refer to "RECHARGING THE BATTERY"





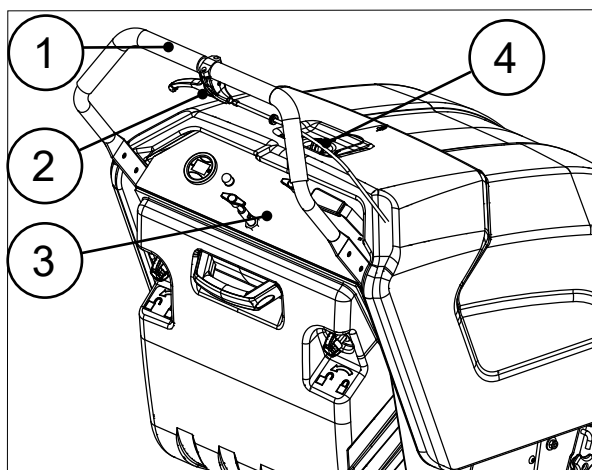
	Instrument panel label with manual filter shaker: located on the back of the machine, to indicate the instrument panel to the user
	Instrument panel label with electric filter shaker: located on the back of the machine, to indicate the instrument panel to the user (optional)



Label warning about the risk of crushed hands: located on the left side of the machine body (in the area housing the vacuum head), to indicate the areas where there is a risk of getting your hands crushed



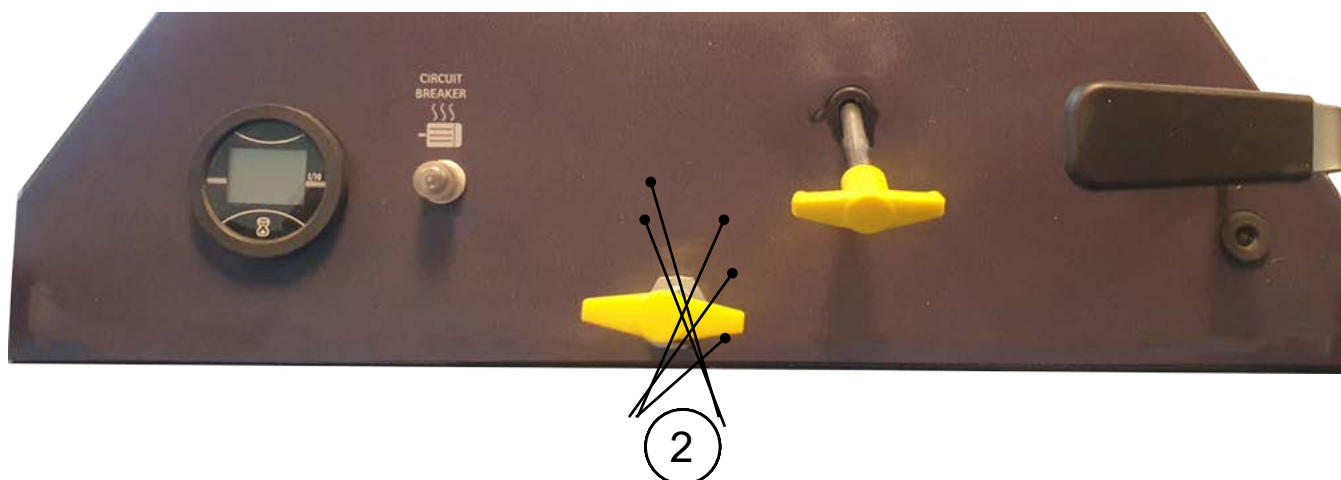
CONTROL STATION



The machine has an easy and user-friendly control station, comprised of mainly the following:

1. Control handle with height adjustment - refer to "MOUNTING AND ADJUSTING THE HANDLEBARS"
2. traction control lever (for BT version) - refer to "STARTING WORK"
3. Control panel - refer to "CONTROL PANEL"
4. ignition key

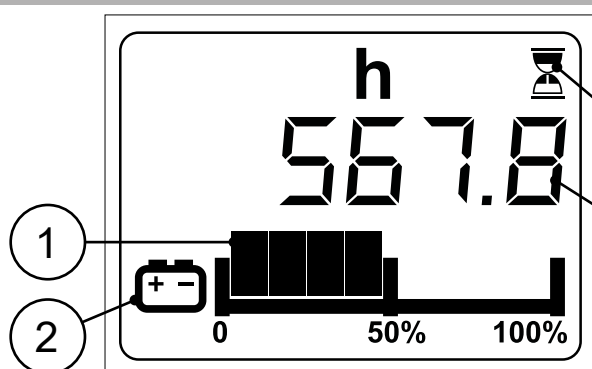
CONTROL PANEL



The control panel is sub-divided as follows:

1. control display - refer to "CONTROL DISPLAY"
2. vacuum motor thermal circuit breaker switch - refer to "THERMAL CIRCUIT BREAKER"
3. manual filter shaker lever (not present with electric filter shaker kit) - refer to "STARTING WORK"
4. vacuum control lever - refer to "STARTING WORK"
5. side brush control lever - refer to "SIDE BRUSH"

CONTROL DISPLAY



The control display consists mainly of:

1. Graphic battery charge level symbol - refer to "BATTERY CHARGE LEVEL INDICATOR"
2. Graphic battery charge level icon - refer to "BATTERY CHARGE LEVEL INDICATOR"
3. Graphic hour meter icon - refer to "HOUR METER"
4. Graphic hour meter symbol - refer to "HOUR METER"

PREPARING THE MACHINE

HANDLING THE PACKAGED MACHINE

The overall dimensions of the entire package are:

DIMENSIONS	[cm]	[in]	[kg]	[lb]
Length	1430	56,3		
Width	660	26		
Height	1180	46,1		
Weight			108	238

i 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 the load handling directives in force in the country of use, and with the dimensions and mass of the packaged product.

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.

i 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.

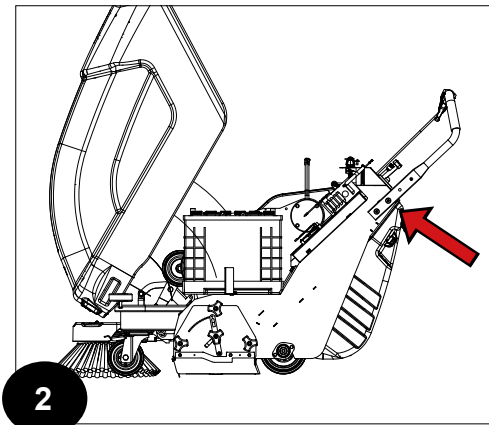
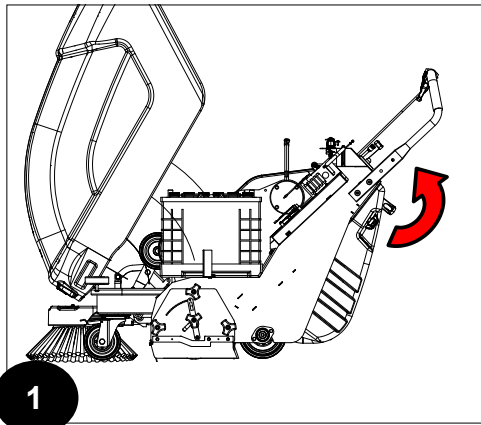
3. Remove any boxes containing brushes or optionals.

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

4. Place two descent ramps at the rear of the machine.

WARNING: the descent ramps are consigned in the machine packaging. If there are no ramps provided, bear in mind the one used must have a suitable slope to avoid damaging the machine and a sufficient load-bearing capacity to ensure it does not break when the machine moves across it. To obtain the net weight of the machine and the safety percentage value required of the ramp, contact your COMAC service centre of reference or the one closest to you. Alternatively, you can send an email to com@comac.it, or visit the website www.comac.it.

5. check the main switch is on "0". If it isn't, make a quarter turn anti-clockwise with the key (fig.3)



6. lift the bonnet and secure it with the relative side catch (see SECURING THE MACHINE)
7. turn the handlebars (fig.1) and tighten the 2 side screws (on both sides) in their respective holes (fig.2), using the Allen wrench provided with the machine documentation

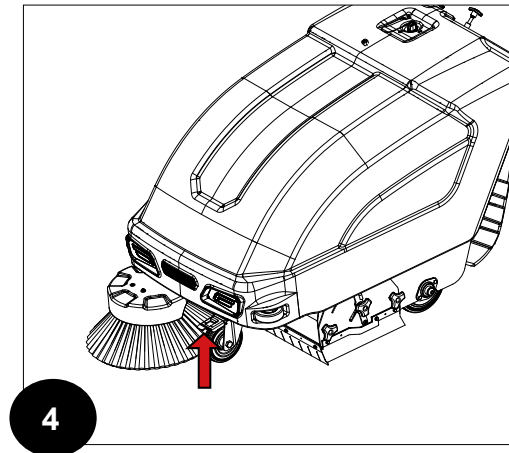
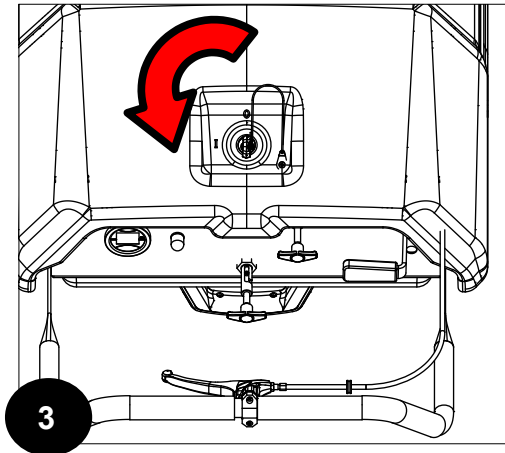
8. tighten the other 2 screws (already inserted) as well, to fully secure the handlebars to the frame

9.

ATTENTION: for safety, use a torque spanner to check the tightening torque for all 4 hex head screws is between 20 Nm and 25 Nm.

10. close the bonnet by releasing the catch and rotating the bonnet to the working position

11. the machine is secured to the pallet with wedges that lock the wheels; remove these wedges
12. check the parking brake on the front swivel wheel is disengaged (fig.2); if it isn't, release the lever on the wheel (for BT version)
13. push the machine in reverse to lower it off the pallet
14. keep the pallet for any future transportation needs



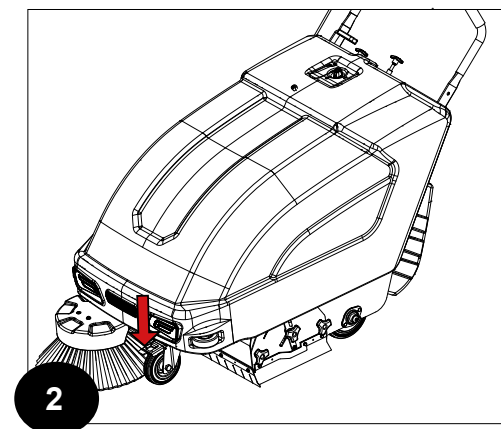
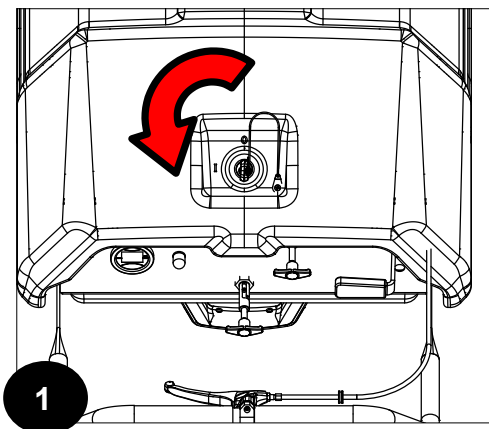
SECURING THE MACHINE

To ensure the tasks are carried out in the best safety conditions (machine safety position), proceed as follows:



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

1. apply the parking brake on the front swivel wheel (fig.2), pressing the lever (for BT version)

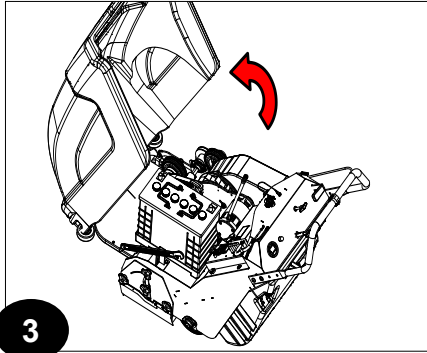


2. check the debris hopper is empty, emptying it if necessary - refer to "EMPTYING THE DEBRIS HOPPER"
3. turn the main switch to "0" (fig.1) by turning the key anti-clockwise, then remove the key to open the bonnet

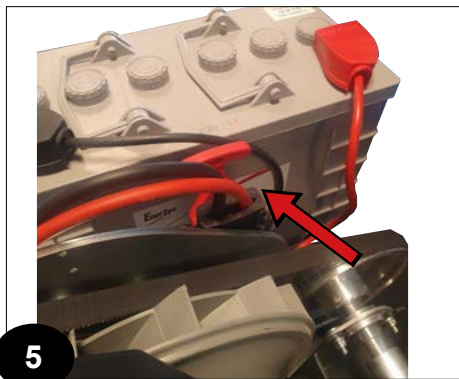


ATTENTION: the bonnet only opens if the key is not inserted

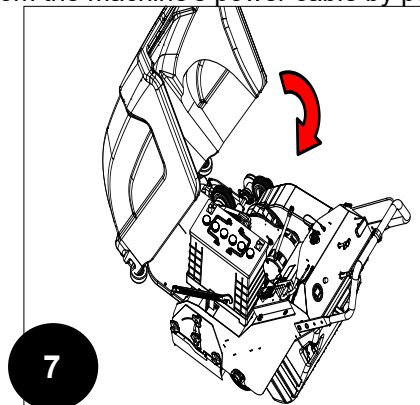
⚠ ATTENTION: the following operations must be carried out by qualified personnel, as acting incorrectly may cause machine malfunctions.



