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**Operations & Maintenance Manual
For Commercial Use Only**



**AUTOMATIC SCRUBBER
MODEL NO: TS120-S53-U**

NOTES



PROTECT THE ENVIROMENT
Please dispose of packaging materials in an enviromentally safe way according to local waste disposal regulations.



Always remember to recycle.

Within 30 days, to activate the warranty, go to;
<https://tornadovac.com/services/warranty-registration-form.aspx>

For warranty information go to www.tornadovac.com

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Your new Tornado unit is a high quality, precision-made product. All parts used in the manufacturing of this unit have passed rigid quality control standards prior to assembly. Please safeguard the original receipt / invoice. If you experience any problems with your unit during the warranty period, the original receipt / invoice will act as proof of purchase. Contact Tornado for any warranty inquiries.

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 that have been instructed on its correct and proper use.
- **ATTENTION:** Do not use the machine on areas having a higher gradient than the one stated on the number plate.
- **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, unless they could benefit, through the intermediation of a responsible person for their safety, by a supervision or instructions concerning to its use.
- During the operation of the machine, pay attention to other people and especially to the children.

- Children shall not play with the machine.
- Children cannot carry out cleaning and maintenance of the machine.

TRANSFER

- Do not strike shelvings or scaffoldings where there is danger of falling objects.
- Leaving the machine in parking position, remove the key and apply the parking brake.
- Do not use the machine as a means of transport.
- Adapt the working speed to the conditions: particularly, slow down before narrow curves have to be faced.

STORAGE AND DISPOSAL

- Storage temperature: between 32°F and 131°F (0°C and +55°C).
- Perfect operating temperature: between 32°F and 104°F (0°C and +40°C).
- 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.
- Restore all electrical connections after any maintenance operation.
- 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, ask for technical advice from an authorized service center.
- 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 indicated in the paragraph “RECOMMENDED 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.

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.

TECHNICAL DESCRIPTION	U/M	T120-S53-U
Cleaning width	mm/in	508/20
Squeegee width	mm/in	770/30
Working capacity	sqm/h/sqft/h	2000/21,528
Brush diameter	mm/in	508/20
Brush rpm	rpm	155
Pressure on the brush	kg/lbs	30/66 max
Brush motor	W/A	450/18.8
Type of drive		automatic
Maximum gradient	%	2
Suction motor	W/A	450/18.8
Suction vacuum	mbar\in water lift	120/48
Solution tank	l/gal	40/11
Recovery tank	l/gal	45/12
Machine length	mm/in	1195/47
Machine height	mm/in	1053/42
Machine width (without squeegee)	mm/in	530/21
Weight of the batteries	kg/lbs	74/163
Compartment of the batteries	mm/in	342x340x295 /13.5x13.4x11.6
Weight of the machine (empty and without batteries)	kg/lbs	76/168
Acoustic pressure level (in conformity with IEC 704/1)	dB(A)	<70
Class		III
Protection level	IP	X3
Tension	V	24

SYMBOLGY ON THE MACHINE



Symbol denoting the solution valve.
Indicates the solution valve lever.



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



Symbol denoting the lifting of the squeegee.



Symbol denoting the charge level of the batteries.



Symbol denoting the lowering of the squeegee.



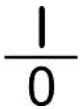
Symbol denoting the brush.
Indicates the switch of the brush motor.



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



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

SYMBOLGY ON THE MANUAL



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



Symbol that indicates the obligation of wearing safety glasses.



Symbol denoting the open book.
For the good functioning of the battery charger, read the manual of the constructor.



Symbol that indicates the obligation of wearing safety gloves.



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



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



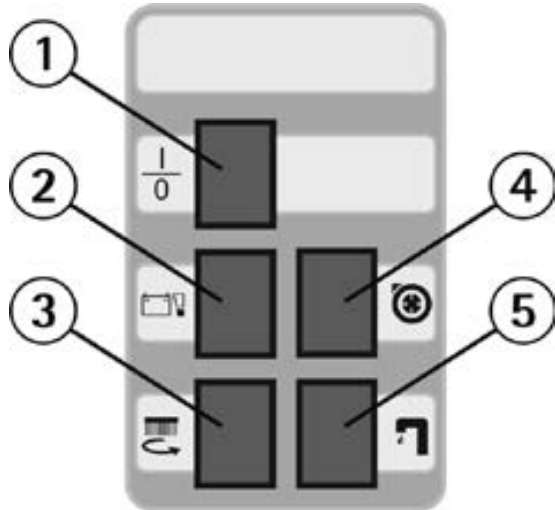
Symbol that indicates the obligations of disconnecting the system from the batteries by disconnecting the connector before operating on the machine.



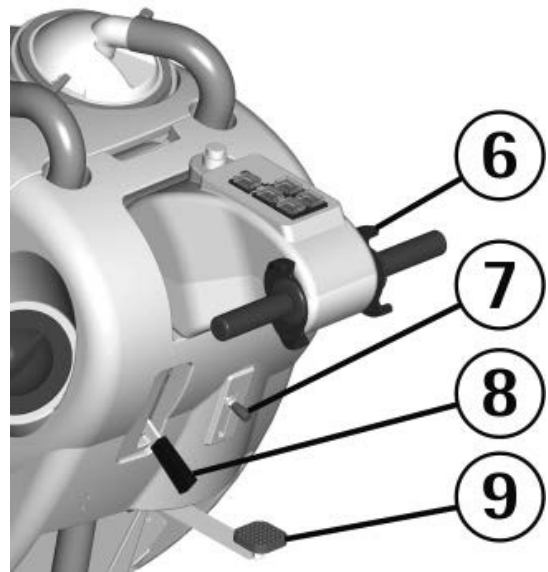
Symbol that indicates operations that have to be carried out only by qualified personnel.

