FLOORPUL®

Ruby
48BL - 48BLT

06/2020

EN

User and maintenance guide
(Translation of the original instructions)



Warning! Read the instructions before use.

EN

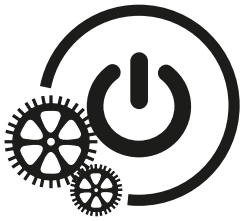
INTRODUCTORY COMMENT

Thank you for having chosen our machine. This floor cleaning machine is used for **commercial use, for example hotels, schools, hospitals, factories, shops, offices and rental business.** It 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 brush 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.
ATTENTION: This machine is for internal use only.
ATTENTION: This machine must only be stored indoors.

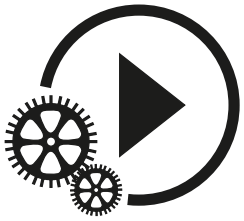
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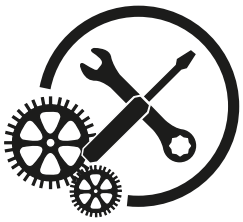


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TECHNICAL DESCRIPTION		ruby 45 light	ruby 55 light	ruby 48bl	ruby 48blt
Cleaning width	mm in	450 18	550	485 19	508 20
Squeegee width	mm in	770 30	770 30	770 30	770 30
Working capacity, up to	m^2/h sqft/h	1575 16.954	1925 20.722	1700 18.300	1700 18.300
Brushes diameter	mm in	2x235 2x9	2x285 2x11	1 x 485 1 x 19	1 x 508 1 x 20
Brushes rpm	rpm	325	260	155	155
Pressure on the brushes	kg lbs.	22,5 50	24.5 54	20 44	30 66
Brushes motor	W A	420 17.5	420 17.5	350 14.6	450 18.5
Suction motor	W A	450 18.8	450 18.8	450 18.8	450 18.8
Suction vacuum	mbar water lift	120 48	120 48	120 48	120 48
Traction motor	W A	/	/	/	120 48
Type of drive		semi-automatic	semi-automatic	semi-automatic	automatic
Movement speed	km/h mph	/	/	/	4 2.5
Maximum gradient	%	2	2	2	2
Solution tank	l gal	33 8.8	33 8.8	40 10.6	40 10.6
Recovery tank	l gal	45 12	45 12	45 12	45 12
Machine length	mm in	1102 43	1140 45	1195 47	1195 47
Machine height	mm in	1053 41.5	1053 41.5	1053 41.5	1053 41.5
Machine width (without squeegee)	mm in	527 21	586 23	530 21	530 21
Weight of the machine (empty and without batteries)	kg lbs.	67 147.7	71 156.5	66 145.5	76 167.6
Gross weight of the machine (in conformity with EN 60335-2-72 art. 5.z102)	kg lbs.	180 397	188 414	185 408	190 419
Tension of the batteries	V	24	24	24	24
Capacity of the batteries	Ah_5	110	110	110	110
Weight of the batteries	kg lbs.	74 163	74 163	74 163	74 163
Compartment of the batteries (LxWxH)	mm in	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6
Acoustic pressure level (in accordance with annex DD IEC/EN 60335-2-72) Lpa	dB (A)	<70	<70	<70	<70
Level of vibration hand (in accordance with annex EE IEC/EN 60335-2-72)	m/s^2	0.72	0.72	1.15	0.75
Uncertainty k	m/s^2	/	/	0.43	0.27
Max. level of the electromagnetic field (recharger)	µT	/	/	/	/
Max. level of the electromagnetic field (machine)	µT	/	/	/	/
Class		III	III	III	III
Protection level	IP	X3	X3	X3	X3
Weight packed machine	kg lbs.	95 209,5	95 209,5	95 209,5	105 231,5
Packing dimensions (LxDxH)	cm in	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47

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ruby 48 bh	ruby 45	ruby 50	ruby 55	ruby 45t	ruby 50t	ruby 55t
485 19	450 18	500 20	550 22	450 18	500 20	550 22
770 30	770 30	770 30	770 30	790 31	790 31	790 31
1700 18.300	1575 16.964	1750 18.837	1925 20.722	1800 19.375	2000 21.528	2200 23.681
1 x 508 1 x 20	2x235 2x9	1x508 1x20	2x285 2x11	2x235 2x9	1x508 1x20	2x285 2x11
155	350	182	280	350	182	280
30 66	22,5 50	30 66	24,5 54	22,5 50	30 66	24,5 54
450 18.5	420 17.5	600 25	420 17.5	420 17.5	600 25	420 17.5
450 18.8	570 237.5	570 237.5	570 237.5	570 237.5	570 237.5	570 237.5
120 5	120 48	120 48	120 48	120 48	120 48	120 48
120 48	/	/	/	120 5	120 5	120 5
automatic	semi-automatic	semi-automatic	semi-automatic	automatic	automatic	automatic
4 2.5	/	/	/	4 2.5	4 2.5	4 2.5
2	2	2	2	2	2	2
40 10.6	40 11	40 11	40 11	40 11	40 11	40 11
45 12	45 12	45 12	45 12	45 12	45 12	45 12
1195 47	1102 43	1205 47	1140 45	1102 43	1205 47	1140 45
1053 41.5	1053 42	1053 42	1053 42	1053 42	1053 42	1053 42
530 21	527 21	535 22	586 23	527 21	535 22	586 23
76 167.6	71 156.5	75 165.4	74 163.1	81 179	85 187	84 185
190 419	180 397	185 408	188 414	187 412	195 430	190 419
24	24	24	24	24	24	24
110	110	110	110	110	110	110
74 163	74 163	74 163	74 163	74 163	74 163	74 163
350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6	350x342x295 13.5x13.5 x11.6
<70	67,3	67,3	66,2	67,6	/	67,6
0.75	0.72	1,78	0,75	0,37	0.62	0,37
0.27	/	/	/	/	0.23	/
/	1,1031	/	1,1031	0,8685	/	0,8685
/	6,3157	/	6,3157	0,5102	/	0,5102
						
X3	X3	X3	X3	X3	X3	X3
105 231,5	95 209,5	95 209,5	95 209,5	105 231,5	105 231,5	105 231,5
118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47	118x67x119 46.5x26.4x47

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GENERAL RULES OF SAFETY

The rules below have to be followed carefully in order to avoid injury to the operator and damage to the machine.
– Read the labels carefully on the machine. Do not cover them for any reason and replace them immediately if damaged.
– **ATTENTION**: The machine must be used exclusively by authorized staff.
– **ATTENTION**: Operators must be properly trained on the use of these machines.
– **ATTENTION**: The machine is not to be used by persons, children included, with reduced physical, sensorial or mental capabilities, or with lack of experience or knowledge.
– **ATTENTION**: Do not use the machine on areas having a higher gradient than the one stated on the machine.
– During the operation of the machine, pay attention to other people and especially to the children.
– Children must be supervised to ensure that they do not play with the appliance.
– Children cannot carry out cleaning and maintenance intended to be completed by the user.

TRANSFER

– Do not strike shelvings or scaffoldings where there is danger of falling objects.
– Do not use the machine as a means of transport.
– Adapt the working speed to the adhesion conditions: particularly, slow down before narrow curves have to be faced.

STORAGE AND DISPOSAL

– Storage temperature: between 0°C and +55°C (32°F and 131°F).
– Perfect operating temperature: between 0°C and +40°C (32°F and 104°F).
– The humidity should not exceed 95%.
– 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.

CORRECT USE

– 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-based fire-extinguisher. Do not use water.
– Do not use the machine in explosive atmosphere.
– 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 and the operator has to wear suitable shoes.
– Signal the areas of moist floors with suitable signs.
– Do not mix different detergents, avoiding harmful odours.
– Avoid brush operation when the machine is standing still in order to prevent floor damages.
– Before lifting the recovery tank, make sure that it is empty.

MAINTENANCE

– If the machine does not work properly, check by conducting simple maintenance procedures. Otherwise, as for technical advice from an authorized assistance centre.
– For any cleaning and/or maintenance operation take off the power supply from the machine.
– Where parts are required, ask for ORIGINAL spare parts from the distributor and/or from an authorized dealer.
– Use only ORIGINAL brushes.
– Do not take off the protections which require the use of tools for their removal.
– 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 by an authorized service department.
– Before using the machine, check that all panels and coverings are in their position as indicated in this use and maintenance catalogue.
– Restore all electrical connections after any maintenance operation.

GENERAL RULES OF THE BATTERIES



– At any intervention on the batteries, use suitable acid-proof gloves and glasses.
– Do not smoke near the batteries and do not approach them with free flames.
– Check that a fire-extinguisher is available on site.
– Be very careful in case of leakages or liquid outlets because corrosive.
– Do not place any metallic tools onto the batteries. Risk of short circuit!
– It is compulsory to hand over exhaust batteries, classified as dangerous waste, to an authorized institution according to the current laws.

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SYMBOLOGY ON THE MACHINE



Symbol denoting the solution valve.
Indicates the switch or signal lamp solenoid valve on the instrument board.
Indicates the solution valve lever.



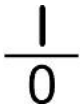
Symbol denoting the lifting of the squeegee.



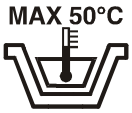
Symbol denoting the lowering of the squeegee.



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



Symbol denoting switching on.
Indicates the general switch of the machine.



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



Symbol denoting the charge level of the batteries **(if the display is not present).**



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



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.

SYMBOLOGY ON THE MANUAL



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 battery charger, 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.



Symbol that indicates the obligations of disconnecting the system from the batteries by disconnecting the connector before operating on the machine.



Icon indicating the part of the manual related to the unboxing, preparation and start of the machine.



Icon indicating the part of the manual related to the maintenance of the machine.



Symbol that indicates the obligation of wearing safety glasses.



Symbol that indicates the obligation of wearing safety gloves.



Symbol that precedes an important information about the proper use of the machine.



Symbol that indicates operations that have to be carried out only by qualified personnel.

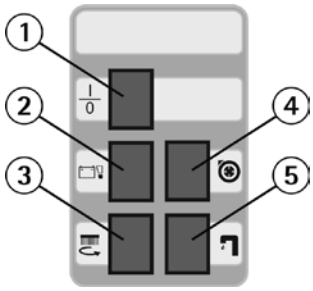


Icon indicating the part of the manual related to the machine use.

