

ruby 45c

10 2015



Use and maintenance



Attention! Please read the instructions before use.

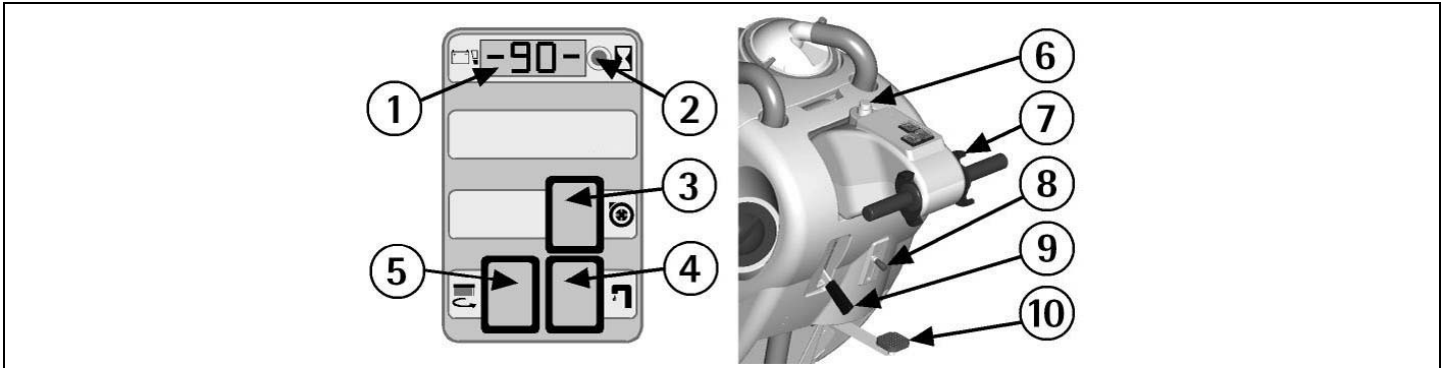
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LEGEND INSTRUMENT BOARD AND CONTROLS

1. DISPLAY CHARGE LEVEL BATTERIES/HOUR METER
2. PUSH BUTTON VISUALIZATION HOUR METER (DISPLAY)
3. SWITCH SUCTION MOTOR
4. SIGNAL LAMP SOLUTION VALVE OPEN

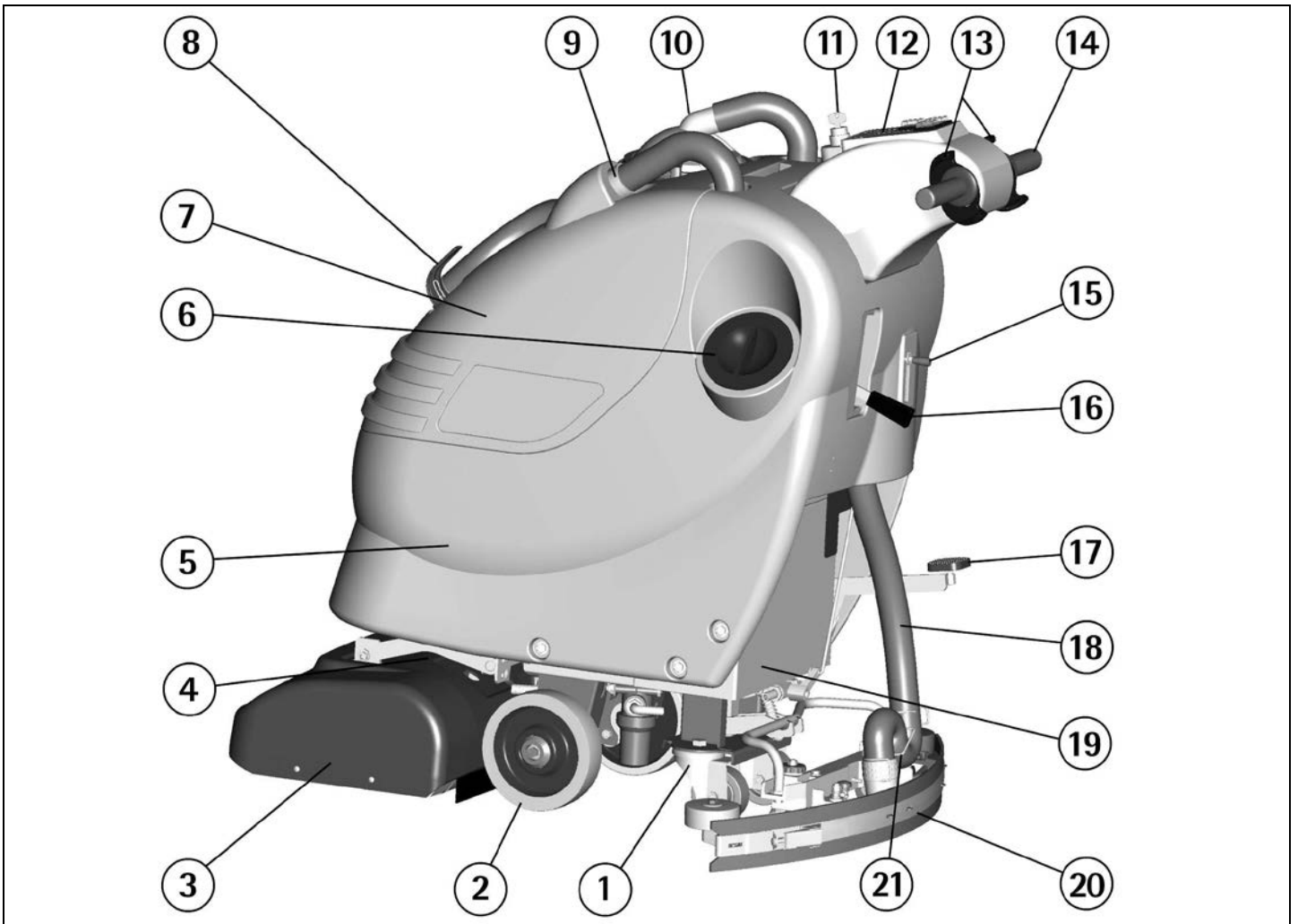
5. SWITCH BRUSHES MOTOR
6. SWITCH WITH KEY (OPTIONAL)
7. LEVERS FORWARD MOVEMENT
8. LEVER SOLUTION VALVE
9. LEVER SQUEEGEE LIFTING
10. PEDAL BRUSHES BASE GROUP LIFTING



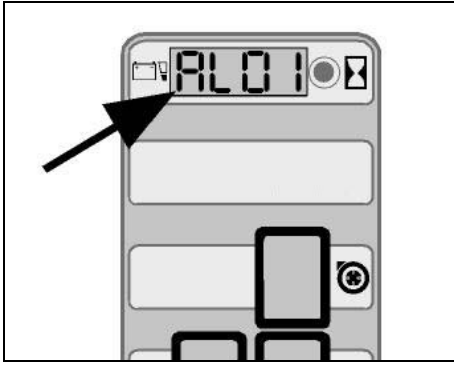
LEGEND MACHINE

1. CASTOR WHEELS
2. WHEELS
3. BRUSHES BASE GROUP
4. SOLENOID VALVE
5. SOLUTION TANK
6. SCREW CAP FOR INLET DETERGENT SOLUTION
7. RECOVERY TANK
8. PLUG EXHAUST HOSE RECOVERY TANK
9. INLET OPENING SQUEEGEE HOSE
10. SUCTION COVER

