



TORNADO INDUSTRIES, LLC
3101 WICHITA COURT
FORT WORTH, TX 76140
PHONE 800-VACUUMS
FAX 817-551-0719
WWW.TORNADOVAC.COM

Operations & Maintenance Manual
For Commercial Use Only



**AUTOMATIC SCRUBBER
MODEL NO: 99685**

Form No. L9717 EB 04/24 ©Tornado Industries, LLC. All rights reserved

Save These Instructions

NOTES



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

SUMMARY	
INTRODUCTORY COMMENT	4
GENERAL RULES OF SAFETY	4
Transfer	4
Storage and disposal	4
Correct use	4
Maintenance	4
TECHNICAL SPECIFICATIONS	5
LEGEND INSTRUMENT BOARD AND CONTROLS	6
LEGEND MACHINE	6
SYMBOLGY ON THE MACHINE	7
SYMBOLGY ON THE MANUAL	7
BEFORE USE	8
Handling of the packed machine	8
Unpacking of the machine	8
Battery installation and setting of the battery type	8
POD (Protection from Over Discharge)	9
Battery recharger	9
Batteries recharging	9
Batteries disposal	9
Batteries charge level indicator	10
Squeegee assembly	10
Adjustment of the squeegee height	10
Adjustment of the squeegee inclination	11
Brush assembly	11
Recovery tank	12
Detergent solution tank	12
FLOOR CLEANING	12
Connection of the batteries to the machine	12
Starting of the machine	13
Overflow device	13
Emptying detergent solution	14
Forward movement	14
Stop	14
STOP OF THE MACHINE AFTER CLEANING OPERATION	14
DAILY MAINTENANCE	15
Recovery tank cleaning	15
Suction filter cleaning	15
Brush cleaning	15
Brush disassembly	15
Squeegee cleaning	16
WEEKLY MAINTENANCE	16
Rear squeegee rubber replacement	16
Squeegee hose cleaning	16
Cleaning of solution tank and filter	17
TWO-MONTHLY MAINTENANCE	17
Front squeegee rubber replacement	17
TROUBLESHOOTING GUIDE	18
The suction motor does not work	18
The brush motor does not work	18
Insufficient water on the brush	18
The machine does not clean properly	18
The squeegee does not dry perfectly	19
Excessive foam production	19
PROGRAMMED MAINTENANCE	19
Periodic ordinary maintenance chart	19
RECOMMENDED BRUSHES	20

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 shelveings 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 odors.
- 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”.

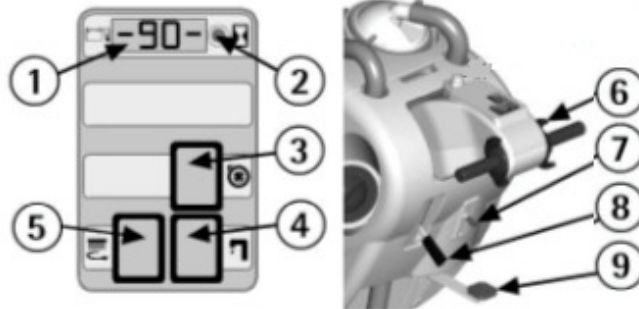
- Do not take off the protections which require the use of tools for their removal.
- Do not wash the machine with direct water, jets or with high water pressure nor with corrosive material.
- Every 200 working hours have a machine check by an authorized service department.
- Before using the machine, check that all panels and coverings are in their position as indicated in this use and maintenance catalogue.

TECHNICAL DESCRIPTION	U/M	BR 18/11
Cleaning width	mm/in	460/18
Squeegee width	mm/in	790/31
Working capacity	sqm/h/sqft/h	1670/17975
Brush diameter	mm/in	2 x 95/2 x 3.75
Brush rpm	rpm	950
Pressure on the brush	kg/lbs	30/66 max.
Brush motor	W/A	600/25
Type of drive		semi-automatic
Maximum gradient	%	2
Vacuum motor	W/A	570/24
Suction vacuum	mbar\in water lift	120/48
Solution tank	l/gal	40/11
Recovery tank	l/gal	45/12
Machine length	mm/in	1092/43
Machine height	mm/in	1041/41
Machine width (without squeegee)	mm/in	533/21
Weight of the batteries	kg/lbs	74/163
Compartment of the batteries	mm/in	342x345x300 /13.5x13.4x12
Weight of the machine (empty and without batteries)	kg/lbs	71/157
Acoustic pressure level (in conformity with IEC 704/1)	dB(A)	<70
Class		III
Protection level	IP	X3
Tension	V	24

INSTRUMENT BOARD AND CONTROLS

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

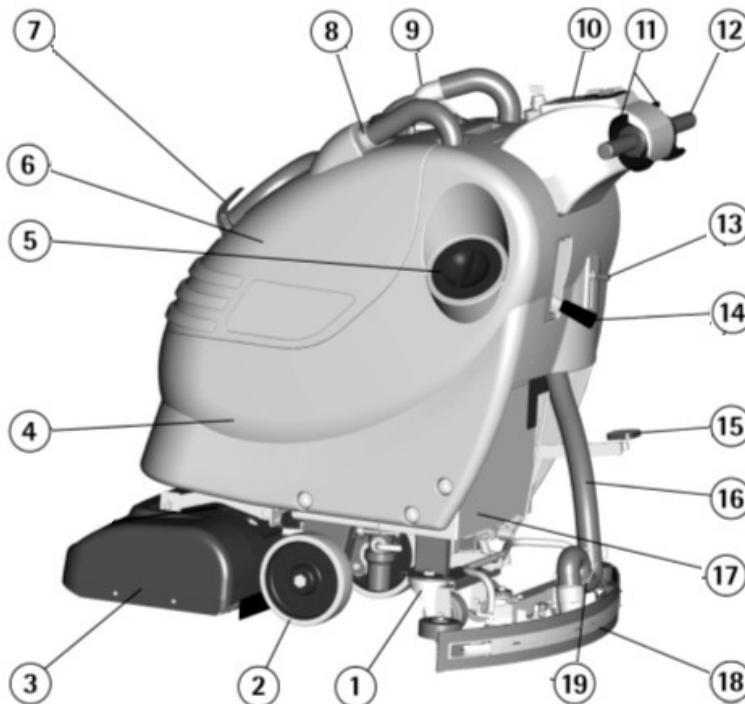
- 5. BRUSH MOTOR SWITCH
- 6. BRUSH ACTIVATION LEVERS
- 7. SOLUTION VALVE LEVER
- 8. SQUEEGEE LIFTING LEVER
- 9. BRUSH HEAD LIFTING PEDAL



