



Electronic Service Manuals

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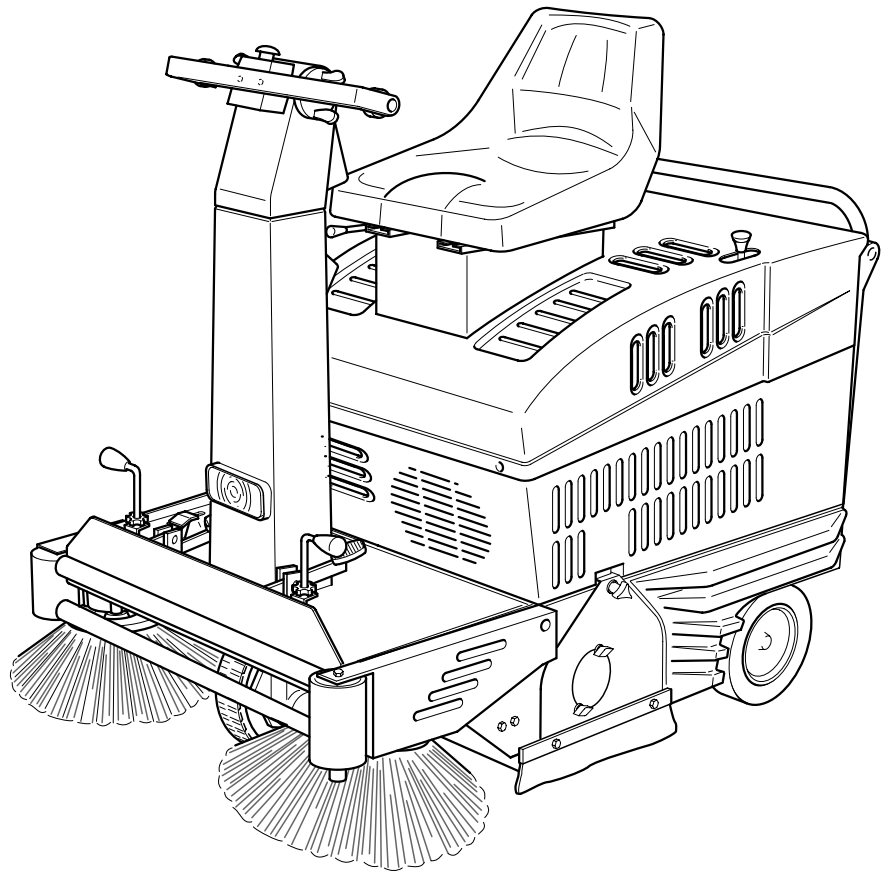
Serving the Cleaning Industry Since 1922

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OPERATOR MANUAL

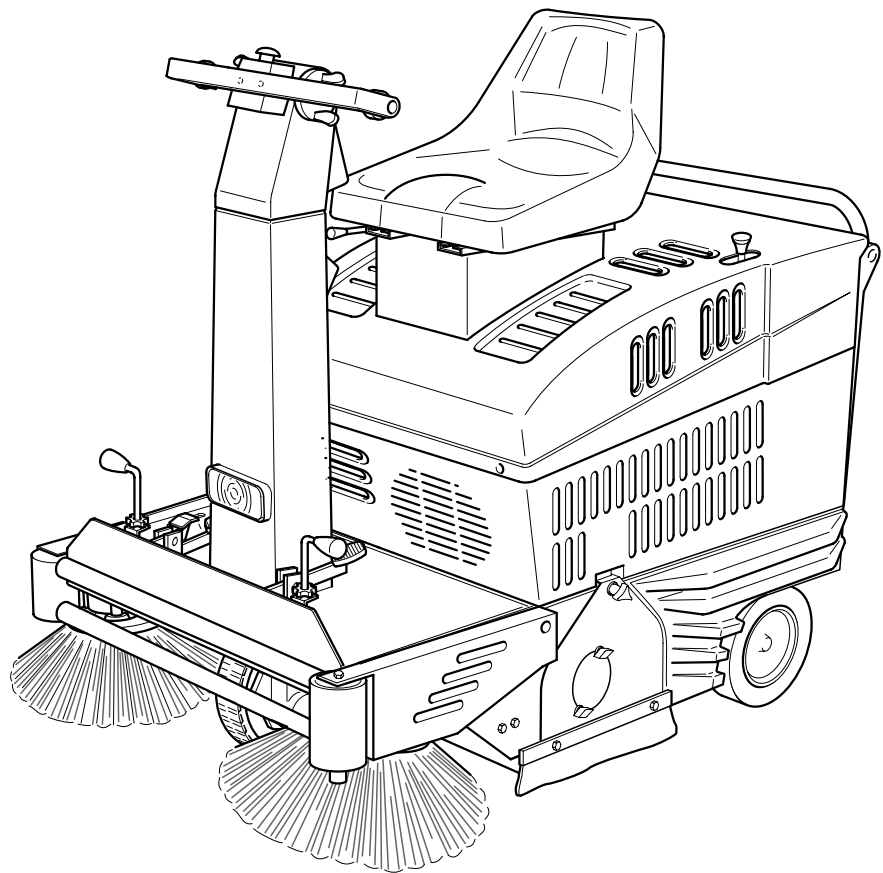
Advance SR 1000 B

Model 9081616010



**Nilfisk
Advance**

setting standards



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INTRODUCTION

This manual will help you get the most from your Sweeper Advance.

Any "left" or "right" indications are always defined with reference to the machine forward movement direction. He has the skilled personnel, the original parts and the tools needed to meet your requirements. The machine should not be used without protection devices. For your safety, make sure that all the safety guards are closed or mounted correctly before starting up the machine.

PARTS AND SERVICE

Repairs, when required should be performed by your Authorized Advance Service Center, who employs factory trained service personnel, and maintains an inventory of Advance original replacement parts and accessories.


Call the Advance Dealer named below for repair parts or service.



Please specify the Model and the Serial Number when discussing your machine.


NAME PLATE

The Model Number and the Serial Number of your machine are shown on the Nameplate on the machine. This information is needed when ordering repair parts for the machine. Use the space below to note the Model and Serial Number of your machine for future reference.

Model:	Prod. No.:
Serial No.:	Max axel rear:
Power:	Max axel front:
Tot weight:	Noise level:
	Voltage:

 LISTED Conforms to
UL STD. 583
9901122
MADE IN ITALY

 Nilfisk-Advance, Inc.
Plymouth, MN, USA
www.nilfisk-advance.com

GENERAL SAFETY RULES

Carefully follow the rules described below to avoid injury to the operator and damage to the machine.

Carefully read the labels on the machine, do not cover them for any reason and replace them immediately if they become worn or damaged.

Do not place containers with liquids on the machine.

The machine storage temperature should range between -25°C and +55°C.

Humidity should range between 30 and 95%.

Do not use the machine in an explosive atmosphere.

Do not use the machine as a transport vehicle.

Do not allow the brushes to operate while the machine is stationary to avoid damaging to the floor.

In case of fire, use a powder extinguisher. Do not use water.

Do not bump into shelves or scaffolding where there is a risk of falling objects.

Adjust the operating speed to the floor adhesion.

Do not exceed the declared slope limits to avoid unstable conditions.

When the machine is parked, remove the key and engage the parking brake.

When machine operating malfunctions occur, make sure that they are not caused by a lack of routine maintenance. If not, request assistance from the service centre.

If parts must be replaced, request ORIGINAL spare parts from a dealer and/or Authorised Retailer.

For all maintenance operations, disconnect the electric power supply to the machine.

Do not remove the guards which require the use of tools to be disassembled.

Do not wash the machine with direct or pressurised water streams, or with corrosive substances.

The machine should be inspected by a service centre every 200 hours of operation.

The machine must never be left unattended, during the scrapping phase, because of the presence of toxic-harmful materials (batteries, oils, etc.) which are subject to standards that require disposal in special centres.

The machine will not generate damaging vibrations.

MODIFICATION AND IMPROVEMENTS

Our company constantly improves its products and reserves the right to make changes and improvements at its discretion without being obligated to apply such benefits to the machines that were previously sold.

SAFETY

How to prevent accidents.

No accident prevention programme is effective without the complete co-operation of the person directly responsible for operating the machine.

Most of the accidents that may occur in a company, on the job or during transfers are caused by the non-observance of the fundamental safety rules.