INSTRUMENT BOARD AND CONTROLS

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

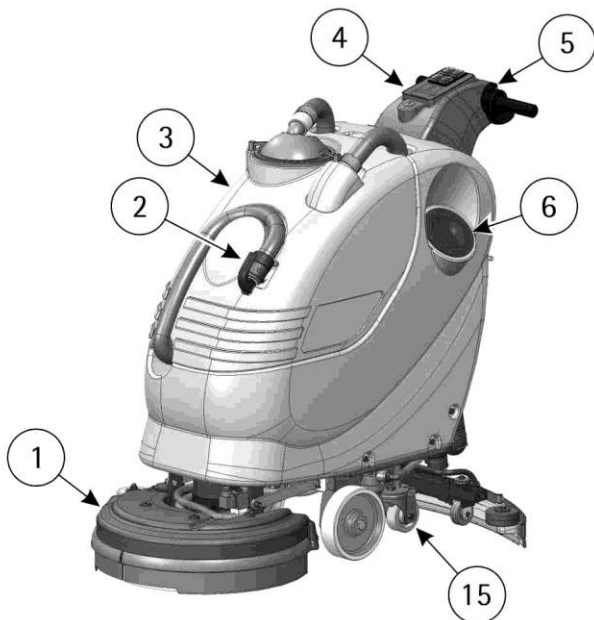


- 6. LEVERS DRIVE CONTROL
- 7. LEVER SOLUTION VALVE
- 8. LEVER SQUEEGEE LIFTING
- 9. PEDAL BRUSH BASE GROUP LIFTING

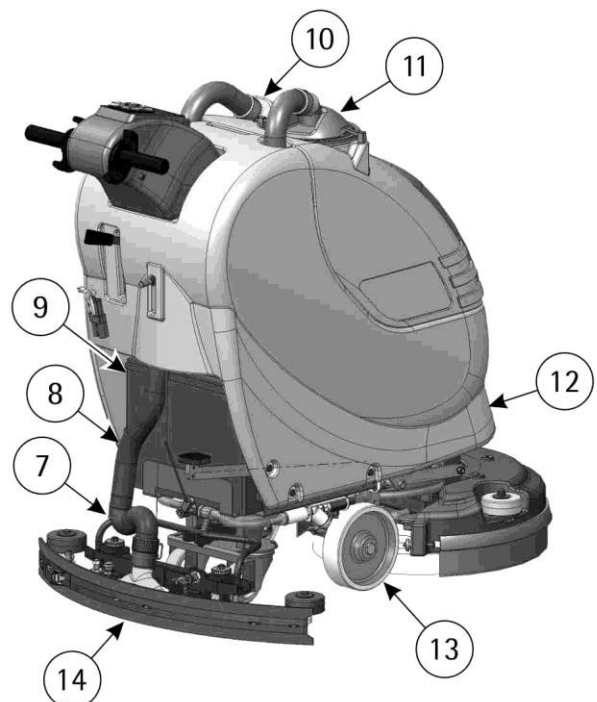


MACHINE

- 1. BRUSH BASE GROUP
- 2. PLUG EXHAUST HOSE RECOVERY TANK
- 3. RECOVERY TANK
- 4. INSTRUMENT BOARD
- 5. LEVERS MOVEMENT
- 6. SCREW CAP FOR INLET DETERGENT SOLUTION
- 7. GUIDE SPRING 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



BEFORE USE

HANDLING OF THE PACKED MACHINE

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

The total weight is 205 lbs. (95 kg).

Packing dimensions:

Base: 46" x 26" (118 cm x 67 cm).

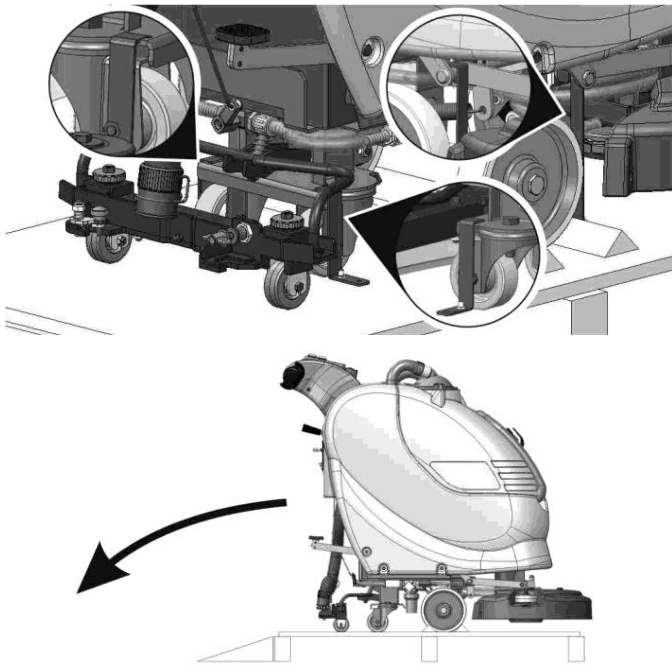
Height: 47" (119 cm).



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

UNPACKING OF THE MACHINE

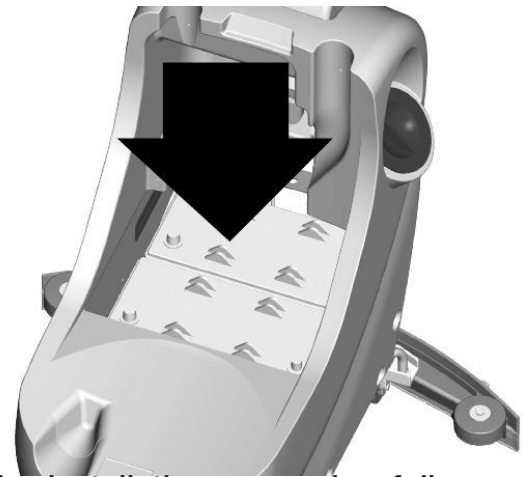
1. Remove the external packing.
2. Unscrew the brackets that secure the machine to the pallet.
3. Move the machine backwards, as indicated in figure, avoiding heavy contacts to mechanical parts.
4. Keep the pallet for eventual transport.



BATTERY INSTALLATION AND SETTING OF THE BATTERY TYPE

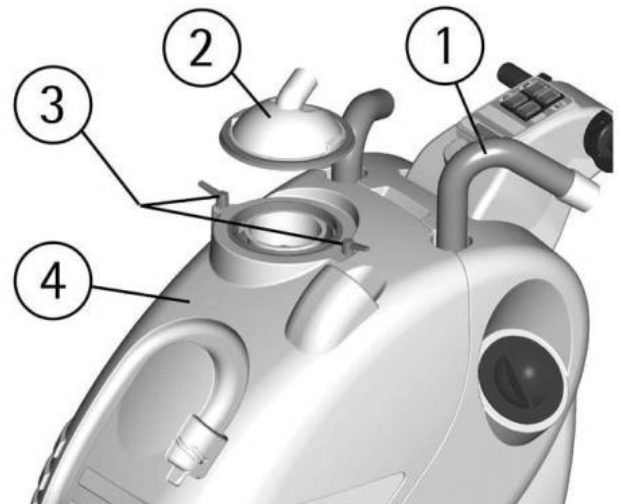
This machine is equipped with two batteries at 12V in serial connection, placed in its appropriate compartment under the recovery tank and must be handled using suitable lifting equipment (due to weight and coupling system). The batteries must be in accordance with CEI 21-5 Norms. The connection of the 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.