MACHINE

- 1. CASTER WHEELS
- 2. WHEELS
- 3. BRUSH HEAD
- 4. SOLUTION TANK
- 5. CAP FOR SOLUTION TANK
- 6. RECOVERY TANK
- 7. RECOVERY TANK DRAIN HOSE
- 8. INLET OPENING SUCTION HOSE
- 9. FLOAT ASSEMBLY COVER

- 10. INSTRUMENT BOARD
- 11. BRUSH ACTIVATION LEVER
- 12. HANDLE BARS
- 13. SOLUTION VALVE LEVER
- 14. SQUEEGEE LIFTING LEVER
- 15. BRUSH HEAD LIFTING PEDAL
- 16. SUCTION HOSE
- 17. BATTERY
- 18. SQUEEGEE ASSEMBLY
- 19. SPRING SQUEEGEE HOSE GUIDE



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 the hour meter.

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.

BEFORE USE

HANDLING OF THE PACKED MACHINE

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

The total weight is 209 lbs. (95 kg).

Packing dimensions:

Base: 146" x 26" (118 cm x 67 cm).

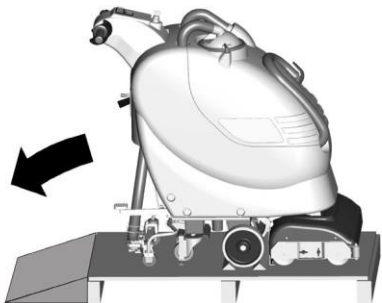
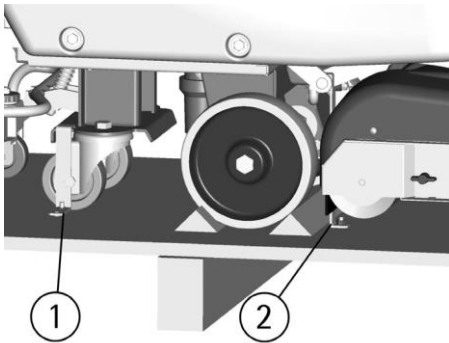
Height: 47" (119 cm).



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

UNPACKING OF THE MACHINE

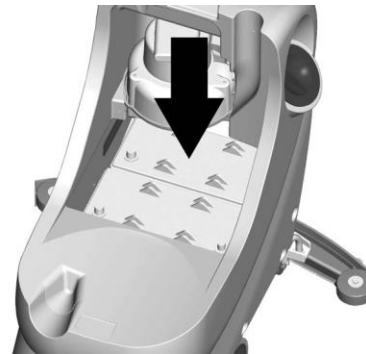
1. Remove the external packing.
2. Unscrew the brackets, (1 + 2), that secure the machine to the pallet.
3. Move the machine backwards, as indicated in figure, avoiding heavy contacts to mechanical parts.
4. Keep the pallet for eventual transport.



BATTERY INSTALLATION AND SETTING OF THE BATTERY TYPE

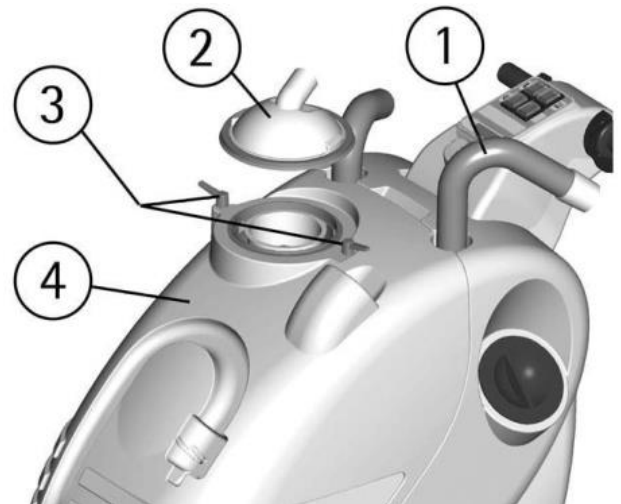
This machine is equipped with two batteries at 12V in serial connection, placed in its appropriate compartment under the recovery tank and must be handled using suitable lifting equipment (due to weight and coupling system). The batteries must be in accordance with CEI 21-5 Norms. The connection of the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

because the inversion of polarity causes the damage of the electrical components. Before the machine is supplied with power, check that the red cable is connected to the + pole of the battery.



For batteries installation proceed as follows:

1. Take off the squeegee hose (1).
2. Take off the suction cover (2) after turning the blocking levers (3).
3. Take off the recovery tank (4).
4. Place the batteries in its compartment.
5. Connect the terminals, respecting the polarities, avoiding contact with 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. In case of AGM batteries installation, it is necessary to carry out a specific adjustment. Please contact the authorized technical assistance.