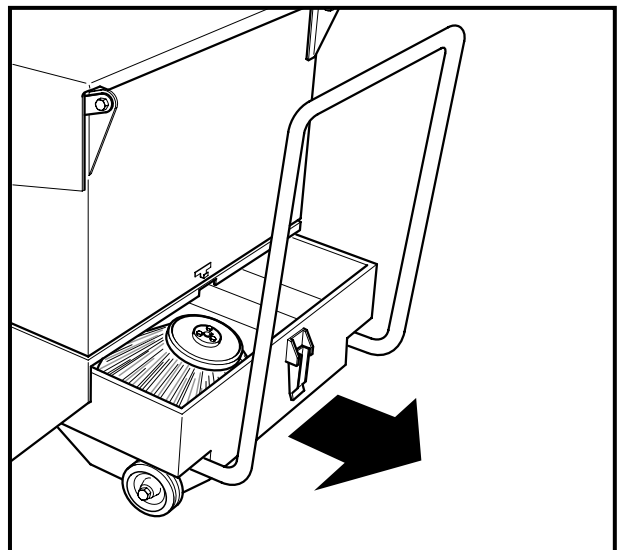
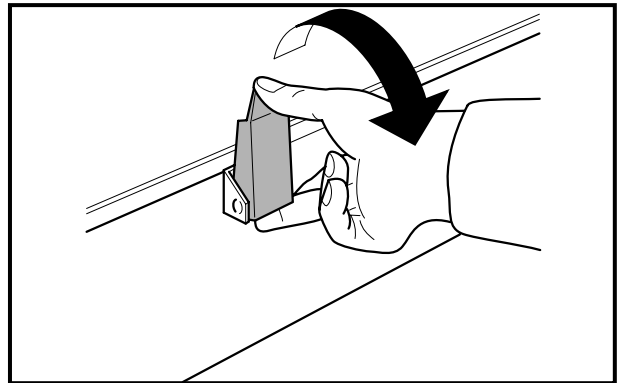
A careful and cautious user is the best guarantee against accidents and is more effective than any type of prevention programme.

SAVE THESE INSTRUCTIONS!

When the machine is delivered, carefully inspect the shipping carton and the machine for damage. If damage is evident, save the shipping carton so that it can be inspected. Contact the Advance Customer Service Department immediately to file a freight damage claim.

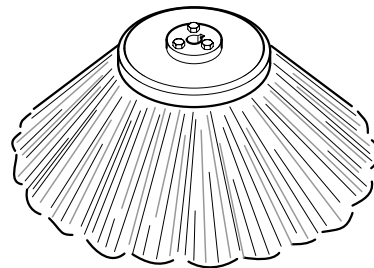
Open the rear bin using the hook latch as shown in the figure.

Pull out the bin and remove the brush. Afterwards, replace the bin and close it using the special hook latch.



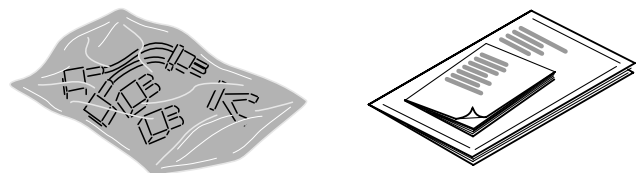
Check that the following parts are present:

1 - Brush (supplied with the machine)



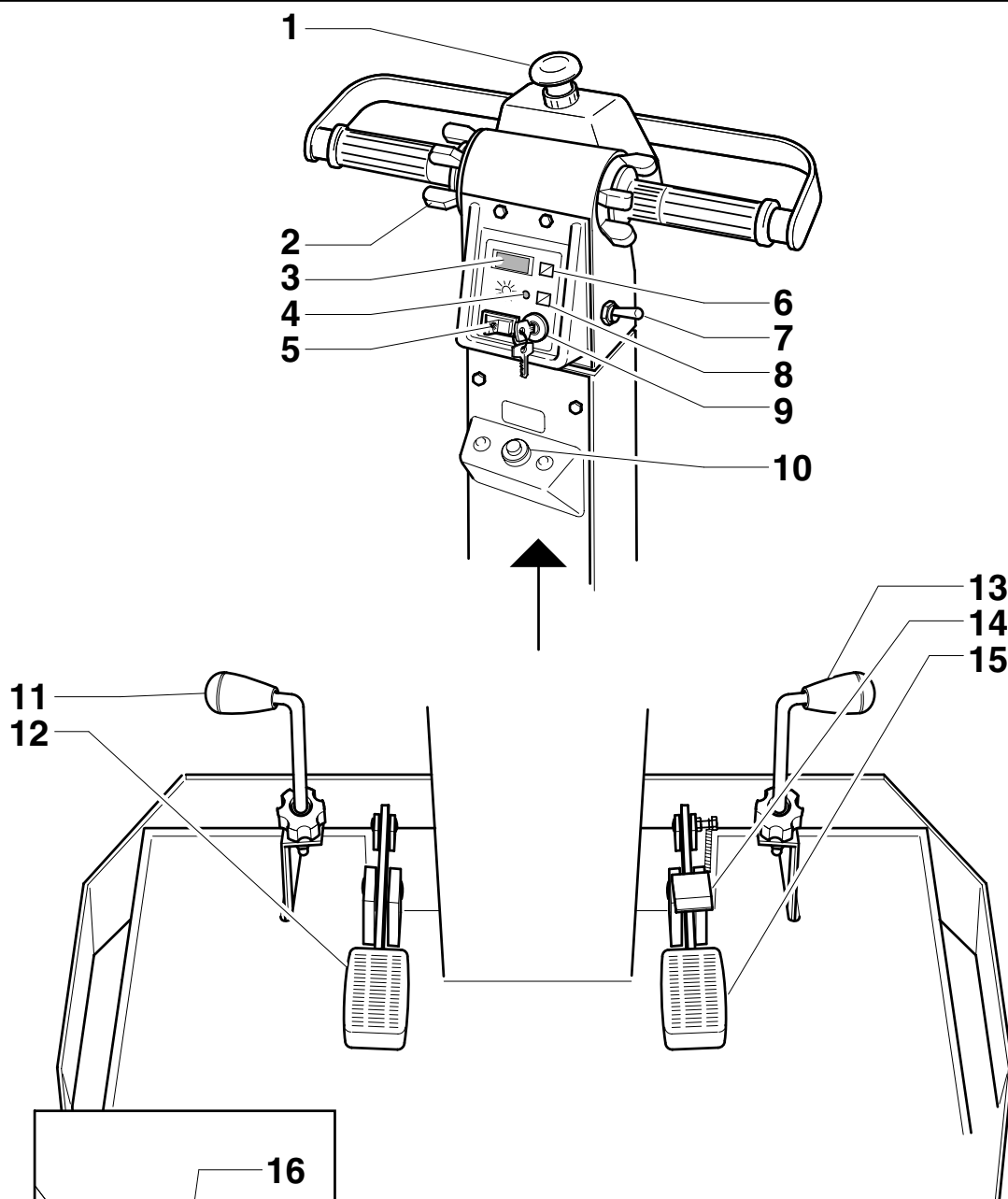
2 - Plastic bag with battery and power adaptor cables for battery charge.

4 - Documents and instruction manuals.



MODELS	ELECTRIC
Voltage	24V
Front drive motor rating	200W-180 RPM
Fan-main brush motor	750W - 3500 RPM
Side brush motor	60W - 70 RPM
Forward max speed (nr 2)	max 5,2 Km/h (3,2mi/h)
Reverse speed (nr 2)	max 2,7 Km/h (1,7mi/h)
Max slope	16%
Main brush (Ø265 x 600)	635 RPM
Side brush (Ø420)	70 RPM
1 side brush cleaning width	820 mm (32in)
2 side brush cleaning width	1000 mm (40in)
Traction front wheel (n° 1)	Ø200 (7,8in)
Rear wheels (n° 2)	Ø200 (7,8in)
Capacity container	53 lt (14gal)
Container filter (nr. 3 cartridge)	3 m ² - 5 micro (0,28sqft-5µ)
Filter shaker	Electric
Fan	3500 RPM
Vacuum main brush compartment	5 -22 mm/H ₂ O (0,2-0,9in/H ₂ O)
Machine length	1250 mm (50in)
Width	720 mm (28in)
Height (handle)	1050 mm (41in)
Turning radius	1030 mm (40in)
Weight (without batteries)	134 Kg (295 lb)
Suggested battery	2x105 Ah @ 20
Autonomy	~ 2÷2,5 h
Total weight	-
Front axe weight	70 Kg (154 lb)
Rear axe weight	110 Kg (242 lb)

Note: Using the recommended batteries the working autonomy will be of about 3 hours.



N°	ELECTRIC VERSION
1	EMERGENCY STOP SWITCH
2	DRIVE CONTROL
3	DISPLAY
4	CENTRE BRUSH LAMP
5	LIGHT SWITCH
6	VOLTMETER/HOUR METER BUTTON
7	SPEED SELECTOR SWITCH
8	BRUSH/FAN BUTTON
9	STARTER KEY
10	FILTER SHAKE
11	LEFT SIDE BRUSH LEVER (OPTIONAL)
12	FLAP LIFTER PEDAL
13	RIGHT SIDE BRUSH LEVER
14	BRAKE LOCK PEDAL
15	BRAKE PEDAL
16	SUCTION CONTROL

The electric model requires two 12V batteries (recommended capacity 140 Ah).