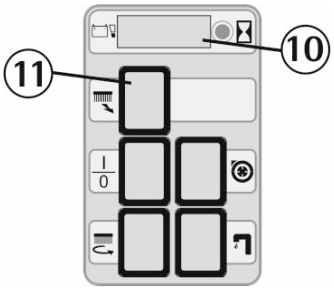
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INSTRUMENT BOARD AND CONTROLS LEGEND

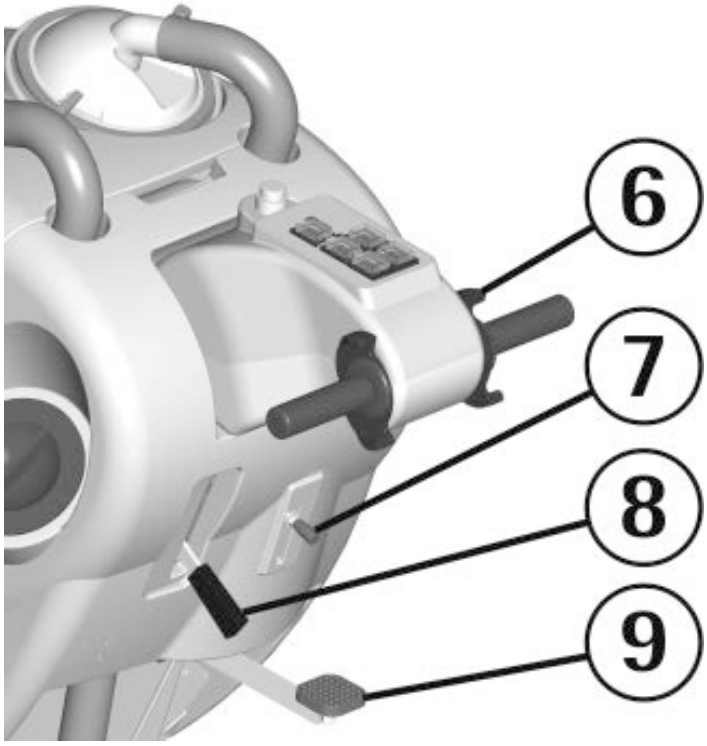
1. IGNITION SWITCH
2. BATTERIES CHARGE LEVEL SIGNAL
3. BRUSH MOTOR SWITCH
4. SUCTION MOTOR SWITCH
5. SOLENOID VALVE SWITCH



1. DISPLAY
2. BRUSH RELEASE (ONLY ON BRUSH BASE 50)



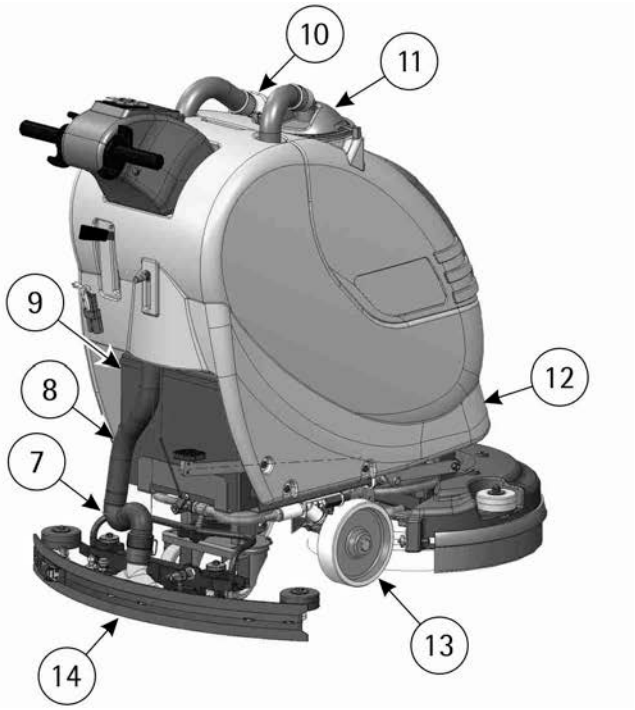
6. LEVERS DRIVE CONTROL
7. LEVER SOLUTION VALVE
8. LEVER SQUEEGEE LIFTING
9. PEDAL BRUSH BASE GROUP LIFTING



LEGEND MACHINE

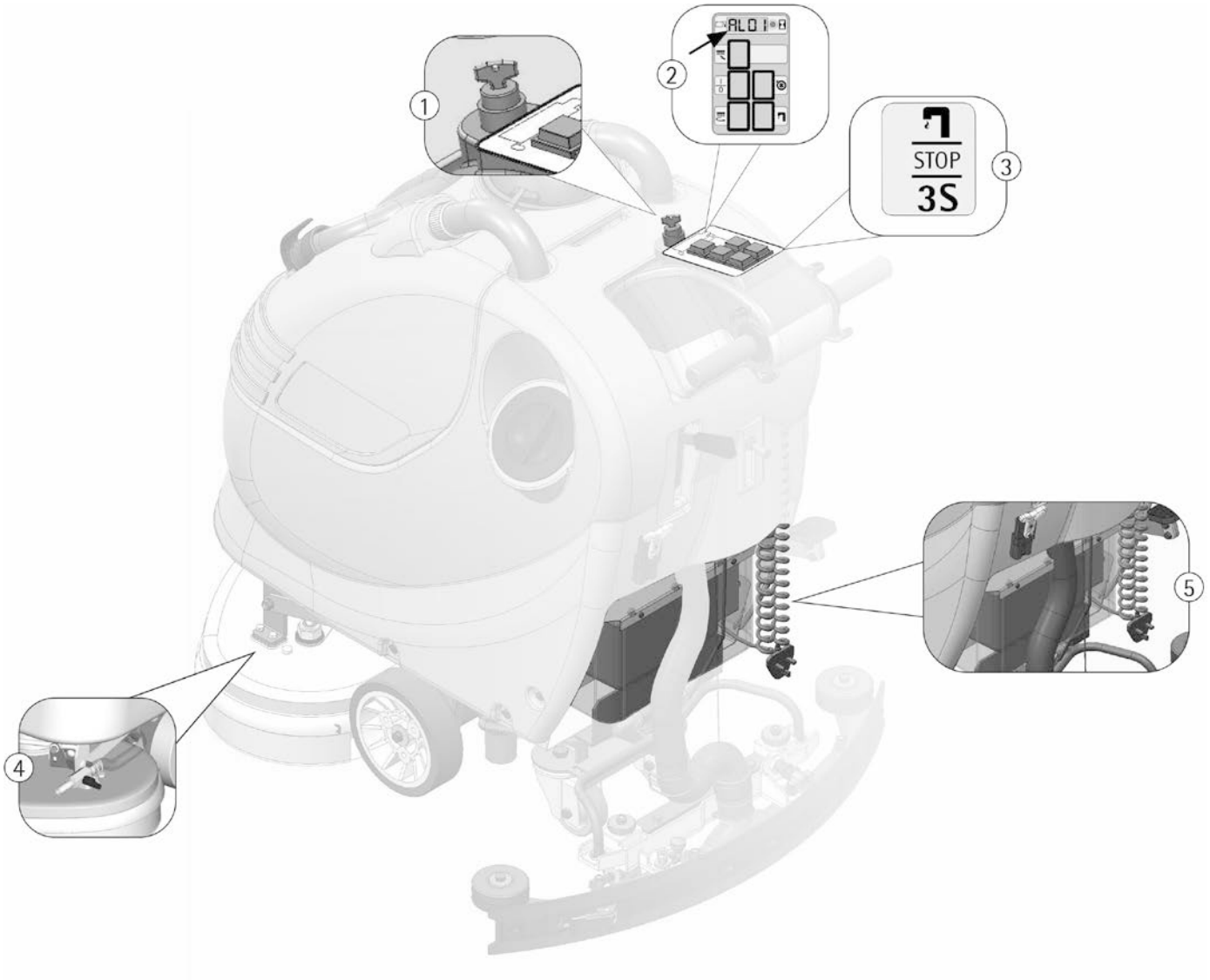
1. BRUSH BASE GROUP
2. PLUG EXHAUST HOSE RECOVERY TANK
3. RECOVERY TANK
4. INSTRUMENT BOARD
5. LEVERS DRIVE CONTROL
6. SCREW CAP FOR INLET DETERGENT SOLUTION
7. GUIDE SPRING SQUEEGEE HOSE SQUEEGEE HOSE
8. SQUEEGEE HOSE
9. BATTERIES
10. INLET OPENING SQUEEGEE HOSE
11. SUCTION COVER
12. SOLUTION TANK
13. WHEELS
14. SQUEEGEE ASSEMBLY
15. CASTOR WHEELS





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OPTIONAL ACCESSORIES
The optional accessories are:
Switch with key (1);
Brush/es motor overload protection device (2);
3S – Solution Saving System assembly (3);
Emptying device of the solution tank (4):
On-board battery charger (5).



BEFORE USE

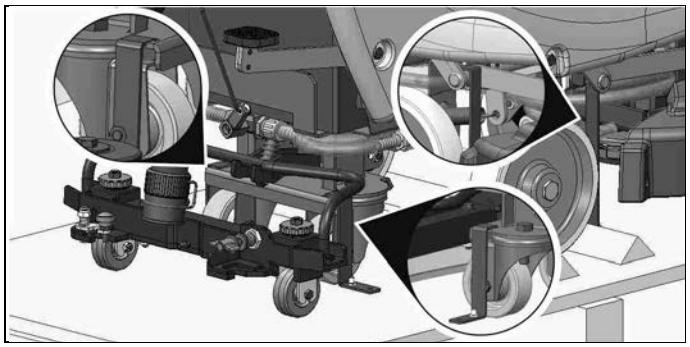
HANDLING OF THE PACKED MACHINE

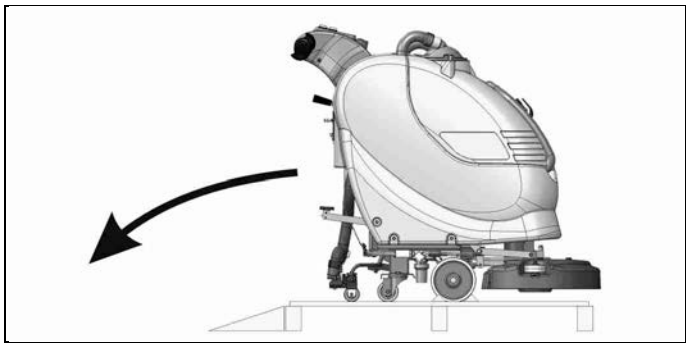
The machine is supplied with suitable packing foreseen for fork lift truck handling.
For the package dimensions please look at the "TECHNICAL DESCRIPTION" table.