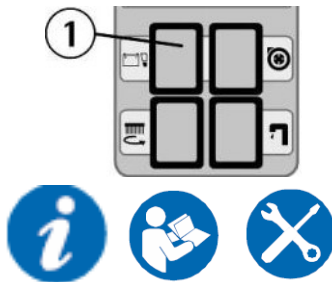
Protection from Over Discharge

Notice for 99685E

This unit is equipped with the NEXSys battery system. This system has a POD (Protection from Over Discharge) device attached that analyzes battery voltage and the State Of Charge (SOC) during operation and storage. When the units reaches the level where the batteries need to be charged, the device issue a audible (beep) and visual (blink) reminder. A light will blink on the control panel (1) and the POD will beep. It is important that the batteries be charged at this point.



Failure to follow the above procedure will void the battery warranty.



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

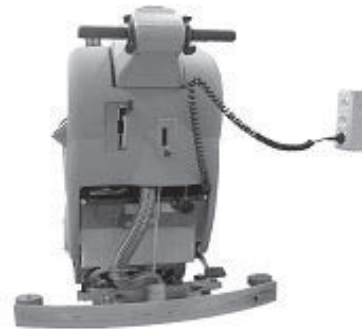
The machine is equipped with the on-board battery recharger. Please refer to the manufactures instructions on the use of the charger. The battery recharger is connected directly to the battery poles. During the recharging operations a device is activated which does not permit the machine's functioning.

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.



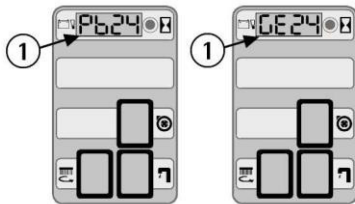
Danger of gas exhalations and emission of corrosive liquids. Fire danger: do not approach with free flames.

BATTERIES DISPOSAL

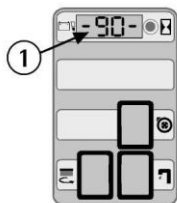
It is compulsory to hand over exhaust batteries, classified as dangerous waste, to an authorized institution according to the current laws.

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

GE 24: check card set for GEL batteries.
Pb 24: check card set for lead batteries.

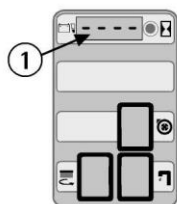


On the display (1) the following indication of the battery charge level is digital and indicates the percentage of the battery charge. 90 is the maximum charge, down to a minimum of 10, indicating every 10% decrease. When the charge level reaches 10%, the display starts blinking indicating the end of the battery charge.



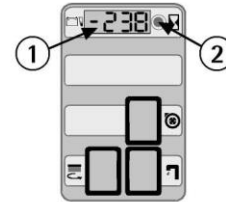
ATTENTION:

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



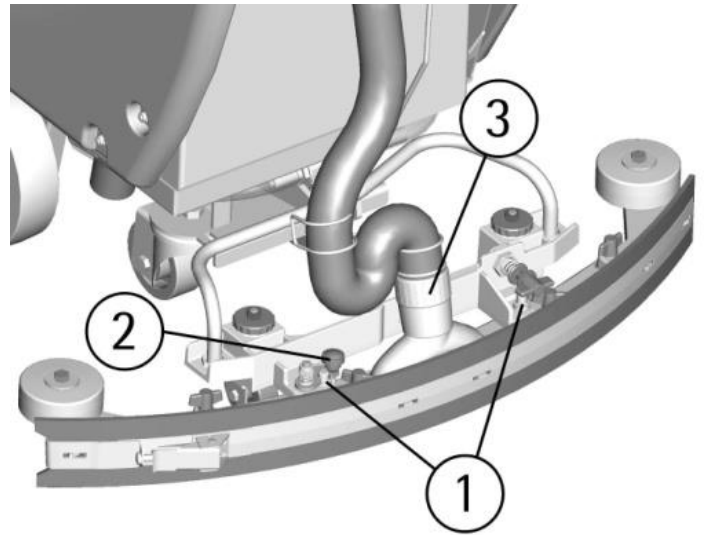
HOUR METER

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



SQUEEGEE ASSEMBLY

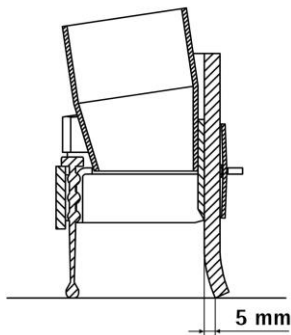
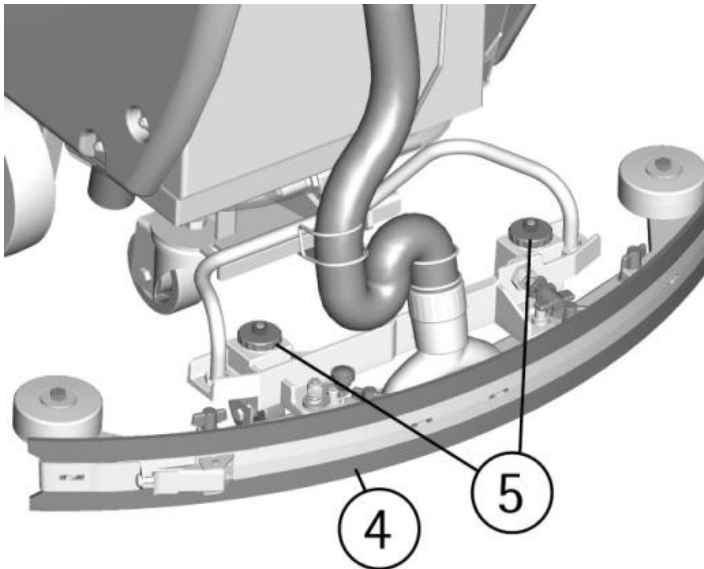
With the squeegee support lowered, slide the two stud bolts (1) placed on the upper part of the squeegee inside the slots on the support. Block the squeegee by rotating the lever (2) clockwise. Insert the squeegee hose (3) into its coupling, respecting its position as indicated in the figure.