11. SWITCH WITH KEY (OPTIONAL)
12. INSTRUMENT BOARD
13. LEVERS FORWARD MOVEMENT
14. HANDLE BARS
15. LEVER SOLUTION VALVE
16. LEVER SQUEEGEE LIFTING
17. PEDAL BRUSHES BASE GROUP LIFTING
18. SQUEEGEE HOSE
19. BATTERIES
20. SQUEEGEE ASSEMBLY
21. GUIDE SPRING SQUEEGEE HOSE



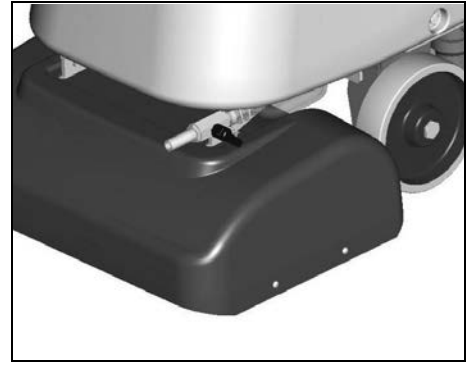
OPTIONAL ACCESSORIES



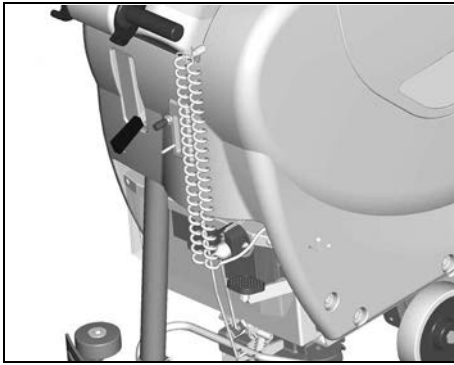
Brushes motor overload protection device



Switch with key



Emptying device of the solution tank



Incorporated battery charger

TECHNICAL DESCRIPTION

U/M

ruby 45c

Cleaning width	mm	460
Squeegee width	mm	770
Working capacity, up to	sqm/h	1670
Brushes diameter	mm	2x95
Brushes rpm	rpm	950
Pressure on the brushes	kg	30 max
Brushes motor	W	500
Type of drive		semi-aut.
Maximum gradient		2%
Suction motor	W	570
Suction vacuum	mbar	120
Solution tank	l	40
Recovery tank	l	45
Machine length	mm	1090
Machine height	mm	1053
Machine width (without squeegee)	mm	548
Capacity of the batteries	V/Ah _{sh}	24/110
Weight of the batteries	kg	74
Compartment of the batteries	mm	342x350x300
Weight of the machine (empty and without batteries)	kg	71
Class		III
Tension	V	24

INTRODUCTORY COMMENT

Thank you for having chosen our machine. This floor cleaning machine is used for the industrial and civil cleaning and is able to clean any type of floor. During its advance movement, the combined action of the brushes and the detergent solution removes the dirt which is aspirated through the rear suction assembly, giving a perfectly dry surface. The machine must be used only for such purpose. It gives the best performance if it is used correctly and maintained in perfect efficiency. We therefore ask you to read this instruction booklet carefully whenever difficulties arise in the course of the machine's use. In case of need, we ask you to contact our service department for all advice and servicing as may prove necessary.

GENERAL RULES OF SECURITY

The rules below have to be followed carefully in order to avoid damages to the operator and to the machine.

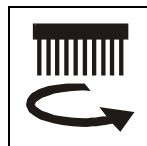
- Read the labels carefully on the machine. Do not cover them for any reason and replace them immediately if damaged.
- The machine must be used exclusively by authorized staff that has been instructed for its use.
- During the working of the machine, pay attention to other people and especially to the children.
- Do not mix different detergents, avoiding harmful odours.
- Do not place any liquid containers onto the machine.
- Storage temperature: between -25°C and +55°C.
- Perfect operating temperature: between 0°C and 40°C.
- The humidity should be between 30 and 95%.
- Do not use the machine in explosive atmosphere.
- Do not use the machine as a means of transport.
- Do not use acid solutions which could damage the machine and/or the persons.
- Avoid working with the brushes when the machine stands still, in order to prevent floor damages.
- Do not use the machine on surfaces covered with inflammable liquids or dusts (for example hydrocarbons, ashes or soot).
- In case of fire, use a powder fire-extinguisher. Do not use water.
- Do not strike shelvings or scaffoldings, where there is danger of falling objects.
- Adapt the working speed to the adhesion conditions.
- Do not use the machine on areas having a higher gradient than the one stated on the number plate.
- The machine has to carry out simultaneously the operations of washing and drying. Different operations must be carried out in restricted areas prohibited to non-authorized personnel.
- Signal the areas of moist floors with suitable signs.
- If the machine does not work properly, check by conducting simple maintenance procedures. Otherwise, ask for technical advice to an authorized assistance centre.
- Where parts are required, ask for ORIGINAL spare parts to the distributor and/or to an authorized dealer.
- Use only ORIGINAL brushes indicated in the paragraph "RECOMMENDED BRUSHES".
- For any cleaning and/or maintenance operation take off the power supply from the machine.
- Do not take off the protections which require the use of tools to be removed.
- Do not wash the machine with direct water jets or with high water pressure nor with corrosive material.
- Every 200 working hours have a machine check through an authorized service department.
- In order to avoid scales on the solution tank filter, do not fill the detergent solution many hours before the machines' use.
- Before using the machine, check that all panels and coverings are in their position as indicated in this use and maintenance catalogue.

- Be sure the recovery tank is empty before removing it.
- Restore all electrical connections after any maintenance operation.
- Provide for the scrapping of the material of normal wear following strictly the respective rules.
- When your machine has to stop activity, provide for the appropriate waste disposal of its materials, especially oils, batteries and electronic components, and considering that the machine itself has been, where possible, constructed using recyclable materials.

SYMBOLOLOGY



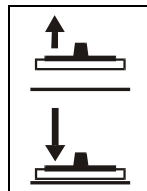
Symbol denoting the solution valve.
Indicates the solution valve lever.
Indicates the signal lamp of the open solution valve.



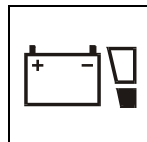
Symbol denoting the brush.
Indicates the switch of the brushes motor.



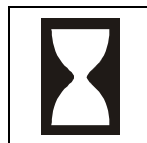
Symbol denoting the suction motor.
Indicates the switch of the suction motor.



Symbol denoting up - down of the squeegee.
Indicates the squeegee lever.



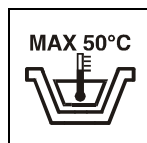
Symbol denoting the charge level of the batteries.



Symbol denoting the hour meter.



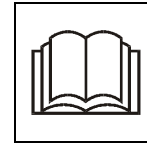
Indicates the exhaust hose of the recovery tank.



Indication of the maximum temperature of the solution detergent.
It is placed near the charging hole of the solution tank.



Symbol denoting the crossed bin. Indicates that at the end of its activity, the machine has to be disposed conforming to the laws in force.



Symbol denoting the open book.
Indicates that the operator has to read the manual before the use of the machine.



Symbol denoting the open book.
For the good functioning of the incorporated battery recharger (optional), read the manual of the constructor.



Warning symbol.
Read carefully the sections marked with this symbol, for the security of both the operator and the machine.