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 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.

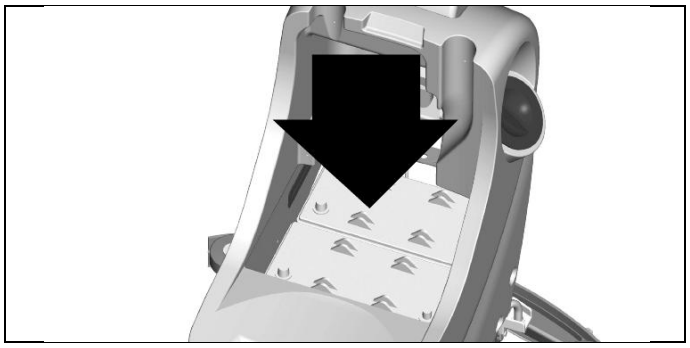




The portable slope is not included in the packaging.

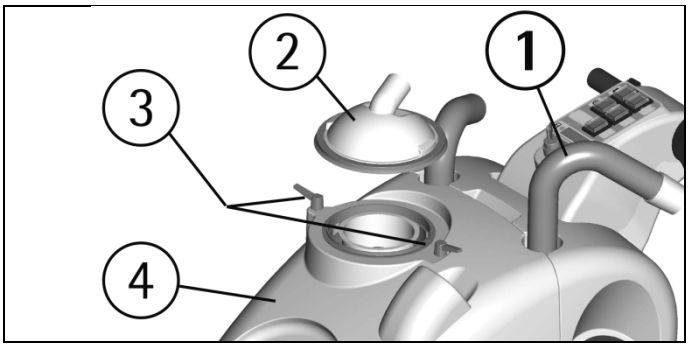
BATTERY INSTALLATION AND SETTING OF THE BATTERY TYPE

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.

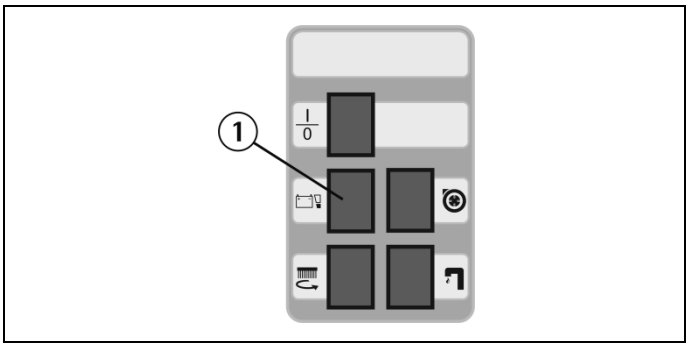


For batteries installation proceed as follows:

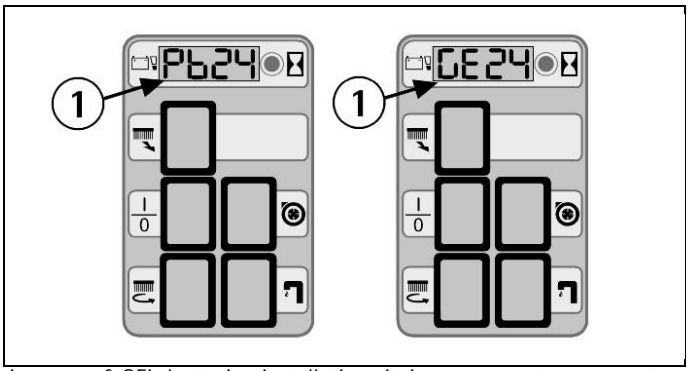
1. Take off the squeegee hose (1).
2. Take off the suction cover (2) after turning the blocking levers (3).
3. Take off the recovery tank (4).
4. Place the batteries in its compartment.
5. **Connect the terminals, respecting the polarities, avoiding contact with tools that could create short circuit.**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



The machine and the signal lamp of the battery charge level foresee the use of traditional lead batteries.



If the machine is equipped with the display, check the battery setting on it (1).



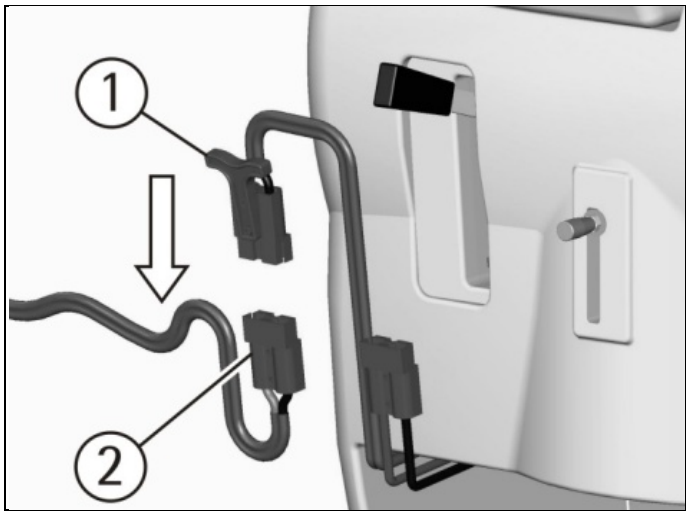
In case of GEL batteries installation, it is necessary to carry out a specific adjustment. Please contact the authorized technical assistance.

BATTERY CHARGER

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 versions not equipped with on-board battery charger it is recommended to use one with current suitable for the batteries used, SELV output voltage (Safety Extra Low Voltage) of 24Vdc and complying with IEC/EN 60335-1 and IEC/EN 60335-2-29.

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.

BATTERIES CHARGING
Take the machine to a levelled surface.
Plug in batteries connector (1) placed in the rear part of the machine, to connector (2) of the battery recharger.



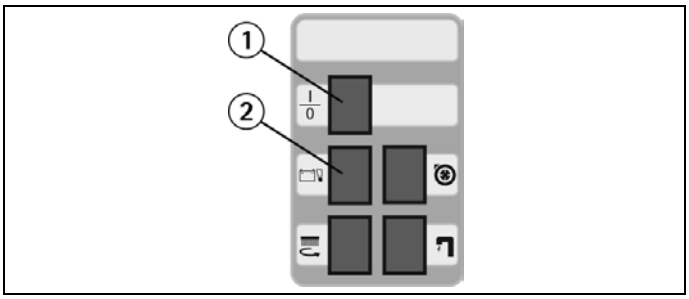
ON-BOARD BATTERY RECHARGER (OPTIONAL)
If the machine is equipped with the on-board battery recharger (see under "OPTIONAL ACCESSORIES") please refer to the instructions of the constructor of this accessory what the recharging operations concern.
The battery recharger is connected directly to the battery poles.
During the recharging operations a device is activated which does not permit the machine's functioning.
The main cable of the battery recharger has a maximum length of two meters (6.5 ft.) and must be connected to a single-phase socket type CEE 7/7.

BATTERIES CHARGING WITH ON-BOARD BATTERY CHARGER (OPTIONAL)

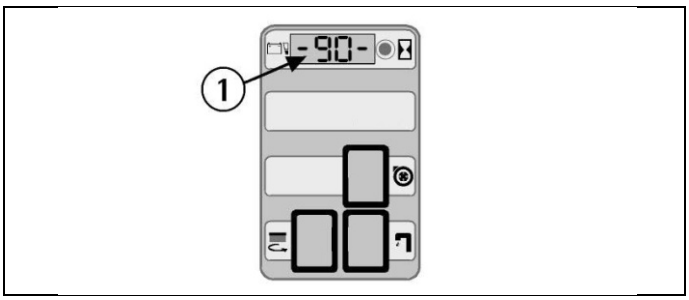
Bring the machine on a leveled surface near to a single-phase socket (within 2m, 6.5 ft.) with tension 230V, frequency 50Hz (for USA 120V, 60Hz), nominal current 10A.
Switch off the switches of the brushes motor, suction motor and of the solenoid valve.
Insert the plug into the mains socket.
At the end of the recharging, take off the plug from the mains socket.



BATTERIES CHARGE LEVEL INDICATOR
If the machine is not provided with a display, when switching on the signal lamp of the battery charge level (2) will come on.
When the signal lamp is in **green colour** it means that the battery charge level is **sufficient** for the functioning of the machine.
If the signal lamp is in **red colour** it means that the battery charge level is **insufficient** for the functioning of the machine and it is necessary to recharge immediately the batteries (see under "BATTERIES CHARGING").

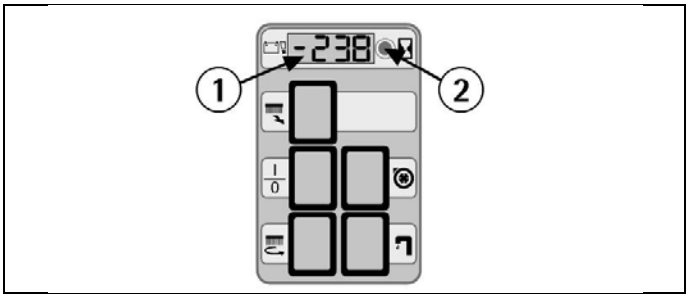


If the machine is equipped with a display, on the display (1) the following indication of the battery charge level is digital and indicates the percentage of the battery charge. 100 is the maximum charge, down to a minimum of 10, indicating every 10% decrease.
When the charge level reaches 20%, the display starts blinking indicating the end of the battery charge.