ADJUSTMENT OF THE SQUEEGEE HEIGHT

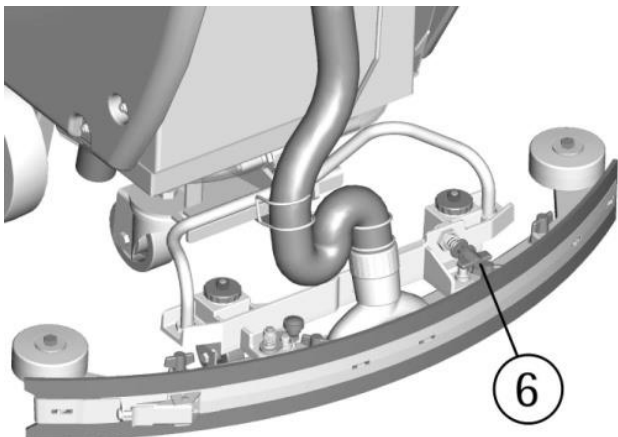
The squeegee must be adjusted in height depending on the rubber wear. In order to guarantee a perfect drying during the operation, the lower blade of the rear squeegee rubber (4) must work slightly bent backwards (operator side) in uniformed way in all its length. Acting clockwise upon the two registers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



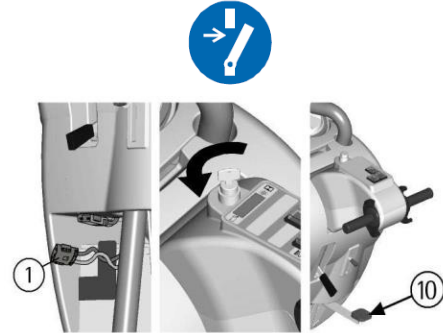
ADJUSTMENT OF THE SQUEEGEE INCLINATION

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.

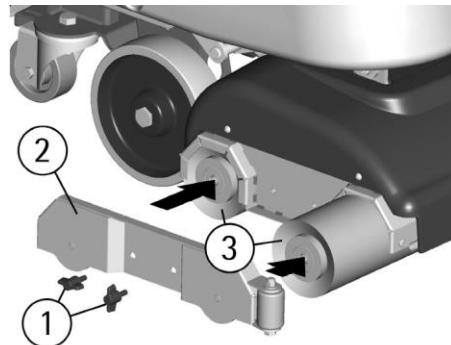


BRUSH ASSEMBLY

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



3. With the brushes base group in the lifted position, unscrew the two wing nuts (1) and then remove the side support of the brushes (2).
4. Insert the brushes (3) into their seats from the side of the hexagonal coupling, taking care to find the coupling at the opposite end and to insert them completely.
5. Reposition the side support (2) so that the support pins enter into the bearing holes visible at the center of the brushes frame.
6. Retighten and the wing nuts



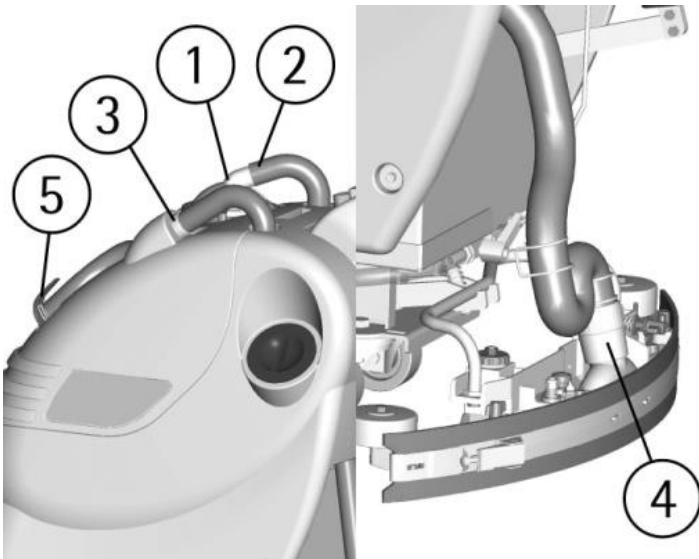
ATTENTION:

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

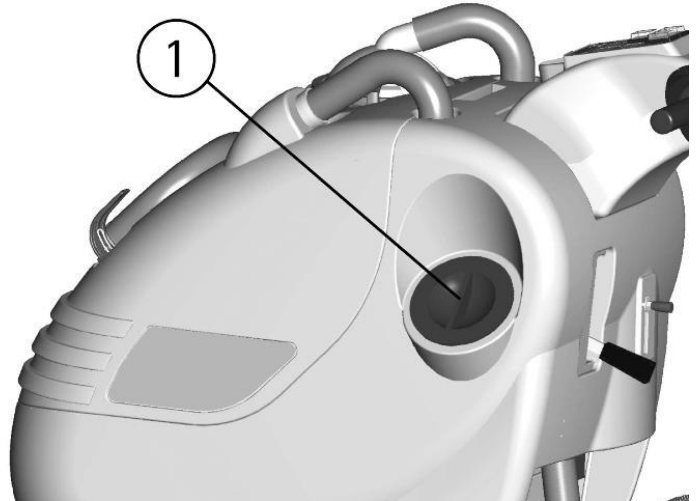
RECOVERY TANK



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



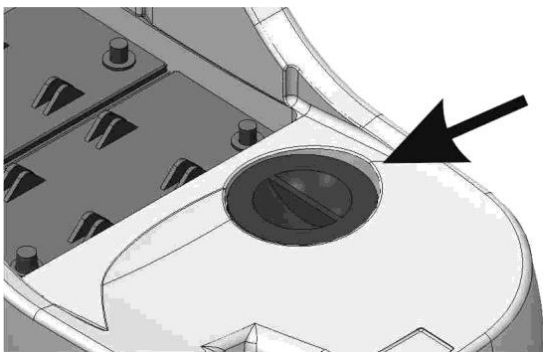
Add the liquid detergent in the percentage and conditions recommended by the manufacturer. To avoid excessive foam presence, which could cause problems to the suction motor, use the minimum percentage of detergent. Screw down the plug to close the tank.