BEFORE USE

HANDLING OF THE PACKED MACHINE

The machine is supplied with suitable packing foreseen for fork lift truck handling.

The total weight is 95 kg.

Packing dimensions:

Base: 118 cm x 67 cm

Height: 119 cm

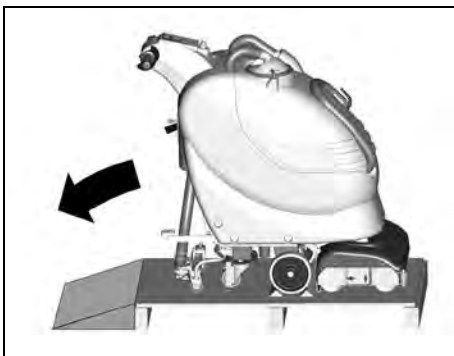
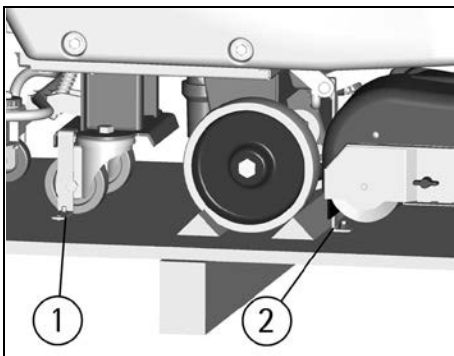


ATTENTION:

Do not place more than 2 packings on top of each other.

UNPACKING OF THE MACHINE

1. Remove the external packing.
2. Unscrew the brackets (1+2) that secure the machine to the pallet.
3. Move the machine backwards, as indicated in figure, avoiding heavy contacts to mechanical parts.
4. Keep the pallet for eventual transport.

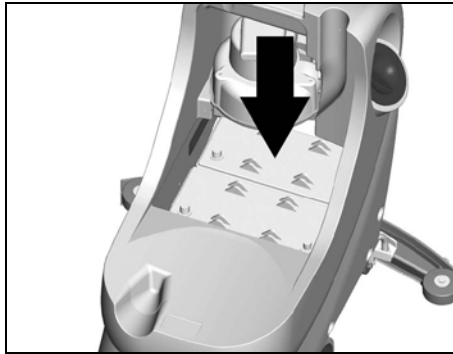


BATTERY INSTALLATION AND SETTING OF THE BATTERY TYPE

This machine is equipped with two batteries at 12V in serial connection, placed in its appropriate compartment under the recovery tank and must be handled using suitable lifting equipment (due to weight and coupling system).

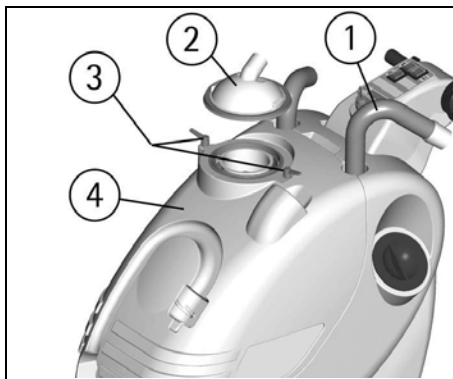
The batteries must be in accordance with CEI 21-5 Norms.

The connection of the batteries' cables has to be carried out by specialized staff, because the inversion of polarity causes the damage of the electrical components. Before the machine is supplied with power, check that the red cable is connected to the + pole of the battery.



For batteries installation proceed as follows:

1. Take off the squeegee hose (1).
2. Take off the suction cover (2) after turning the blocking levers (3).
3. Take off the recovery tank (4).
4. Place the batteries in its compartment.
5. **Connect the terminals, respecting the polarities, avoiding contact with other parts that could create short circuit.**
6. Reassemble all parts.

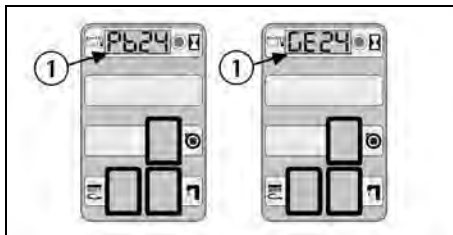


ATTENTION:

The machine and its battery check card foresee the use of traditional lead batteries.

CHECK THE SETTING OF THE CHECK CARD ON THE INDICATOR (1).

In case of GEL batteries installation, it is necessary to set the battery check card. Please contact the authorized technical assistance.



ATTENTION:

Strictly follow manufacturer/distributor indications for the maintenance and daily recharge of the batteries. All installation and maintenance operations must be executed by specialized staff, using suitable protection accessories.

BATTERY RECHARGER

Be sure that the battery recharger is suitable for the installed batteries both for their capacities and type (lead/acid or GEL and equivalent).

In the plastic bag containing the use and maintenance you will find the coupling connector for the recharger. It must be assembled onto the cables of

your recharger, following the instructions given by the manufacturer.



ATTENTION:

This operation must be carried out by qualified staff. A wrong or faulty cable connection can create serious damages to persons or things.

INCORPORATED BATTERY RECHARGER (OPTIONAL)

If the machine is equipped with the incorporated battery recharger (see under "OPTIONAL ACCESSORIES") please refer to the instructions of the constructor of this accessory what the recharging operations concern.

To check the type of battery recharger assembled, verify its serial number plate.

The battery recharger is connected directly to the battery poles.

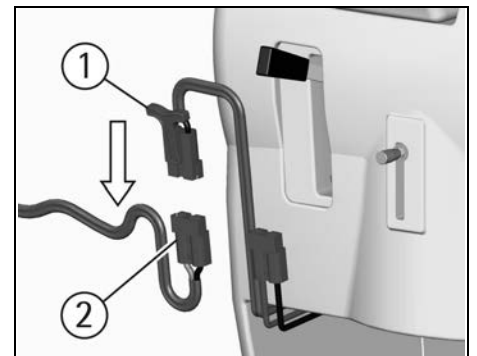
During the recharging operations a device is activated which does not permit the machine's functioning.

The mains cable of the battery recharger has a maximum length of two metres and must be connected to a single-phase socket type CEE 7/7.

BATTERIES RECHARGING

Bring the machine on a levelled surface.

Plug in batteries connector (1) placed in the rear part of the machine, to connector (2) of the battery recharger.



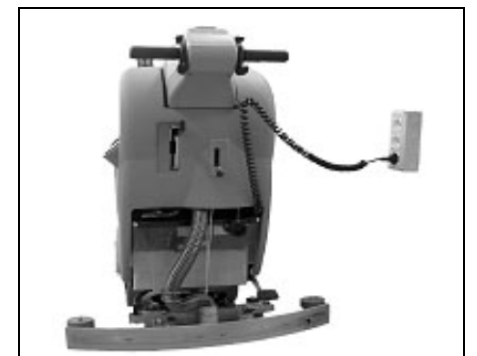
BATTERIES RECHARGING WITH INCORPORATED BATTERY RECHARGER (OPTIONAL)

Bring the machine on a levelled surface near to a single-phase socket with tension 230V, frequency 50Hz, nominal current 10A.

Switch off the switches of the brushes motor, suction motor and of the solenoid valve.

Insert the plug into the mains socket.

At the end of the recharging, take off the plug from the mains socket.



ATTENTION:

Never charge a GEL battery with a non suitable recharger. Strictly follow the instructions supplied by the batteries and recharger manufacturer.