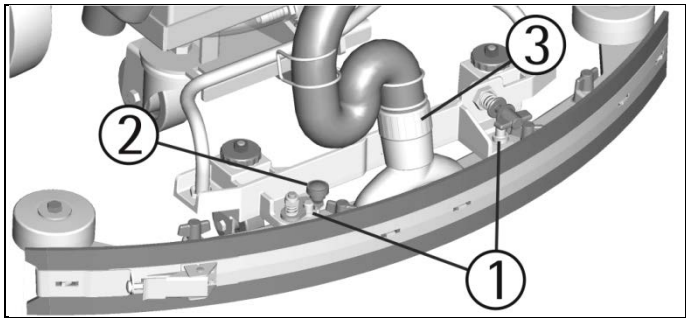


After a few seconds from the four blinking "----" dashes, the brushes motor stops automatically. With the remaining charge it is anyhow possible to finish the drying operation before proceeding to the recharge.

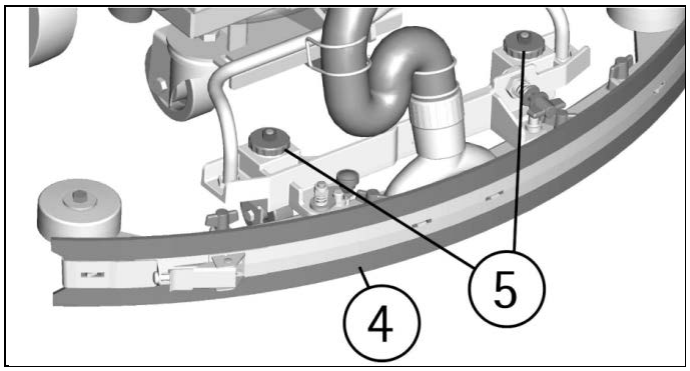
HOUR METER (IF EQUIPPED WITH A DISPLAY)
The machine is equipped with an hour meter located on the same display of the battery charge level indicator (1). Keeping the button (2) pressed for more than 3 seconds, the first data indicates the working hours and after a few seconds the working minutes are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

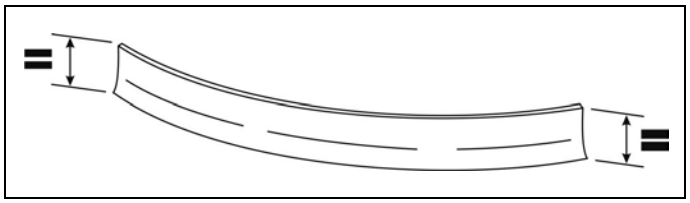


SQUEEGEE ASSEMBLING
With the squeegee support lowered, slide the two stud bolts (1) placed on the upper part of the squeegee inside the slots on the support. Block the squeegee by rotating the lever (2) clockwise.
Insert the squeegee hose (3) into its coupling, respecting its position as indicated in the figure.

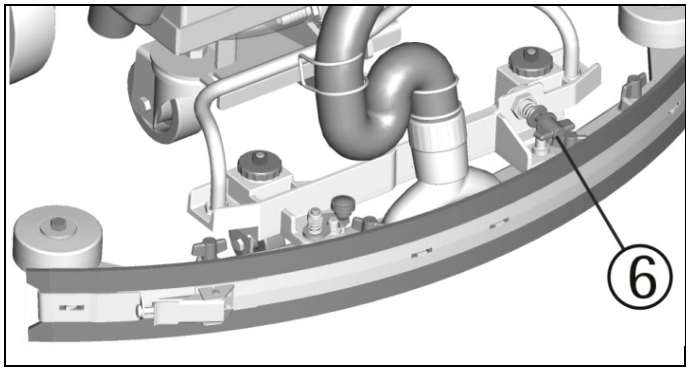


ADJUSTING THE SQUEEGEE HEIGHT
The squeegee must be adjusted in height depending on the rubber wear. In order to guarantee a perfect drying during the operation, the lower blade of the rear squeegee rubber (4) must work slightly bent backwards (operator side) in uniformed way in all its length.
Acting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



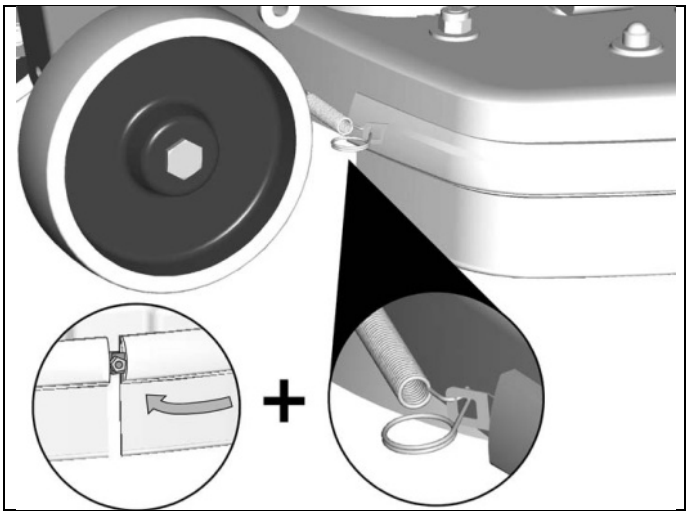


ADJUSTING THE SQUEEGEE INCLINATION
In case of need, to increase the rubber bending in the central part, it is necessary to tilt the squeegee rotating counterclockwise the register (6). To increase the rubber bending on the squeegee extremities, rotate the register clockwise.

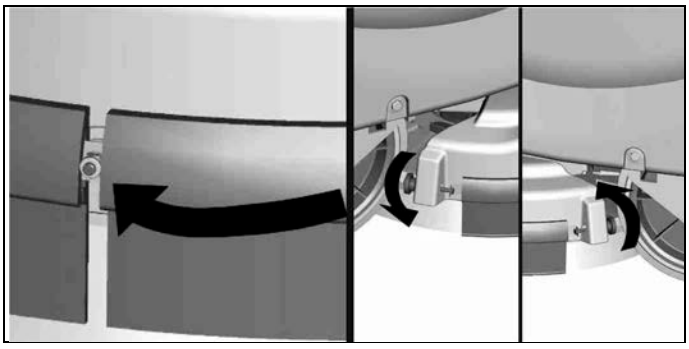


SPLASH GUARD ASSEMBLING

SPRING-LOCKING TYPE
The two splash guards have to be assembled onto the brushes base group. Insert the metal strips inside the suitable slots present on the rubber. Place the round hole at the flat extremity of the strip onto the screw placed in the front part of the brushes base group. Secure the strips through the nut blocking it.
Hook the coupling in the rear part of the brushes base group to the slot placed at the extremity of the metal strip still free. Please act as above for both the splash guard rubbers, paying attention to reduce to the minimum the gap between the two rubbers in the front part of the brushes base group.
With brushes assembled, the splash guard must slightly touch the floor.



KNOB-LOCKING TYPE
The two splash guards have to be assembled onto the brush base group. Insert the metal strips inside the suitable slots present on the rubber. Place the round hole at the flat extremity of the strip onto the screw placed in the front part of the brush base group. Secure the strips through the nut blocking it.
Screw down the knobs in the rear part of the cover in the free extremity of the metal strips. The operation has to be carried out for both splash guards.
With the brush assembled, the splash guard must slightly touch the floor.

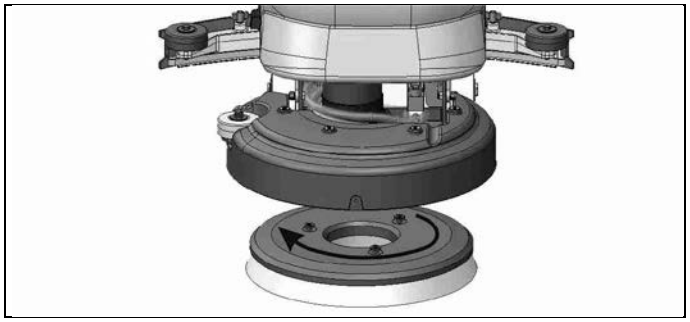


BRUSH/ES ASSEMBLY AND DISASSEMBLY

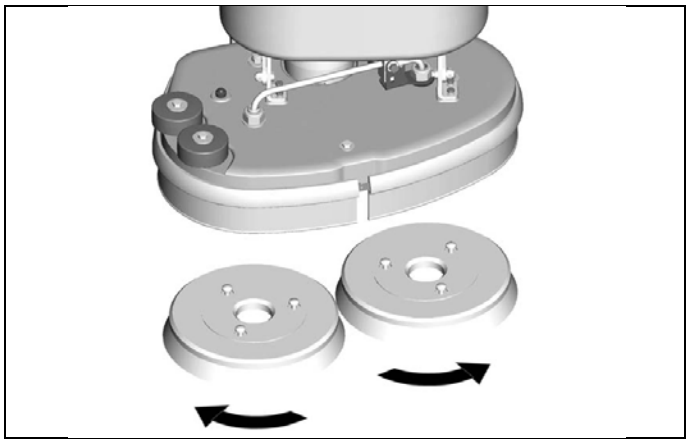
1. Take off the electric supply to the brush motor unplugging the batteries connector.
2. Acting upon the pedal lift the brush base group.
3. With the brush base group in lifted position, insert the brush into its plate seat underneath the brush base turning it until the three metal buttons are properly seated in their slots; rotate energically the brush to push the button towards the coupling spring until it gets blocked.

The figure shows the rotating sense for the brush coupling.

SINGLE BRUSH VERSION

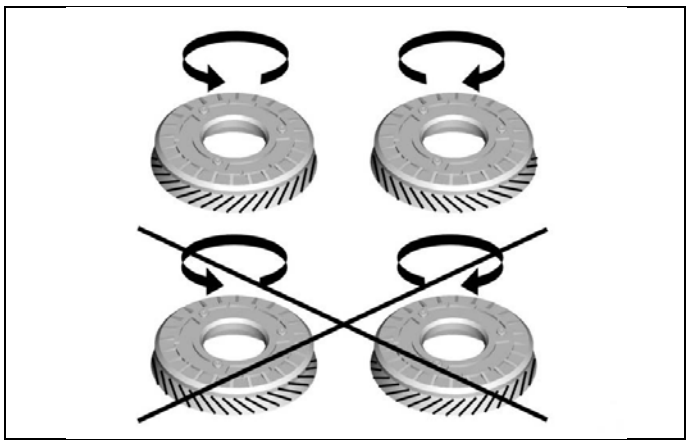


TWO-BRUSHES VERSION



To unlock the brush, perform the same operations and rotate the brush the opposite way as for the locking.