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.

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.

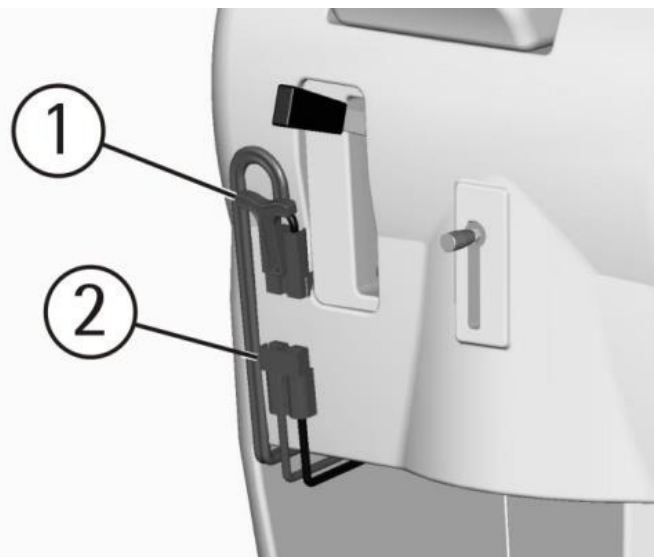


The capacity of the detergent solution tank is indicated in the technical data. Open the screw plug (1) placed in the rear left part of the machine and fill the detergent solution tank with clean water at a maximum temperature of 122°F (50°C).

FLOOR CLEANING

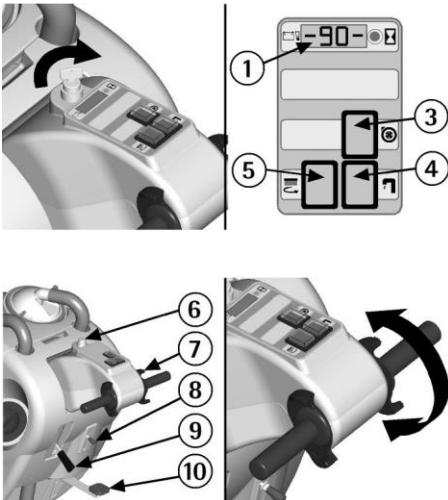
CONNECTION OF THE BATTERIES TO THE MACHINE

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



STARTING THE MACHINE

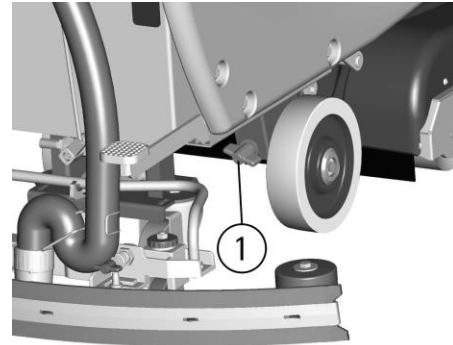
1. Press the brush motor switch (2).
2. The signal lamp of the battery charge level (1) will come on. Check that it is in green color. If the red color appears, it is necessary to proceed for the batteries' recharge (see under "BATTERIES RECHARGING").
3. Press the suction motor switch (3).
4. Acting upon the solution valve lever (6) adjust the solution detergent quantity bringing the floor uniformly wet, avoiding the leakage of detergent from the splash guard. Always consider that the correct quantity of solution detergent depends on the type of floor, dirtiness and machine speed.
5. Acting upon this lever, the indicator on the instrument board of the open solution valve (4) will turn on.
6. Acting upon the brush base lifting pedal (8) lower the brush base.
7. Acting upon the squeegee lifting lever (7) lower the squeegee.
8. Activating the levers (5) the brush will start rotating transferring to the machine a forward movement. The squeegee will start drying the floor.
9. During the first meters check that the detergent solution flow is appropriate and that the squeegee adjustment guarantees a perfect drying action.



ADJUSTMENT OF THE BRUSHES PRESSURE

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

By turning the wing nut clockwise the pressure increases, rotating the wing nut counterclockwise, the pressure decreases. This device allows a more efficient cleaning action also on very difficult and dirty surfaces.

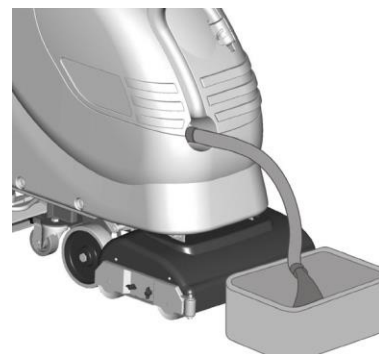


OVERFLOW DEVICE



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.

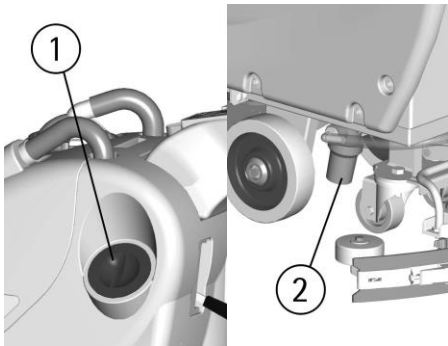




EMPTYING DETERGENT SOLUTION

To empty the detergent solution remained in the solution tank:

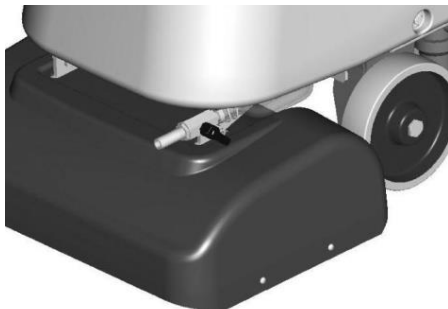
1. Bring the machine to an appropriate place for tanks draining.
2. Unscrew the solution tank cap (1).
3. Unscrew the exhaust plug (2).