According to the country where it is sold, there are three possibilities:

- 1 - Battery is supplied with the machine and it is set, complete with acid solution.
- 2 - Battery is supplied with the machine and it is set, but not complete with acid solution.
- 3 - Battery is not supplied.

Before installing batteries, carefully read the information written on the decal sticked under the bonnet.

The battery compartment is under the seat - lift the seat cover and check which of the three possibilities apply to your machine.

1 - If the battery is set, open one of the ventilation caps to check if it is complete with acid. If so:

- 1a - Check the level of the solution in each element and fill up with distilled water only.
- 1b - Proceed with the charging.

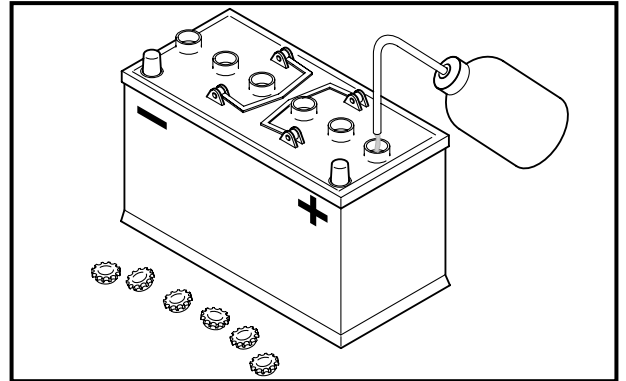
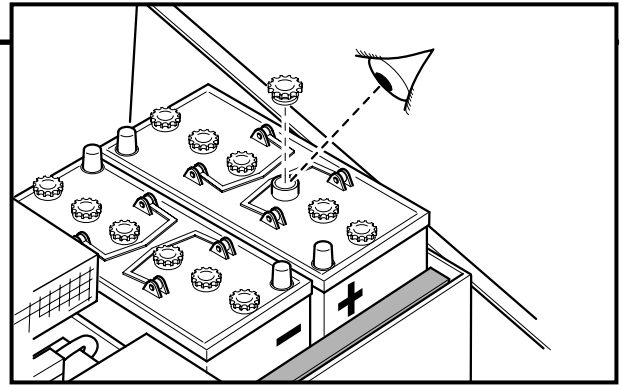
2 - If the battery is set without acid solution it must be filled up (sulphuric acid, concentration >36%) according to the instructions of the next paragraph.

BATTERY FILLING UP WITH ACID SOLUTION

Warning: the battery acid is corrosive and if it comes in contact with the skin or eyes, rinse thoroughly with water and consult a physician.

The battery must be filled up in an airy room.

Fill up each element of the battery with acid. After one hour fill up with water if necessary. Let battery rest for one hour and proceed with the charging.

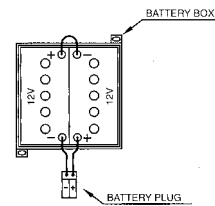


FRONT OF MACHINE

INSTALL BATTERIES ACCORDING TO DIAGRAM BELOW. OBSERVE CORRECT POLARITY AT ALL CONNECTIONS.

WARNING
THIS IS A 24VDC SYSTEM. USE ONLY THE CHARGER PROVIDED WITH THE UNIT TO RECHARGE BATTERIES.

N°2 BATTERIES x 12V



BACK OF MACHINE

Connect the batteries using the cables contained in the bag supplied with the machine as illustrated in the figure, being very careful not to create contacts between the (+) and (-) poles of the battery.

Connect one pole and cover it with the special insulator, then connect another one and insulate it, and continue this procedure.

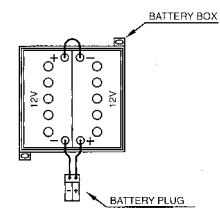
Once mounted, the batteries must be charged to give them the rated Volt and Ampere values. To charge them use a suitable battery charger.

FRONT OF MACHINE

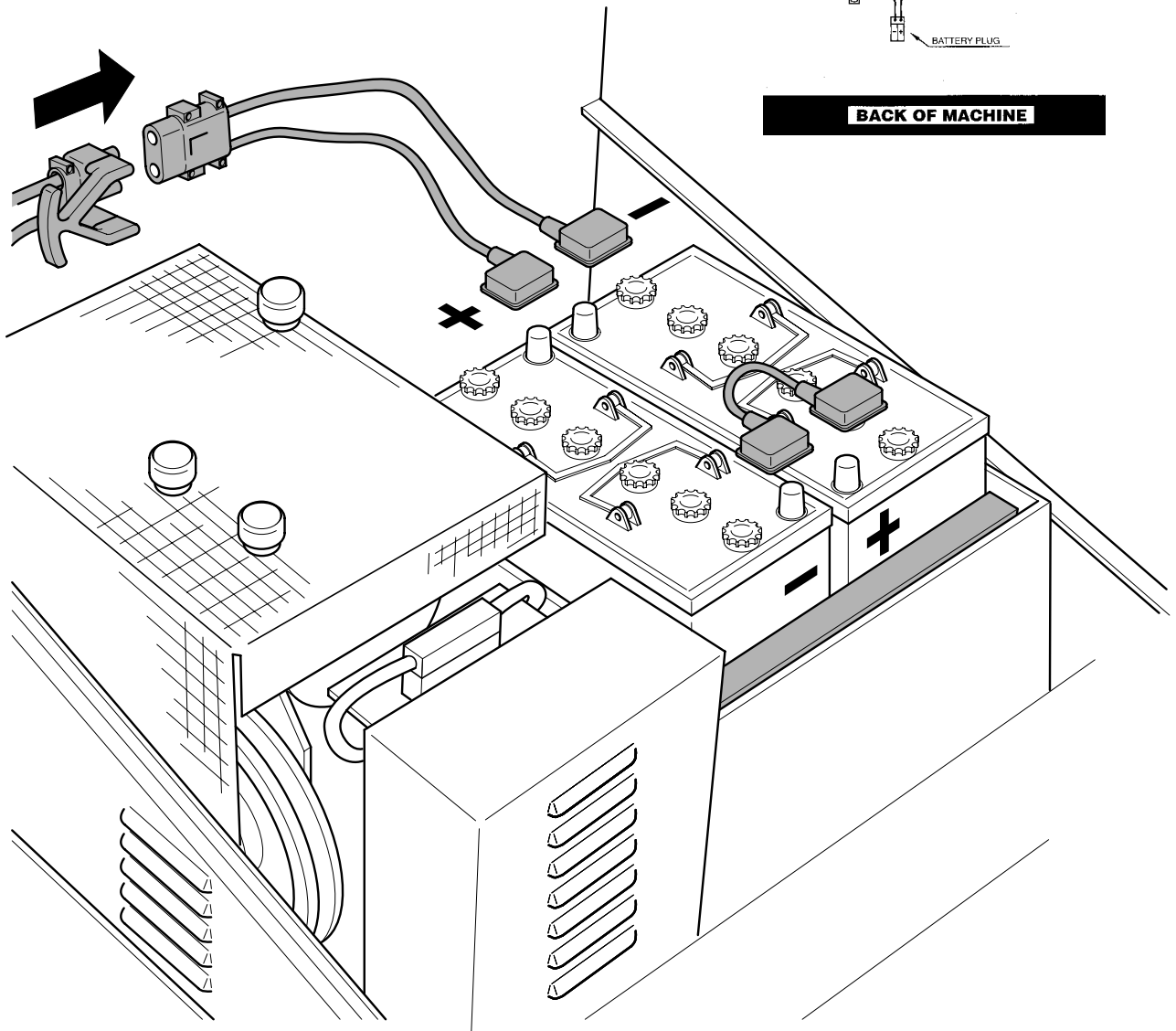
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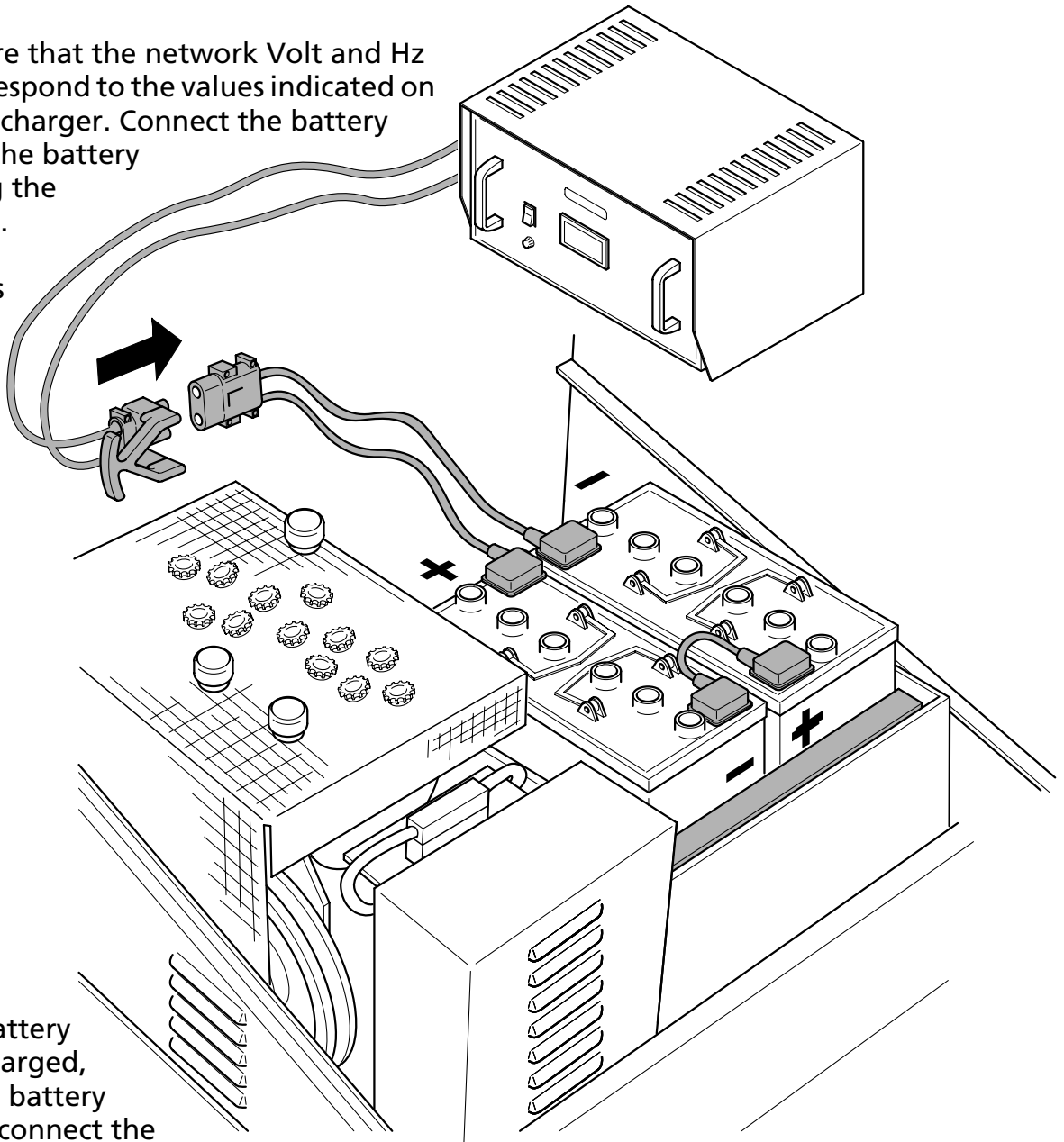