In order not to cause permanent damages to the batteries, it is necessary to avoid their complete discharge, providing for the recharging within a few minutes after batteries discharge signal starts blinking.

NOTE: Never leave batteries completely discharged even if the machine is not used. In case of traditional batteries, please check the electrolyte level every 20 recharging cycles and eventually fill them up with distilled water.

⚠ ATTENTION:

For the daily recharge of the batteries it is necessary to follow strictly all the indications given by the manufacturer/distributor. All the installation and maintenance operations must be carried out by qualified staff. **Danger of gas exhalations and emission of corrosive liquids. Fire danger: do not approach with free flames.**

BATTERIES DISPOSAL

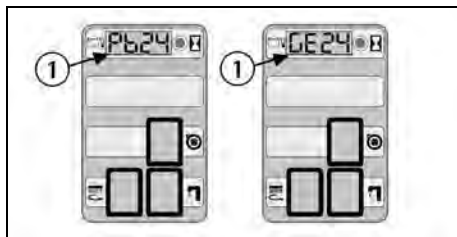
It is compulsory to hand over exhaust batteries, classified as dangerous waste, to an authorized institution according to the current laws.

BATTERIES CHARGE LEVEL INDICATOR

WHEN THE MACHINE IS SWITCHED ON, ON THE DISPLAY (1) APPEARS THE SETTING OF THE BATTERY CHECK CARD:

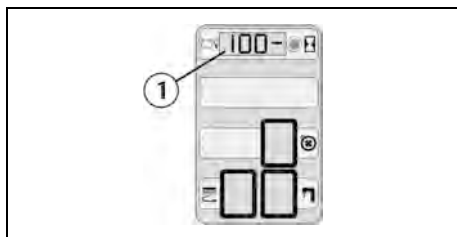
GE 24: check card set for GEL batteries.

Pb 24: check card set for lead batteries.



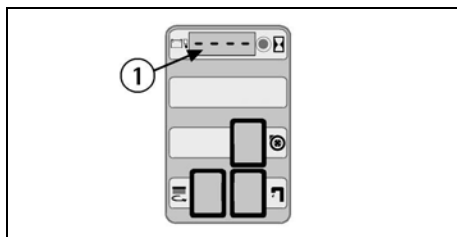
On the display (1) the following indication of the battery charge level is digital and indicates the percentage of the battery charge. 100 is the maximum charge, down to a minimum of 10, indicating every 10% decrease.

When the charge level reaches 10%, the display starts blinking indicating the end of the battery charge.



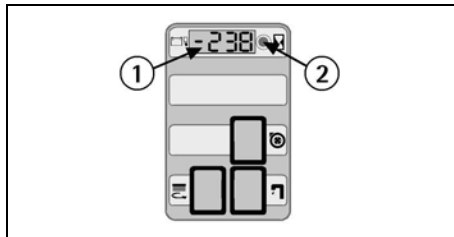
⚠ ATTENTION:

After a few seconds from the four blinking "----" dashes, the brushes motor stops automatically. With the remaining charge it is anyhow possible to finish the drying operation before proceeding to the re-charge.



HOUR METER

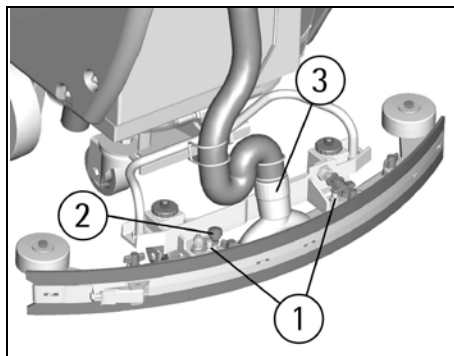
The machine is equipped with an hour meter located on the same display of the battery charge level indicator (1). Keeping the button (2) pressed for more than 3 seconds, the first data indicates the working hours and after a few seconds the working minutes are shown.



SQUEEGEE ASSEMBLY

With the squeegee support lowered, slide the two stud bolts (1) placed on the upper part of the squeegee inside the slots on the support. Block the squeegee by rotating the lever (2) clockwise.

Insert the squeegee hose (3) into its coupling, respecting its position as indicated in the figure.



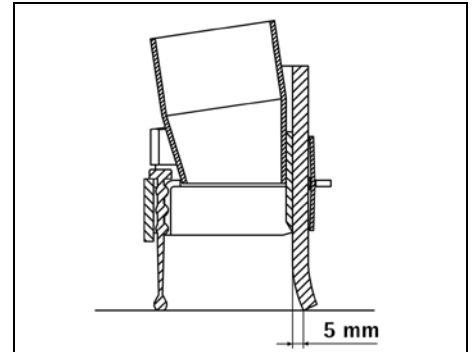
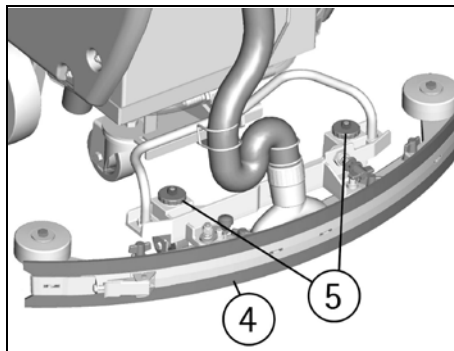
ADJUSTMENT OF THE SQUEEGEE HEIGHT

The squeegee must be adjusted in height depending on the rubber wear. In order to guarantee a perfect drying during the operation, the lower blade of the rear squeegee rubber (4) must work slightly bent backwards (operator side) in uniform way in all its length.

Acting clockwise upon the two registers (5) it is possible to increase the bending of the rubber. Acting counterclockwise it is possible to decrease the rubber bending.

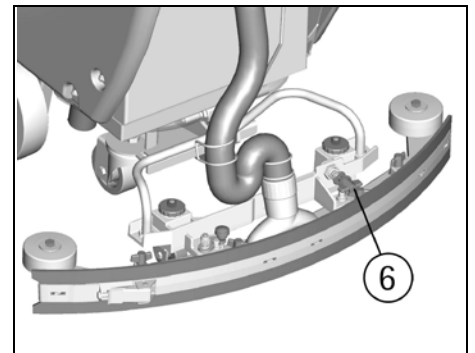
A label placed near the two registers (5) indicates rotation sense to increase or reduce the height.

Note: The wheels of the squeegee support must be adjusted through the registers (5) at the same height so that the squeegee works parallel to the floor.



ADJUSTMENT OF THE SQUEEGEE INCLINATION

In case of need, to increase the rubber bending in the central part, it is necessary to tilt the squeegee rotating counterclockwise the register (6). To increase the rubber bending on the squeegee extremities, rotate the register clockwise.



BRUSHES ASSEMBLY

1. Take off the electric supply to the brushes motor unplugging the batteries connector (1). For machines equipped with key switch (see under "OPTIONAL ACCESSORIES"), turn the key counterclockwise.

2. Acting upon the pedal (10) lift the brushes base group.

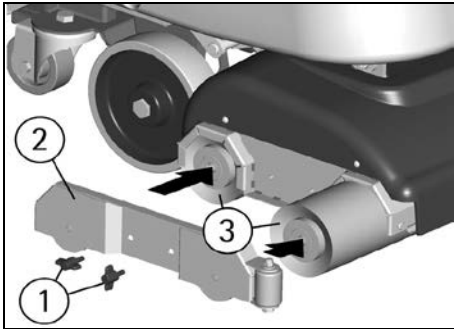


3. With the brushes base group in lifted position, unscrew the two wing nuts (1) and then remove the side support of the brushes (2).