EMPTYING DEVICE DETERGENT SOLUTION (OPTIONAL)

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

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



FORWARD MOVEMENT

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

STOP

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



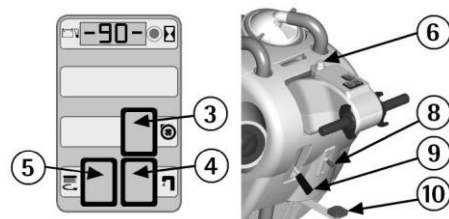
ATTENTION:

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

STOP OF THE MACHINE AFTER CLEANING OPERATION

Before executing any type of maintenance:

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

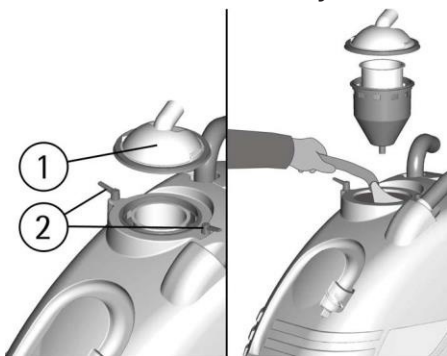


The machine is not equipped with a parking brake, therefore do not leave it on slopes.

DAILY MAINTENANCE RECOVERY TANK CLEANING



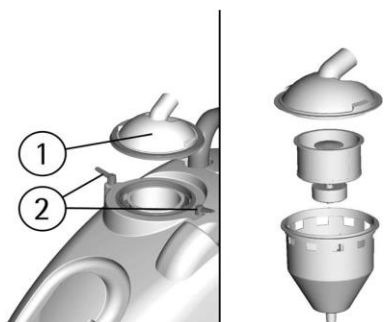
1. Hold the drain hose placed in the front part of the machine.
2. Take off the drain plug acting upon its lever and empty the recovery tank into appropriate containers (see under "OVERFLOW DEVICE").
3. Take off the suction cover (1) after rotating the blocking levers (2).
4. Take off the filter and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

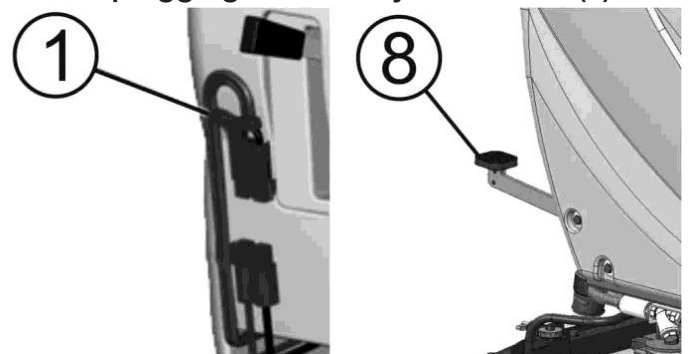


Disassemble the brush and clean it with a water jet (for the disassembly see under "BRUSH DISASSEMBLY").