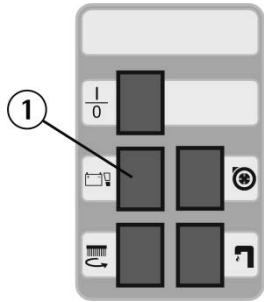


For batteries installation proceed as follows:

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 (1) foresee the use of traditional lead batteries. In case of GEL batteries installation, it is necessary to carry out a specific adjustment. Please contact the authorized technical assistance.



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).

ON-BOARD BATTERY RECHARGER

The machine is equipped with the on-board battery recharger. Please refer to the manufacturer's instructions on the use of the charger. 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 and must be connected to a single-phase socket type CEE 7/7.

BATTERIES RECHARGING

Bring the machine on a leveled surface near to a single-phase 120V 60 HZ socket (within 2 m), nominal current 10A. Switch off the machine and proceed as follows.

1. Insert the plug into the mains socket.
2. Proceed with the recharging keeping the recovery tank lifted (see under paragraph "ACCESS TO THE BATTERY COMPARTMENT" in "BEFORE USE").

3. Do not take off the plug from the mains socket until the end of charge. At the end of the recharging, remove the plug from the mains socket.



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.



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 after having carried out a complete recharge.



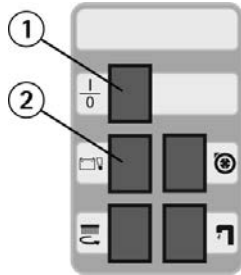
Danger of gas exhalations and emission of corrosive liquids. Fire danger: do not approach with free flames.

BATTERIES DISPOSAL

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

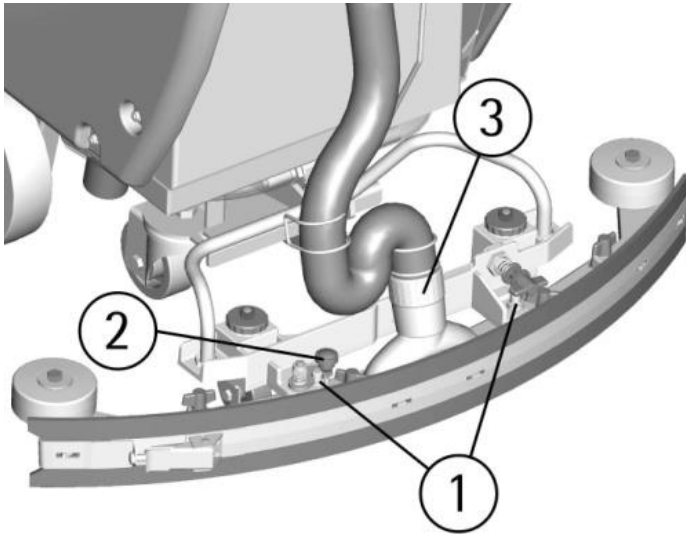
BATTERIES CHARGE LEVEL INDICATOR

When switching on, the signal lamp of the battery charge level (2) will come on. When the signal lamp is in green color it means that the battery charge level is sufficient for the functioning of the machine. If the signal lamp is in red color it means that the battery charge level is insufficient for the functioning of the machine and it is necessary to recharge the batteries (see under "BATTERIES CHARGING").



SQUEEGEE ASSEMBLY

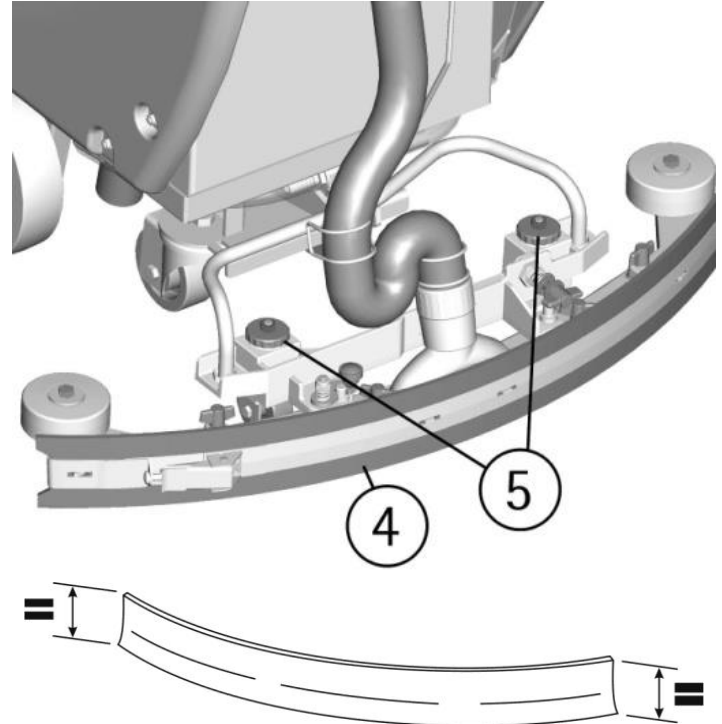
With the squeegee support lowered, slide the two stud bolts (1) placed on the upper part of the squeegee inside the slots on the support. Block the squeegee by rotating the lever (2) clockwise. Insert the squeegee hose (3) into its coupling, respecting its position as indicated in the figure.



ADJUSTMENT OF THE SQUEEGEE HEIGHT

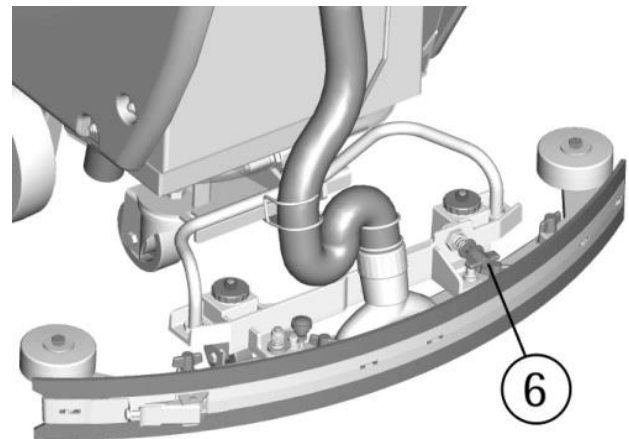
The squeegee must be adjusted in height depending on the rubber wear. In order to guarantee a perfect drying during the operation, the lower blade of the rear squeegee rubber (4) must work slightly bent backwards (operator side) in a uniformed way in all its length.

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.



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.

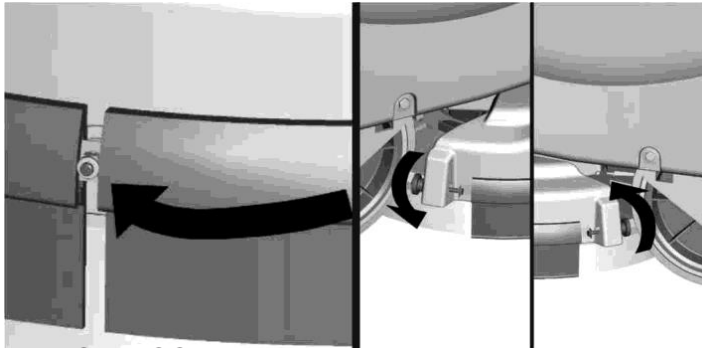


SPLASH GUARD ASSEMBLY

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.