BACK OF MACHINE



Once mounted, the batteries must be charged to give them the rated Volt and Ampere values. To charge them use a suitable battery charger.

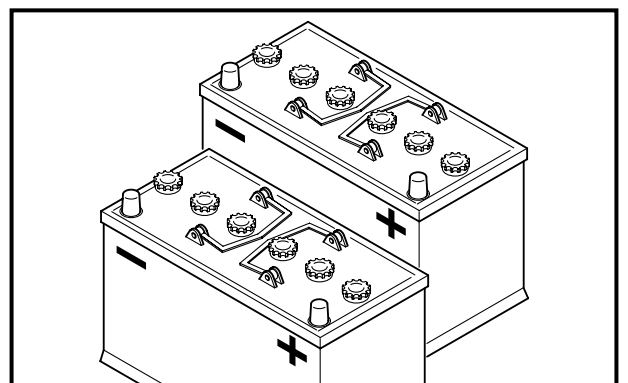
A -Make sure that the network Volt and Hz ratings correspond to the values indicated on the battery charger. Connect the battery charger to the battery cables using the special plug. Remove all battery caps and turn on the battery charger.



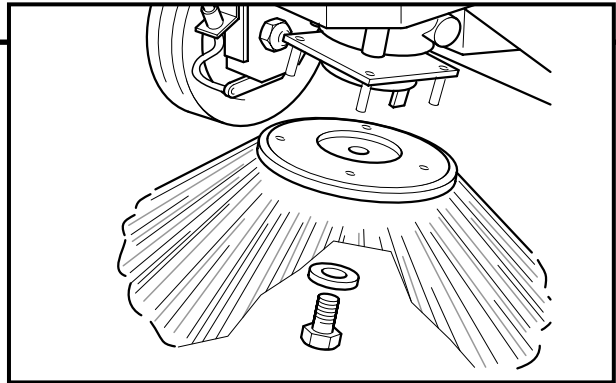
After the battery has been charged, turn off the battery charger, disconnect the cable plug and screw the caps back on the batteries. Connect the plug to the outlet located on the machine and close the seat cover.

Each time the batteries are charged, repeat the operations from point (A).

3 - If the machine is supplied with no batteries, they have to be provided and mounted. It is recommended to use the service of qualified personnel to chose and set batteries.

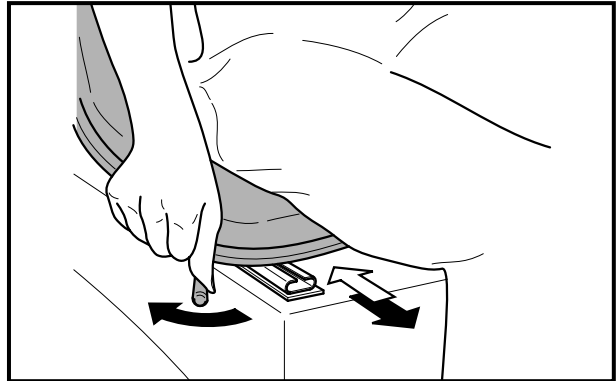


Place the brush as per the figure and make sure that the fixing profiles match perfectly with the relevant holes. Coupling may be helped thanks to a light pressure of your hand.



Once the front brushes are mounted, the machine is ready to be used.

Climb onto the machine and adjust the seat to find the most comfortable position.



Insert the ignition key into the panel and turn it clockwise. After 3 seconds the battery charge condition will appear on the display.

The display has two functions: voltmeter and hour meter.

The voltmeter will activate the block function during an undervoltage and will disable all machine activities except for the drive when the battery voltage drops below 20 volts (the display flashes).

At 19 Volts the machine is totally blocked including the drive. Recharge the battery as described on page 7 and 8.

NOTE: If the machine must be moved, disconnect the ignition key, and push it slowly backwards. If the distance is farther than 10 metres lift up the front traction wheel.

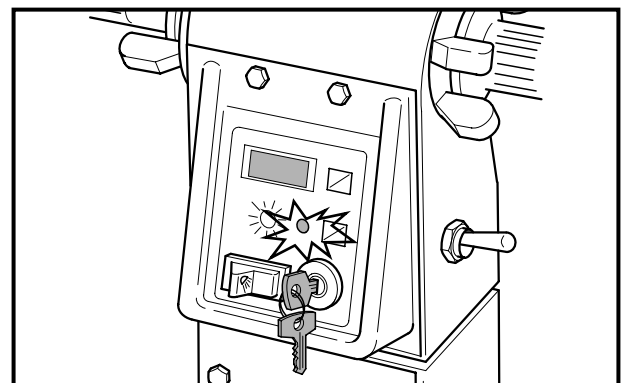
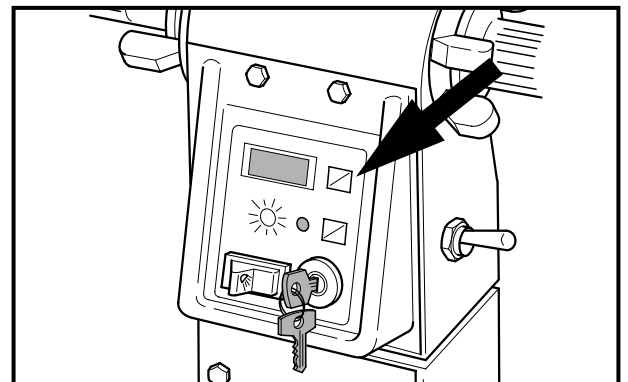
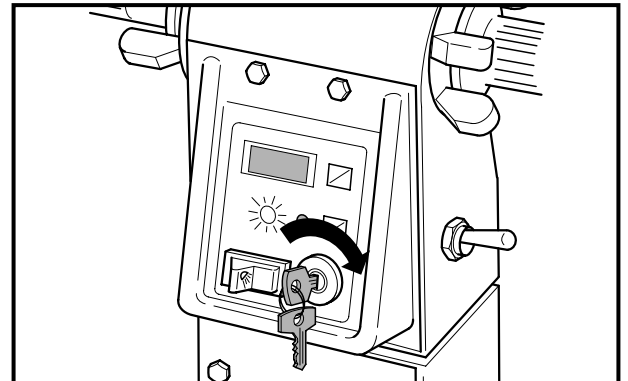
To access the hour meter function, press the button indicated in the figure and the display will show the number of machine service hours. Press the button again to display the number of machine service minutes. After 10 seconds the value on the display will return automatically to the battery voltage level.