For a longer life of the brushes we suggest to invert daily their position. Whenever brushes were deformed we suggest to reassemble them in the same position, avoiding that the different inclination of the bristles causes excessive motor overload or troublesome vibrations.

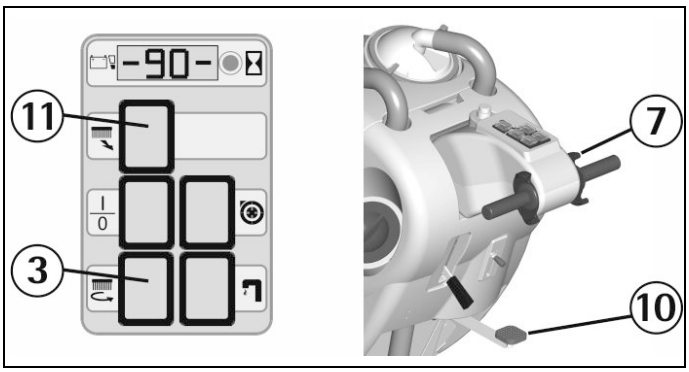


AUTOMATIC BRUSH RELEASE

Only for the models with the 50 brush base it is possible to release the brush as follows:

1. Lift the brush base by pressing the pedal (10).
2. Turn on the brush switch (3).
3. Press the drive control levers (7).
4. Press the release button (11).
5. Release the drive control levers (7).

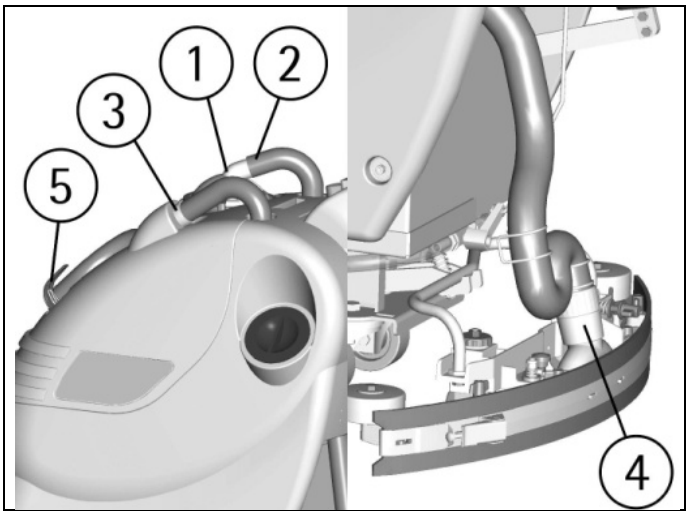
In this way the brush automatically releases itself from the brush base.



RECOVERY TANK

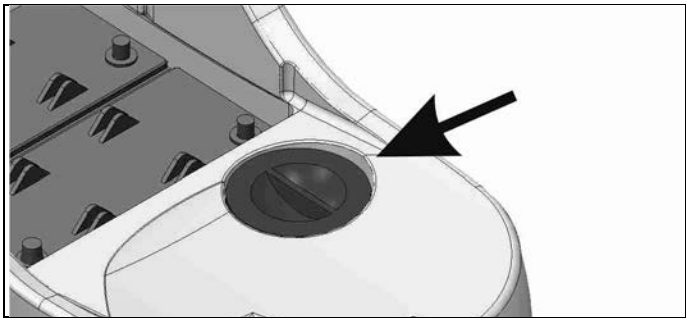


Check that the cover of the suction filter (1) is correctly secured, after rotating the levers and that the suction motor hose (2) is correctly connected.
Verify also that the squeegee hose is correctly inserted into the seats (3 and 4) and that the exhaust hose plug (5) placed in the front part of the machine, is closed.



DETERGENT SOLUTION TANK

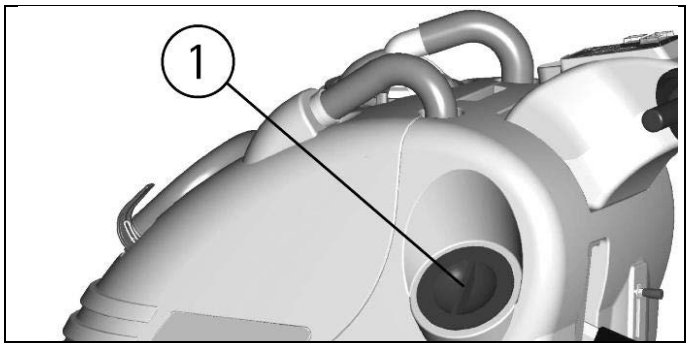
The solution tank is provided with an inspection opening. This permits to clean the exit point of the detergent solution.
Be sure that the cap is well tightened after the cleaning.





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. Always use low-foam detergent. To safely avoid the production

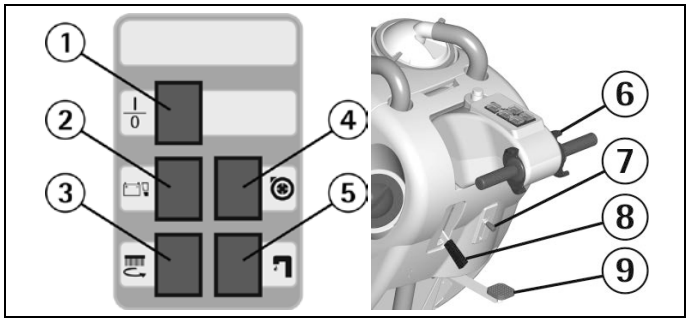
of foam, before starting work introduce a minimum quantity of anti-foaming liquid into the recovery tank. Do not use pure acids and use only professional products suitable for cleaning with scrubbing machines.



FLOOR CLEANING

STARTING OF THE MACHINE

1. Press the key switch (OPT).
2. If present, press the switch ignition 1/0 (1).
3. Check the charge level on the display or on the signal lamp battery charge level.
4. Press the brush motor switch (3).
5. Press the suction motor switch (4).
6. Press the solenoid valve switch (5).
7. Acting upon the brush base lifting pedal (9) lower the brush base.
8. Acting upon the solution valve lever (7) open and adjust the solution detergent flow.
   The water starts to flow automatically when the brush motor is activated.
   On the instrument board the indicator of the solenoid valve switch (5) will turn on.
9. Activating the levers drive control (6) the machine will start moving, the brush starts to rotate, the solenoid valve activates the water flow and the squeegee will start drying the floor.
10. During the first meters check that the detergent solution flow is appropriate and that the squeegee adjustment guarantees a perfect drying action.



3S SYSTEM "SOLUTION SAVING SYSTEM" (OPTIONAL)

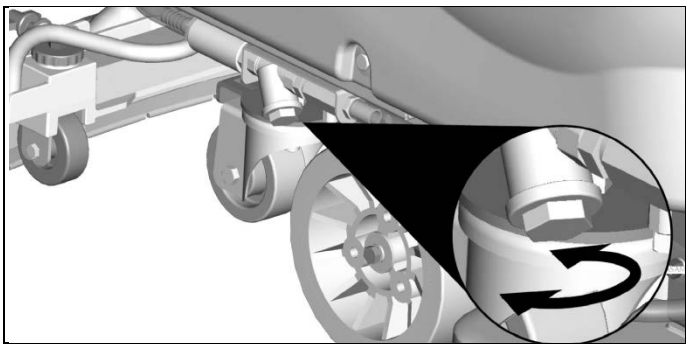
The need of an increasing carefulness to the environment, and to the abuse of polluting elements, such as detergents in the floor cleaning machines, has brought us to the realization of a device which, regardless from the capacity to use the machine by the operator, keeps the minimum flow of the detergent solution constant, having been properly calibrated by an expert technician. The best detergent solution amount with this system will be the one which realizes the minimum flow of detergent solution sufficient to clean correctly the floor. For this reason, the system is called "**Solution Saving System**" abbreviated to "**3S**" system.

The system is composed by a hydraulic circuit parallel to the traditional one which can be enabled or disabled directly from the instrument board through a 3-position switch with the following functions:

(1) = Position solution valve with traditional functioning with variable water flow that differs by the opening of the solution valve.
(2) = Position STOP with functioning without flow (drying only).
(3) = Position 3S with functioning with optimal fixed flow.



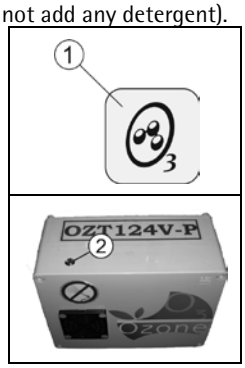
The hydraulic circuit of the 3S system is independent and it is provided with a proper filter which has to be cleaned regularly.
For the cleaning it is necessary to unscrew the plug as shown in the figure and clean the inside filter with a water jet.



SELECTING AND WORKING WITH OZONE (OPTIONAL)

The machine can produce water with an ozone level high enough to disinfect the surfaces cleaned.
In order to operate the ozone system, the best way, proceed as follows:

1. Make sure that the inside of the solution tank is clean, eventually rinse it making at least a couple of fillings and depletions.
2. Fill the solution tank with tap water (do not add any detergent).
3. Turn on the ozone generator by pressing the proper switch identified by the appropriate symbol (1) located on the control panel and set the different controls for the work of the machine.
4. Start working.
   When the solenoid valve starts working, the warning light (2) lights up indicating ozone production.



Ozone is a very penetrating gas and it can be irritating.

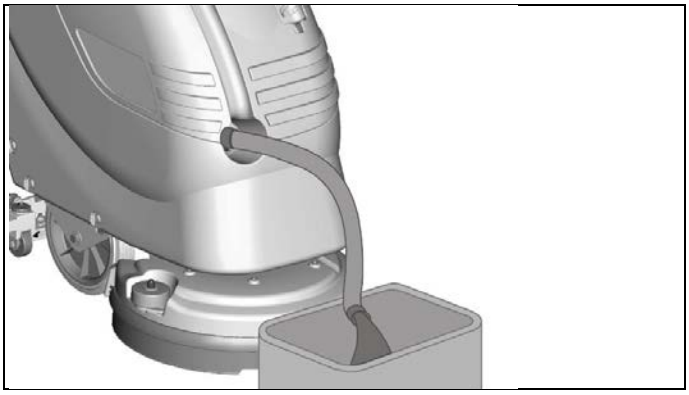
The ozonated water is strongly oxidizing, therefore in order to protect from oxidization (rust) the metal parts of the machine, it is better to rinse with water all the lower parts of the machine at least once a week.