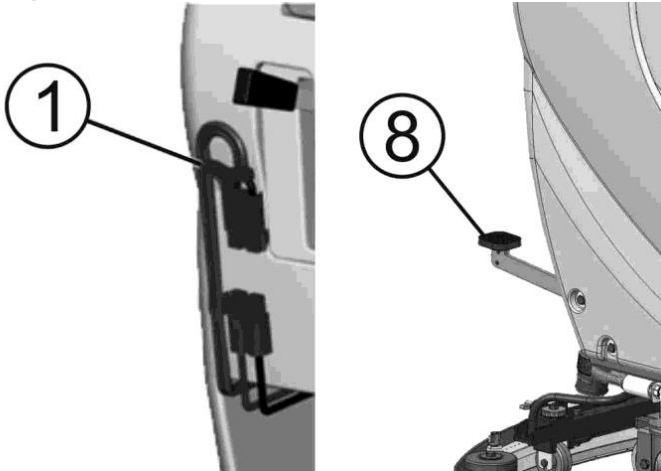
The operation has to be carried out for both splash guards. With the brush assembled, the splash guard must slightly touch the floor.



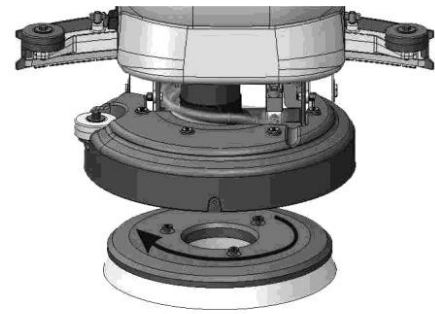
BRUSH ASSEMBLY



1. Take off the electric supply to the brush motor unplugging the batteries connector (1).
2. Acting upon the pedal (8) 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 quickly the brush to push the button towards the coupling spring until it gets blocked. The figure shows the rotating sense for the brush coupling.

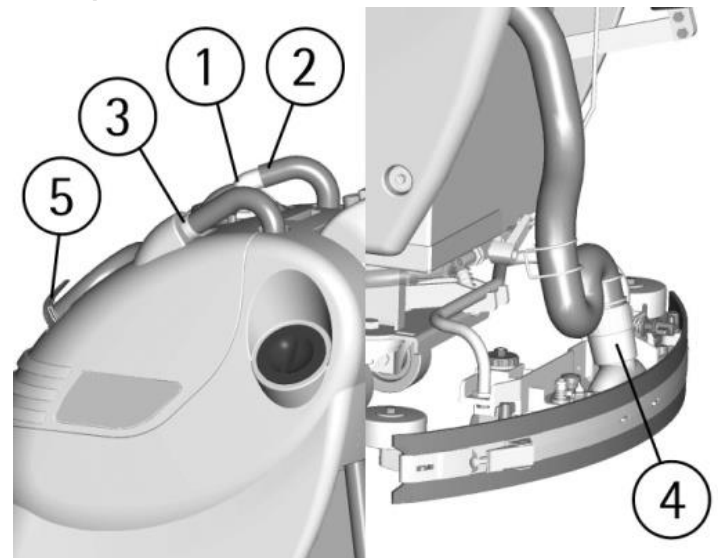


Use only brushes supplied with the machine or the ones indicated in the paragraph “RECOMMENDED BRUSHES”. The use of other brushes can compromise the security.

RECOVERY TANK

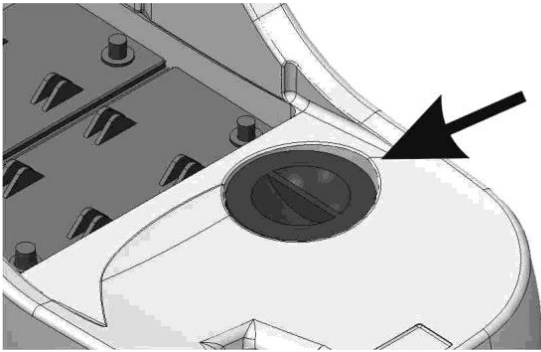


Check that the cover of the suction filter (1) is correctly secured, after rotating the levers and that the suction motor hose (2) is correctly connected. Verify also that the squeegee hose is correctly inserted into the seats (3 and 4) and that the exhaust hose plug (5) placed in the front part of the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

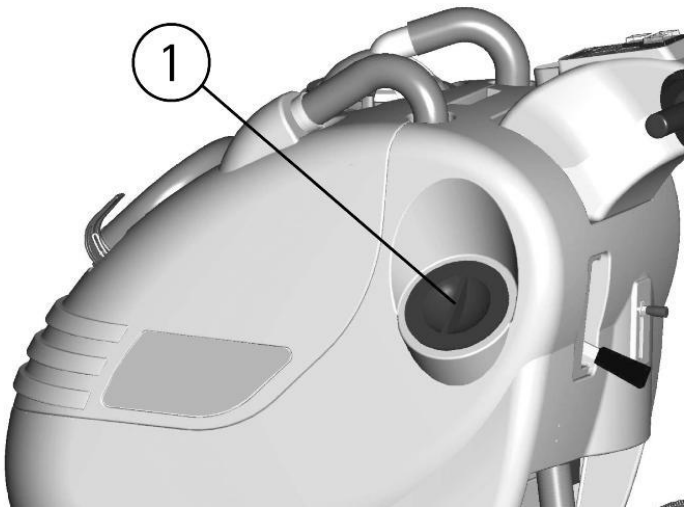


DETERGENT SOLUTION TANK

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



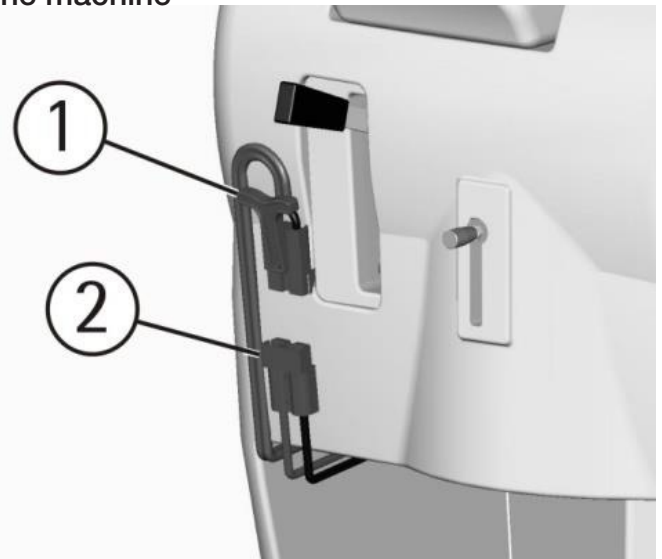
The capacity of the detergent solution tank is indicated in the technical data. Open the screw plug (1) placed in the rear left part of the machine and fill the detergent solution tank with clean water at a maximum temperature of 122°F (50°C). Add the liquid detergent in the percentage and conditions recommended 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 avoid foam presence, before starting working operation, introduce into the recovery tank a minimum quantity of anti-foam product. Never use pure acid.