If the electronic circuits malfunction, the display indicates an error code that corresponds to the type of fault and the machine stops. (See the TROUBLESHOOTING chapter for the error code table).

Start the centre brush using the button shown in the figure - the relative lamp turns on indicating that the brush is operating.

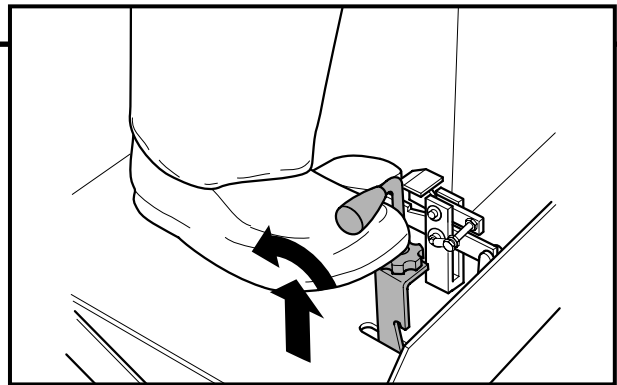
Press the button again to deactivate the brush.

NOTE: When the centre brush is activated the suction function is activated as well.



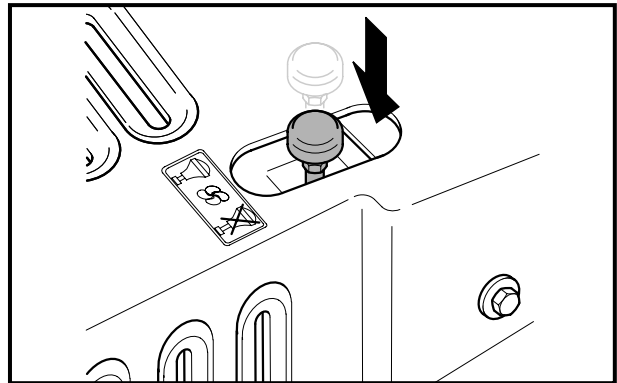
To activate the side brushes, lower the left or right or both levers depending on the kind of work to be carried out. The brush will begin operating as the lever is lowered.

NOTE: In the electric version the side brushes operate only if the centre brush is operating.



Check that the suction function is on (knob down).

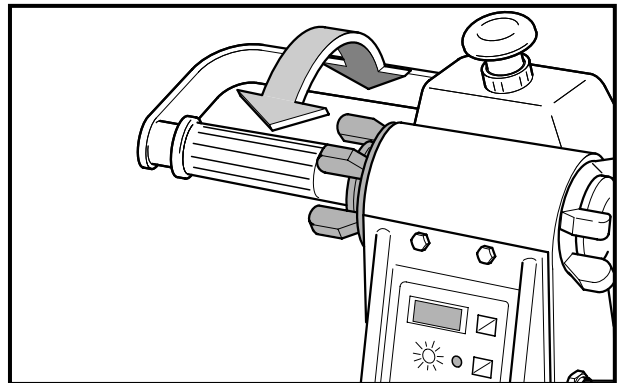
Note:
If the machine must be used on wet ground, to protect the filters the suction function must be deactivated by lifting the knob.



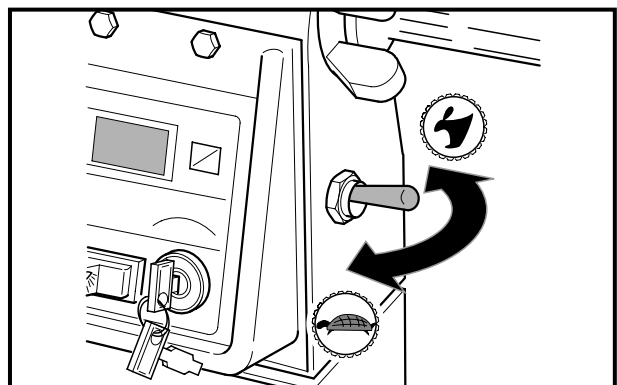
To move the machine forward turn the handle forward, and to move it backward turn the handle backward.

The speed can be adjusted from 0 to the Maximum setting.

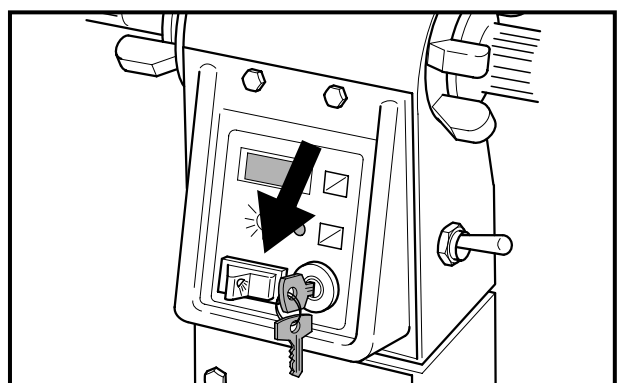
To stop the machine, release the accelerator until it is in neutral position.



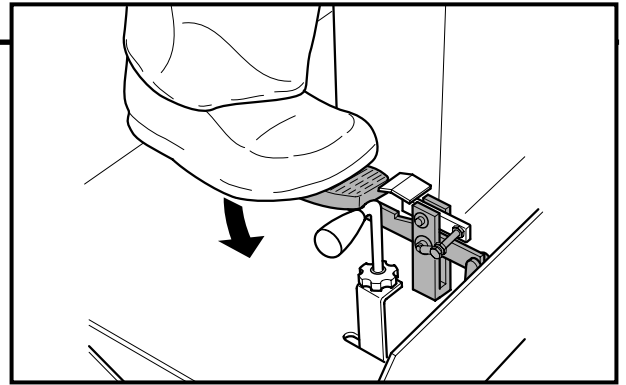
It is possible to reduce the maximum forward speed of the machine by setting the switch shown in the figure on the turtle symbol; set the switch to the hare symbol for a faster speed as required.



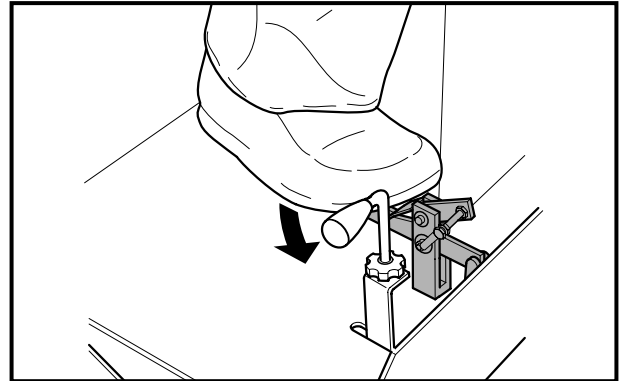
Turn on the light, if necessary, using the button indicated in the figure.



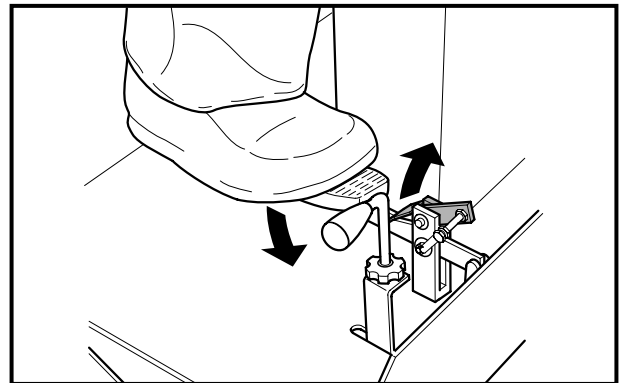
To stop the machine, press the right pedal.



The right pedal can also be used as a parking brake. Press both brake lever controls until the pedal is locked in the lowered position.

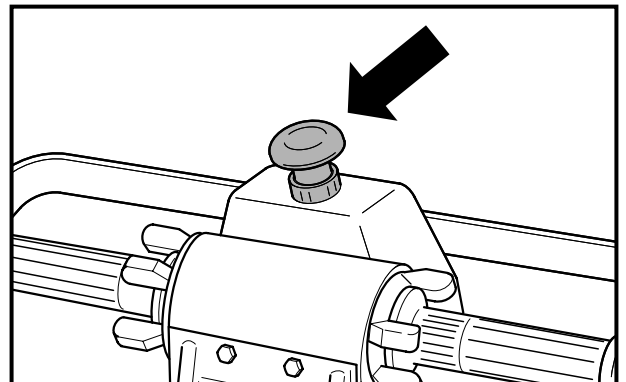


To release the pedal, press only the pedal shown in the figure.