4. rotate the bonnet, lifting it from the control station side (fig.3)
5. fasten the prop in the lower part of the retainer plate (fig.4)



6. disconnect the battery connector from the machine's power cable by pulling the relative handle (fig.2-4)



7. close the bonnet by releasing the catch and rotating the bonnet to its working position (fig.7)
 8. bring the side brush to its idle position by pulling the relative lever on the control panel - refer to "SIDE BRUSH"
- the machine is now in its SAFETY POSITION

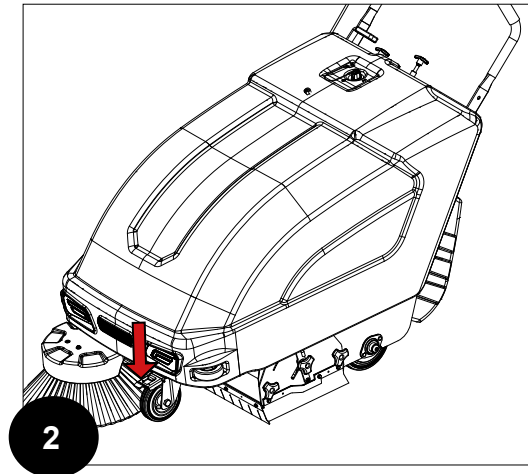
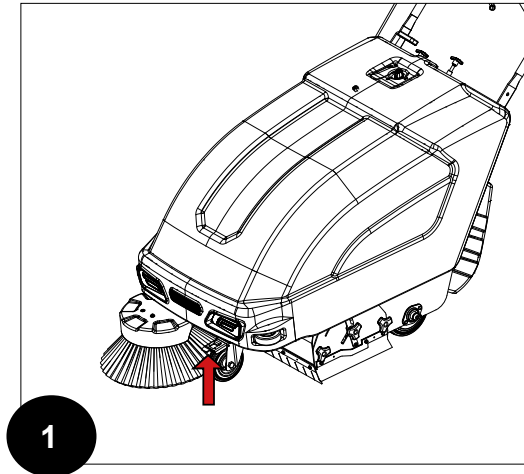
HOW TO MOVE THE MACHINE

The procedure for transporting the machine safely is as follows:



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

1. put the machine in the safety position - refer to "SECURING THE MACHINE"
2. bring the side brush to its idle position - refer to "SIDE BRUSH"
3. release the front wheel brake (fig.1) (for BT version)



4. use a ramp to raise the machine onto the transport vehicle



WARNING: bear in mind the ramp must have a suitable slope to avoid damaging the machine, and a sufficient load-bearing capacity to ensure it does not break when the machine moves across it.



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

5. position the machine on the transport vehicle
6. lock the front wheel brake (fig.2)
7. Secure the machine to the means of transport using an appropriate number and type of fastening elements, based on its weight and size.



CAUTION: secure the machine according to the directives in force in the country of use, so that it cannot slide or tip over.

TYPE OF BATTERY TO BE USED

To obtain good work results, **the machine must be powered at 12V**. COMAC recommends using a 12V 110Ah_{C5} gel battery.

The dimensions of the battery-holder compartment are: 175x290x340 mm (length x height x width, according to the work direction).

BATTERY MAINTENANCE AND DISPOSAL

For battery maintenance and recharging, follow the instructions contained in the document provided by the battery manufacturer.

When the battery is dead, it must be disconnected by a technician from a COMAC service centre; using suitable lifting devices, remove the battery from the machine and take it to a specific disposal centre.

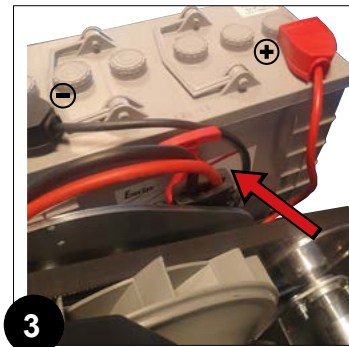
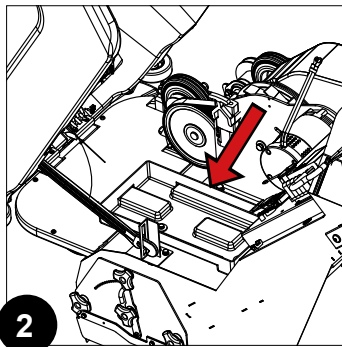
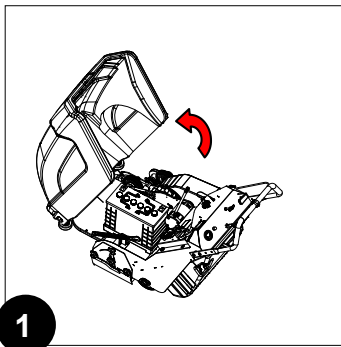


N.B.: the dead battery is classified as dangerous waste, so it is compulsory to take it to an authorised disposal centre.

INSERTING THE BATTERY IN THE MACHINE

The procedure for inserting the battery is as follows:

1. put the machine in the safety position - refer to "SECURING THE MACHINE"
2. open the bonnet and secure it with the side catch (fig.1)
3. insert the battery in its seat (fig.2)
4. connect the cables (supplied with the documentation delivered with the machine) to the respective poles of the battery (fig.3)



⚠ WARNING: connect the black cable to the negative battery pole (-) and the red cable to the positive pole (+)

5. connect the battery cable to the machine cable (fig.3)

RECHARGING THE BATTERY

⚠ WARNING: the battery must be charged prior to first use and whenever it no longer provides sufficient power to carry out the task in hand.



N.B.: before recharging, carefully read the Use and Maintenance Manual of the batteries you want to use.



N.B.: before recharging, carefully read the Use and Maintenance Manual of the battery charger you want to use.

WARNING: COMAC disclaims all responsibility for any damage to property or injury to persons if the batteries are recharged by an unauthorised technician or anyone not correctly instructed on how to perform the task.

1. Take the machine to the battery recharging area.

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.

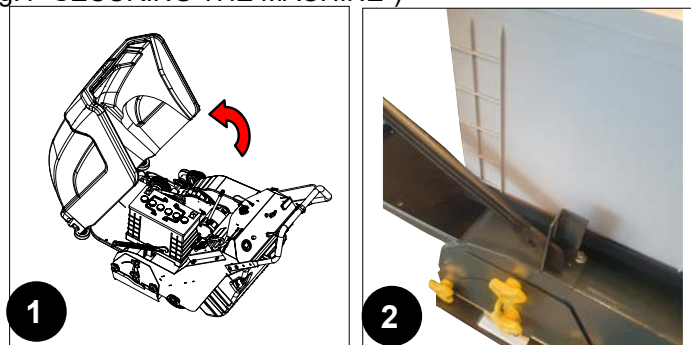
ATTENTION: the room where the batteries are recharged must be adequately ventilated to prevent the accumulation of the gases that leak from the batteries.

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

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

2. put the machine in the safety position - refer to "SECURING THE MACHINE"

3. rotate the bonnet by lifting it from the control station side (fig.1), and fasten the prop in the lower part of the retainer plate (refer to fig.4 "SECURING THE MACHINE")

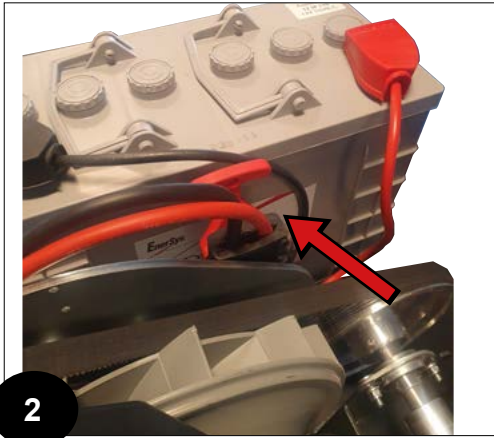


WITHOUT BUILT-IN BATTERY CHARGER:

ATTENTION: the following operations must be carried out by qualified personnel as acting incorrectly may result in machine malfunctions.
Carry out the following steps:

- Disconnect the connector on the machine power cable from the connector on the battery power cable.
- Connect the connector on the battery charger cable to the connector on the battery power cable.
- **N.B.:** The battery charger coupling connector comes inside the bag containing this instruction booklet, and must be assembled on the battery charger cables as indicated in the instructions.
- **ATTENTION:** before connecting the batteries to the battery charger, make sure it is suitable for the type of battery you want to charge.
- **N.B.:** carefully read the user and maintenance instructions for the battery charger to be used for charging.
- **CAUTION:** keep the bonnet in the maintenance position (open) throughout the battery recharging cycle, to allow gas fumes to escape.
- Connect the connector on the battery charger cable to the connector on the battery power cable.
- Connect the battery charger cable to the power supply socket.

- When the recharging cycle has been completed, disconnect the connector on the battery charger cable from the connector on the battery power cable (fig.3).
- Connect the connector on the machine power cable to the connector on the battery power cable (fig.2).



- Close the bonnet by releasing the catch and rotating the bonnet to its working position.

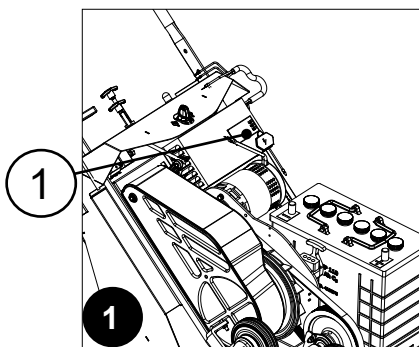
WITH BUILT-IN BATTERY CHARGER (OPTIONAL)



The built-in battery charger ensures maximum performance because it has been purposely selected for the sweeping machine on which it is mounted. It offers the convenience of being able to recharge the machine wherever you are at the end of the shift, without having to return to a specific point on the route.

WARNING: before running the battery charging cycle, check the battery charger is suitable for the batteries you want to use. The battery charger in the machine is programmed by the factory with the following type of charging curve: GelGeneric. To change the type of charging curve, contact your local COMAC service centre or the one closest to you. Alternatively, you can send an email to com@comac.it, or visit the website at www.comac.it

N.B.: carefully read the battery charger use and maintenance manual (included in the bag that contains this instruction booklet).

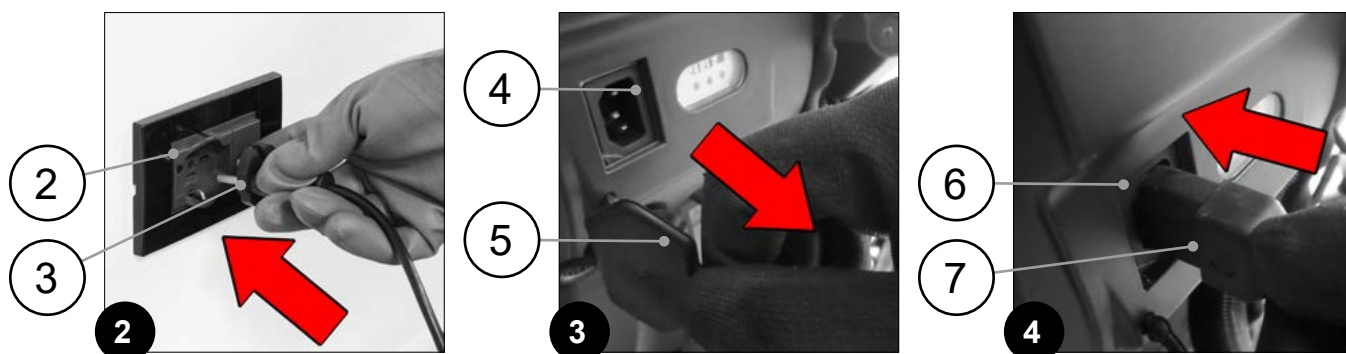


Carry out the following steps:

- Insert the battery charger power cable plug (6) in the mains socket (2) (fig.2).
- The charger (1) is located above the battery (fig.1), so stand to the side of the machine and remove the cap (5) covering the socket (4) on the charger (fig.3).
- Connect the battery charger power cable connector (7) to the battery charger socket (6) (fig.4).

WARNING: before inserting the battery charger power cable in the socket (2), check there is no condensation or any other type of liquid.

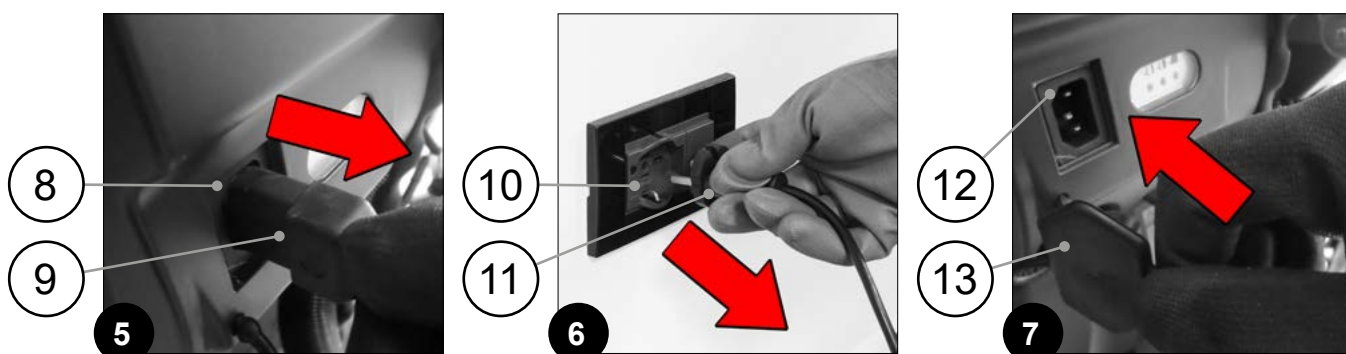
- **N.B.:** the battery charger power cable is delivered in the bag that also contains this instruction booklet.



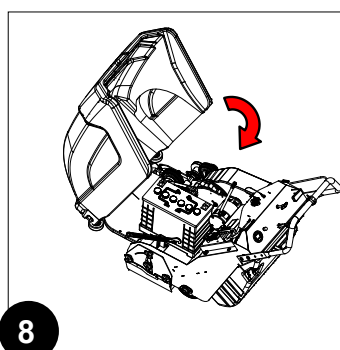
CAUTION: keep the recovery tank open throughout the battery box recharging cycle to allow the gas fumes to escape.

WARNING: if the LEDs in the charger display make a series of irregular flashes during the battery charging phase, stop charging and contact your local COMAC service centre or the one nearest to you. Alternatively, you can send an email to com@comac.it, or visit the website at www.comac.it

- When the recharging cycle has been completed, disconnect the connector (9) on the battery charger cable from the socket (8) on the charger body (fig.5).
- Disconnect the charge power cable plug (11) from the mains socket (fig.6).
- Fit the cap (13) on the battery charger socket (12) (fig.7).

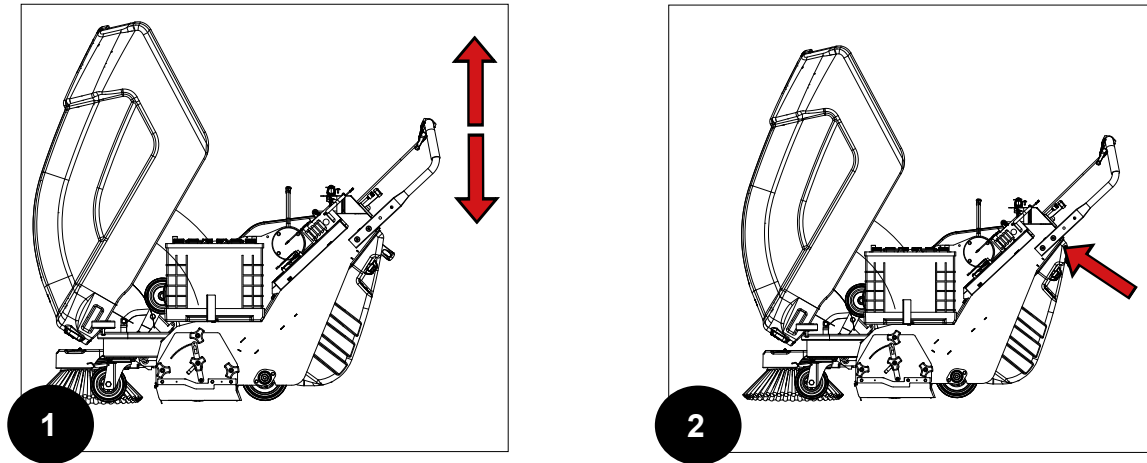


- Close the bonnet after releasing its catch (fig.8).