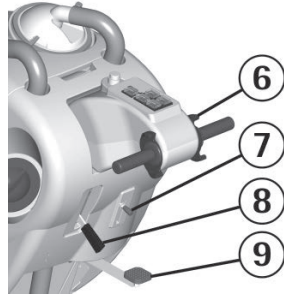
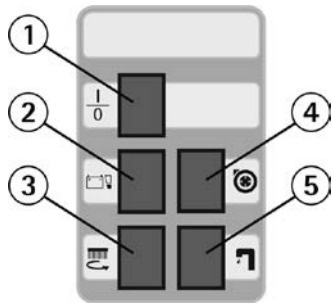
FLOOR CLEANING CONNECTION OF THE BATTERIES TO THE MACHINE

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



STARTING OF THE MACHINE

1. Press the switch ignition 1/0 (1).
2. Check the charge level on the display or on the signal lamp battery charge level.
3. Press the brush motor switch (3).
4. Press the suction motor switch (4).
5. Press the solenoid valve switch (5).
6. 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.

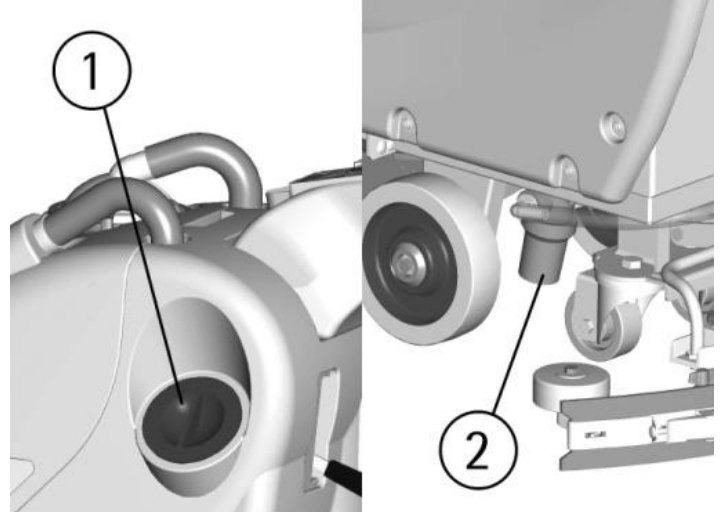


EMPTYING DETERGENT SOLUTION



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

The traction of these machines is given by the brush that, working on an inclined axle, transmits to the machine the forward movement.

STOP

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



When moving the machine backwards, make sure that the squeegee is lifted.

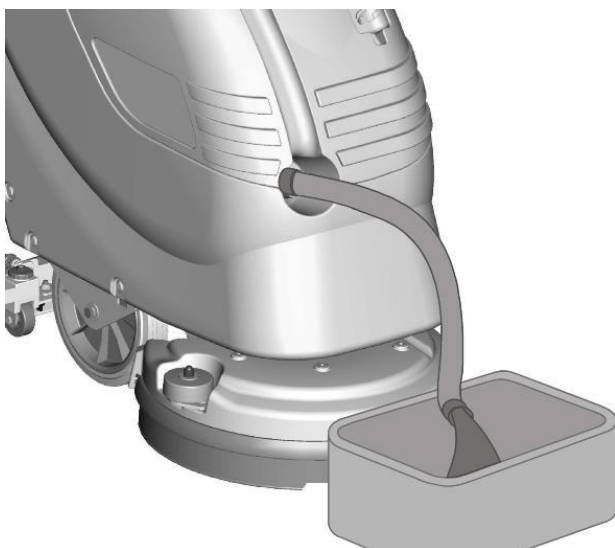


OVERFLOW DEVICE



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.

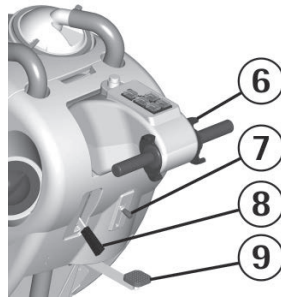
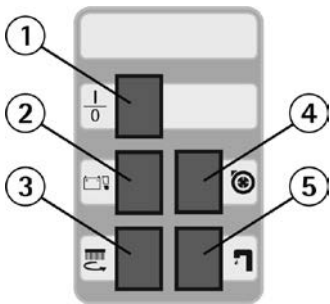
1. When this happens, it is necessary to empty the recovery tank.
2. Hold the drain hose placed in the front part of the machine.
3. Take off the drain plug acting upon its lever and empty the recovery tank into appropriate containers, according to the standard norms for the liquid disposal.



STOPPING THE MACHINE AFTER CLEANING OPERATION

Before executing any type of maintenance:

1. Close the solution valve lever (7) and check that the indicator of open solution valve (4) on the instrument board turns off.
2. Lift the brushes base by 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.

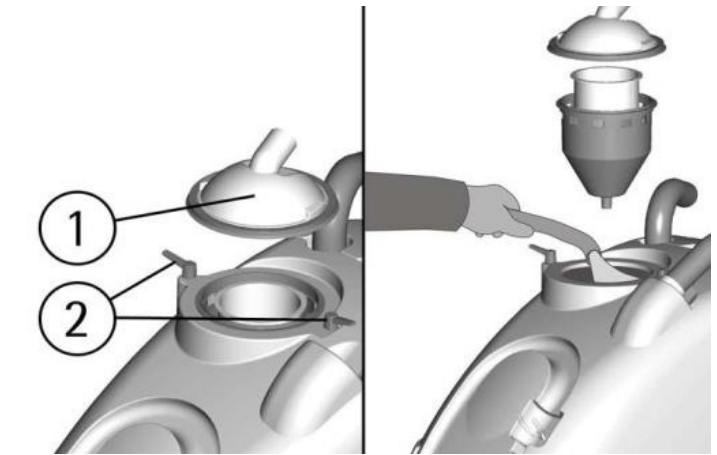


The machine is not equipped with a parking brake, therefore do not leave it on slopes.