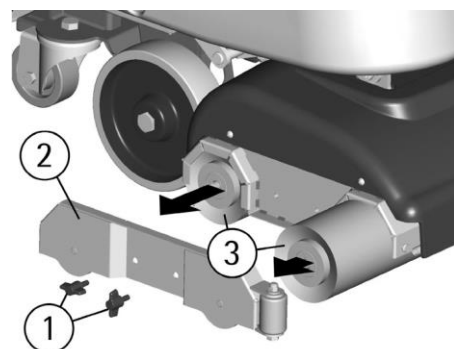
BRUSH DISASSEMBLY



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



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



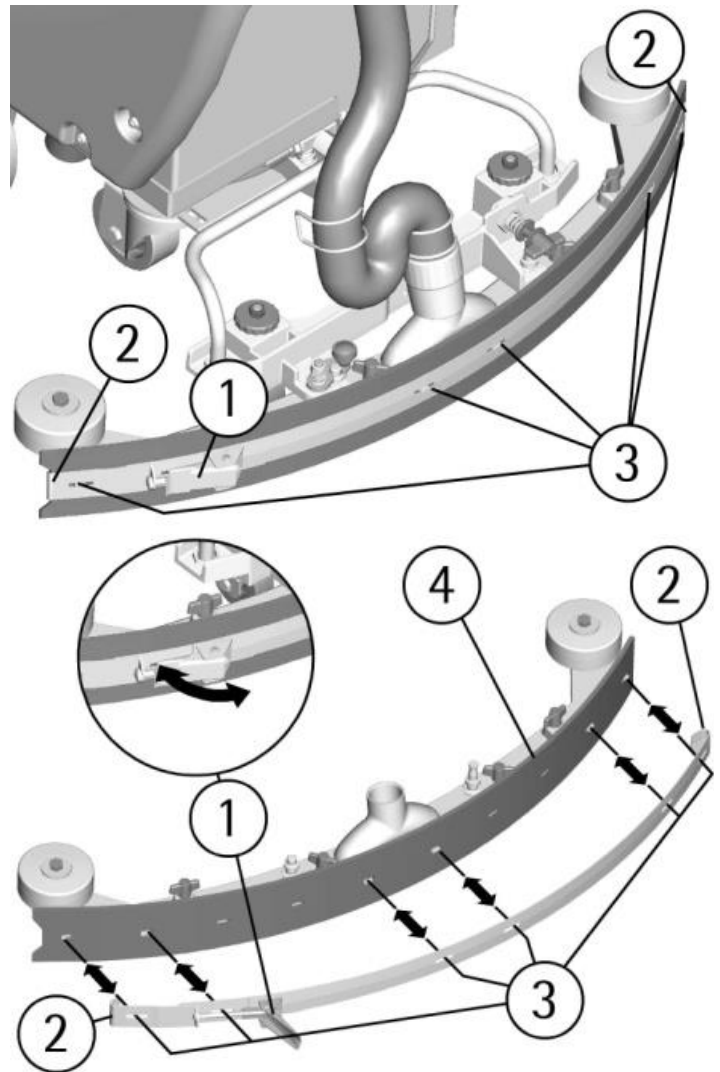
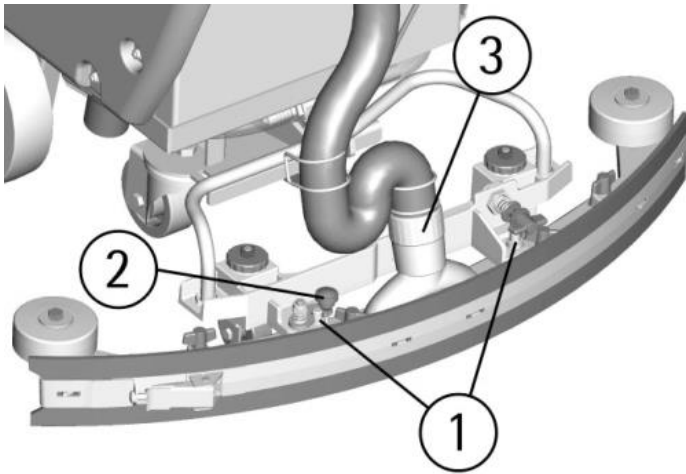
SQUEEGEE CLEANING



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.



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.

WEEKLY MAINTENANCE REAR SQUEEGEE RUBBER REPLACEMENT

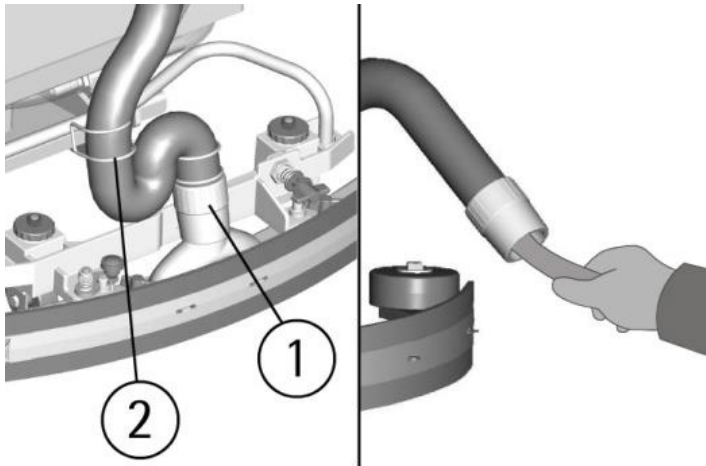


Check the squeegee rubber wear and eventually turn or replace it.

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.

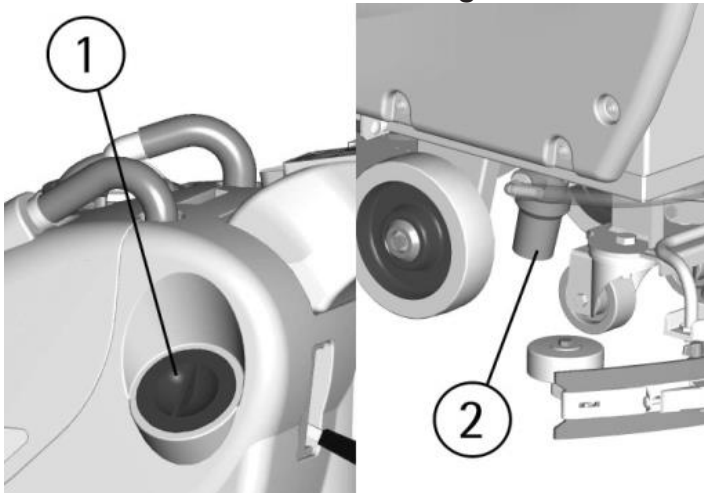
To reassemble the squeegee repeat reverse the operations above-mentioned, inserting the rubber (4) on the guides (3), couple the extremities (2) of the rubber holder blade onto the squeegee body and finally block the hook (1).