MOUNTING AND ADJUSTING THE HANDLEBARS

The handlebars in the control station can be adjusted to 3 different heights:



1. To adjust the handlebars, proceed as follows:
2. put the machine in the safety position - refer to "SECURING THE MACHINE"
3. open the bonnet and secure it with the catch
4. using the Allen spanner (provided with this manual), loosen the 4 handlebar support screws (2 on the right and 2 on the left) (fig.2)
5. position the handlebars at the required height, centring the screws with the relative holes in the frame
6. fasten the 4 screws with the Allen spanner

⚠ ATTENTION: for safety, check with a torque spanner that the tightening torque of all 4 hex head screws is between 20 Nm and 25 Nm

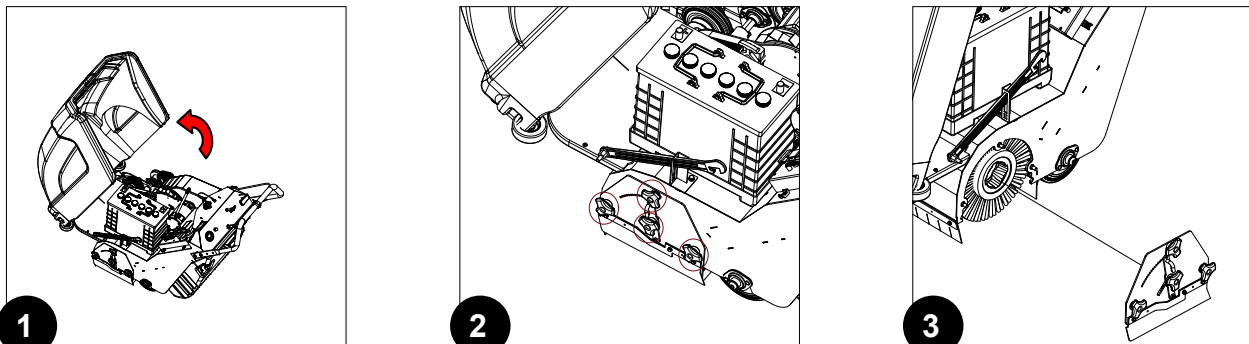
DISASSEMBLING THE CENTRAL BRUSH

To mount the brush in the central tunnel, proceed as follows:

1. take the machine to the maintenance area
2. put the machine in the safety position - refer to "SECURING THE MACHINE"

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

3. rotate the bonnet by lifting it from the control station side, and fasten the prop in the lower part of the retainer plate (fig.1)
4. unscrew the knobs of the central brush inspection carter and central brush lifting arm (fig.2)
5. remove the central brush inspection carter (fig.3)
6. remove the brush by pulling it out of the frame tunnel

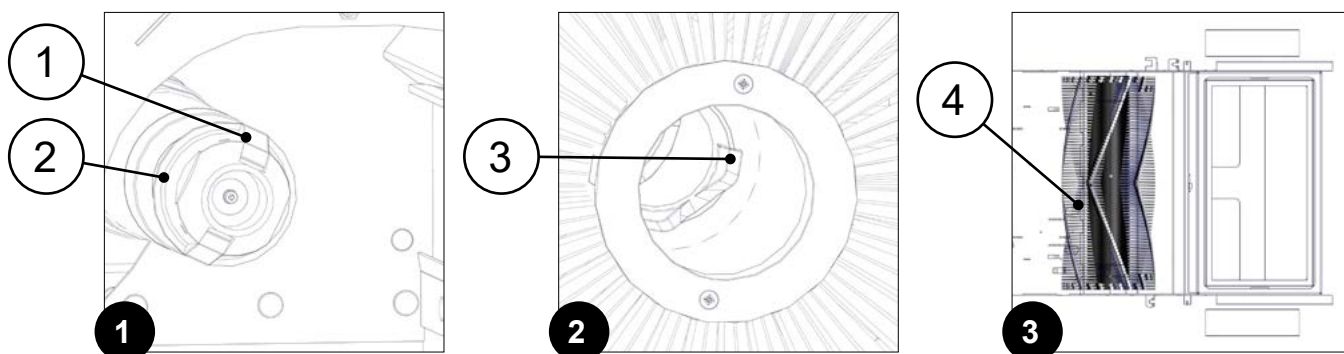


ASSEMBLING THE CENTRAL BRUSH

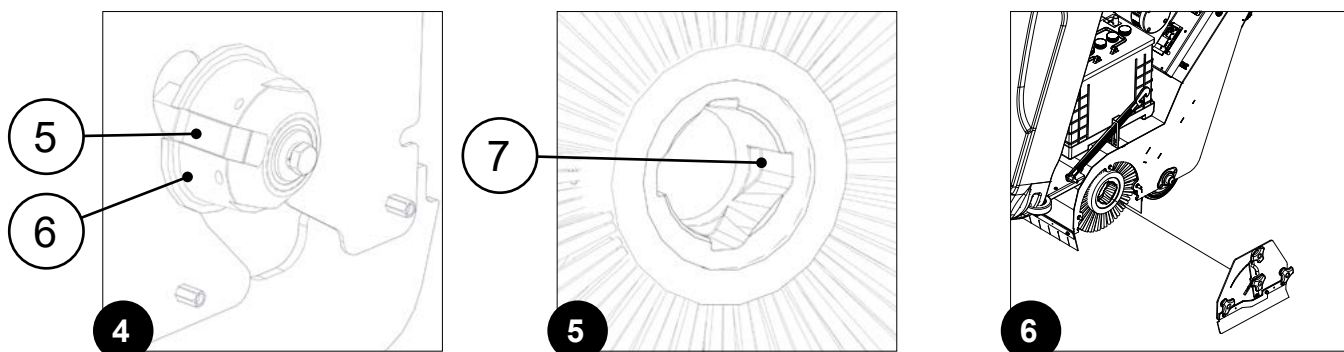
1. put the machine in the safety position - refer to "SECURING THE MACHINE"
2. unscrew the knobs of the central inspection carter and central brush arm
3. remove the central brush side inspection carter
4. insert the brush in the frame tunnel

i N.B.: when the brush is mounted correctly, the cusps on the brush form an arrow $\wedge$ when seen from above in the forward movement direction (fig.3).

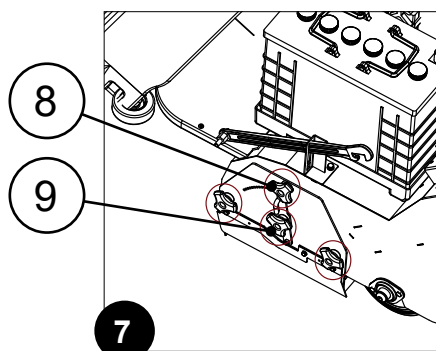
5. rotate the brush until the fastening hooks (1) in the driving towing hook (2) (fig.1) correctly enter the slots (3) in the brush (fig.2)
6. insert the central brush inspection carter (fig.6)



! ATTENTION: make sure the fastening hooks (5) in the idle towing hook (6) (fig.4) correctly enter the slots (7) in the brush (fig.5).



7. tighten the knobs (8) of the central brush inspection carter (fig.7)



DISASSEMBLING AND ASSEMBLING THE SIDE BRUSH

To disassemble and assemble the side brush in the machine, contact a COMAC service centre technician.

 **WARNING:** COMAC disclaims all responsibility for any injury to people or damage to property if the side brush is replaced by an unauthorised technician.

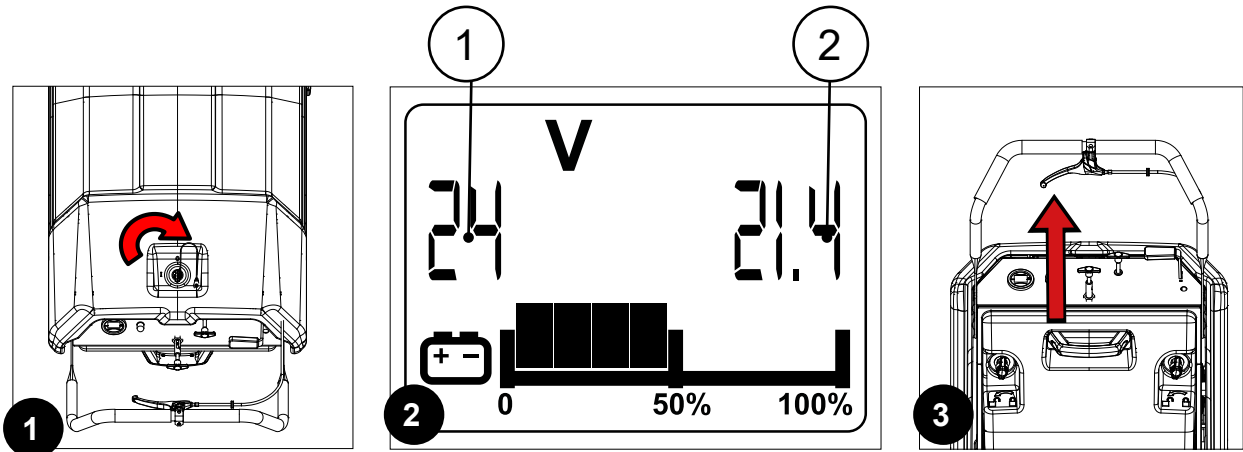
WORK PREPARATION CHECKLIST

Check for any fluid leaks	If you note any faults, contact your COMAC service centre of reference or the one closest to you. Alternatively, you can send an email to com@comac.it or visit the website www.comac.it
Check the headlights (if installed)	If you note any faults, contact your COMAC service centre of reference or the one closest to you. Alternatively, you can send an email to com@comac.it or visit the website www.comac.it
Check the front wheel and rear wheels for damage	If you note any faults, contact your COMAC service centre of reference or the one closest to you. Alternatively, you can send an email to com@comac.it or visit the website www.comac.it
Check the battery charge level	Check the battery box charge level on the control display. Recharge it if necessary. Refer to "RECHARGING THE BATTERY"
Check the debris hopper (in the rear part of the machine) is empty	If the debris hopper is full, empty it. Refer to "EMPTYING THE DEBRIS HOPPER"
Check all the dust guards of the central brush compartment for signs of damage or wear	If you note any faults, contact your COMAC service centre of reference or the one closest to you. Alternatively, you can send an email to com@comac.it or visit the website www.comac.it
Check the central brush is not dirty, damaged or worn	If the brush in the central machine tunnel is dirty, clean it. Refer to "CLEANING THE CENTRAL BRUSH"
	If the brush in the central machine tunnel is worn or damaged, replace it. Refer to "REPLACING THE CENTRAL BRUSH"
Check the side brush is not dirty, damaged or worn	If the brush in the side brush head is dirty, clean it. Refer to "CLEANING THE SIDE BRUSH"
	If the brush in the side brush head is worn or damaged, replace it. Refer to "REPLACING THE SIDE BRUSH"
Check the condition of the vacuum filter on the debris hopper	If the collection filter is clogged or dirty, clean it. Refer to "CLEANING THE PANEL FILTER"

STARTING WORK

To start working, proceed as follows:

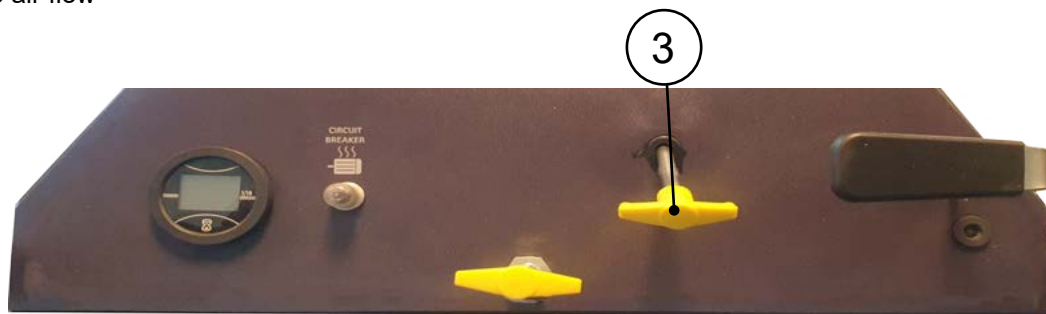
1. carry out all the checks listed in the "WORK PREPARATION CHECKLIST" section
 2. go to the control station
 3. insert the key in the slot on the upper part of the bonnet
 4. turn the key clockwise to "I" and switch on the machine (fig.1)
 5. At the moment of ignition, the display will show a series of screens in sequence. Fig.2 shows the screen with the machine programming characteristics.
- i N.B.:** the upper left area of the screen shows the nominal battery voltage value (1), while the upper right area shows the minimum permitted inhibit value (2).



6. by manually pushing the machine via the handlebars, it will now work at full efficiency levels until the end of the job or until the batteries run down

For the version with traction:

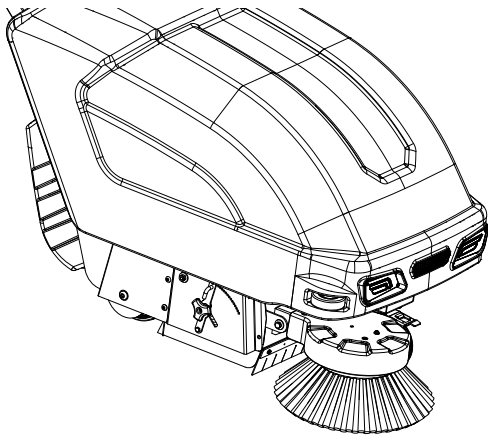
7. press the lever on the handlebars (fig.3); the machine will start to move and will work at full efficiency levels until the end of the job or until the batteries run down
8. during work it may be necessary to temporarily stop the vacuum to prevent the collection of liquids (which might wet the filter) or other unwanted elements. To do this, press and hold the vacuum lever (3) to temporarily block the air flow



- i N.B.:** pick up any large pieces of waste before performing the cleaning operations; pick up wire, tape, string, large pieces of wood, or any other types of refuse that might wrap around the brushes or become entangled.
- i N.B.:** drive the machine along the most linear path possible. Avoid hitting any obstacles and scratching the sides of the machine. Overlap the working widths by several centimetres. To avoid damaging carpet floors, do not turn the machine from one side to the other while it is stationary.
- i N.B.:** remember that only the central brush has a dust vacuum system; the side brush can only channel the dirt towards the central part of the machine.