DAILY MAINTENANCE RECOVERY TANK CLEANING



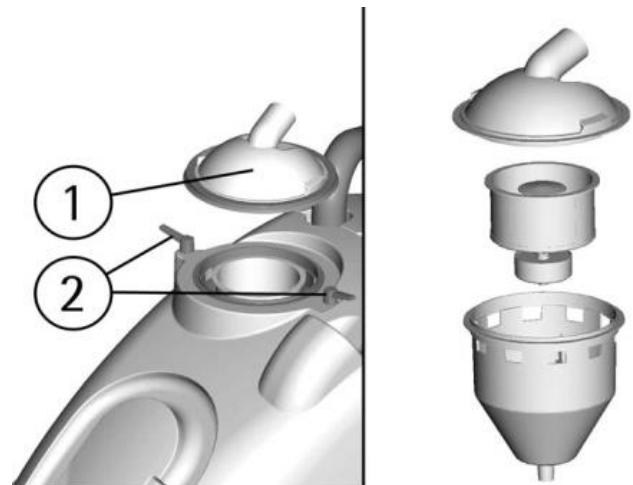
1. Hold the drain hose placed in the front part of the machine.
2. Take off the drain plug acting upon its lever and empty the recovery tank into appropriate containers (see under "OVERFLOW DEVICE").
3. Take off the suction cover (1) after rotating the blocking levers (2).
4. Take off the filter and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



SUCTION FILTER CLEANING



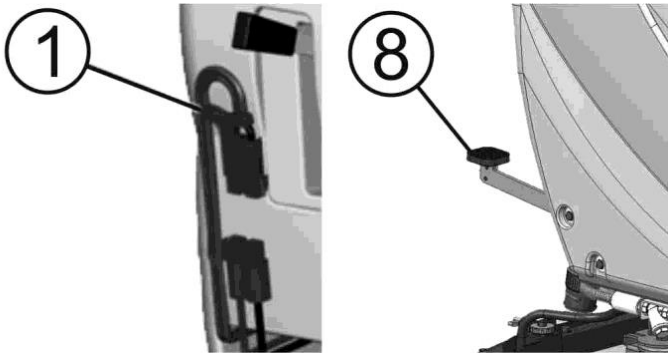
1. Take off suction cover (1) after rotating the blocking levers (2).
2. Take off the filter and filter protection.
3. Clean all parts with a water jet especially inside surfaces and filter bottom.
4. Carry out carefully the cleaning operations.
5. Reassemble all parts.



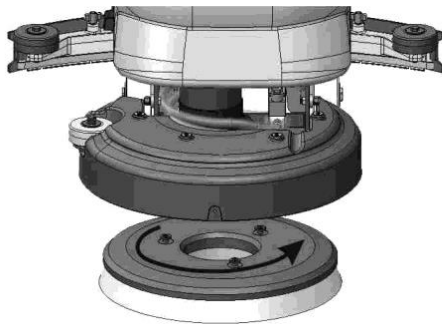
BRUSH DISASSEMBLY



1. Lift the brush base lowering the pedal (8).
2. Take off the electric supply to the brush motor unplugging the battery connector (1).



4. With the brush base in lifted position, turn the brush in its rotating sense, until it is released from the brush holder plate seat as indicated in the figure. The following figure shows the rotating sense for brush release.



BRUSH CLEANING

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

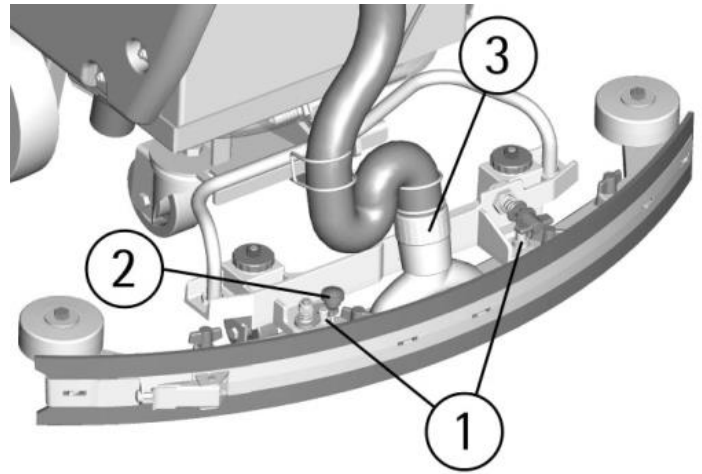
SQUEEGEE CLEANING



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 sliding the stud bolts (1) in their slots up to their release.
3. Clean with care the internal part of the squeegee inlet eliminating dirt residue.
4. Clean with care the squeegee rubbers.
5. Reassemble all parts.



WEEKLY MAINTENANCE REAR SQUEEGEE RUBBER REPLACEMENT

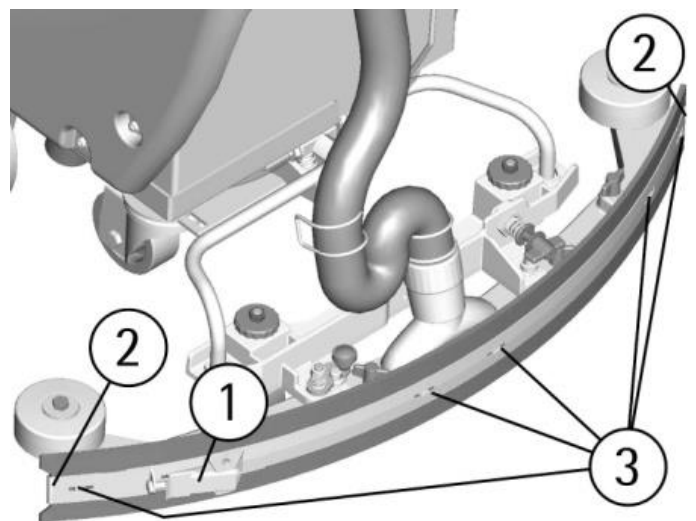


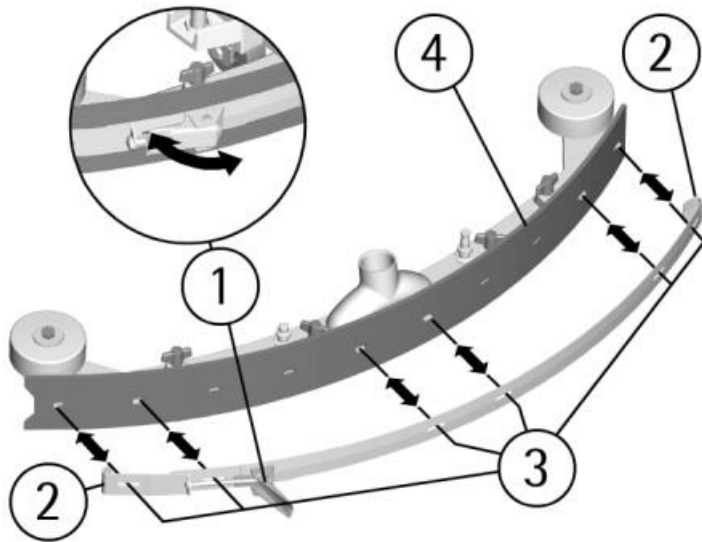
Check the squeegee rubber wear and eventually turn or replace it.