4. Insert the brushes (3) into their seats from the side of the hexagonal coupling, taking care to find the coupling at the opposite end and to insert them completely.

5. Reposition the side support (2) so that the support pins enter into the bearing holes visible at the centre of the brushes frame.

6. Retighten and block the wing nuts.



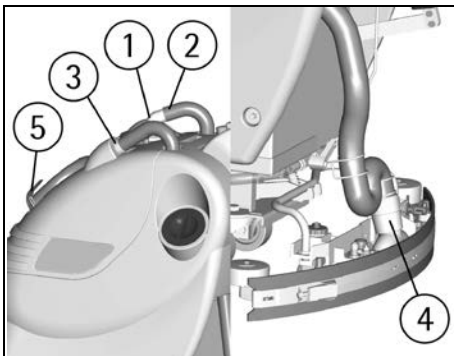
⚠ ATTENTION:

Use only brushes supplied with the machine or the ones indicated in the paragraph "RECOMMENDED BRUSHES". The use of other brushes can compromise the security.

RECOVERY TANK

Check that the cover of the suction filter (1) is correctly secured, after rotating the levers and that the suction motor hose (2) is correctly connected.

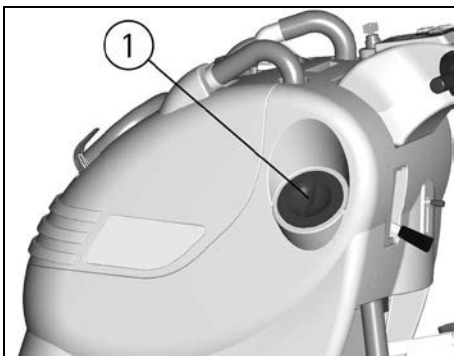
Verify also that the squeegee hose is correctly inserted into the seats (3 and 4) and that the exhaust hose plug (5) placed in the front part of the machine, is closed.



DETERGENT SOLUTION TANK

The capacity of the detergent solution tank is indicated in the technical data.

Open the screw plug (1) placed in the rear left part of the machine and fill the detergent solution tank with clean water at a maximum temperature of 50°C. Add the liquid detergent in the percentage and conditions foreseen by the manufacturer. To avoid excessive foam presence, which could cause problems to the suction motor, use the minimum percentage of detergent. Screw down the plug to close the tank.



⚠ ATTENTION:

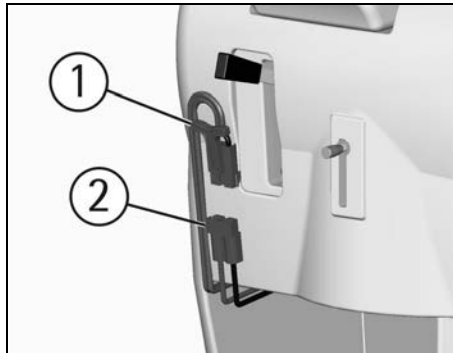
Use always low foam detergent. To avoid foam presence, before starting working operation, introduce into the recovery tank a minimum quantity of anti-foam product.

Never use pure acid.

FLOOR CLEANING

CONNECTION OF THE BATTERIES TO THE MACHINE

Plug in the batteries connector (1) to the machine connector (2), placed in the rear part of the machine.



STARTING OF THE MACHINE

1. For machines equipped with key switch (see under "OPTIONAL ACCESSORIES"), turn the key (6) clockwise.

2. Press the brushes motor switch (5).

3. Check the battery type and the charge level on the display (1).

4. Press the suction motor switch (3).

5. Acting upon the solution valve lever (8) adjust the solution detergent quantity bringing the floor uniformly wet, avoiding the leakage of detergent from the protection. Always consider that the correct quantity of solution detergent depends on the type of floor, dirtiness and machine speed.

Acting upon this lever, the indicator on the instrument board of the open solution valve (4) will turn on.

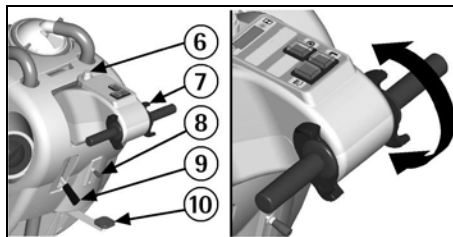
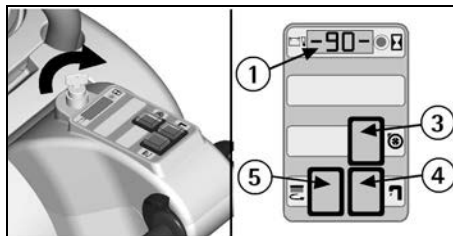
This model is equipped with solenoid valve. The flow of detergent solution will be activated automatically, once the solution valve has been opened through the lever (8), acting upon the levers forward movement (7). Releasing these levers, flow will stop automatically.

6. Acting upon the brushes base lifting pedal (10) lower the brushes base.

7. Acting upon the squeegee lifting lever (9) lower the squeegee.

8. Activating the levers (7) the brushes will start rotating transferring to the machine a forward movement. The squeegee will start drying the floor.

9. During the first meters check that the detergent solution flow is appropriate and that the squeegee adjustment guarantees a perfect drying action.

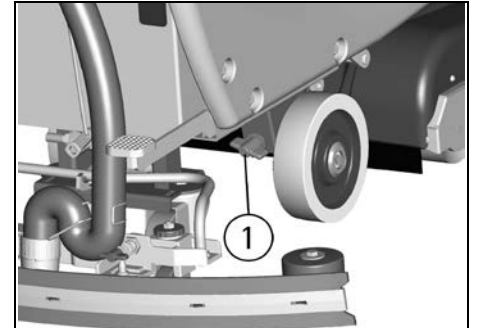


ADJUSTMENT OF THE BRUSHES PRESSURE

Through the register (1) placed on the internal part of the front right wheel, it is possible to adjust the brushes pressure on the cleaned surface.

By turning the wing nut clockwise the pressure increases, rotating the wing nut counterclockwise, the pressure decreases.

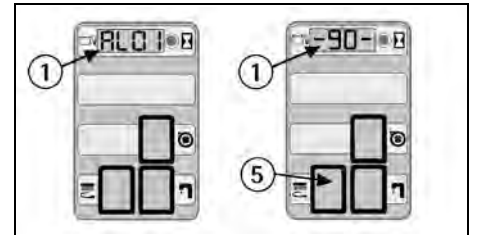
This device allows a more efficient cleaning action also on very difficult and dirty surfaces.



BRUSHES MOTOR OVERLOAD PROTECTION DEVICE (OPTIONAL)

If the machine is equipped with the amperometric protection device (see under "OPTIONAL ACCESSORIES"), this, in case of extended overload of the brushes motor, intervenes shutting it off. Furthermore, on the display (1) appears an alarm "AL01". In case of intervention of this device, check the brushes pressure adjustment in connection with the type of floor to be cleaned and if necessary, reduce it.

To reset the brushes motor, turn off the brushes motor switch (5) for a few seconds and turn it on again.



OVERFLOW DEVICE

In order to avoid serious damages to the suction motor, the machine is equipped with a float that intervenes when the recovery tank is full, closing the suction hose and stopping the suction.

When this happens, it is necessary to empty the recovery tank.