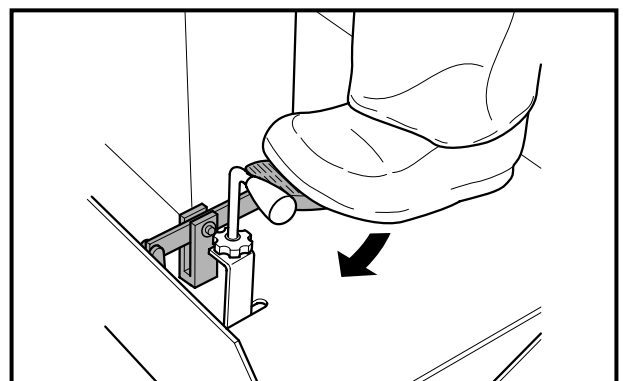


The machine is supplied with an emergency stop button. On electric version by pushing it all the functions and the traction stop.

To reactivate the machine turn the button clockwise.



To collect light and bulky waste materials, activate the flap using the left pedal (do not press the pedal down for a long time).



For efficient brushing operations, the air filters must always be clean.

To clean the filters, follow the instructions described below:

Close the suction function by pulling the knob **A**.

Push the filter shake button **B**.

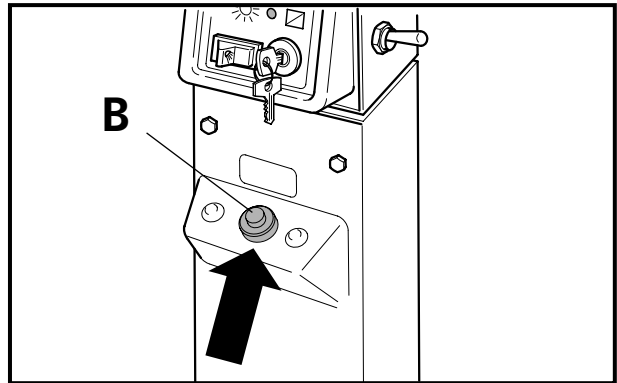
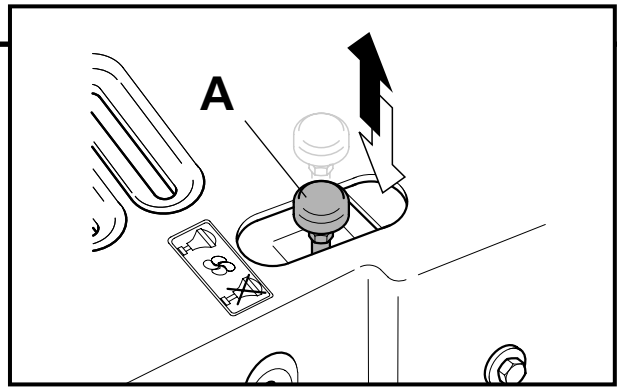
NOTE: this function can be operated with the machine on, provided the suction function is off.

Repeat this operation every 15-20 minutes (the frequency can also be calculated according to the volume of waste), before emptying the bin and at the end of the work.

The bin should be emptied after each work period and every time the rear bin is full.

Note:

After working and before leaving the machine, make sure that the side brushes are raised off the ground, that the parking brake is engaged and that the ignition key is in the OFF position.



CENTRE BRUSH ADJUSTMENT AND REPLACEMENT

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Warning: these operations must be carried out with the machine off, the key switched off and with the machine on level ground.

When the centre brush is fairly worn, its height must be adjusted to recover as much of the brush consumption as possible.

Loosen the bolts on both sides of the machine, lower the brush to the ground taking the **A** indicator to the right position in the direction shown in the figure. The **A** indicator must be placed in the same position on both sides of the machine.

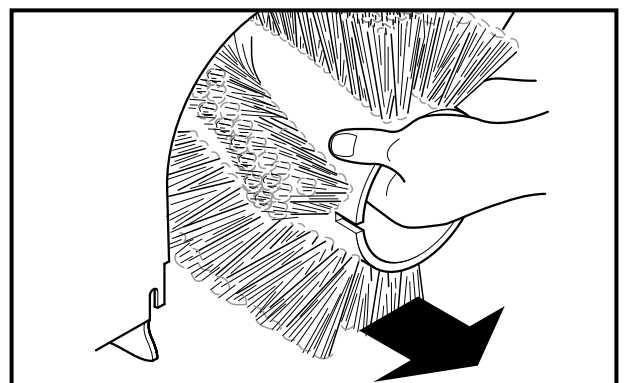
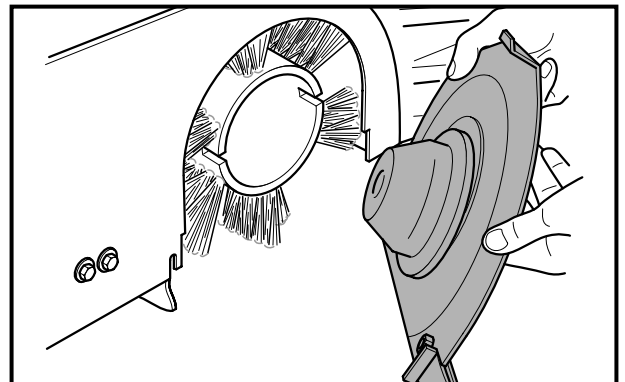
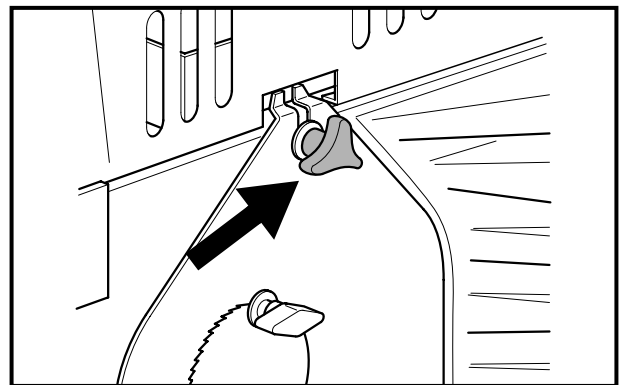
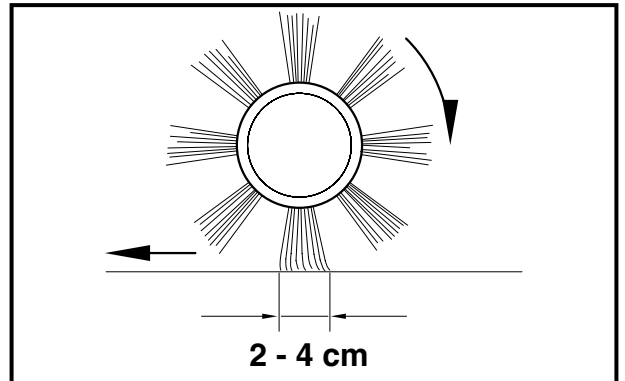
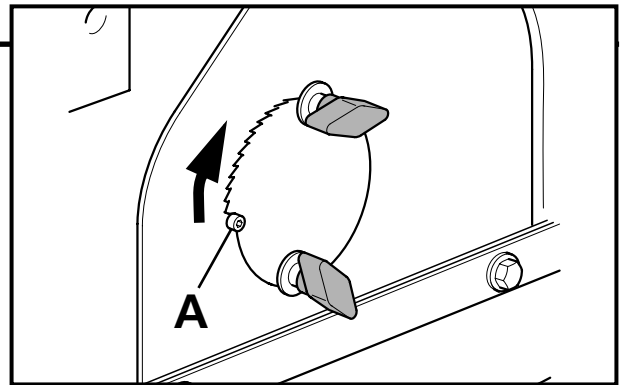
If the brush does not operate efficiently repeat the adjustment operation.

When the brush is very worn, it must be replaced.

To proceed, lift the case and loosen the bolt on the left side of the machine, as shown in the figure.

Remove the cover by pushing it down.

Pull out the worn brush.



CENTRE BRUSH ADJUSTMENT AND REPLACEMENT

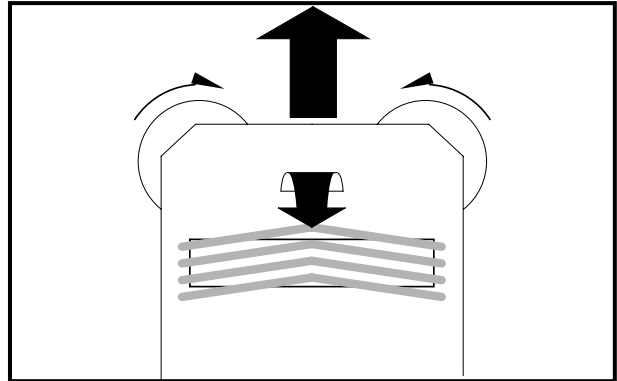
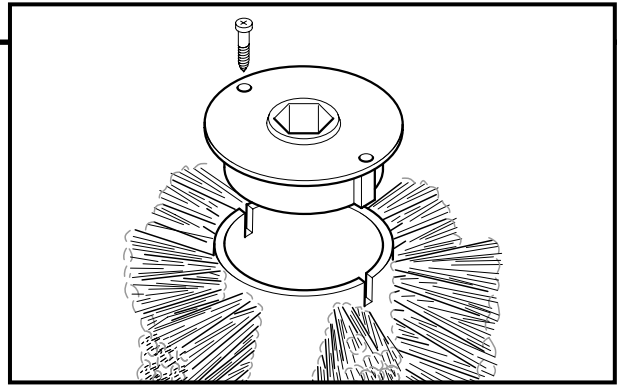
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Remove the flange from the brush body and replace it on the new brush following the same direction as in the bristle angle. (see next figure).