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 abovementioned, 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).



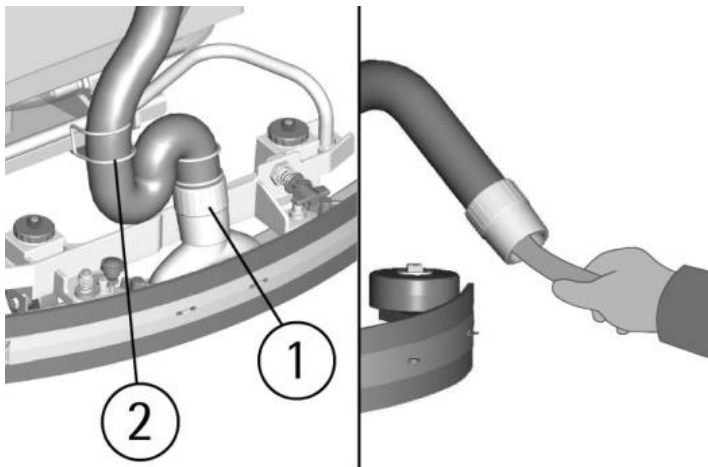


SQUEEGEE HOSE CLEANING



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 reverse the operation.

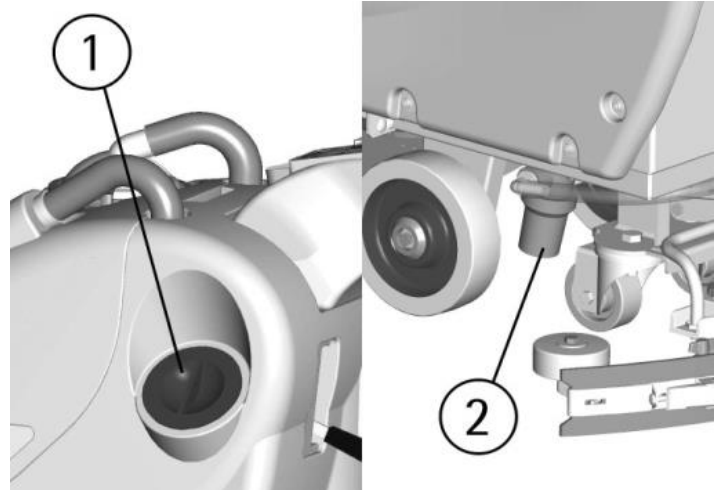


CLEANING OF SOLUTION TANK AND FILTER



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

3. Unscrew the solution filter (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

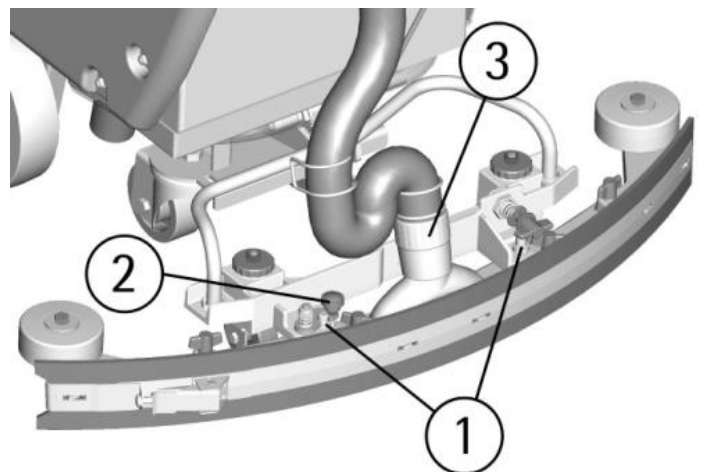


TWO-MONTHLY MAINTENANCE FRONT SQUEEGEE RUBBER REPLACEMENT

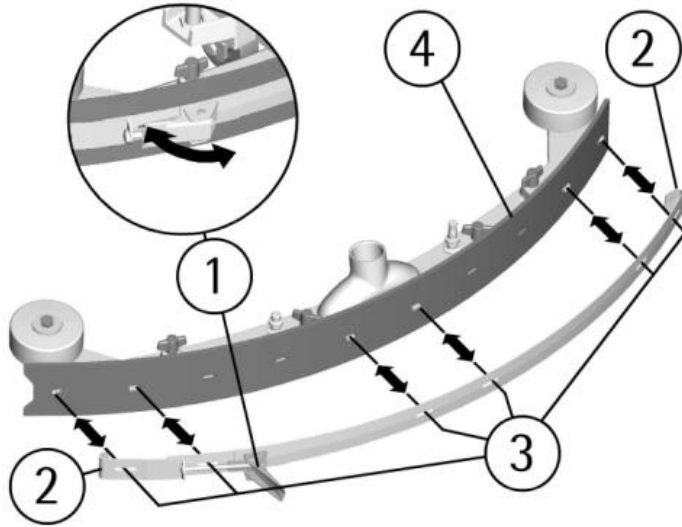
Check the wear of the squeegee rubber and eventually replace it.

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.

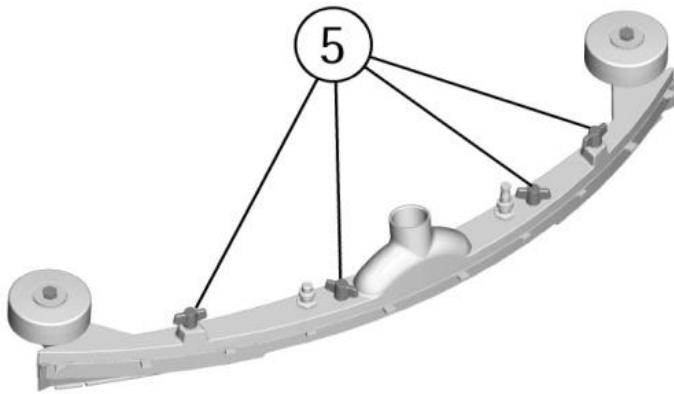


3. Uncouple the hook (1) of the rubber holder blade, release the extremities (2) from the squeegee body and take off the rubber (4).