1. Hold the exhaust hose placed in the front part of the machine.

2. Take off the exhaust plug acting upon its lever and empty the recovery tank into appropriate containers, according to the standard norms for the liquid disposal.

⚠ ATTENTION:

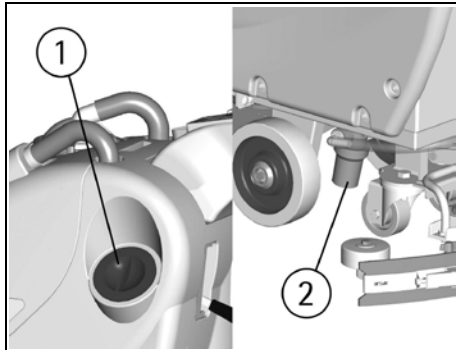
This operation must be carried out using gloves to protect from contact with dangerous solutions.



EMPTYING DETERGENT SOLUTION

To empty the detergent solution remained in the solution tank:

1. Bring the machine to an appropriate place for tanks draining.
2. Unscrew the solution tank cap (1).
3. Unscrew the exhaust plug (2).

**! ATTENTION:**

This operation must be carried out using gloves to protect from contact with dangerous solutions.

EMPTYING DEVICE DETERGENT SOLUTION (OPTIONAL)

To recover the detergent solution, it is necessary to use the emptying device provided for the purpose and proceed as follows:

1. Unhook the hose.
 2. Open the solution valve directing the jet into a collecting container.
 3. When the operation has been completed, close the solution valve.
- Put the hose back into its position, placing it into the spring.

**! ATTENTION:**

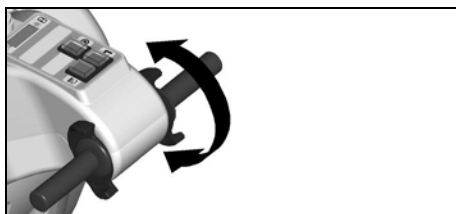
This operation must be carried out using gloves to protect from contact with dangerous solutions.

FORWARD MOVEMENT

The traction of these machines is given by the brushes that transmit to the machine the forward movement.

STOP

Releasing the lever of the forward movement, brushes rotation will end, stopping the machine movement.

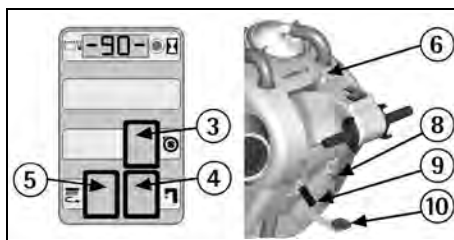
**! ATTENTION:**

Moving the machine backwards, make sure that the squeegee is lifted.

STOP OF THE MACHINE AFTER CLEANING OPERATION

Before executing any type of maintenance:

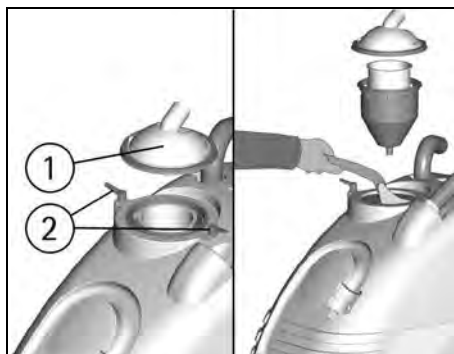
1. Close the solution valve lever (8) and check that the indicator of open solution valve (4) on the instrument board turns off.
2. Lift the brushes base acting upon the pedal (10).
3. Lift the squeegee acting upon the lever (9).
4. Turn the brushes motor switch off (5).
5. Turn the suction motor switch off (3).
6. For machines equipped with key switch (see under "OPTIONAL ACCESSORIES"), turn the key (6) counterclockwise.
7. Bring the machine to an appropriate place for tanks draining.

**! ATTENTION:**

The machine is not equipped with a parking brake, therefore do not leave it on slopes.

DAILY MAINTENANCE**RECOVERY TANK CLEANING**

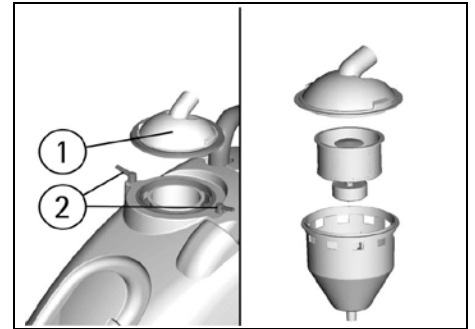
1. Hold the exhaust hose placed in the front part of the machine.
2. Take off the exhaust plug acting upon its lever and empty the recovery tank into appropriate containers (see under "OVERFLOW DEVICE").
3. Take off the suction cover (1) after rotating the blocking levers (2).
4. Take off the filter and filter protection.
5. Rinse the tank with a water jet.

**! ATTENTION:**

This operation must be carried out using gloves to protect from contact with dangerous solutions.

SUCTION FILTER CLEANING

1. Take off suction cover (1) after rotating the blocking levers (2).
2. Take off the filter and filter protection.
3. Clean all parts with a water jet especially inside surfaces and filter bottom.
4. Carry out carefully the cleaning operations.
5. Reassemble all parts.

**BRUSHES CLEANING**

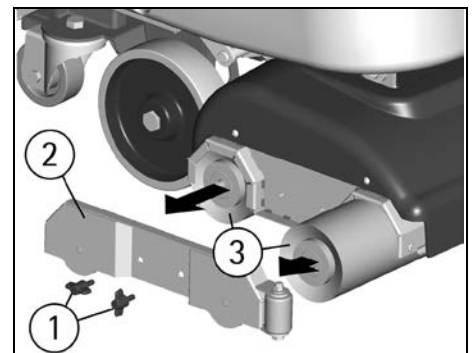
Disassemble the brushes and clean them with a water jet (for the disassembly see as follows under "BRUSHES DISASSEMBLY").

BRUSHES DISASSEMBLY

1. Lift the brushes base lowering the pedal (10).
2. Take off the electric supply to the brushes motor unplugging the battery connector (1). For machines equipped with key switch (see under "OPTIONAL ACCESSORIES"), turn the key counterclockwise.



3. With the brushes base group in lifted position, unscrew the two wing nuts (1) and then remove the side support of the brushes (2).
4. Take off the brushes (3) from their seats to proceed for their cleaning or replacement.
5. To reassemble them again, insert once more the brushes (3) into their seats from the side of the hexagonal coupling, taking care to find the coupling at the opposite end and to insert them completely.
6. Reposition the side support (2) so that the support pins enter into the bearing holes visible at the centre of the brushes frame.
7. Retighten and block the wing nuts.

**! ATTENTION:**

The execution of brushes disassembly operations with electric supply on, may cause damages to hands.

! ATTENTION:

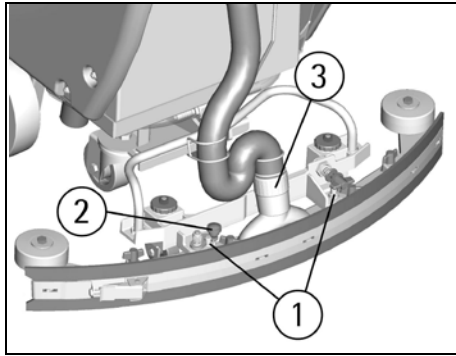
The handling of the brushes operation must be carried out using suitable gloves to protect both mechanically from contact with the bristles and the chemical risk of contact with dangerous solutions.