-  **N.B.:** if the results are not satisfactory, stop and refer to the "TROUBLESHOOTING" section of this manual.
-  **WARNING:** when using the machine, slow down on slippery or sloping surfaces.
-  **ATTENTION:** slow down on ramps and slippery surfaces.
-  **WARNING:** do not use the machine in areas where the ambient temperature is higher than 43°C (110°F) or lower than 10°C (50°F).
-  **N.B.:** after use, carry out daily maintenance procedures - refer to "MAINTENANCE PROGRAM"

SIDE BRUSH



The machine leaves the factory with only the right-hand side brush.

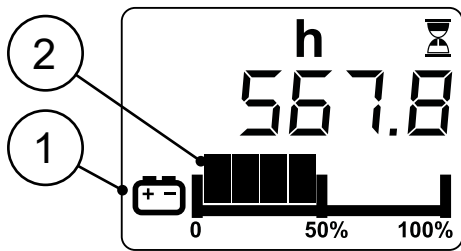
The side brush is an essential accessory when the areas to be cleaned contain shelving or other similar furnishings. The side brush can extend beyond the total width of the machine, so it can clean right up to the wall and pass under shelves. In this way the entire room is cleaned in a single passage, and nothing is left behind.

If it is necessary to use the side brush while working in sweeping mode, pull the brush lever (1), releasing it from its catch and lowering it to the working position (fig.1).



-  **N.B.:** the side brush will start to turn at the same time as the central brush.
-  **N.B.:** if you want to return the side brush to its idle position, pull the lever (1) and lock it in the catch.

BATTERY CHARGE LEVEL INDICATOR



The control display is present on the control panel of the machine. The percentage of battery charge is visible in the lower part of the screen. The battery charge percentage indicator consists of two symbols, the first represented by a graphic symbol (1), the second by a battery icon (2).

i **N.B.:** the control display shows the percentage of battery charge in relation to the maximum capacity.

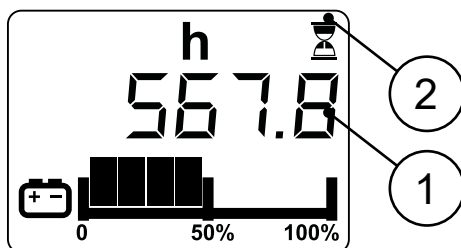
i **N.B.:** the graphic symbol (1) consists of five charge levels, each of which represents approximately 20% of residual battery charge.

i **N.B.:** when the residual charge is at 20%, the graphic symbol starts to flash. When this happens, take the machine to the battery box charging area.

i **N.B.:** a few seconds after the battery box charge level reaches 20%, the brush motor switches off automatically. The remaining charge is sufficient for completing the task before recharging the battery box.

i **N.B.:** a few seconds after the battery charge level reaches 10%, the suction motor switches off automatically. With the remaining charge however, the machine can still be moved to the designated battery box recharging area.

HOUR METER



The control display is present on the control panel of the machine. The hour meter (1) is present in the upper part of the screen.

The hour meter allows the user to view the machine's total time of use via a series of numbers.

i **N.B.:** the digits preceding the "." identify the hours, while the digits that come after the "." identify the tenths of an hour. A tenth of an hour corresponds to six minutes.

i **N.B.:** the hour meter is running when the hourglass symbol (2) flashes.

THERMAL CIRCUIT BREAKER



On the machine control panel there is the vacuum motor thermal circuit breaker (1). The thermal circuit breaker intervenes when the motor is under strain and overheats due to malfunctions or the collection of oversized objects that block the central brush.

i **N.B.:** when the thermal circuit breaker trips, the switch flips up and blocks the power supply to the motor.

i **N.B.:** to reset the thermal circuit breaker, turn the switch off.

EMPTYING THE DEBRIS HOPPER

If you notice the machine can no longer collect dirt from the floor while cleaning, the debris hopper in the rear part of the machine might be full.

To empty the debris hopper, proceed as follows:

1. Take the machine to the designated waste disposal area.

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

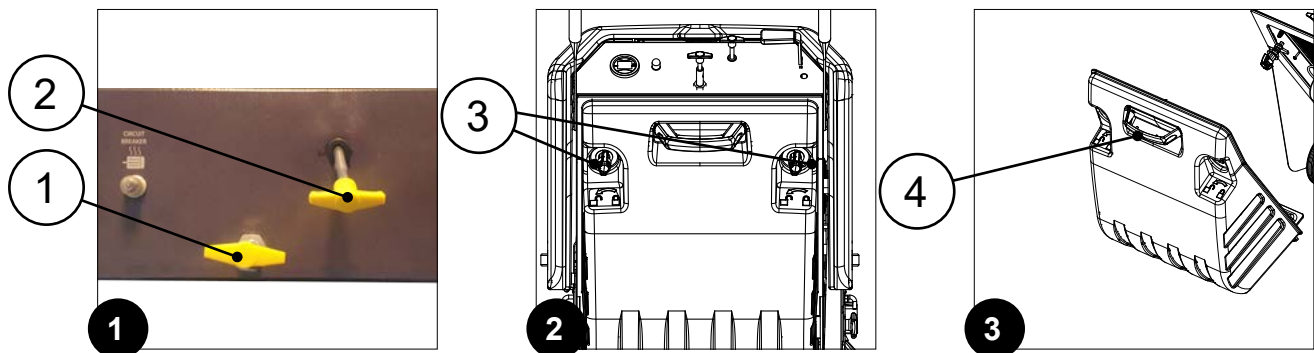
2. Position the machine near the waste bin.
3. Pull the filter shaker lever (1) on the control station a couple of times to clean the vacuum filter (fig.1).

 **N.B.:** with electric filter shaker (optional): shut off the vacuum via the handle (2) (fig.1) in order to activate the filter shaker and clean the filter.

4. Put the machine in the safety position - refer to "SECURING THE MACHINE".

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

5. free the debris hopper by rotating the retainers (3) in the direction indicated by the printed arrow (fig.2)
6. gripping the handle (4) on the debris hopper (fig.3), remove it from the machine



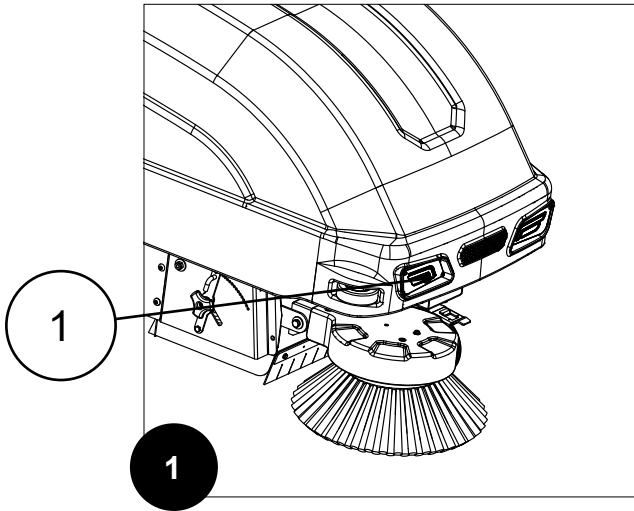
7. take the debris hopper to the designated unloading area and empty it

 **ATTENTION:** when using the machine, pay attention to the debris hopper; it can contain up to 50 kg (110 lb). Respect the general rules for manual movement of the loads. If heavy materials are incorrectly lifted and/or moved, this may cause back injury or other types of personal injury.

8. gripping the handle (4), insert the debris hopper in the machine (fig.3)
9. to attach the hopper to the frame, rotate the retainers (3) in the direction indicated by the printed arrow

OPTIONAL FUNCTIONS

WORKING LED HEADLIGHTS



Upon request, the machine can be equipped with the LED headlight kit (1).

The kit increases visibility in the working direction and is automatically activated when the machine is switched on.

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. Take the machine to the designated debris hopper emptying area.



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



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

2. Follow the steps to empty the debris hopper - refer to "EMPTYING THE DEBRIS HOPPER"
3. Carry out all the daily machine maintenance procedures - refer to "MAINTENANCE PROGRAM".
4. Once the daily maintenance operations are complete, take the machine to the designated storage location.



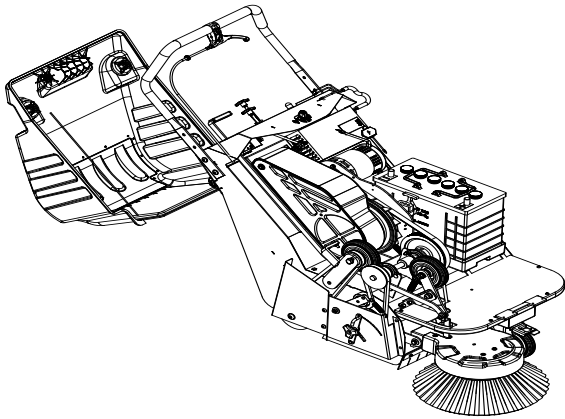
ATTENTION: park the machine in an enclosed place, on a flat surface; near the machine there must be no objects that could either damage it, or be damaged through contact with it.

5. Put the machine in the safety position - refer to "SECURING THE MACHINE".



ATTENTION: before setting aside the machine, read the "SETTING ASIDE THE MACHINE" section in the "GENERAL SAFETY RULES" document provided with the machine.

MAINTENANCE PLAN



The importance of machine maintenance should not be underestimated.

By ensuring the machine is inspected regularly, we can replace all parts that become worn in a timely manner.

In addition, we can also recognise faults quickly, thus increasing the useful life of our machine.

First, it is important to understand the difference between the various types of maintenance:

- routine maintenance is an activity designed to keep the machine in good working order.
- extraordinary maintenance regards work carried out to implement substantial updates on the machine.

i **N.B.:** the primary purpose of routine maintenance is to maintain the performance of the machine's various functions, checking for any worn or faulty elements. A fault that is not fixed or an excessively worn part could cause damage to the machine or injure persons in the vicinity.

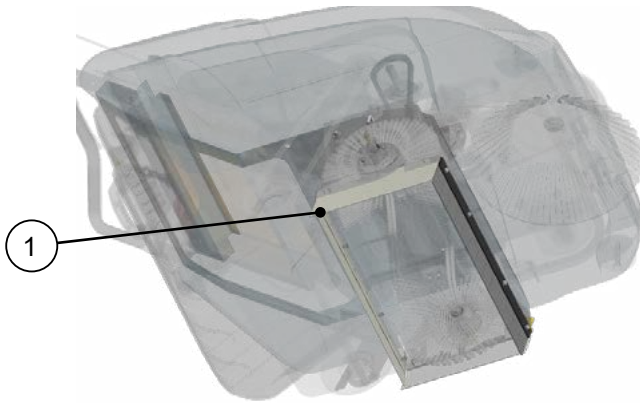
i **N.B.:** The main purpose of extraordinary maintenance is to replace any worn or defective elements.

i **N.B.:** In addition, maintenance enables the operator to use the machine in a safer manner, in the knowledge that the risk of unforeseen events has been reduced as far as possible.

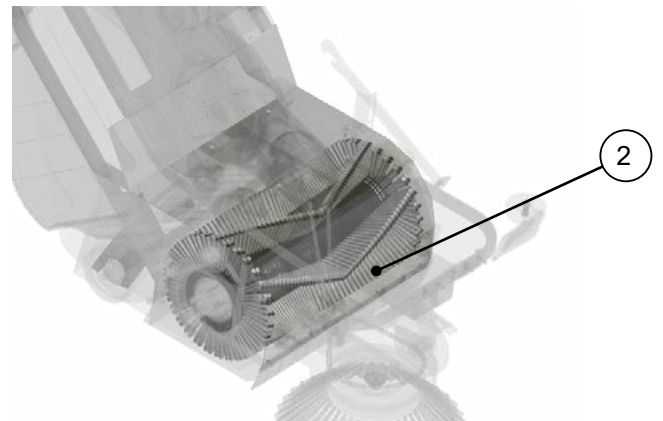
i **N.B.:** The use and maintenance manual contains all the procedures to be carried out during routine maintenance of the machine. By following these instructions, even individuals with no particular expertise in this area can check the machine and replace any parts necessary, taking a DIY approach. However, it is essential to remember the importance of entrusting the work to genuine professionals. An experienced specialist may notice details that could escape the notice of a less observant and expert eye.

i **N.B.:** A dilemma may arise during maintenance: which spare parts are best? COMAC supplies original spare parts which are exactly identical to the parts on a given machine that need replacing; these are the best choice because they are durable and long-lasting, and help to maintain the performance of the machine.

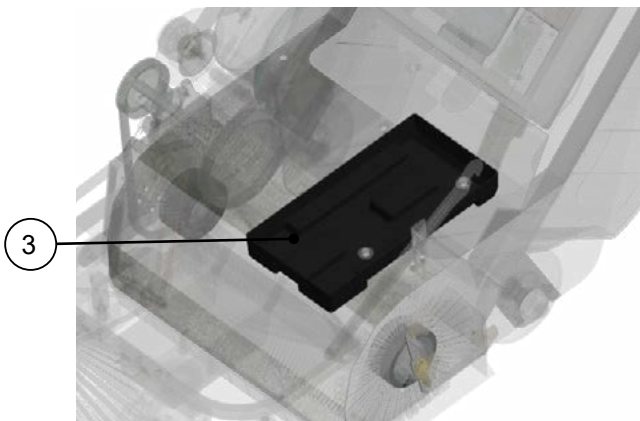
i **N.B.:** COMAC service centres use these spare parts; in an unauthorised workshop, however, we recommend explicitly asking the technicians to use only these genuine COMAC products. Using official spare parts extends the longevity of your machine.