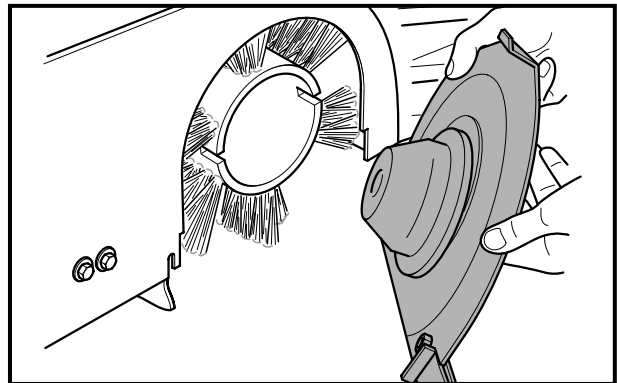
NOTE:

Before inserting the brush, replace the adjustment devices in the position that is farthest away from the ground.

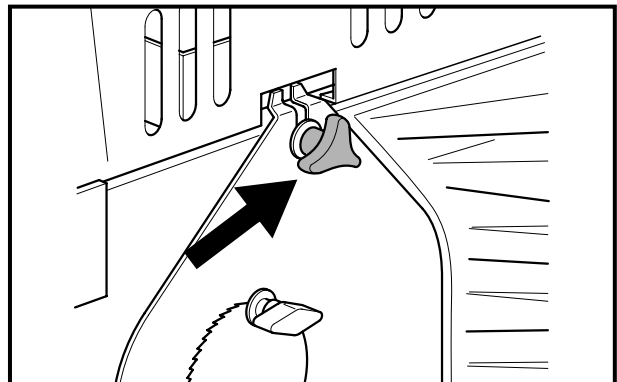
Insert the new brush and make sure that the flange is inserted in the entrainment device.



Replace the cover



and tighten the lock screw.



SIDE BRUSH ADJUSTMENT AND REPLACEMENT

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When the side brush has been fairly worn, its height must be adjusted to recover as much of the brush consumption as possible.

To adjust the height of the side brushes, following the instructions below:

Lower the brush to the ground, loosen the handwheel **A** and turn the lever clockwise or counterclockwise until the brush touches the ground as required.

After adjusting, re-tighten the handwheel, locking the lever.

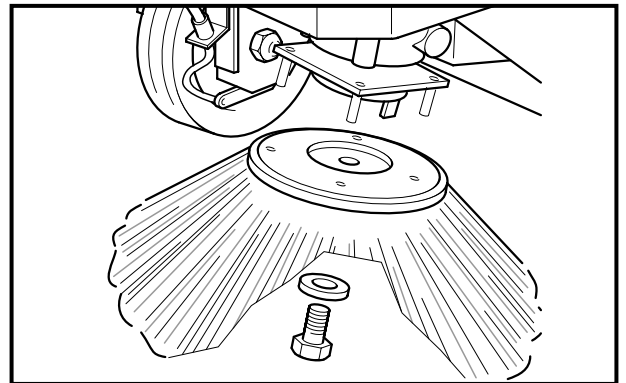
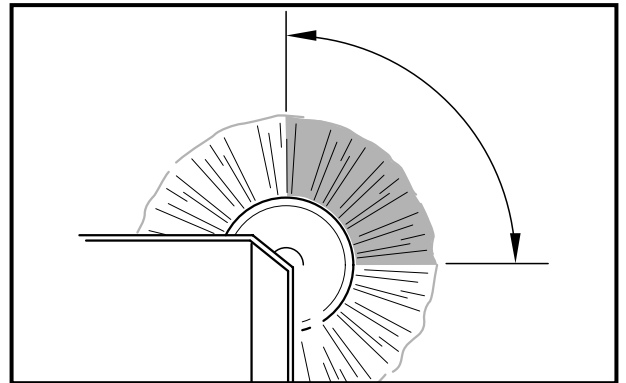
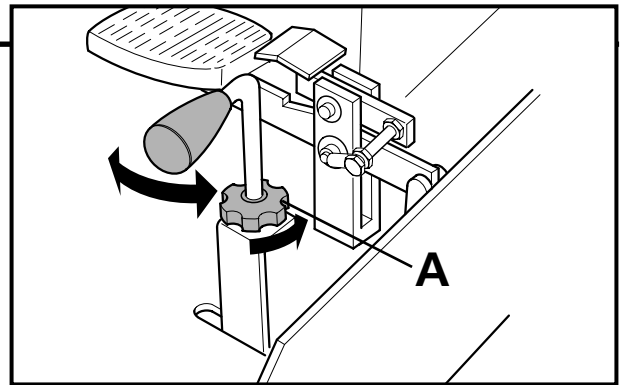
To check position start the brush and check that it touches the ground as shown in the figure. If necessary repeat the adjustment procedure until the position is correct.

Warning: these operations must be carried out with the machine off, the key switched off and with the machine on level ground.

When the brush is remarkably worn out, it is necessary to replace it. Just press the two tabs inwards and remove the brush.

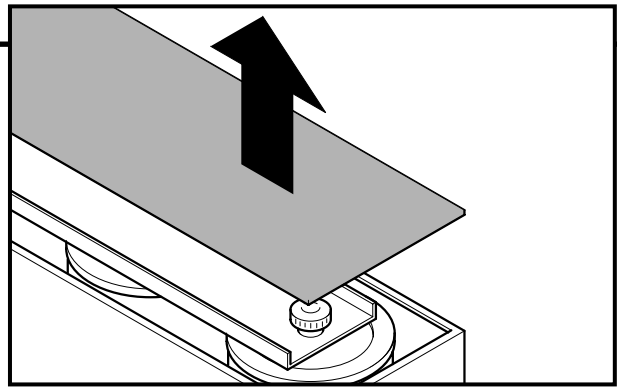
Reinstall the new brush by carrying out the reverse operation and pushing it with your hands.

NOTE: When the brushes are replaced check that the height is adjusted to its original position, corresponding to a new brush.

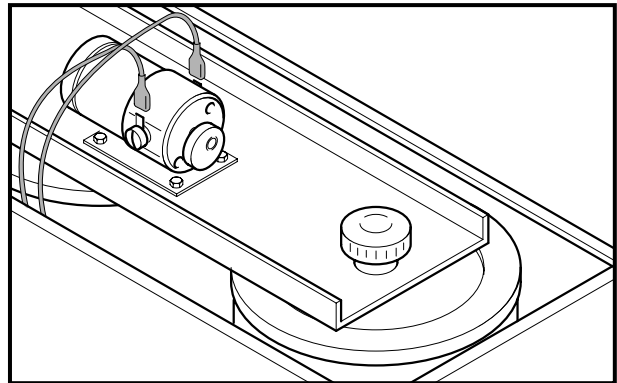


Thoroughly clean the filters as follows:

Lift the machine bonnet and remove the rear cover.

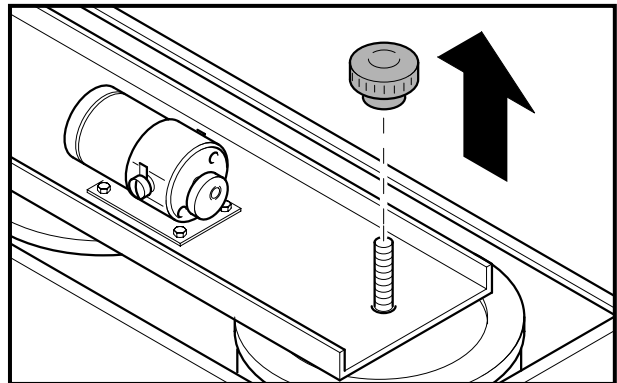


Disconnect the two cables of the filter shake engine (when re-setting, it is not necessary to keep the same polarity of the electrical connections).



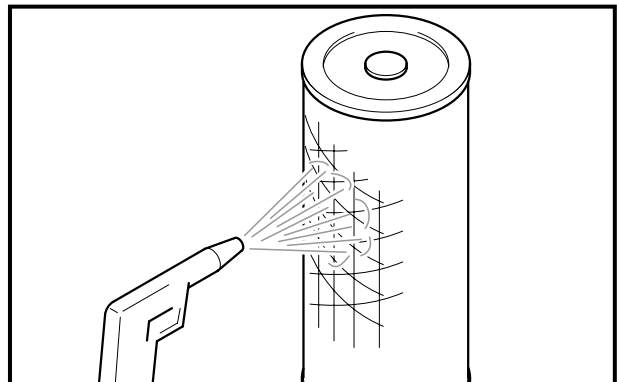
Unscrew the side handwheels and pull out the fastening bracket.