SQUEEGEE CLEANING

Keeping the squeegee clean guarantees always the best drying action.

For the cleaning it is necessary to:

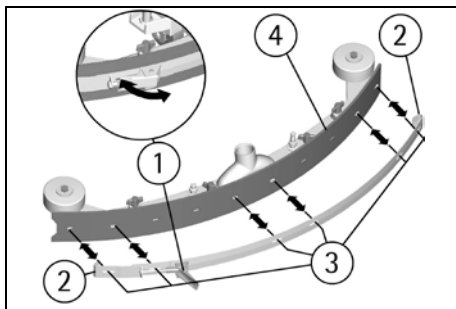
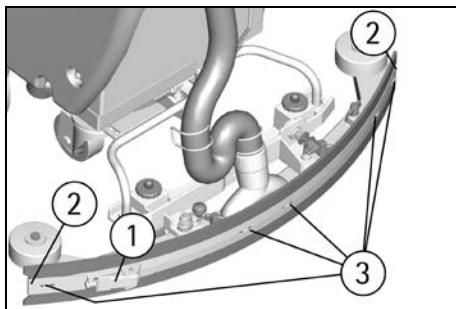
1. Take off the squeegee hose (3) from its coupling.
2. Disassemble the squeegee from its support by rotating the lever (2) counterclockwise and making slide the stud bolts (1) in their slots up to their release.
3. Clean with care the internal part of the squeegee inlet eliminating eventual dirt residuals.
4. Clean with care the squeegee rubbers.
5. Reassemble all parts.

**WEEKLY MAINTENANCE****REAR SQUEEGEE RUBBER REPLACEMENT**

Check the squeegee rubber wear and eventually turn or replace it.

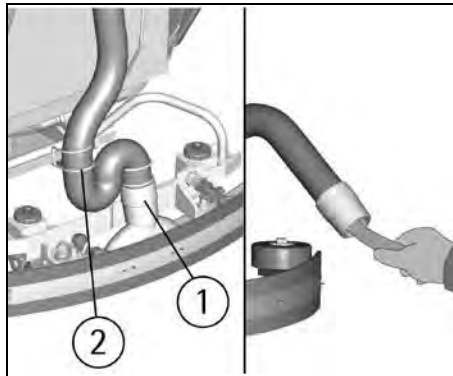
For the replacement it is necessary to:

1. Lift the squeegee acting upon the lever (fig. 1, pos. 17).
 2. Uncouple the hook (1) of the rubber holder blade, release the extremities (2) from the squeegee body and take off the rubber (4).
 3. Turn the rubber (4) to a new side or replace it.
- To reassemble the squeegee repeat reverse the operations above-mentioned, inserting the rubber (4) on the guides (3), couple the extremities (2) of the rubber holder blade onto the squeegee body and finally block the hook (1).

**SQUEEGEE HOSE CLEANING**

Weekly or in case of insufficient suction, it is necessary to check that the squeegee hose is not obstructed. Eventually, to clean it, proceed as follows:

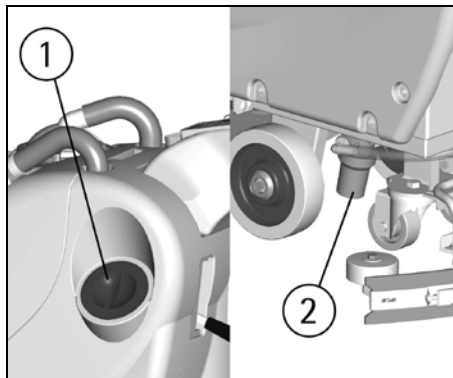
1. Take off the hose from the squeegee coupling (1) and release the guide spring of the suction hose (2).
2. Wash the inside of the hose with a water jet, from the squeegee hose side.
3. To reassemble the hose repeat reverse the operations above-mentioned.

**CLEANING OF SOLUTION TANK AND FILTER**

1. Bring the machine to an appropriate place for tanks draining.
2. Unscrew the solution tank cap (1).
3. Unscrew the exhaust plug (2).
4. The machines equipped with the optional device of the solution drainage, it is sufficient to open the solution valve of the device (see under "EMPTYING DEVICE DETERGENT SOLUTION").
5. Rinse with a water jet the solution tank.
6. Rinse the solution tank filter placed inside the exhaust plug, under the machine.
7. Reassemble all parts and close, if present, the solution valve of the drainage device.

⚠ ATTENTION:

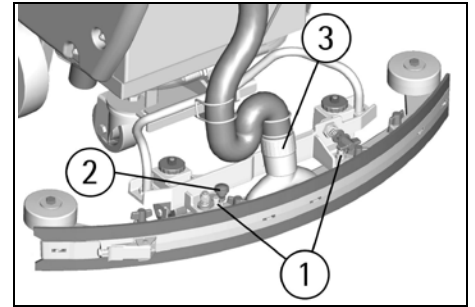
This operation must be carried out using gloves to protect from contact with dangerous solutions.

**TWO-MONTHLY MAINTENANCE****FRONT SQUEEGEE RUBBER REPLACEMENT**

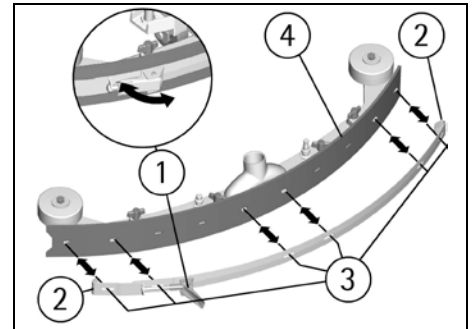
Check the wear of the squeegee rubber and eventually replace it.

For the replacement it is necessary to:

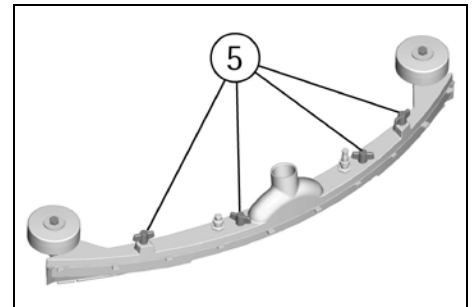
1. Take off the squeegee hose (3) from its coupling.
2. Disassemble the squeegee from the support rotating the lever (2) counterclockwise and sliding the stud bolts (1) in their slots.



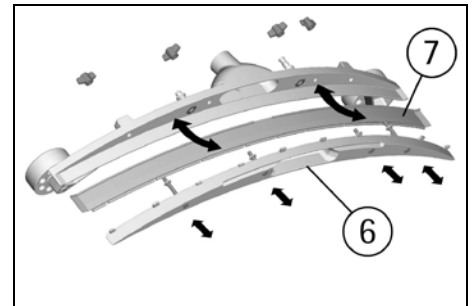
3. Uncouple the hook (1) of the rubber holder blade, release the extremities (2) from the squeegee body and take off the rubber (4).



4. Unscrew the wing nuts (5) in the upper part of the squeegee.



5. Slip off the lower part (6) of the squeegee body, so to take off the front rubber (7).



6. Replace the front rubber.
7. To reassemble the squeegee repeat reverse the operations above-mentioned.

The checking of all the other foreseen machine operations is left to the authorized technical assistance.