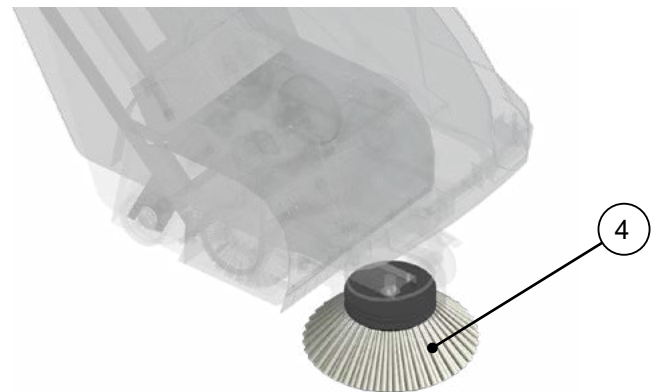
1 dust guard rubber blades for the central brush



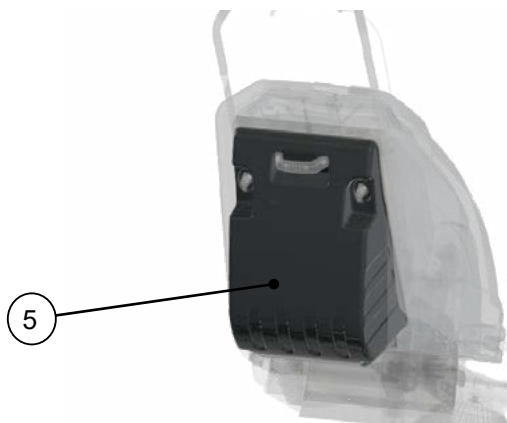
2 central brush



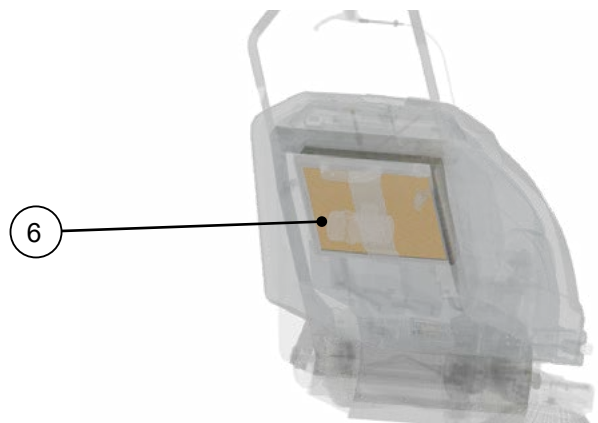
3 battery compartment



4 side brush



5 debris hopper



6 panel vacuum filter

Frequency	Person resp.	Ref.	Description	Procedure	Notes
At the end of the work	General worker	1	Dust guard rubber blades for the central brush assembly	Clean the surface of the rubber blades	
		2	Central brush	Clean the central brush, removing any waste	
		4	Side brush	Clean the central brush, removing any waste	
		6	Panel vacuum filter	To clean the panel filter, follow the instructions provided by the manufacturer	Carefully shake it on a clean, flat surface. Clean with compressed air ($\leq 7\text{atm}$), pointed in the opposite direction to the vacuum flow
Every 50 work hours	General worker	1	Dust guard rubber blades for the central brush assembly	Check for wear and possible faults	If necessary, contact your COMAC service centre of reference or the one closest to you
	Specialised operator			Check the adjustment in relation to the floor	
	General worker	2	Central brush	Check for wear and possible faults	If necessary, contact your COMAC service centre of reference or the one closest to you
		4	Side brush	Check for wear and possible faults	If necessary, contact your COMAC service centre of reference or the one closest to you
	Specialised operator	6	Panel vacuum filter	Check for wear and possible faults	If necessary, contact your COMAC service centre of reference or the one closest to you
	General worker	3	Battery compartment	Check for leakages from the batteries, and bleed them if necessary	
Every 100 work hours	General worker	6	Panel vacuum filter	Check for wear and possible faults in the gaskets	If necessary, contact your COMAC service centre of reference or the one closest to you
		5	Debris hopper compartment	Check for wear and possible faults in the debris hopper	
				Check for wear and possible faults in the removable bins (optional)	

 **N.B.:** "general worker" means someone able to handle tasks for which physical effort is required to carry out specific but simple job-related procedures, or responsible for tasks or services calling for aptitude or for knowledge that can be acquired in a few days.

 **N.B.:** "specialised operator" means someone able to handle specific tasks requiring special practical skills obtained via technical-practical preparation organised by COMAC service centre technicians.

ROUTINE MAINTENANCE

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. put the machine in the safety position - refer to "SECURING THE MACHINE"

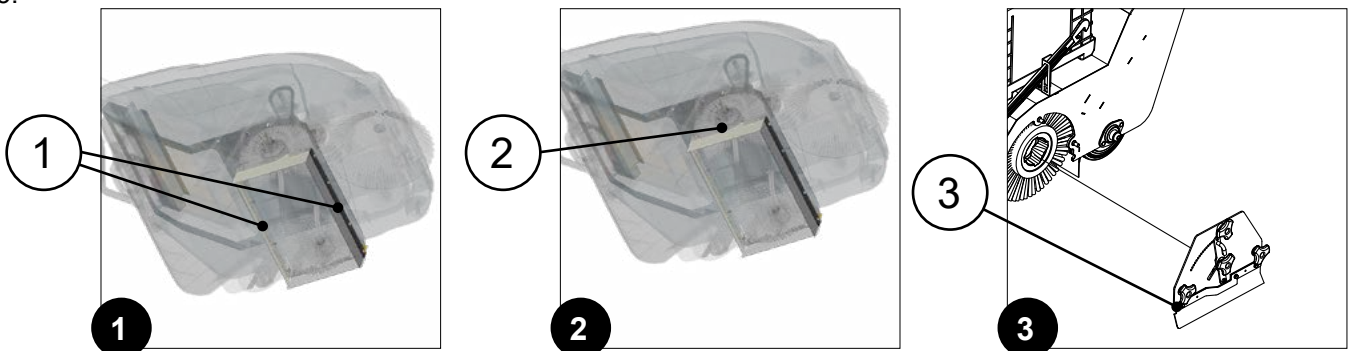


CAUTION: it is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

CLEANING THE RUBBER BLADES OF THE CENTRAL BRUSH DUST GUARD

To clean the rubber blades in the central brush front dust guard kit, proceed as follows:

1. Go to the left-hand side of the machine.
2. Follow the procedure to remove the central brush - refer to "DISASSEMBLING THE CENTRAL BRUSH".
3. Use a damp cloth to clean the bulkheads and rubber blades (1) in the machine frame (fig.1).
4. Use a damp cloth to clean the bulkhead and rubber blade (2) of the right-hand side panel attached to the frame (fig.2).
- 5.



6. Use a damp cloth to clean the bulkhead and left-hand dust guard rubber blade (3) in the disassembled brush inspection carter (fig.3).



N.B.: when cleaning the rubber blades, check their condition and state of wear. If they are unfit to be used, contact your COMAC service centre of reference or the one closest to you.

7. After completing the work, refit the brush following the instructions - refer to "ASSEMBLING THE CENTRAL BRUSH".

CLEANING THE CENTRAL BRUSH

A thoroughly clean central brush will ensure a cleaner floor, thereby reducing costs and increasing environmental sustainability. To clean the central brush, proceed as follows:

1. Follow the procedure to disassemble the central brush - refer to "DISASSEMBLING THE CENTRAL BRUSH".
2. Clean the brush under a stream of running water to remove any impurities from its bristles.

 **N.B.:** check the bristles for wear. If they are excessively worn, replace the brush - refer to "REPLACING THE CENTRAL BRUSH".

3. When cleaning is complete, carry out all the brush assembly steps - refer to "ASSEMBLING THE CENTRAL BRUSH".

CLEANING THE SIDE BRUSH

A thoroughly clean side brush will ensure a cleaner floor, thereby reducing costs and increasing environmental sustainability. To clean the side brush, proceed as follows:

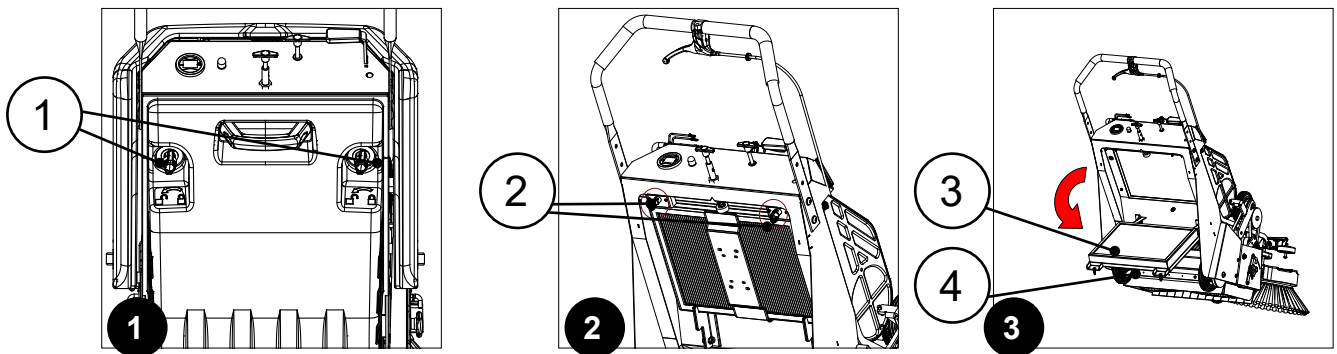
1. Go to the right-hand side of the machine.
2. Move the brush to its idle position - refer to "SIDE BRUSH".
3. Use a damp cloth to clean the brush, removing any dirt from the bristles.

 **N.B.:** check the bristles for wear. If they are excessively worn, replace the brush - refer to "DISASSEMBLING AND ASSEMBLING THE SIDE BRUSH".

CLEANING THE PANEL FILTER

A thoroughly clean panel filter will ensure better machine vacuum system results, thereby reducing costs and increasing environmental sustainability. To clean the panel filter, proceed as follows:

1. Stand at the back of the machine (with the machine switched off).
2. Remove the debris hopper by rotating the relative retainers (1) in the direction indicated by the printed arrows (fig.1).
3. Turn the fixing pins (2) anti-clockwise to rotate the filter-holder frame (fig.2).
4. Rotate the filter-holder frame (4) to the maintenance position and take out the panel filter (3) (fig.3).
5. Clean the panel filter, carefully shaking it on a clean, flat surface. If necessary, clean with compressed air ($\leq 7\text{atm}$), pointed in the opposite direction to the vacuum flow.
6. Reposition the panel filter on the filter-holder frame.
7. Rotate the frame back into its working position.



ATTENTION: remember to lift the manual filter shaker lever to let the filter-holder frame pass through.

8. Turn the fixing pins clockwise to lock the filter-holder frame.
9. Close the debris hopper by rotating the retainers in the direction indicated by the printed arrows.



N.B.: pay attention to the working direction of the panel filter when inserting it in the vacuum compartment on the machine: the gasket in the filter must be in contact with the machine frame.

CLEANING THE HEPA FILTER

To clean the HEPA filter (optional), follow the same procedure as for the panel filter - refer to "CLEANING THE PANEL FILTER".

CLEANING THE CARPET FLOOR FILTER

To clean the HEPA filter (optional), follow the same procedure as for the panel filter - refer to "CLEANING THE PANEL FILTER".

CLEANING THE DEBRIS HOPPER

To clean the debris hopper:

1. with the machine switched off, follow the hopper emptying procedure - refer to "EMPTYING THE DEBRIS HOPPER"
2. before reattaching the hopper to the machine, clean the inside of it, removing any encrusted dirt with a spatula

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. Put the machine in the safety position - refer to "SECURING THE MACHINE".

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

REPLACING THE CENTRAL BRUSH

The good condition of the central brush will ensure a cleaner floor, thereby reducing costs and increasing environmental sustainability.

To replace the central brush, carry out the steps to remove the old brush - refer to "DISASSEMBLING THE CENTRAL BRUSH", then fit the new one - refer to "ASSEMBLING THE CENTRAL BRUSH".

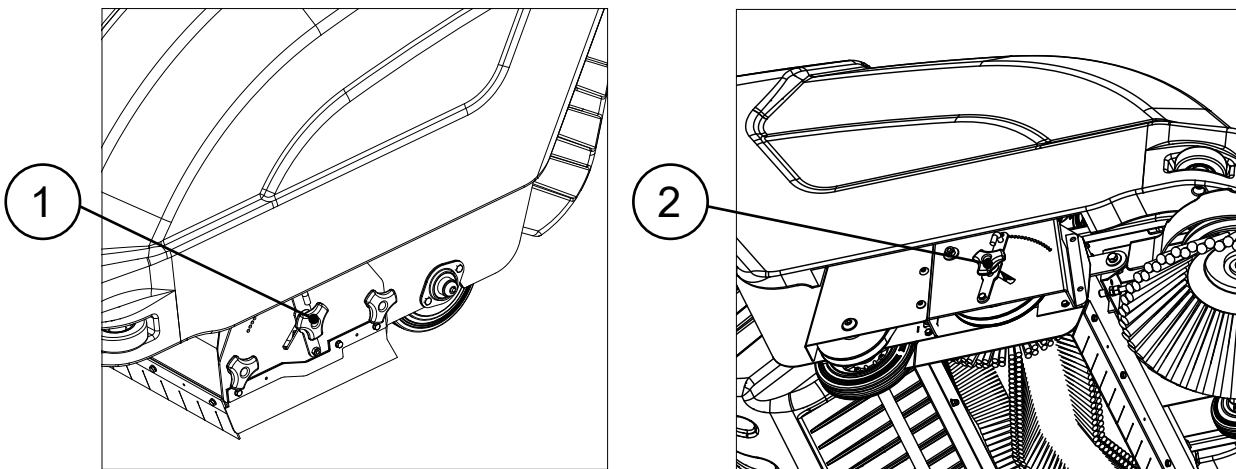
ADJUSTMENT INTERVENTIONS

Adjustments may be necessary whenever the machine is not cleaning effectively.

ATTENTION: for any type of adjustment, first of all put the machine in the safety position - refer to "SECURING THE MACHINE".

ADJUSTING THE CENTRAL BRUSH

The central brush must be flattened to the ground by 7/8 mm in order to work properly. The height is adjusted by turning the nuts of the adjusters on the left (1) and right (2) side of the machine:

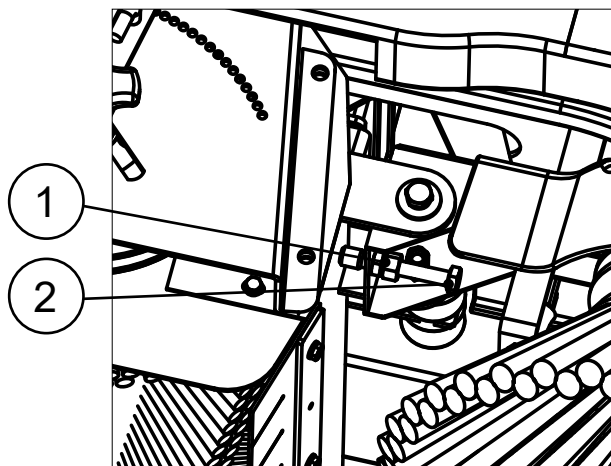
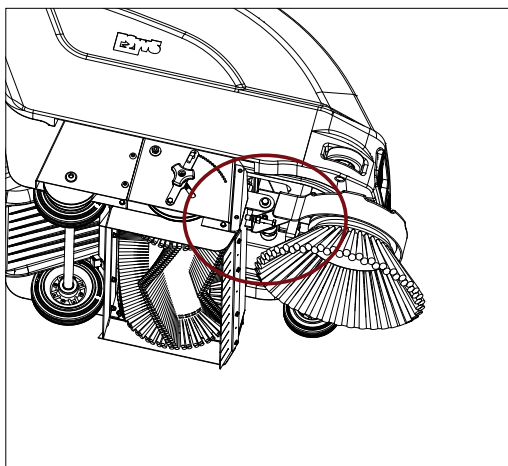


N.B.: when adjusting, respect the alignment of the brush by setting the same height on both sides.