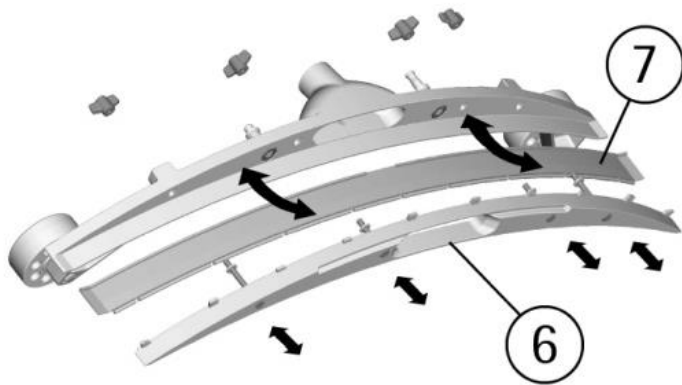


1. Unscrew the knobs in the rear part of the brush base group from the extremity of the metal strips. The operation has to be carried out on both splash guards.
2. Unscrew the nut on the front part of the brush base group and take off the metal strips.
3. Replace the splash guard rubbers and follow the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

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

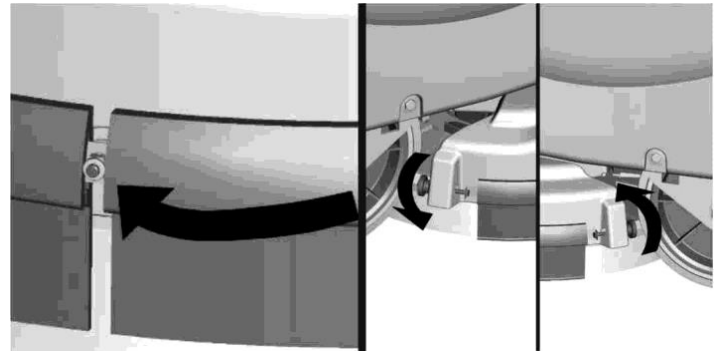


5. Slip off the lower part (6) of the squeegee body, so to take off the front rubber (7).



6. Replace the front rubber.
7. To reassemble the squeegee reverse the operations.

SIX-MONTHLY MAINTENANCE SPLASH GUARD REPLACEMENT



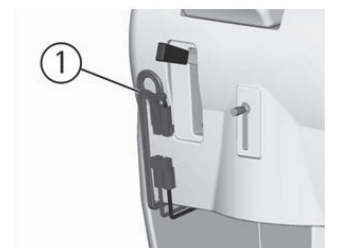
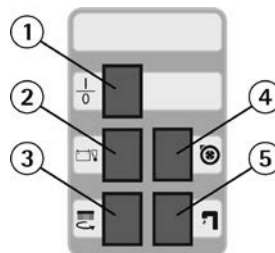
TROUBLESHOOTING GUIDE



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

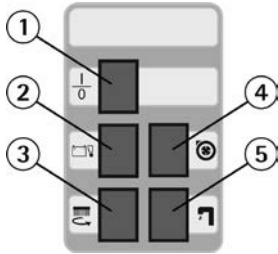
THE SUCTION MOTOR DOES NOT WORK

1. Verify that the switch (4) is on.
2. Check the charge level of the batteries: pressing the switch of the brush motor (2) the signal lamp of the battery charge level (1) comes on. Check that it is green in color. If the red color appears, it is necessary to proceed for the batteries' recharge (see under “BATTERIES RECHARGING”).
3. Check that the battery connector (1) is correctly plugged in. If the problem persists, please contact the authorized technical assistance.

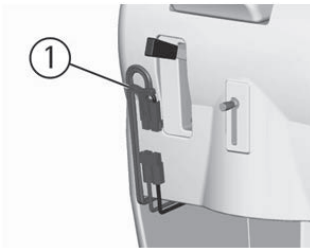


THE BRUSH MOTOR DOES NOT WORK

1. Verify that the switch (3) is on.
2. Activate the levers movement.
3. Check the charge level of the batteries: pressing the switch of the brush motor (2) the signal lamp of the battery charge level (1) comes on. Check that it is green in color. If the red color appears, it is necessary to proceed for the batteries' recharge (see under "BATTERIES RECHARGING").



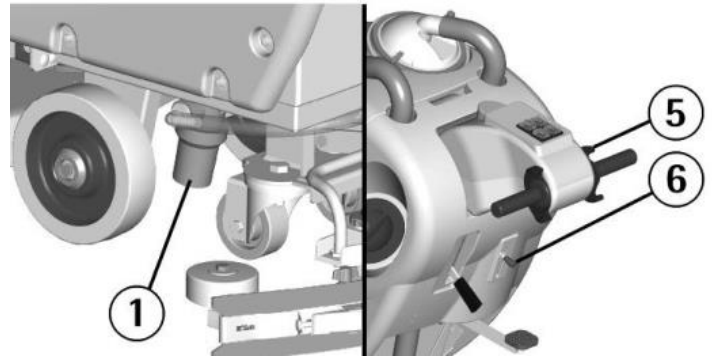
4. Check that the battery connector (1) is correctly plugged in. If the problem persists, please contact the authorized technical assistance.



Never leave the batteries discharged for a long time.

INSUFFICIENT WATER ON THE BRUSH

1. Check that the solution valve lever (6) is open.
2. Check the level of the liquid in the solution tank.
3. Check that solution filter (1) is clean. If the problem persists, please contact the authorized technical assistance.



THE MACHINE DOES NOT CLEAN PROPERLY

1. The brush does not have the suitable bristle dimension: use only original brushes. For advice, contact the authorized technical assistance.
2. The brush has worn bristles. Check the brush wear condition and eventually replace it (the brush has to be replaced when the bristles have reached a height of about 15mm). To replace the brush, see instructions at paragraph "BRUSH DISASSEMBLY" and "BRUSH ASSEMBLY".
3. The solution detergent is insufficient: open the solution valve more.
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		•

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 122°F (50°C). It is not hygroscopic.
NYLON	Excellent wear resistance, even with hot water. It is hygroscopic.
TYNEX	Nylon bristles with grains of abrasive material. Use with caution in order not to mark the floor or ruin the polishing.
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 brush 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.
PAD HOLDER	It is equipped with anchor points which permit the blocking of the abrasive pad during work. The pad is recommended to clean smooth floors.

CODE	QTY	DESCRIPTION	USE
48902010	1	Brush PPL 0.3	Irregular floors with large joints.
48902020	1	Brush PPL 0.7	Smooth floors with small joints and persistent dirt.
48902030	1	Brush PPL 0.9	Smooth floors with small joints and persistent dirt.
48902040	1	Brush TYNEX	Floors of resistant material and particularly dirty.
48902050	1	Brush PPL 0.6	Normal floors.
48902060	1	Brush 5-mix	For all types of floors.
48802010	1	Pad holder + center lock green	For pads of 20", for smooth surfaces cleaning.