Pull out the filters.



Blow with compressed air, max. 6 bar, only from the outside towards the interior of the filters to prevent damage to the paper.

Before replacing, make sure that the filters have not been cut and that the rubber ring under the filters is properly positioned. If not, replace them.



Warning: these operations must be carried out with the machine off and the key switched off. All periodic or extraordinary maintenance operations must be performed by skilled personnel, or by an authorised service centre.

CONTROL	UPON DELIVERY	EVERY 50/h	EVERY 100/h	EVERY 200/h
Battery liquid level and voltage level	●	●		
Check the brushes of all electric motors, and replace them if worn.				●
Belt tension	●		●	
Brake adjustment	●		●	
Filter shaker		●		
Nut and screw tightness			●	
Side and centre brush condition		●		
Cartridge filter cleaning		●		
Bin gasket seal	●	●		
GREASE: Drive wheel chain			●	

Note:

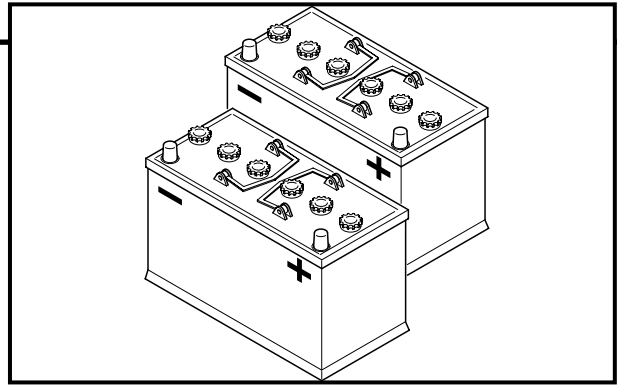
The battery duration will depend on the level of periodic maintenance (checking the electrolyte level and density).

If the machine does not run for a long time (ex. 4 to 6 weeks) it will be necessary to recharge the batteries to make sure their voltage does not go under 20 Volt. Unused batteries discharge themselves.

In addition to the accessories supplied with the machine, the following optionals are also available:

Batteries:

- 2x12V 105Ah @ 20.



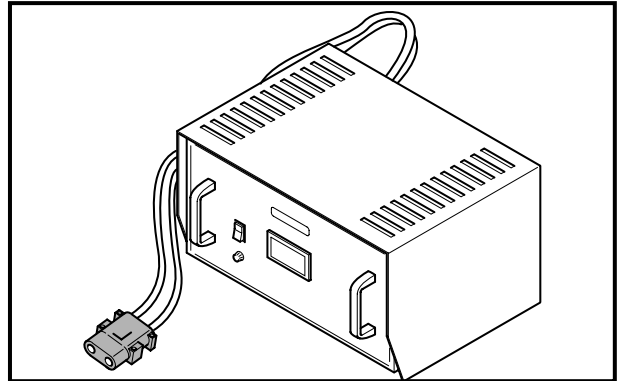
Battery charger:

- Two battery charger versions are available with characteristics that vary according to the country where they are used

FOR BATTERIES WITH

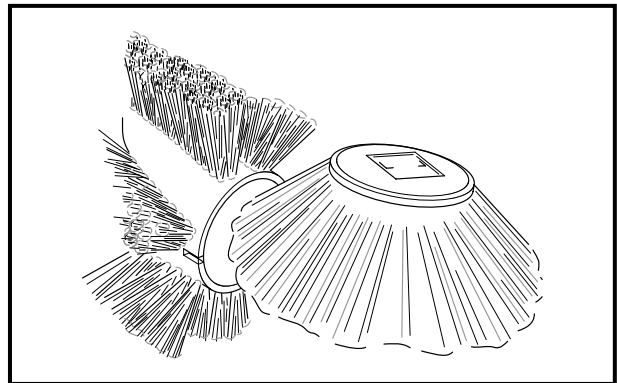
ACID SOLUTION CBN2 25A-24V

FOR BATTERIES WITH GEL CBS2 25A-24V



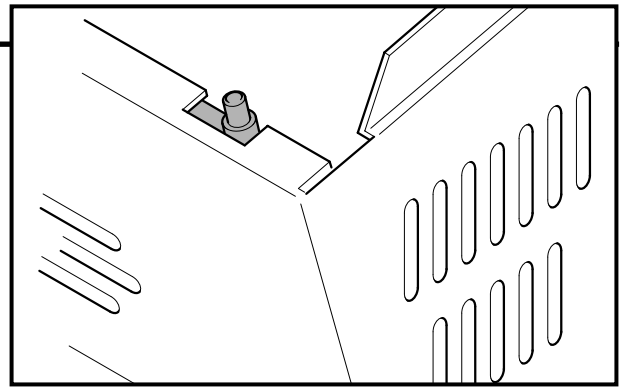
Brushes with different characteristics depending on use.

Ask your retailer for a complete list of available brushes.



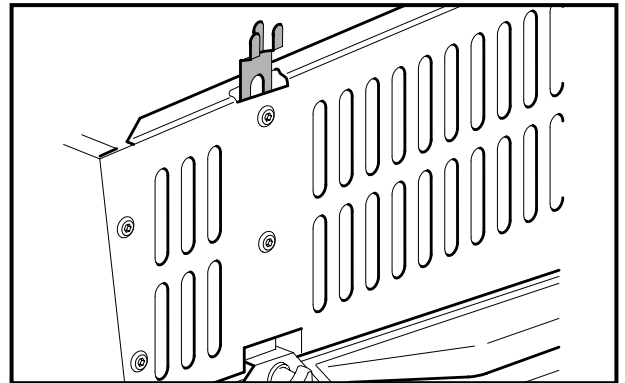
SAFETY MICROSWITCH

It is activated when the machine bonnet is lifted up, and it stops:
 - all functions in the electric model



CENTRE BRUSH SAFETY DEVICE

The operator has to lift the bonnet to reach the lid latch of the centre brush compartment. When the bonnet is lifted the microswitch is activated, stopping the centre brush.



If the safety functions are activated the multifunction display on the control panel will show the correspondent safety codes (as shown in the chart bellow).

The machine has a hold up device for power overload. If the battery - indicated on the display - exceeds 28V, the machine stops.

SAFETY CODE-EVENT	MACHINE BEHAVIOUR	POSSIBLE INTERVENTION	NOTES
302: TROUBLE ON THE ELECTRONIC CONTROL OF THE DRIVE FUNCTION.	AUTOMATIC STOP OF THE MACHINE.	BEFORE REPLACING THE POWER ELECTRONIC BOARD: 1-CHECK THE CONTINUITY OF THE CONNECTION CABLES BETWEEN THE POWER ELECTRONIC BOARD AND THE DRIVE MOTOR 2-CHECK THE OPERATION OF THE DRIVE MOTOR AND OF ITS CARBON BRUSHES.	FOR FURTHER DETAILS SEE THE WORKSHOP MANUAL OR CALL THE SERVICE PERSONNEL.
306: OVERTEMPERATURE ON THE POWER ELECTRONIC BOARD.	AUTOMATIC STOP OF ALL THE FUNCTIONS OF THE MACHINE.	TURN-OFF THE KEY AND WAIT FOR THE SELF COOLING OF THE ELECTRONIC BOARD (AT LEAST 20 MINUTES). THEN CHECK THAT THE ROTATION OF THE DRIVE MOTOR AND/OR OF THE BRUSH MOTOR(S) IS FREE. IT COULD BE USEFULL TO REDUCE THE PRESSURE OF THE BRUSH(ES) ON THE FLOOR.	IF THE 306 CODE OCCURS FREQUENTLY CALL THE SERVICE PERSONNEL.
307: WRONG SWITCH-ON SEQUENCE: THE ACCELERATOR THUMB WHEELS WERE OUT OF THE NEUTRAL POSITION WHEN TURNING ON THE KEY.	THE MACHINE IS NOT ABLE TO WORK.	PUT THE ACCELERATOR THUMB WHEELS IN THE NEUTRAL POSITION. IN THE EVENT THAT THE 307 CODE IS STILL FLASHING A CHECK OF THE TWO MICROSWITCHES DEDICATED TO THE FORWARD/ REVERSE DRIVE CONTROL MUST BE DONE (CALL THE SERVICE PERSONNEL). CHECK THAT NO INTERFERENCE OCCURS BETWEEN THE HAND GRIPS AND THE THUMB WHEELS.	
308: THE WIRES OF THE POTENTIOMETER ARE CUT.	THE MACHINE IS NOT ABLE TO WORK.	1-CHECK THE CONNECTION CABLES OF THE POTENTIOMETER DEDICATED TO THE SPEED CONTROL. 2- IF THE POTENTIOMETER CONNECTION CABLES ARE GOOD REPLACE THE POTENTIOMETER (CALL THE SERVICE PERSONNEL).	

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