ADJUSTING THE SIDE BRUSH

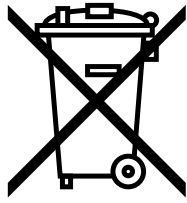
The side brush must be flattened to the ground by 7/8 mm in order to work properly.
To adjust the side brush, proceed as follows:

1. Go to the left side of the machine.
2. Loosen the nut (1) with a spanner of a suitable size (tool not included in the package).



3. Tighten the bolt (2) to raise the brush (or loosen to lower it) with a spanner of a suitable size (tool not included in the package).
4. Once the required height has been set, lock the bolt by tightening the nut (2) with a spanner of a suitable size (tool not included in the package).

DISPOSAL



COMAC is committed to creating its products by respecting the environment, investing in the development of sustainable solutions and technologies, seeking materials that can easily be recycled, and ensuring that the entire production process has a low environmental impact.

Before proceeding with disposal, it is essential to contact your nearest authorised collection centres directly, in accordance with the legislation in force in the country where the machine is used.

CHOOSING AND USING BRUSHES

All the brushes are comprised of a body to which the various tufts of bristles are fixed. The brush bodies are generally made of plastic, as this is a material that ensures higher levels of reliability, in that it does not become damaged when wet.



N.B.: when the bristle starts to be consumed, it comes closer to the brush and increases its rigidity, losing its flexibility characteristics that allows it to collect and remove dirt. For this reason it is important to replace them at the right moment.

The type of brush for sweeping machines can be chosen according to the material the bristles are made of. The most common bristle materials are:

POLYPROPYLENE (PPL)	NYLON (PA)	TYNEX
Synthetic polymer	Synthetic polymer	Very durable abrasive material
Bristles with varying level of abrasion and thickness (0.3÷1.5 mm)	Can be used as an alternative to PPL	Can be used for heavy duty cleaning on industrial surfaces
Can be used on any type of flooring		
Can be used for routine or deep cleaning		

UNION MIX	STEEL
Compound based on natural products	Suitable for industrial floors with stubborn dirt
Can be used for polishing and scrubbing activities	Alternative to Tynex
Resistant to very high temperatures	
Subject to rapid wear, shorter life than the PPL version	
Must be used with non-aggressive detergents	
Suitable for flooring types such as: marble; granite; porphyry cobbles; terracotta	
Not suitable for cleaning heavy soiling	

Legend: $\emptyset_E$ = external bristle diameter; L_E = maximum brush width (bristle reference);

TYPE OF CYLINDRICAL BRUSH

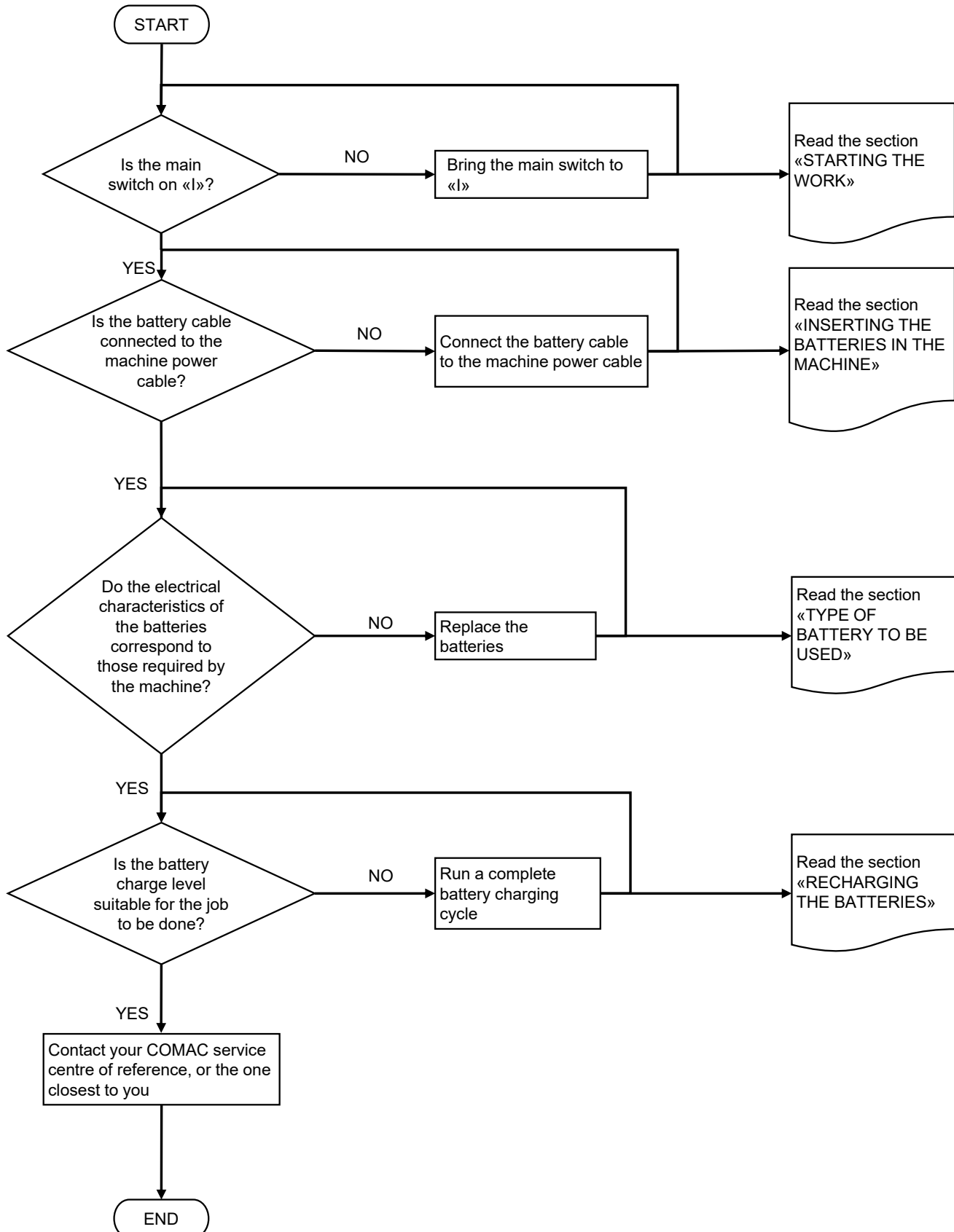
CODE	QTY	$\emptyset$ EXTER-NAL	TYPE OF BRISTLE	$\emptyset$ BRISTLES	NOTES
458832	1	265	TAMPICO	0,7	CYLINDRICAL BRUSH $\emptyset_E$ 265 L_E 500 mm
458831	1	265	STEEL MIX	0,5	CYLINDRICAL BRUSH $\emptyset_E$ 265 L_E 500 mm
457411	1	265	PPL	0,7- 1,1	CYLINDRICAL BRUSH $\emptyset_E$ 265 L_E 500 mm
458833	1	265	PPL+BRONZE	0,7	CYLINDRICAL BRUSH $\emptyset_E$ 265 L_E 500 mm

TYPE OF DISCOIDAL SIDE BRUSH

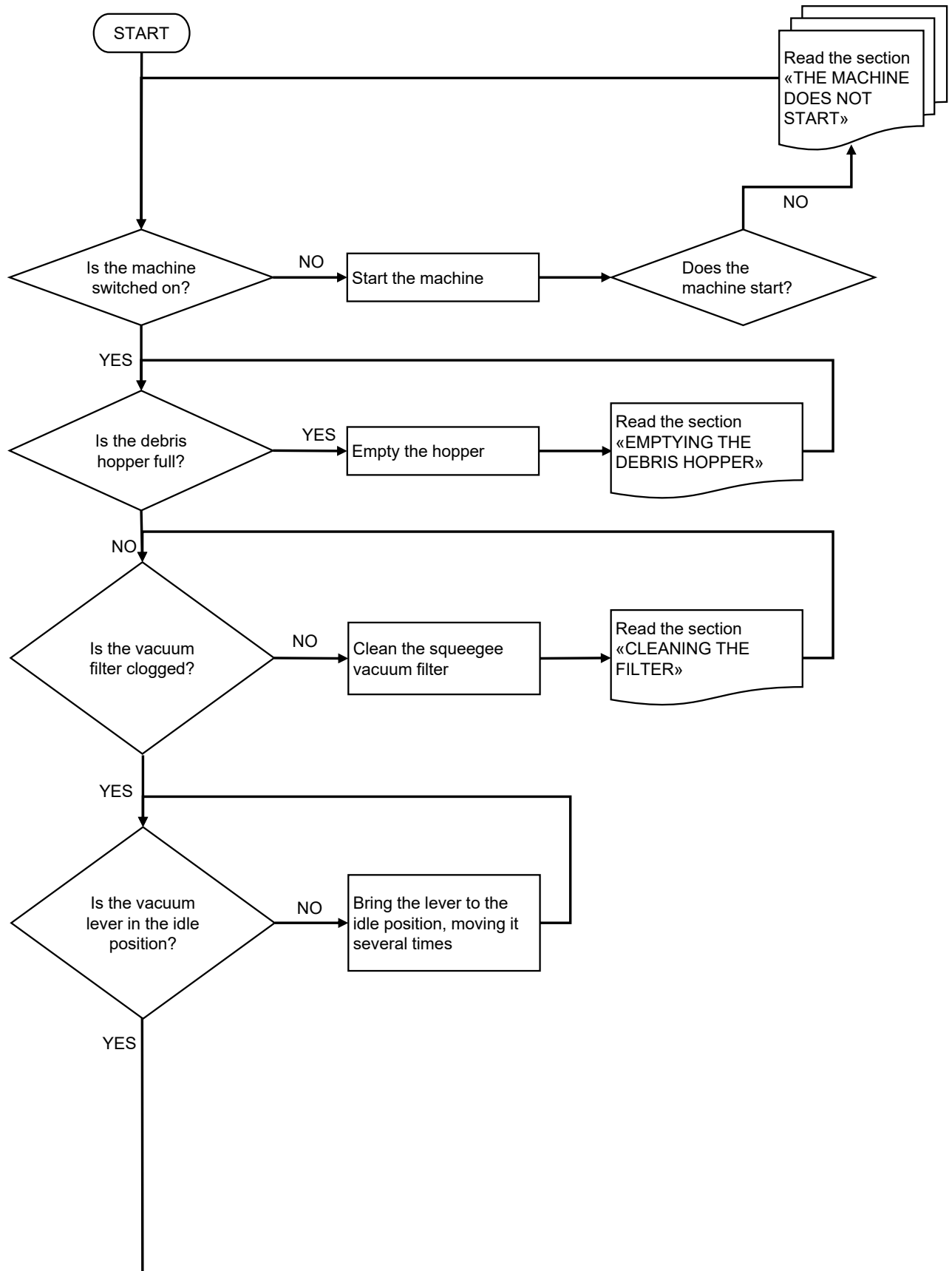
CODE	QTY	$\emptyset$ EXTER-NAL	TYPE OF BRISTLE	$\emptyset$ BRIS-TLES	NOTES
411690	1	380	PPL	0,5	DISCOIDAL BRUSH $\emptyset_E$ 380 mm
411691	1	380	PPL+STEEL	0.6	DISCOIDAL BRUSH $\emptyset_E$ 380 mm
414299	1	380	TAMPICO + BRONZE	-	DISCOIDAL BRUSH $\emptyset_E$ 380 mm