At the end of the work, it is not necessary to empty the solution tank.

OVERFLOW DEVICE

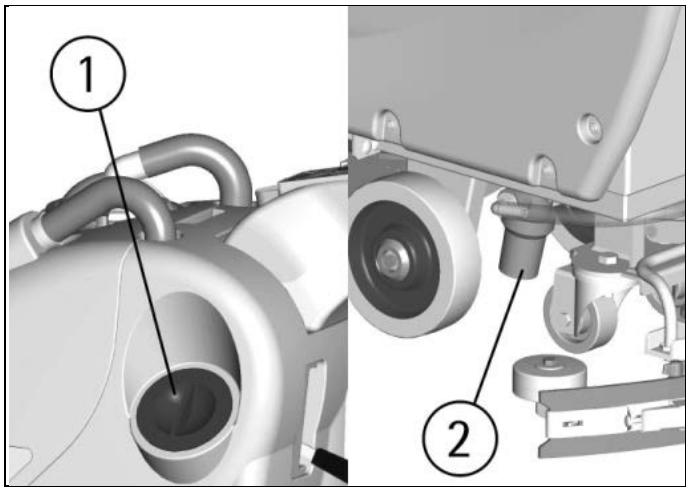
In order to avoid serious damages to the suction motor, the machine is equipped with a float that intervenes when the recovery tank is full, closing the suction hose and stopping the suction.
When this happens, it is necessary to empty the recovery tank.

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.



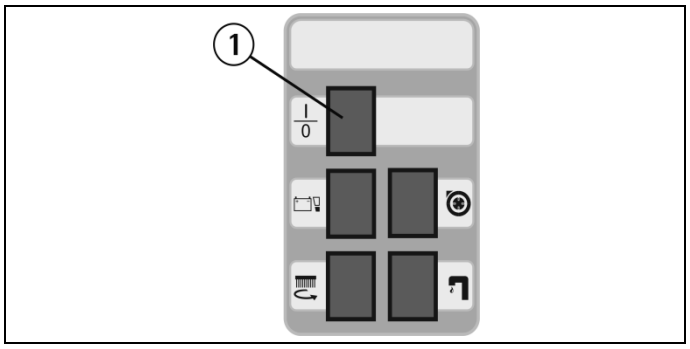
EMPTYING DETERGENT SOLUTION

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).



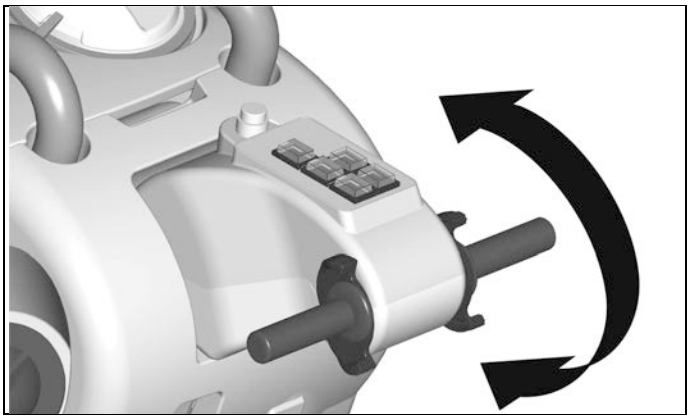
FORWARD MOVEMENT (IF EQUIPPED WITH TRACTION)

The traction of this machine is given through an electronically controlled motor.
To move the machine, act upon the switch (1), then rotate the levers drive control placed on the handle bar, in forward you obtain the forward drive, in reverse the backwards movement is obtained. The control acts in a progressive way, therefore it is possible to graduate the speed depending on each requirement rotating the lever whatever it is necessary. During reverse motion the speed is reduced.



STOP (IF EQUIPPED WITH TRACTION)

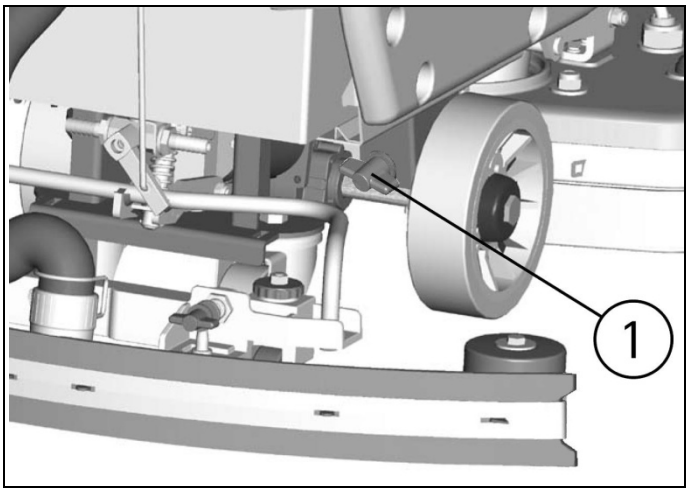
Releasing the levers drive control, the machine and the brush will stop.



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

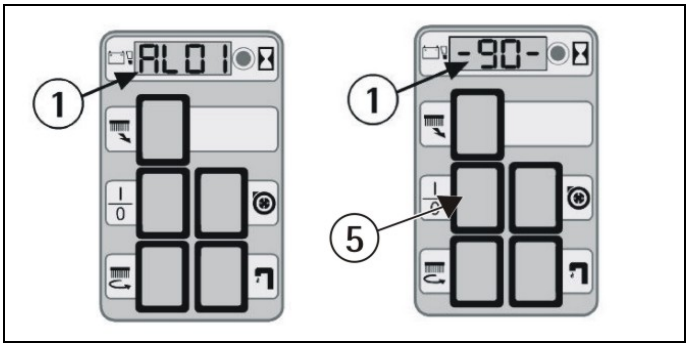
ADJUSTMENT OF THE BRUSH/ES PRESSURE PRESENT ON SOME MODELS

Through the register (1) placed on the internal part of the front right wheel, it is possible to adjust the brush/es 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.



BRUSH/ES MOTOR OVERLOAD PROTECTION DEVICE (OPTIONAL)

If the machine is equipped with the amperemetric protection device (see under "OPTIONAL ACCESSORIES"), this, in case of extended overload of the brush/es motor, intervenes shutting it off. Furthermore, on the display (1) appears an alarm "AL01". In case of intervention of this device, check the brush/es pressure adjustment in connection with the type of floor to be cleaned and if necessary, reduce it.
To reset the brush/es motor, turn off the brush/es motor switch (5) for a few seconds and turn it on again.



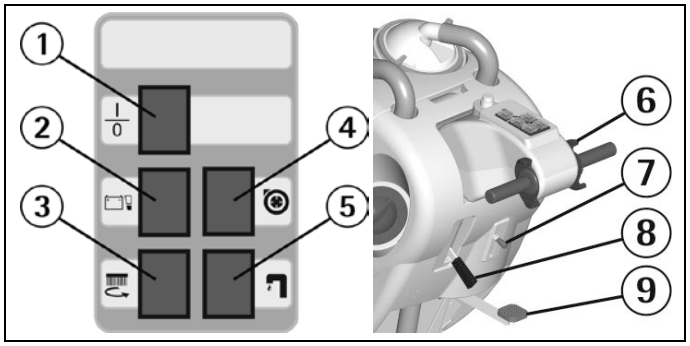
SIGNAL DETERGENT SOLUTION RESERVE (H2O ON THE DISPLAY)

When the indication H2O on the display appears, this means that the detergent is getting low corresponding to 10% of the maximum capacity of the solution tank.



STOP OF THE MACHINE AFTER CLEANING OPERATION

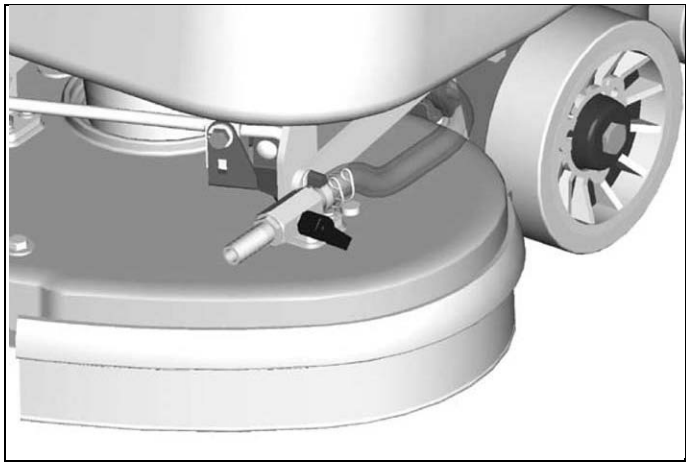
Before executing any type of maintenance:
1. Lift the brushes base acting upon the pedal (9).
2. Lift the squeegee acting upon the lever (8).
3. Turn off the brush motor, the suction motor and the solenoid valve acting upon its switches.
4. Bring the machine to an appropriate place for tanks draining.



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

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.
4. Put the hose back into its position, placing it into the spring.