CLEANING OF SOLUTION TANK AND FILTER



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



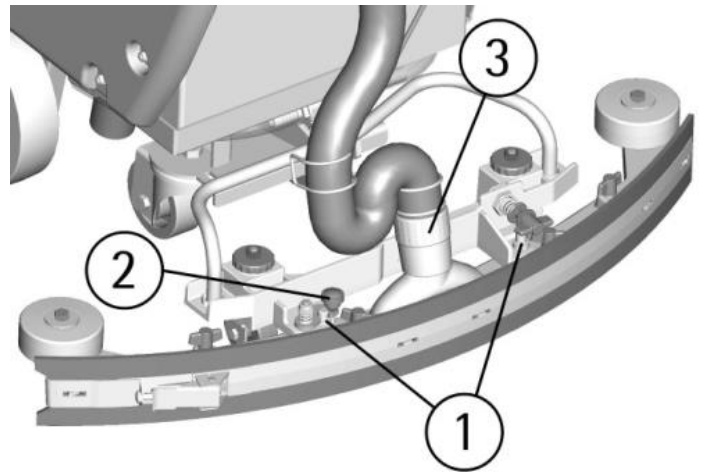
TWO-MONTHLY MAINTENANCE FRONT SQUEEGEE RUBBER REPLACEMENT



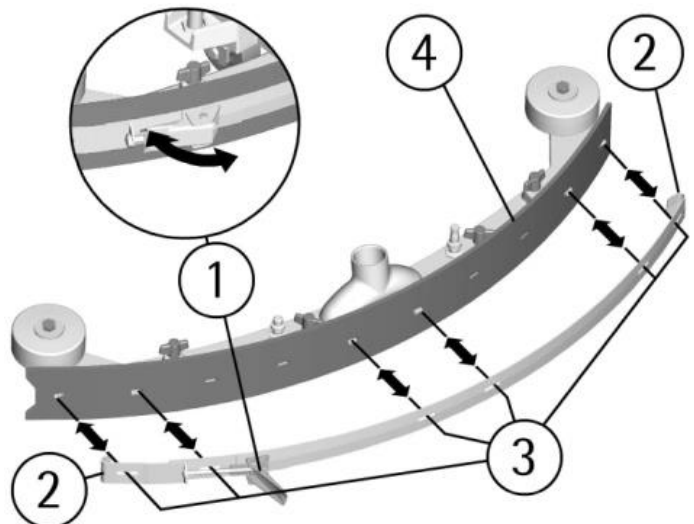
Check the wear of the squeegee rubber and eventually replace it.

For the replacement it is necessary to:

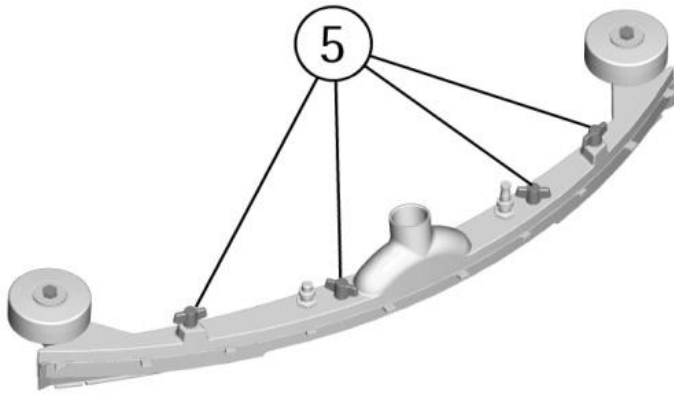
1. Take off the squeegee hose (3) from its coupling.
2. Disassemble the squeegee from the support rotating the lever (2) counterclockwise and sliding the stud bolts (1) in their slots.



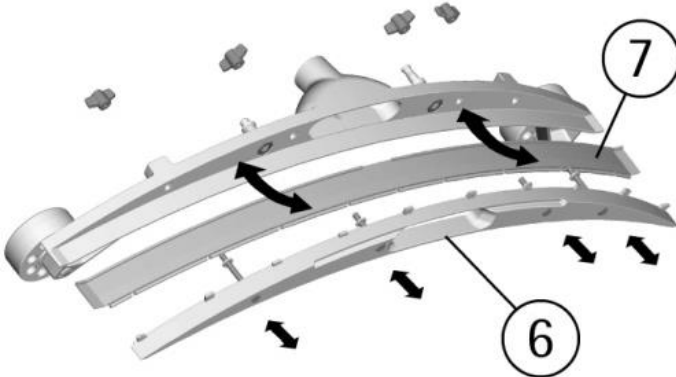
3. Uncouple the hook (1) of the rubber holder blade, release the extremities (2) from the squeegee body and take off the rubber (4).



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).



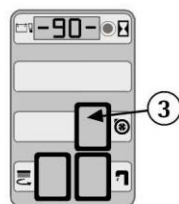
6. Replace the front rubber.
7. To reassemble the squeegee reverse the operations.
The checking of all the other foreseen machine operations is left to the authorized technical assistance.

TROUBLESHOOTING GUIDE



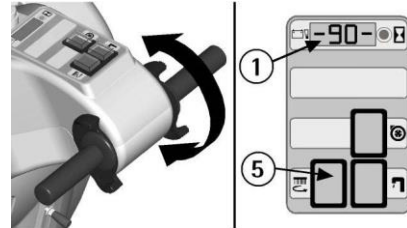
THE SUCTION MOTOR DOES NOT WORK

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



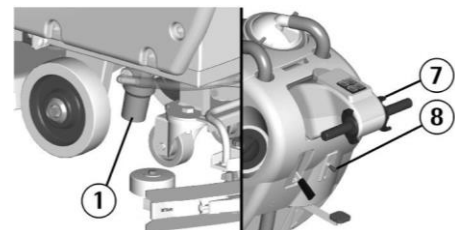
THE BRUSHES MOTOR DOES NOT WORK

1. Check the charge level of the batteries.
2. Check that the battery connector is correctly plugged in.
3. Verify that the switch (5) is on.
4. Activate the levers forward movement.
If the problem persists, please contact the authorized technical assistance.



INSUFFICIENT WATER ON THE BRUSH

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



THE MACHINE DOES NOT CLEAN PROPERLY

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

THE SQUEEGEE DOES NOT DRY PERFECTLY

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

EXCESSIVE FOAM PRODUCTION

Check that low foam detergent has been used. Eventually add small quantities of anti foam liquid into the recovery tank. Please be aware that a bigger quantity of foam is produced when the floor is not very dirty. In this case please dilute detergent solution.

PROGRAMMED MAINTENANCE

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

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.
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.
CODE	QTY	DESCRIPTION
K57621710	2	Cylindrical brush nylon 0,6 Ø 95x462
48901210	2	Cylindrical brush PPL 0,4 Ø 95x462
K57621720	2	Cylindrical brush PPL 0,3 Ø 95x462
48901230	2	Cylindrical brush nylon 0,3 Ø 95x462