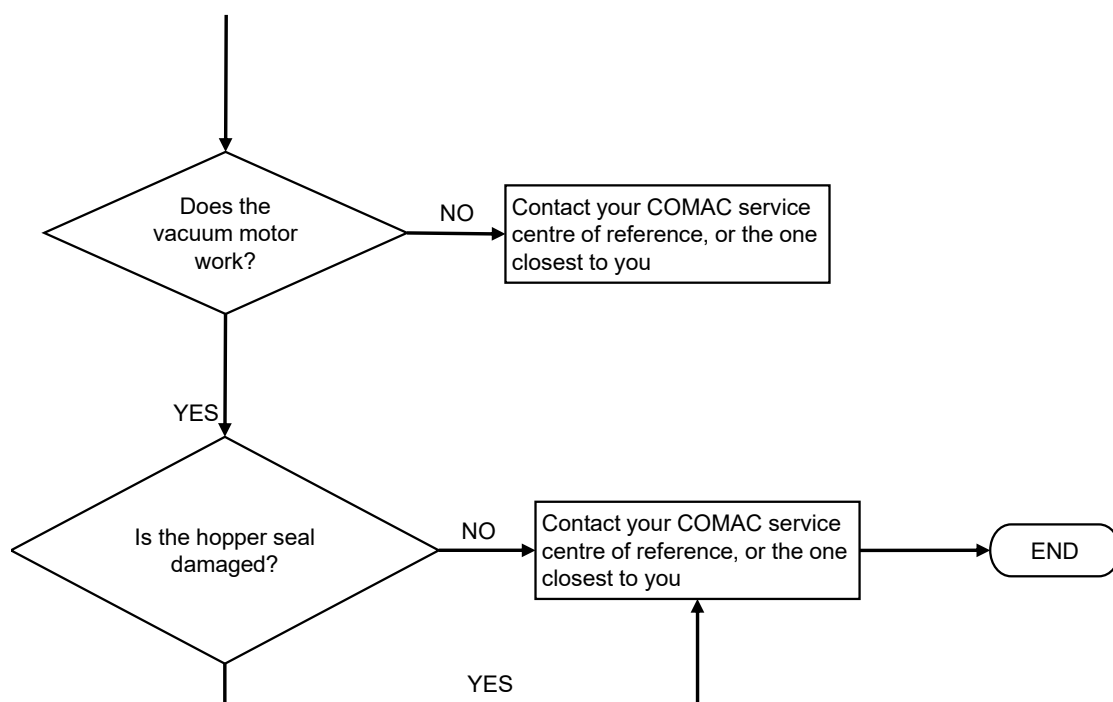
TROUBLESHOOTING

THE MACHINE DOES NOT START

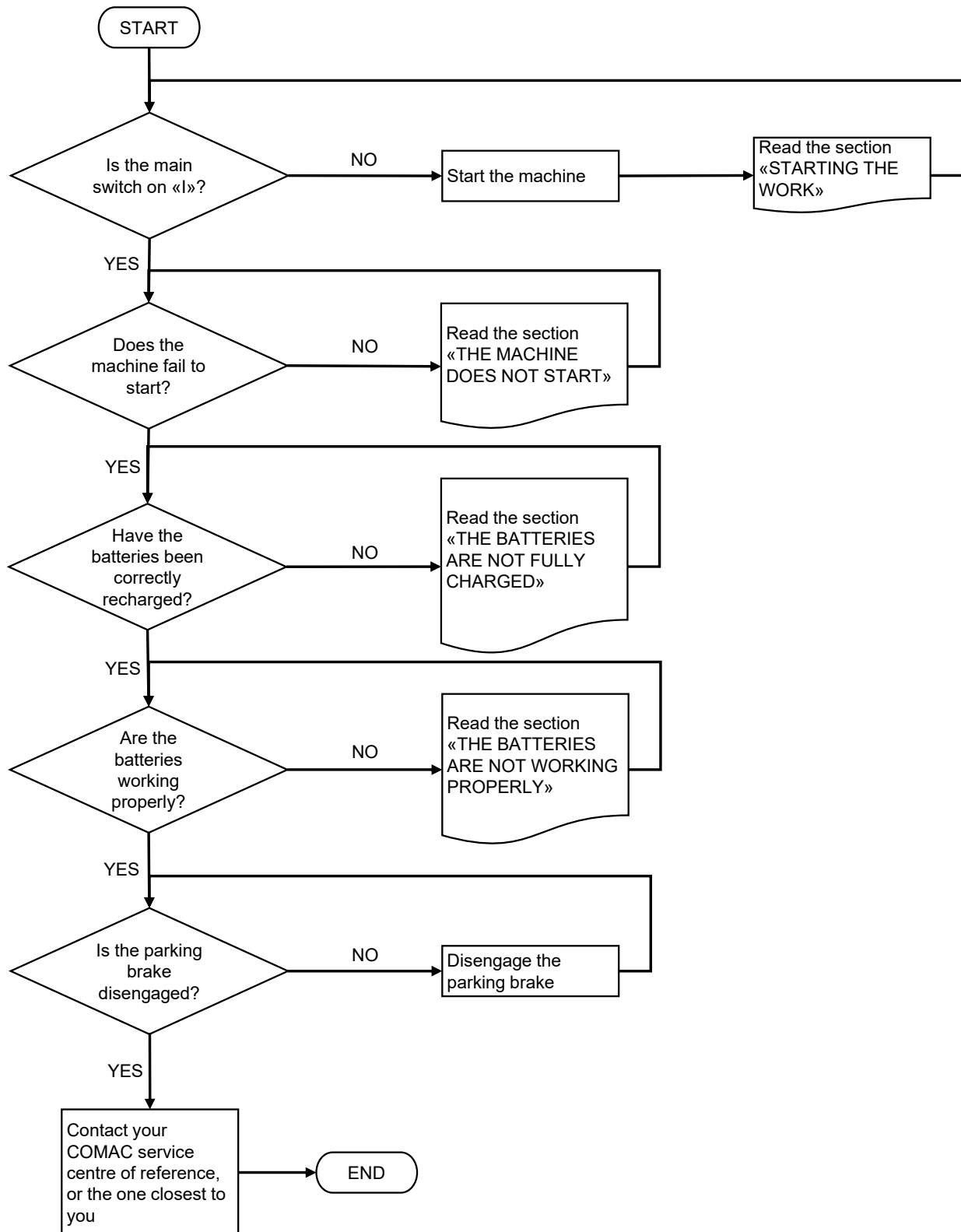


THE MACHINE DOES NOT VACUUM CORRECTLY

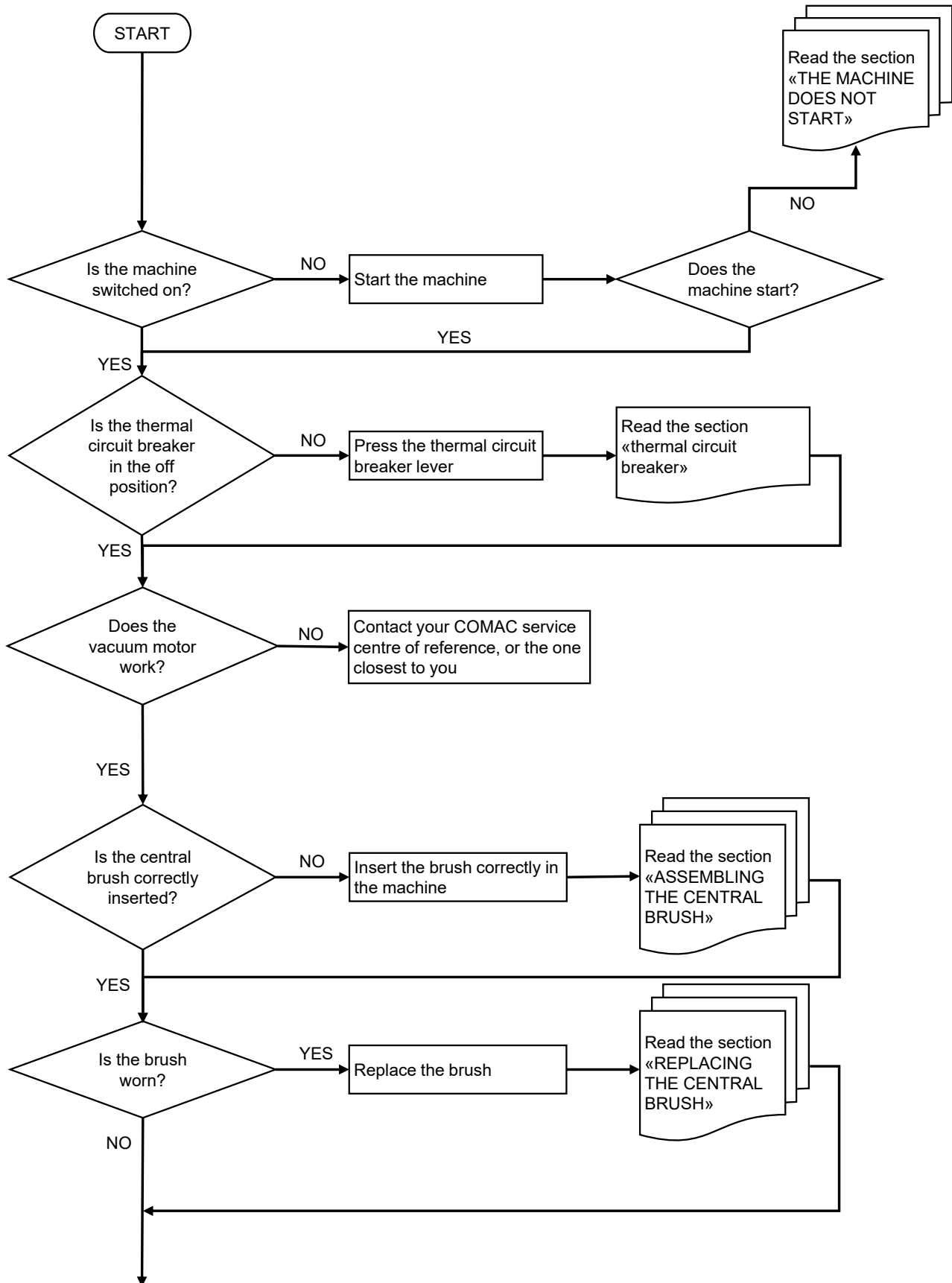


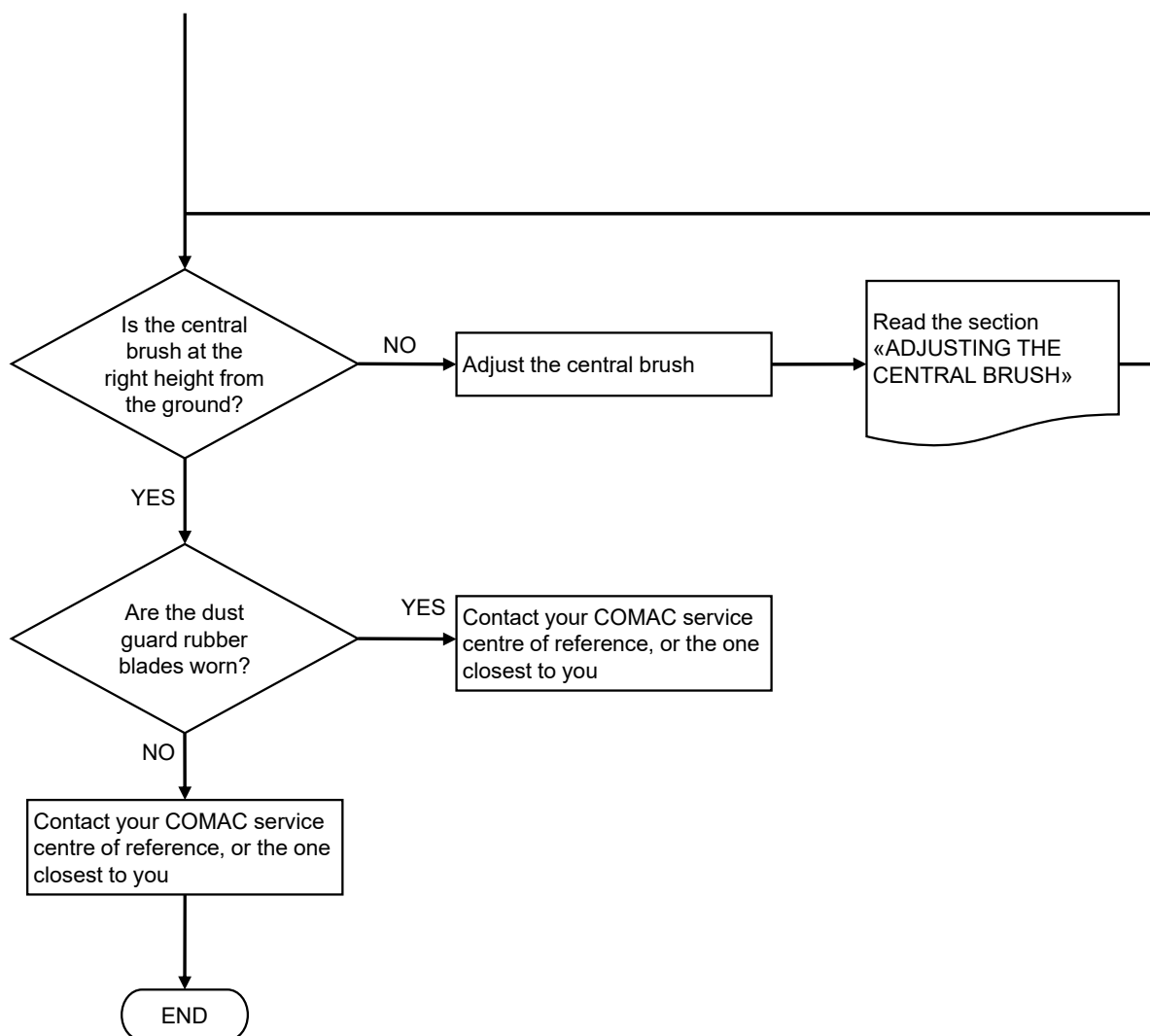


THE MACHINE DOES NOT MOVE

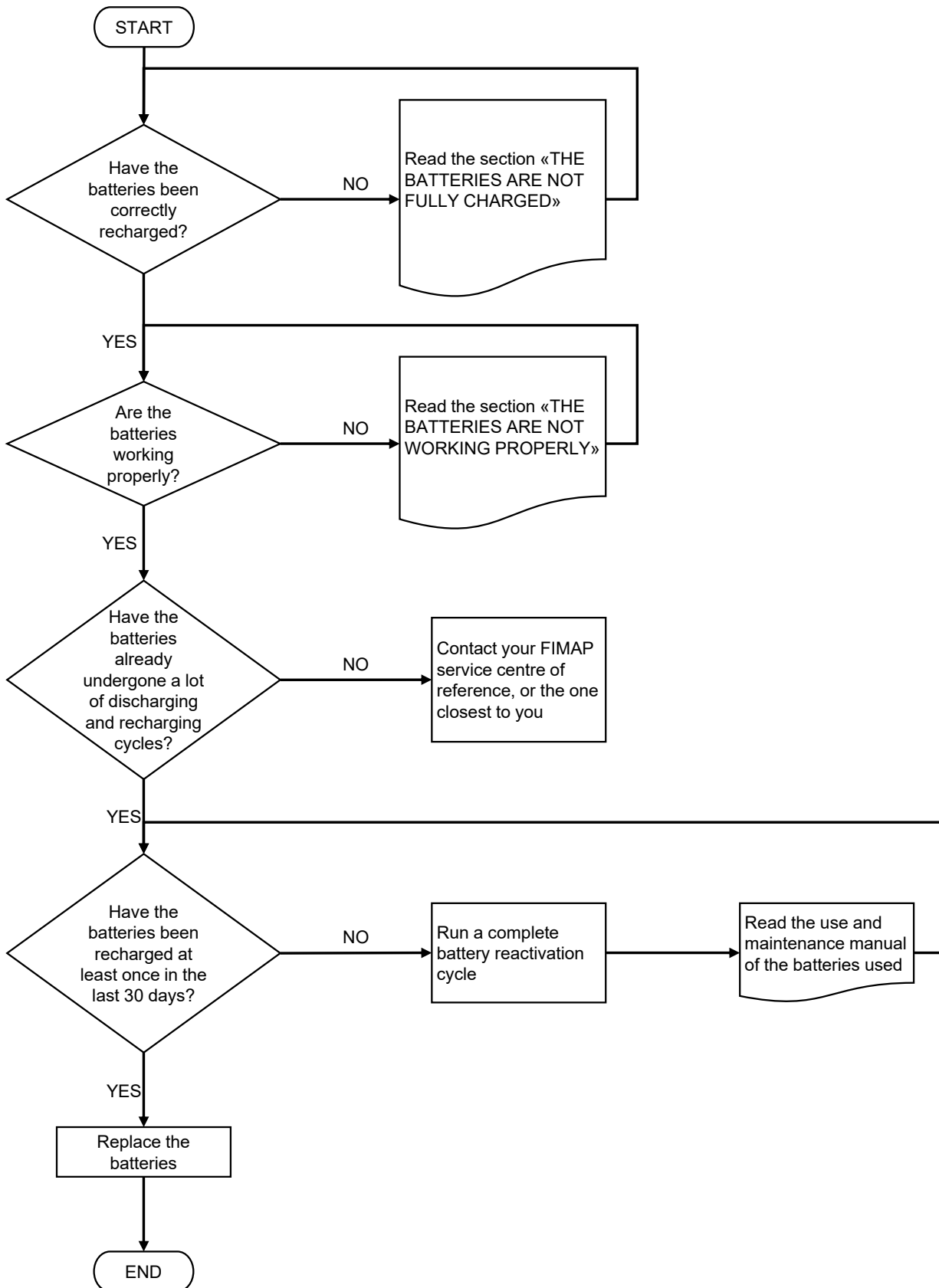


THE MACHINE DOES NOT SWEEP CORRECTLY

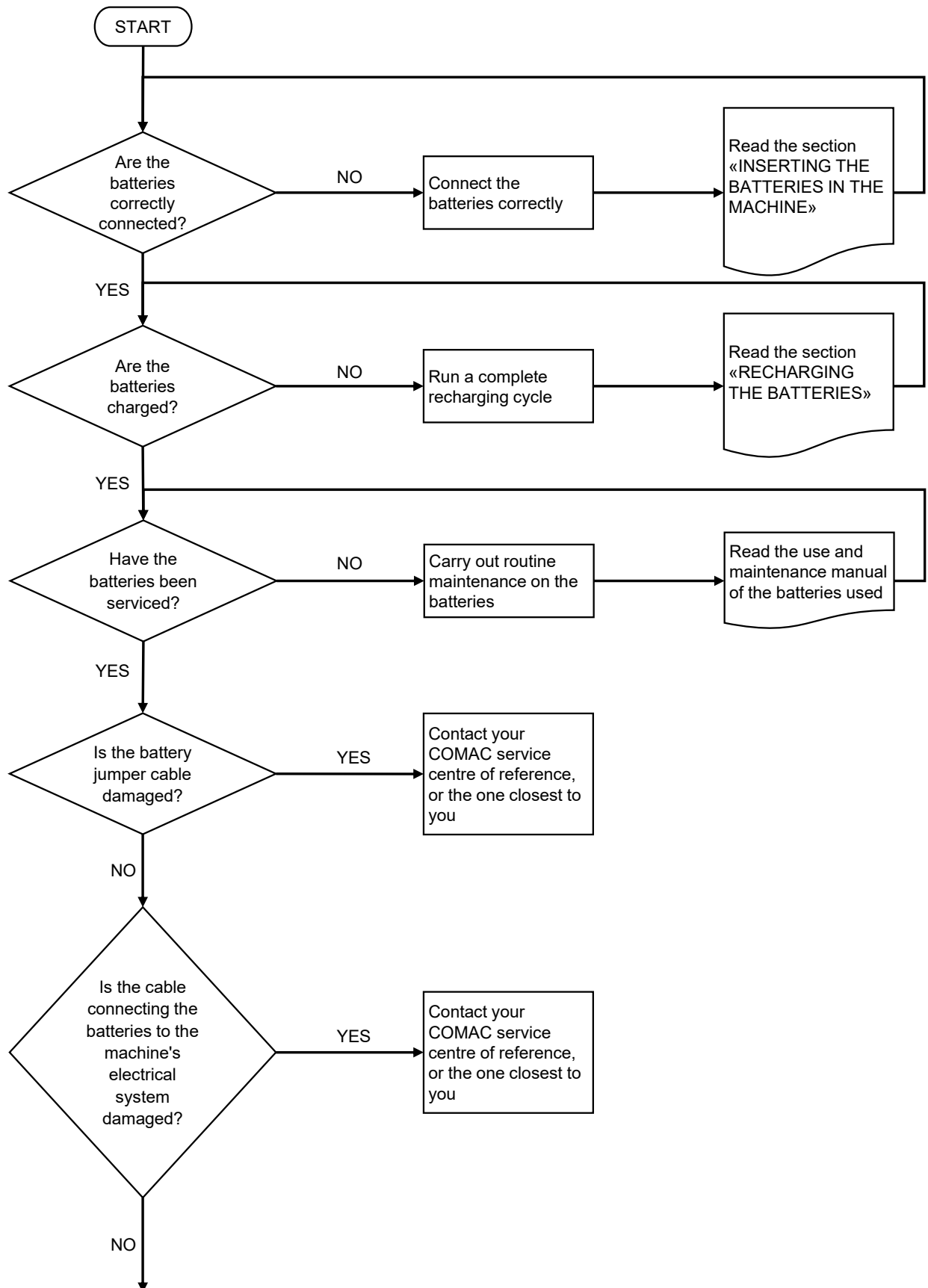


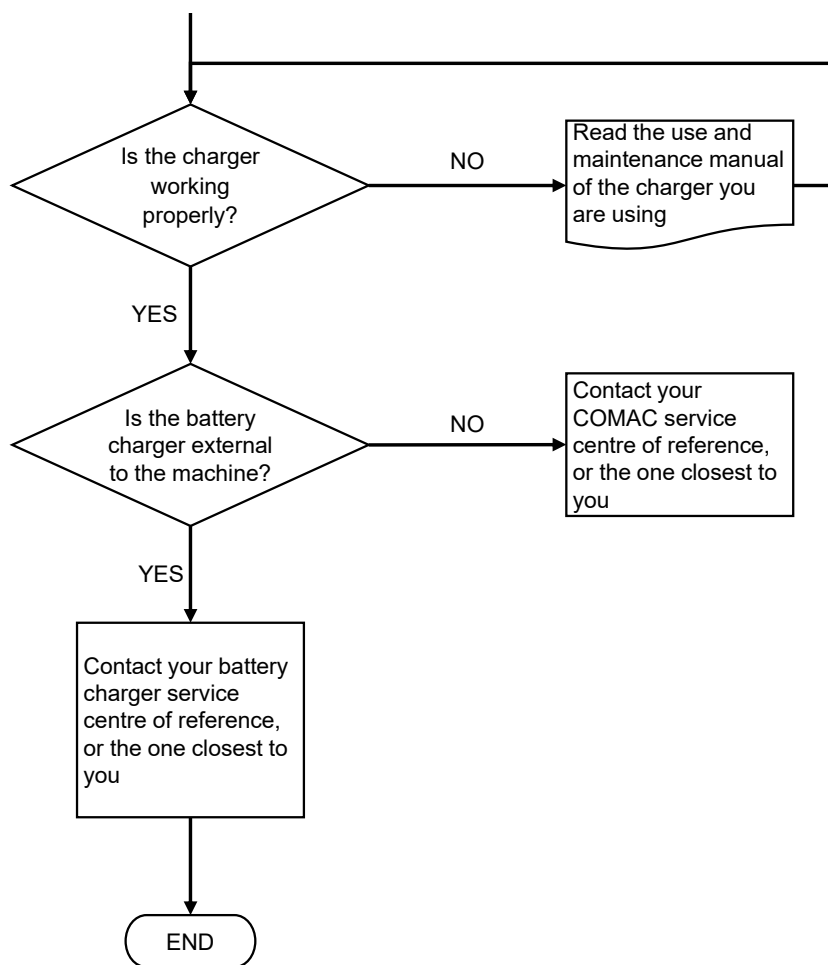


VERY LOW WORKING AUTONOMY

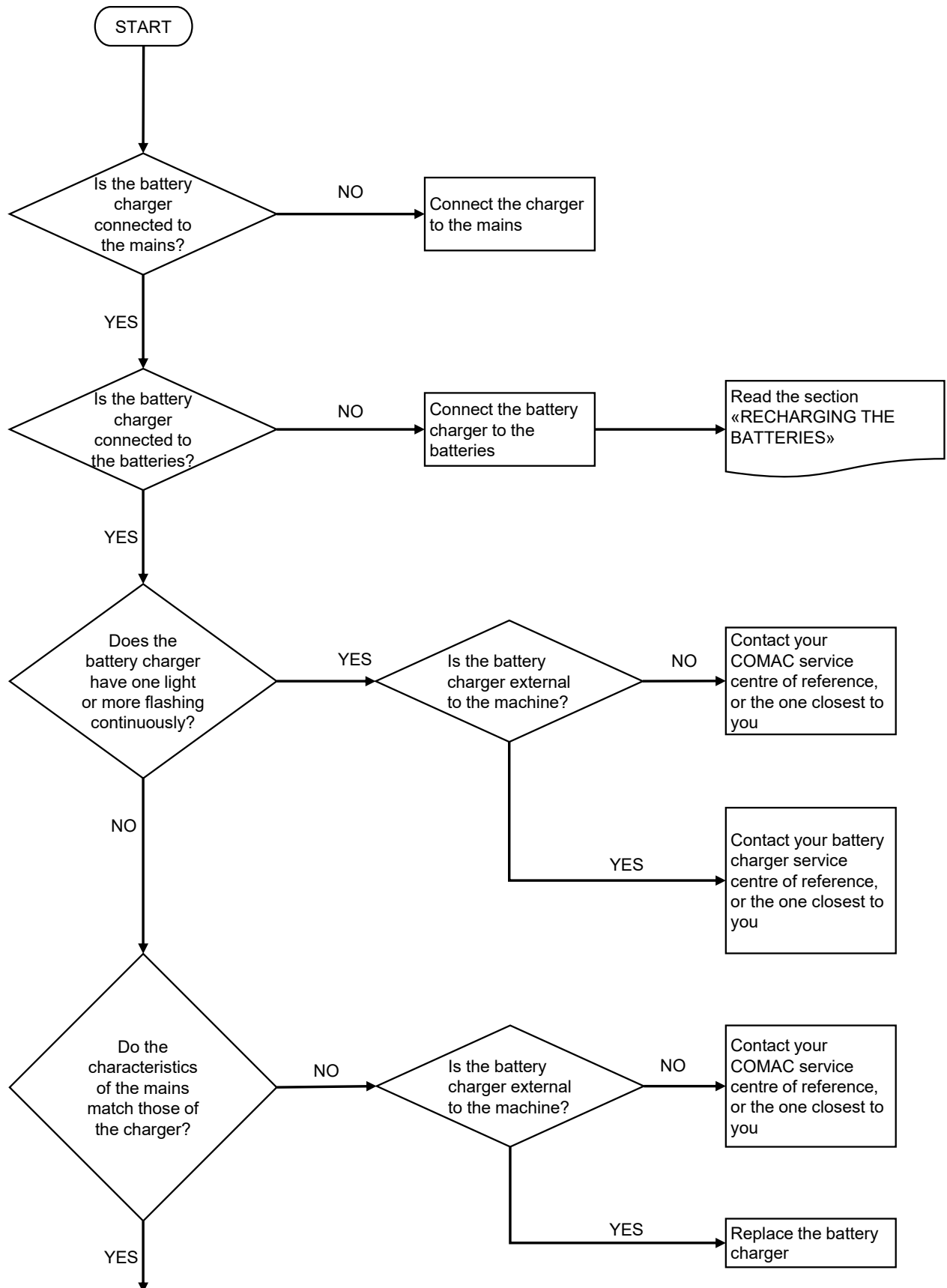


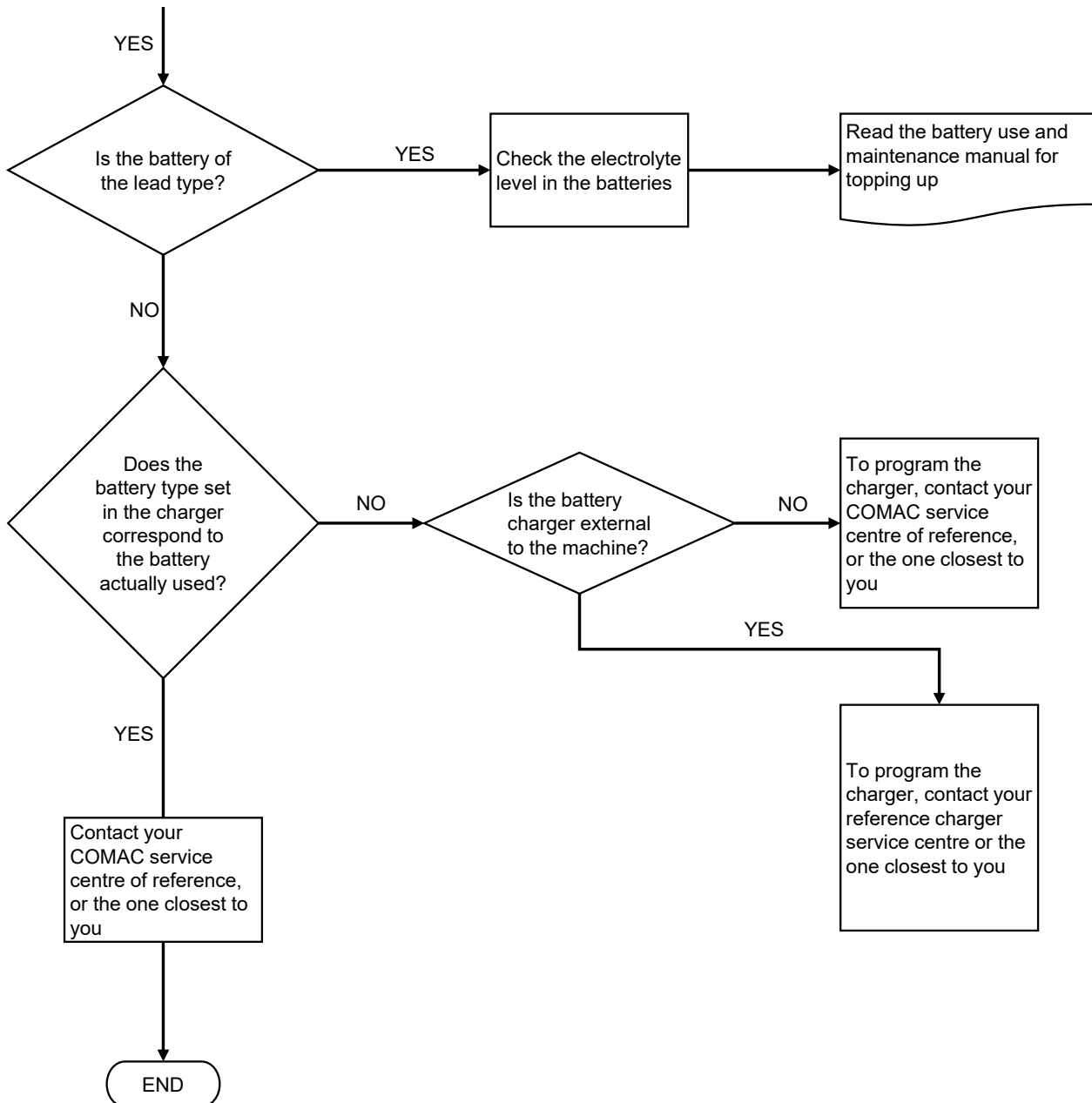
THE BATTERIES DO NOT WORK PROPERLY





THE BATTERY IS NOT FULLY CHARGED





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. CS500 B, CS500 BT

comply with the requirements of the following Directives:

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

The person authorized to compile the technical file:

Mr. Giancarlo Ruffo
Via Maestri del Lavoro, 13
37059 Santa Maria di Zevio (VR) - ITALY

Santa Maria di Zevio (VR), 28/03/2022

COMAC S.p.A.
Legal representative
Giancarlo Ruffo

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MODEL	LwA [dB(A)]	LwA guaranteed [dB(A)]
CS500 B	80	80
CS500 BT	80	80

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UKCA DECLARATION OF CONFORMITY



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- S.I. 2016:1091 Electromagnetic Compatibility Regulations 2016 (as amended).

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Tel. 045 8774222 - Fax 045 8750303 - www.comac.it - com@comac.it