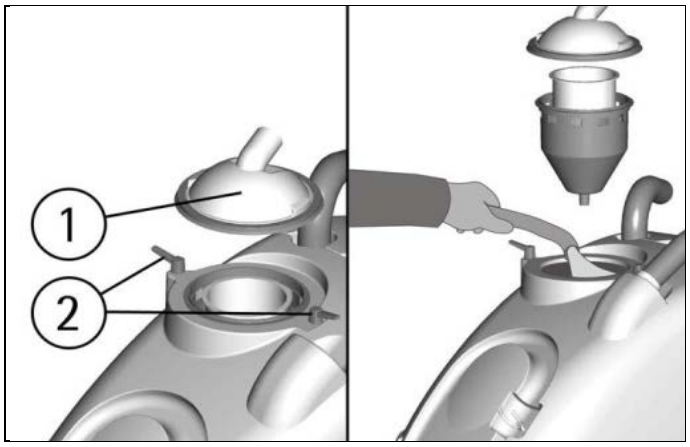


DAILY MAINTENANCE

RECOVERY TANK CLEANING



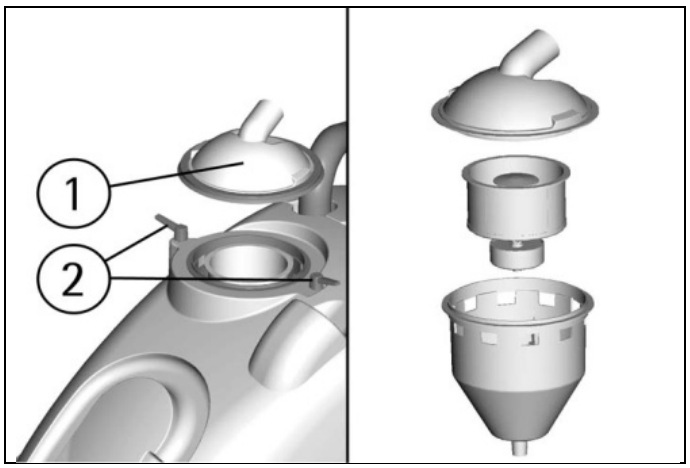
1. Hold the exhaust hose placed in the front part of the machine.
2. Take off the exhaust plug acting upon its lever and empty the recovery tank into appropriate containers (see under "OVERFLOW DEVICE").
3. Take off the suction cover (1) after rotating the blocking levers (2).
4. Take off the filter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



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.



BRUSH/ES CLEANING

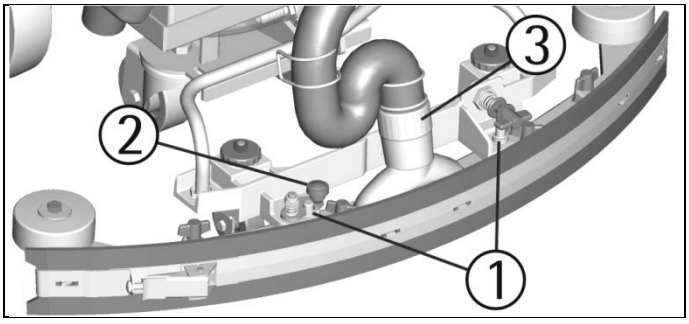
Disassemble the brush/es and clean it/them with a water jet (for the brush disassembly see under "BRUSH ASSEMBLY AND DISASSEMBLY").

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

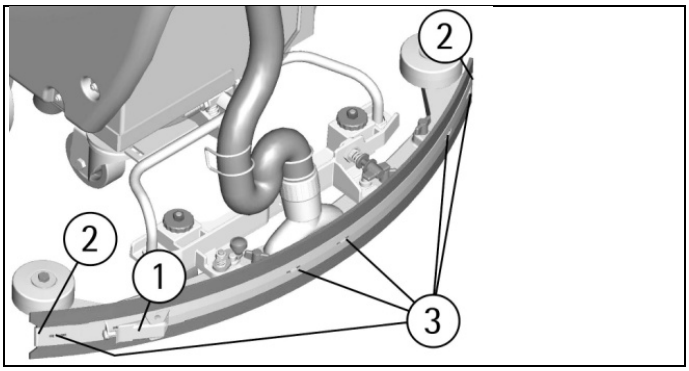
REAR SQUEEGEE RUBBER REPLACEMENT

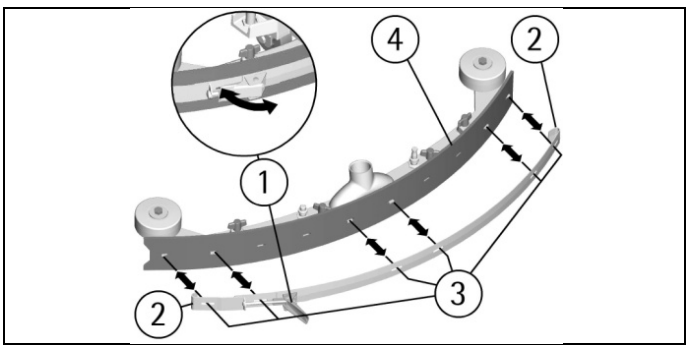


Check the squeegee rubber wear and eventually turn or replace it.
For the replacement it is necessary to:

1. Lift the squeegee acting upon the lever.
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).



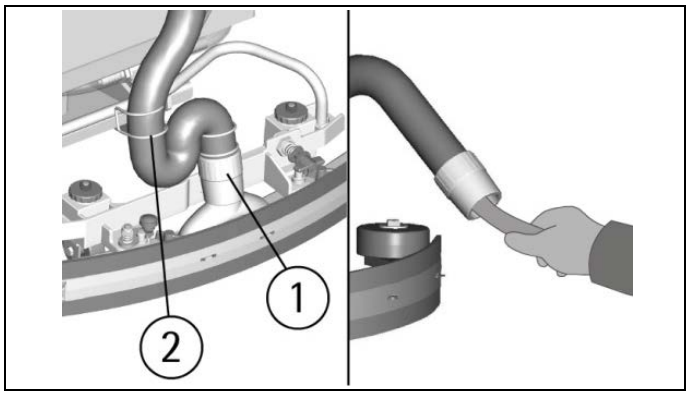


SQUEEGEE HOSE CLEANING



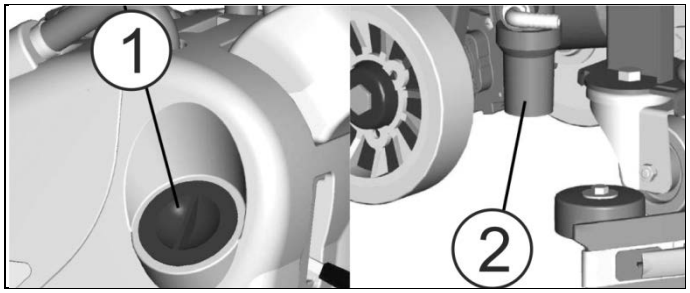
Weekly or in case of insufficient suction, it is necessary to check that the squeegee hose is not obstructed. Eventually, to clean it, proceed as follows:

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) being careful not to lose or to damage the gasket.
4. Rinse with a water jet the solution tank.
5. Rinse the solution tank filter placed inside the exhaust plug, under the machine.

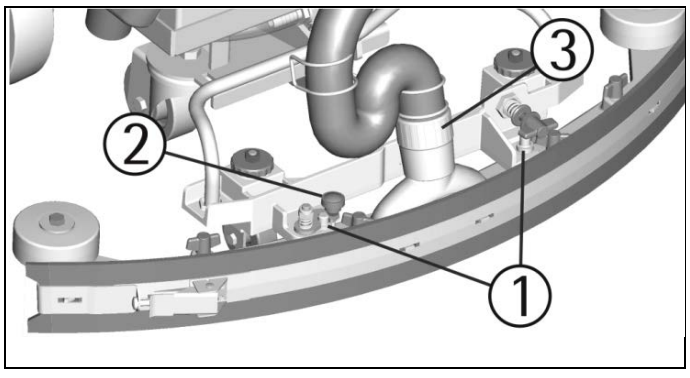


TWO-MONTHLY MAINTENANCE

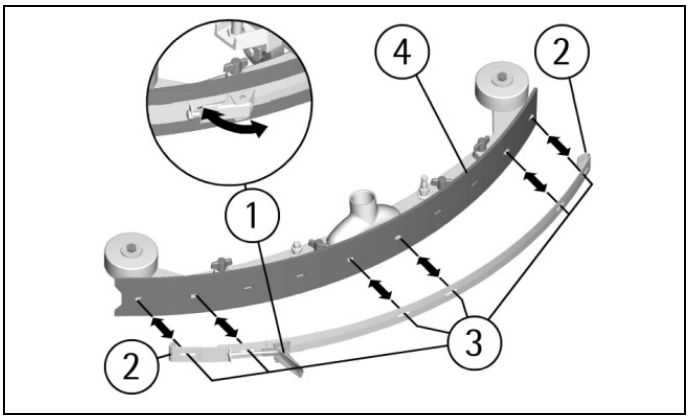
FRONT SQUEEGEE RUBBER REPLACEMENT

Check the wear of the squeegee rubber and eventually replace it.
For the replacement it is necessary to:

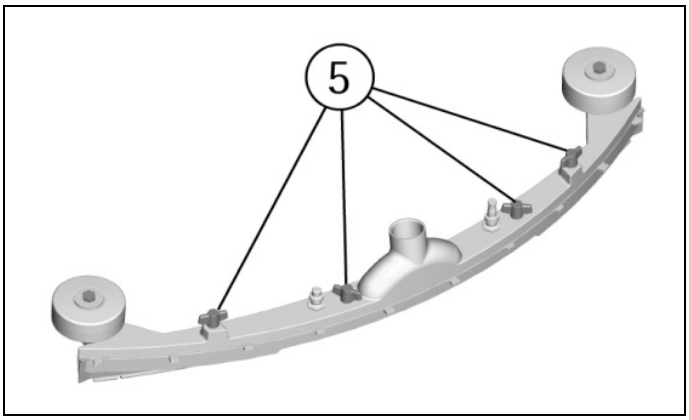
1. Take off the squeegee hose (3) from its coupling.
2. Disassemble the squeegee from the support rotating the lever (2) counterclockwise and sliding the stud bolts (1) in their slots.



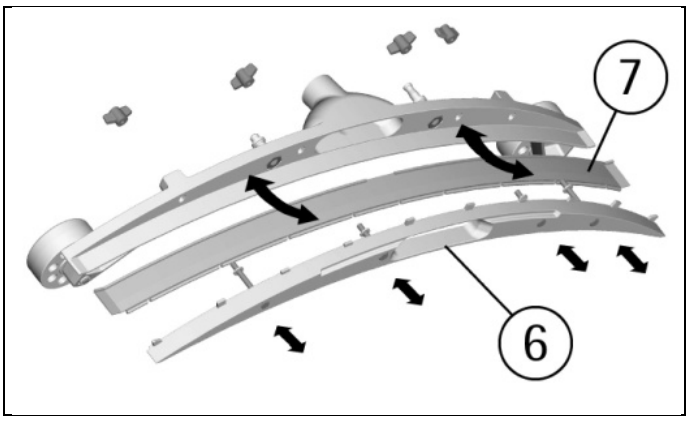
3. Uncouple the hook (1) of the rubber holder blade, release the extremities (2) from the squeegee body and take off the rubber (4).