TROUBLESHOOTING GUIDE**SIGNALS ON THE DISPLAY**

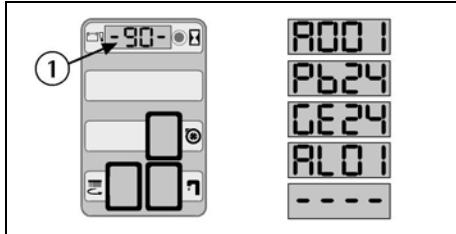
A001: Indication of the version of the electronic check card (the last number indicates the revision of the check card).

Pb24: Indication battery check card set for lead batteries.

GE24: Indication battery check card set for gel batteries.

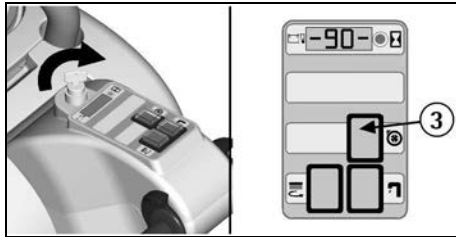
AL01: Signal indicating an absorption of excessive current of the brushes motor, only on machines equipped with the overload protection device for the brushes pressure adjustment (see under "OPTIONAL ACCESSORIES").

---- (blinking): signal indicating the discharged batteries and intervention of the brushes stop device.



THE SUCTION MOTOR DOES NOT WORK

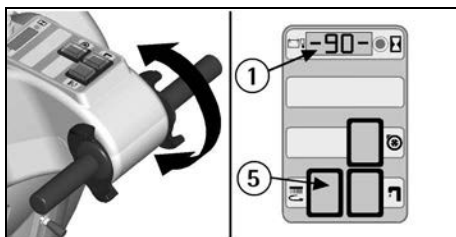
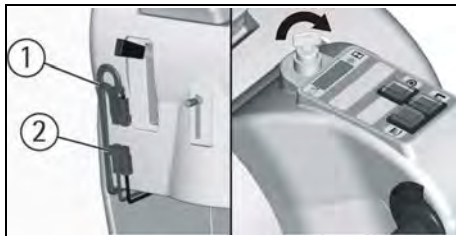
1. Verify that the switch (3) is on.
2. Verify that the key switch (see under "OPTIONAL ACCESSORIES") is in the correct position (clockwise). If the problem persists, please contact the authorized technical assistance.



THE BRUSHES MOTOR DOES NOT WORK

1. Verify that the key switch (see under "OPTIONAL ACCESSORIES") is in the correct position (clockwise).
2. Check the charge level of the batteries.
3. Check that the battery connector (1) is correctly plugged in.
4. Verify that the switch (5) is on.
5. Activate the levers forward movement.
6. On machines equipped with brushes motor overload protection device (see under "OPTIONAL ACCESSORIES"), check that on the display (1) does not appear the alarm "AL01" (brushes motor overload alarm).

If the problem persists, please contact the authorized technical assistance.



⚠ ATTENTION:

Never leave the batteries discharged for a long time.

THE MOTORS DO NOT FUNCTION

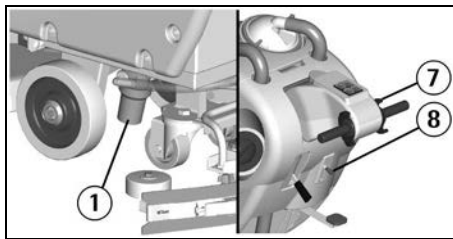
If the machine is supplied with the incorporated battery recharger (optional), check:

1. if the recharging of the batteries is being carried out. In this case the machine is not connected.
2. that the switches are on.
3. that the switch with key (see under "OPTIONAL ACCESSORIES") is in the correct position.

If the problem persists, please contact the authorized technical assistance.

INSUFFICIENT WATER ON THE BRUSHES

1. Check that the solution valve lever (8) is open.
2. Check the level of the liquid in the solution tank.
3. Check that solution filter (1) is clean.
4. The machine is equipped with solenoid valve, therefore act upon the levers forward movement (7). If the problem persists, please contact the authorized technical assistance.



THE MACHINE DOES NOT CLEAN PROPERLY

1. The brushes do not have the suitable bristle dimension: use only original brushes. For advice, contact the authorized technical assistance.
2. The brushes have got worn bristles. Check the brushes wear condition and eventually replace them. To replace the brushes, see instructions at paragraph "BRUSHES DISASSEMBLY" and "BRUSHES ASSEMBLY".
3. The solution detergent is insufficient: open more the solution valve.
4. Check that the liquid detergent is in the recommended percentage. Contact the authorized technical assistance for advice.

THE SQUEEGEE DOES NOT DRY PERFECTLY

1. Check that the squeegee rubbers are clean.
2. Check the height and inclination of the squeegee (see under "SQUEEGEE" in "BEFORE USE").
3. Check that the suction hose is correctly inserted in the proper seat on the recovery tank.
4. Clean the suction filter.
5. Replace the rubbers if worn out.
6. Check that the suction motor switch is on.
7. Check that the recovery tank is empty.

EXCESSIVE FOAM PRODUCTION

Check that low foam detergent has been used. Eventually add small quantities of anti foam liquid into the recovery tank.

Please be aware that a bigger quantity of foam is produced when the floor is not very dirty. In this case please dilute detergent solution.

PROGRAMMED MAINTENANCE

INTERVENTION	DAILY	WEEKLY	TWO-MONTHLY	SIX-MONTHLY
RECOVERY TANK CLEANING	•			
SUCTION FILTER CLEANING	•			
SOLUTION TANK FILTER CLEANING		•		
BRUSHES CLEANING	•			
BRUSHES DISASSEMBLY	•			
SQUEEGEE CLEANING	•			
FRONT SQUEEGEE RUBBER REPLACEMENT			•	
REAR SQUEEGEE RUBBER REPLACEMENT		•		
SQUEEGEE ADJUSTMENT CHECK		•		
SQUEEGEE HOSE CLEANING		•		
SOLUTION TANK CLEANING		•		
BATTERIES ELECTROLYTE CHECK		•		
BRUSHES MOTOR CHECK				•
SUCTION MOTOR CHECK			•	
BRUSHES BASE GROUP CHECK			•	
SCREW TIGHTENING				•

RECOMMENDED BRUSHES

Brushes must be chosen depending on type of floor and dirt to be removed.

The employed material and the bristles diameter are the elements that distinguish different types of brushes.

MATERIAL	CHARACTERISTICS
PPL (Polypropylene)	Good wear resistance. Maintains characteristics with hot water up to 60°C. It is not hygroscopic.
NYLON	Excellent wear resistance, even with hot water over 60°C. It is hygroscopic. It loses its physical characteristics over the time.
BRISTLES THICKNESS	Thicker bristles are more rigid and must be used on smooth floor or floor with small joints. On irregular floors with deep joints or relieves, it is recommended to use softer bristles which penetrate more easily and deeper. Please be aware that when brushes bristles are worn out and therefore too small, they become rigid and unable to penetrate and clean deeper. This may also happen with thicker bristles creating brush vibration.

MACHINE	CODE	QUANTITY	DESCRIPTION
ruby 45c	48901200	2	Cylindrical brush nylon 0,6 Ø 95x462
	48901210	2	Cylindrical brush PPL 0,4 Ø 95x462
	48901220	2	Cylindrical brush PPL 0,3 Ø 95x462
	48901230	2	Cylindrical brush nylon 0,3 Ø 95x462