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.

SIX-MONTHLY MAINTENANCE

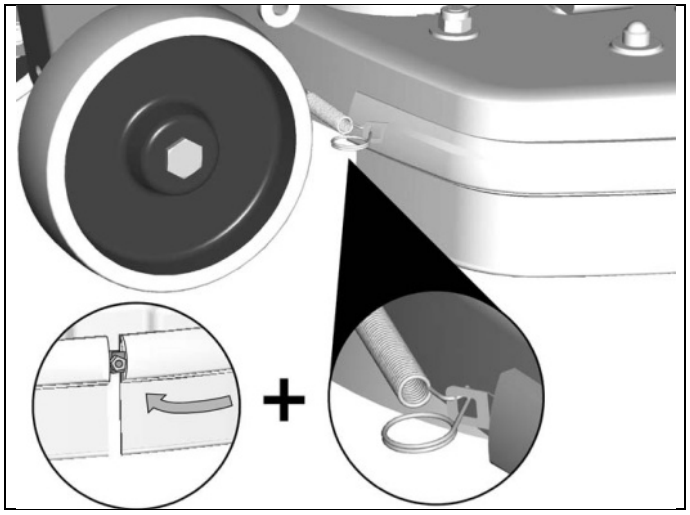
SPLASH GUARD REPLACEMENT

SPRING-LOCK SYSTEM

1. Release the coupling in the rear part of the brushes base group from the slot placed at the extremity of the metal strip.
2. Unscrew the nut on the front part of the brushes base group and take off the metal strips.

3. Replace the splash guard rubbers and follow assembling instructions at "SPLASH GUARD ASSEMBLY" paragraph.

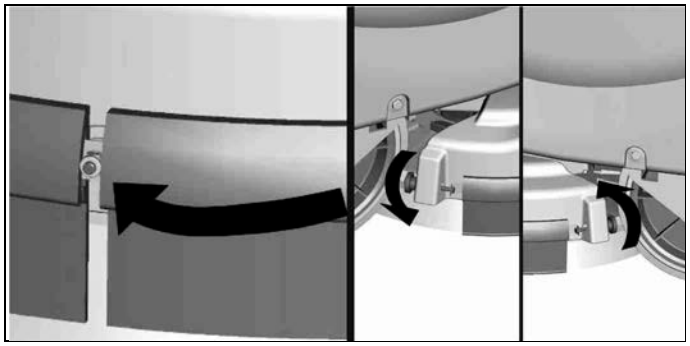
With brushes assembled, the splash guard must slightly touch the floor.



KNOBS-LOCK SYSTEM

1. Unscrew the knobs in the rear part of the brush base group from the extremity of the metal strips. The operation has to be carried out on both splash guards.
2. Unscrew the nut on the front part of the brush base group and take off the metal strips.
3. Replace the splash guard rubbers and follow the assembling instructions at "SPLASH GUARD ASSEMBLY" paragraph.

With the brush assembled, the splash guard must slightly touch the floor.

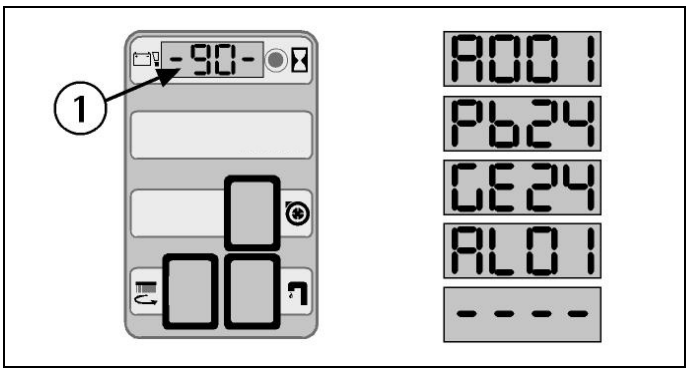


TROUBLESHOOTING GUIDE

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

SIGNALS ON THE DISPLAY (IF PRESENT)

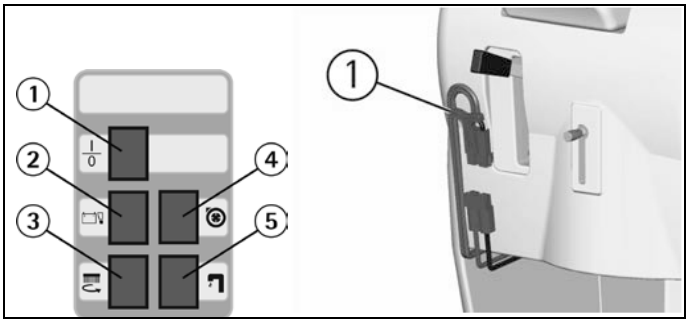
A001: Indication of the version of the electronic check card (the last number indicates the revision of the check card).
Pb24: Indication battery check card set for lead batteries.
GE24: Indication battery check card set for gel batteries.
AL01: Signal indicating an absorption of excessive current of 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.



THE SUCTION MOTOR DOES NOT WORK

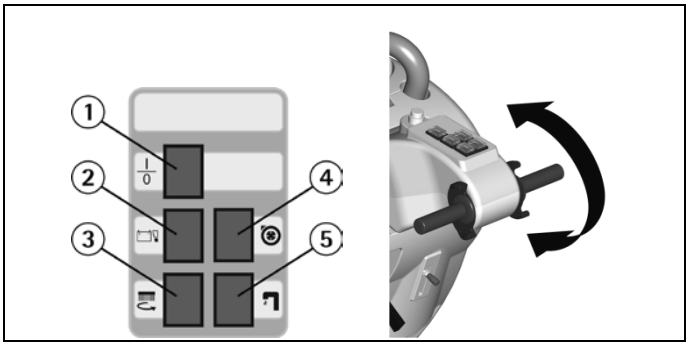
1. Verify that the key switch (see under "OPTIONAL ACCESSORIES") is in the correct position (clockwise).
2. Check that the suction motor switch is on.
3. Check the charge level of the batteries (see "BATTERIES CHARGING")
4. Check that the battery connector (1) is correctly plugged in.

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



THE BRUSH MOTOR DOES NOT WORK

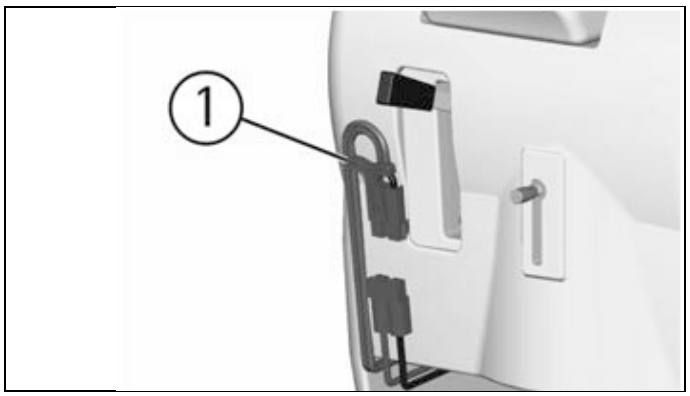
1. Verify that the key switch (see under "OPTIONAL ACCESSORIES") is in the correct position (clockwise).
2. Verify that the brush motor switch is on.
3. Activate the levers movement.
4. Check the charge level of the batteries (see "BATTERIES CHARGING")



5. Check that the battery connector (1) is correctly plugged in.
6. On machines equipped with brush/es motor overload protection device (see under "OPTIONAL ACCESSORIES"), check that on the display (1) does not appear the alarm "AL01" (brush/es motor overload alarm).

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

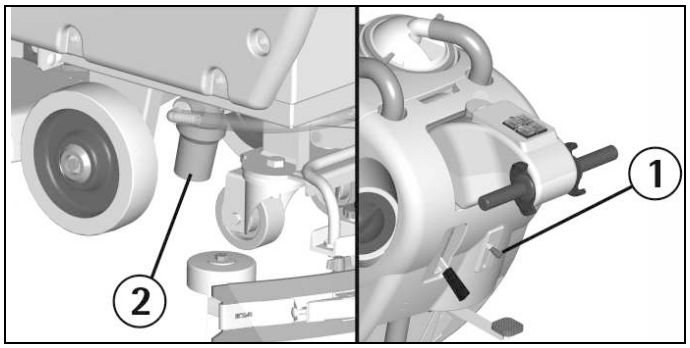
Never leave the batteries discharged for a long time.



INSUFFICIENT WATER ON THE BRUSH

1. Check that the solution valve lever (1) is open.
2. Check the level of the liquid in the solution tank.
3. Check that the solution filter (2) is clean.

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



THE MACHINE DOES NOT CLEAN PROPERLY

1. The brush/es do not have the suitable bristle dimension: use only original brushes. For advice, contact the authorized technical assistance.
2. The brush/es has/have got worn bristles. Check the brushes wear condition and eventually replace them (the brush has to be replaced when the bristles have reached a height of about 15mm).
   To replace the brush/es, see instructions at paragraph "BRUSH/ES DISASSEMBLY" and "BRUSH/ES 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

PERIODIC ORDINARY MAINTENANCE CHART

INTERVENTION	DAILY	PERIODIC
RECOVERY TANK CLEANING	•	
SUCTION FILTER CLEANING	•	
SOLUTION TANK FILTER CLEANING		•
BRUSH CLEANING	•	
BRUSH DISASSEMBLY AND CLEANING	•	
SQUEEGEE CLEANING	•	
FRONT SQUEEGEE RUBBER CHECK		•
REAR SQUEEGEE RUBBER CHECK		•
SPLASH GUARD RUBBER CHECK		•
CHECK SQUEEGEE ADJUSTMENT		•
SQUEEGEE HOSE CLEANING		•
SOLUTION TANK CLEANING		•
CHECK BATTERIES ELECTROLYTE		•

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